■研究発表論文

南京民国時代における大学キャンパスの空間構成及び特徴に関する研究

Research into the Spatial Composition and Features of University Campuses in Nanjing in the Period of the Republic of China (1912-1949)

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Abstract: In terms of composition elements, spatial forms and flow lines, the authors of this thesis respectively investigated and analyzed the entrance space, main-square space and subsidiary spaces of the campuses of the only three colleges/universities in Nanjing (including National Central University (NCU), University of Nanking (UN) and Ginling College (GC)) in the period of the Republic of China (ROC) (1912-1949), with a view to ascertaining the features of spatial composition of university campuses in Nanjing in the period of the ROC. According to the research findings, the key composition features of each of these three universities are "principal axis + stub-end buildings + main square in the style of three-sided courtyard + lawn space" in the Western style, the separation of teaching space and dormitory space, and the setting of large-sized sport spaces. In addition, based on the Chinese-style treatment of campus buildings and spaces, church universities present a style combining both Chinese and Western elements for the "localized" missionary purpose. In contrast, campus spaces of national universities assume a "completely Westernized" style different from the traditional one, so as to convey the brand-new administrative philosophy of the National Government.

Keywords: *campus, buildings of the Republic of China, external space, spatial composition, Nanjing*
キーワード：大学キャンパス，民国建築，外部空間，空間構成，南京

1. Introduction

On Jan.1, 1912, the ROC was founded. Dr. Sun Yat-sen announced the founding of the Provisional Government of the ROC in Nanjing. From then on, the National Government started the modernized construction of Nanjing as an important city. This construction process lasted from 1927 when Nanjing was designated as the capital of the National Government to 1937 when the construction of Nanjing reached its peak. Thanks to the great attention of the government, many buildings and gardens were built in the meantime [1]. In addition, from the end of the 19th century to the 1920s, the role played by Western missionaries changed from "preacher" to "educator": they founded missionary schools in China in succession [2]. In the period of the ROC, three universities in modern sense were established in Nanjing, including NCU, UN and GC, namely the three existing universities with the longest history in Nanjing. They appeared not only different from the traditional academy buildings and garden spaces, but also the socialist universities built after 1949 (the year marking the founding of the PRC), so that they assumed unique cultural features in that era (a combination of Chinese and Western elements). Therefore, the former sites of campuses of the above-mentioned three universities in the period of the ROC have been designated as "key units of cultural relics under national protection", ranking at the highest level among units of cultural relics in China. Since they demonstrate a unique artistic feature of transition in the Chinese architecture and garden history, they are extremely valuable for academic research. Therefore, it is not too much to say that we must study the campus spaces of NCU, UN and GC while studying the composition features of all campus spaces in the period of the ROC in Nanjing and throughout China.

The previous researches into the university campuses in Nanjing in the period of the ROC focused on the history[3),4)]・features and protection[5),6)] of campus buildings, the protection of campuses[7)~9)], and a review on the general planning[10)]. Previous researches illuminated the conscious about the great value beneath, but none of researches into campus spaces went beyond the scope of macroscopic discussion, i.e. no research has been conducted into the spatial composition of campuses in specific forms as well as its features. Therefore, with the period of the ROC as its background, and the only three universities in Nanjing at that time as its research objects, this thesis aims to ascertain the composition features of the campus spaces of these three colleges/universities. Based on research purpose and due to space limitation, this research did not include buildings dated back to the period before the ROC and their spaces, as well as the spaces of natural forms which were not designed artificially. The authors analyzed and investigated nothing but the spaces that are constituted by buildings in the period of the ROC, including squares, courtyards and roads.

2. Methods

(1) Investigation Method

In March and July of 2012, the authors collected and arranged public publications[3),5)] and electronic data[4),6)~10)] about universities in Nanjing in the period of the ROC (including previous research theses, investigation reports, historical literatures, plane figures and photos) from such institutions/websites as the Library of Nanjing, Jinling Library of Nanjing, Nanjing Urban Construction Archives, the Second Historical Archives of China and websites of electronic journal. And based on the results of the above-mentioned arrangement, the authors made an on-the-spot investigation into these three universities.

(2) Analysis Method

First, based on the social background at that time, the authors sort out the obtained investigation data, assemble the overview of universities and the information about their main buildings into Table 1 and Table 2.

Next, based on the location attributes and functional features of campus spaces, and the research conducted by Mr. Yang into the campuses of

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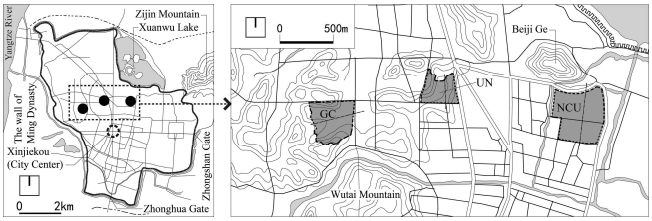


Figure-1 Location of Three Campuses in Nanjing

Table-1 Profile of Three Campuses[11)]

Name of Campus		NCU	NU	GC
Time Conditions	Created	1902	1910	1915
	Analysis	1949	1949	1949
Ownership		State-run	American church	American church
Planner		J. Morrison. Wilson	Perkins, Fellows & Hamilton Architects	Henry K. Murphy
Principal Axis		North-south	North-south	East-west
Site Conditions	Terrain	Flat	Slope, South is lower than North	Ringed on three sides by mountains, Flat center
	Scale (hm^2)	20.3	12.2	13.8
Education Plan	Faculties	7	3	2
	Students	3200	480	400

these three universities[7)], the authors classify campus spaces into: entrance space, main-square space and subsidiary spaces, and confirm the actual forms of sites and draw relevant pictures: Fig. 2-4 ~ 2-6.

Thirdly, based on relevant previous researches of spatial composition, the authors define the analyzed items as: composition elements[1)], spatial forms (configuration[1), 12)], scale[13)]), and flow lines[14), 15)] (Please refer to Table 3 for relevant explanation), and thereby analyze the spatial composition and features of the campuses of these three colleges/universities respectively.

Finally, based on the similarities and differences of features of spatial composition among the campuses of these three universities, the authors conduct a comprehensive consideration in terms of cultural dimension and social background.

3. Profile of University Campuses

Please refer to Fig. 1, Table 1 and Table 2 for the basic profile (geographic location, topographic condition, site scale, number of faculties and number of students, etc.) and details about main buildings. In general, all campuses of these three universities were planned by American designers, while their campus construction was chiefly carried out in the 1920s and the 1930s.

NCU was not only the earliest national comprehensive university in Nanjing, but also the supreme institution of higher learning in China in the period of the ROC. As can be discovered from the plane figure (Fig. 2-1) of Nanjing Higher Normal School (NHNS), the campus construction of NCU was developed on the original basis of NHNS. The construction of the teaching area in the south of this university laid the foundation for the overall spatial pattern of its campus (Fig. 2-4). Now this site serves as the old campus of Southeast University.

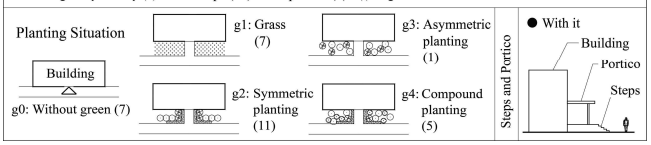
UN was one of the private church universities founded by the Christian Church of USA at the earliest time in China. In 1914, PFHA[16)] completed the detailed blueprint of the new site of UN (156hm^2) (Fig. 2-2). However, for historical reasons, only the northernmost building of Undergraduate Department in this blueprint was put into effect. The 11 buildings set up against the slope constituted the spatial pattern of this university in its early period (Fig. 2-5). Now this site serves as a part of the old campus of Nanjing University.

GC was not only the first college for women in China, but also a private church college. The campus of GC was planned and designed by Henry K. Murphy[17)]. Please refer to Fig. 2-3 for its planning chart. However, as a matter of fact, only the 9 buildings in the central area were

Table-2 The Names, Floors, Years, Designers, and Constitute Contents of Buildings[18)]

	NO.	Name	Function	Year	Designer	Style	Floors	Axis	Main Entrance		
									Steps	Portico	Planting
National Central University (NCU)	1	Auditorium	f6	1931	Parmer & Tarner Architects	s1	3	a1	●		g2
	2	Mengfang Library	f6	1924	Jousseume Pascal	s1	2	a1	●	●	g2
		(enlargement)	f6	1933	Tingbao YANG						
	3	Biology Building	f1	1929	Zongkan LI	s1	3	a1	●		g2
	4	Science Building	f1	1927	Tingbao YANG et al.	s1	3	a1	●	●	g2
	5	Literature Faculty	f1, f2	1922	unknown	s2	2	a1	●	●	g1
	6	Law Faculty	f1, f2	1919	unknown	s2	2	a1	●	●	g1
	7	New Classroom	f1	1929	unknown	s4	2	a1	●		g2
	8	Plum Hut	f6	1933	unknown	s4	1	a1	●		g3
	9	Dental Hospital	f4	1936	Tingbao YANG	s4	3	a1	●		g2
	10	Stadium	f6	1922	unknown	s2	3	a1	●	●	g0
	11	Technology Practice Room	f1	1918	unknown	s4	2	a1			g2
University of Nanking (UN)	12	Administration Building	f1, f2	1919	PFHA*	s3	2(5)	a1	●		g2
	13	Science Building	f1	1917	PFHA	s3	3	a1			g4
	14	West Science Building	f1	1925	A.G. Small	s3	2	a1			g4
	15	Northeast Building	f1	1935	unknown	s3	4	a1	●		g1
	16	Library	f6	1936	Tingbao YANG	s3	2	a1	●		g2
	17	Sage Chapel	f5	1918	PFHA	s3	2	a1	●		g4
	18	Twinem Memorial Chapel	f5	1923	PFHA	s3	1	a1	●		g2
	19	Mc Cormic Dormitory 1	f3	1925	PFHA	s3	2	a1			g1
	20	Mc Cormic Dormitory 2	f3	1925	PFHA	s3	2	a1			g0
	21	Mc Cormic Dormitory 3	f3	1925	PFHA	s3	2	a1			g1
	22	Mc Cormic Dormitory 4	f3	1925	PFHA	s3	2	a1			g0
Ginling College (GC)	23	No.100 Building	f6	1923	Henry K. Murphy	s3	2	a1	●		g2
	24	No.200 Building	f1	1923	Henry K. Murphy	s3	2	a1	●		g4
	25	No.300 Building	f1, f2	1923	Henry K. Murphy	s3	2	a1	●	●	g4
	26	No.400 Building	f3	1923	Henry K. Murphy	s3	2	a1			g0
	27	No.500 Building	f3	1923	Henry K. Murphy	s3	2	a1			g0
	28	No.600 Building	f3	1923	Henry K. Murphy	s3	2	a1			g0
	29	No.700 Building	f3	1924	Henry K. Murphy	s3	2	a1			g0
	30	Library	f6	1934	Henry K. Murphy	s3	2	a1	●		g1
	31	Chapel and Music room	f5, f6	1934	Henry K. Murphy	s3	2	a1	●		g1

*PFHA: Perkins Fellows & Hamilton Architects (USA). Architectural functions: f1 Teaching use (12), f2 Administrative use (4), f3 Residential use (8), f4 Medical use (1), f5 Religious use (5), f6 Cultural use (8). Architectural styles: s1 Western classical style (4), s2 Simplified Western style (3), s3 Traditional renaissance building of combined Chinese and Western style (20), s4 Modern Style (4). Axis of symmetry: a1 Left-right symmetry (31), a2 Left-right asymmetry (0). With steps (20) With portico (6). ( ): Figures in brackets are the results of each statistic.



put into effect according to the plan. These buildings laid the spatial pattern of GC. Please refer to Fig. 2-6. Now this site serves as a part of the old campus of Nanjing Normal University.

At present, the original forms of spatial distribution and main buildings of these three universities are all kept intact. Some buildings still maintain their original functions after due repair and renovation, while some buildings have been directly sealed up for safekeeping as historical relics.

4. The Composition and Features of Campus Spaces

As described previously, the authors classify campus spaces into: entrance space, main-square space and subsidiary spaces. The entrance spaces of these three universities consist of entrance gates and spaces inside and outside the gates. Specifically, they include three gates (G1, G2 and G3 respectively), and six spaces inside and outside the gates (E1~E2, E3~E4, and E5~E6,respectively). The main-square space refers to the most important public open space at a college/university, which is a major space for public activities and exchanges among students and teachers, i.e. the major venue for such outdoor activities as party, communication and performance. This kind of space plays a very important role in the spiritual construction of college/university campuses. The main squares on these three campuses are M1, M2 and M3 respectively. Subsidiary space refers to the activity space allocated and formed on the basis of main buildings outside the main square space, or the activity space designed artificially. These three universities have 17 subsidiary spaces in

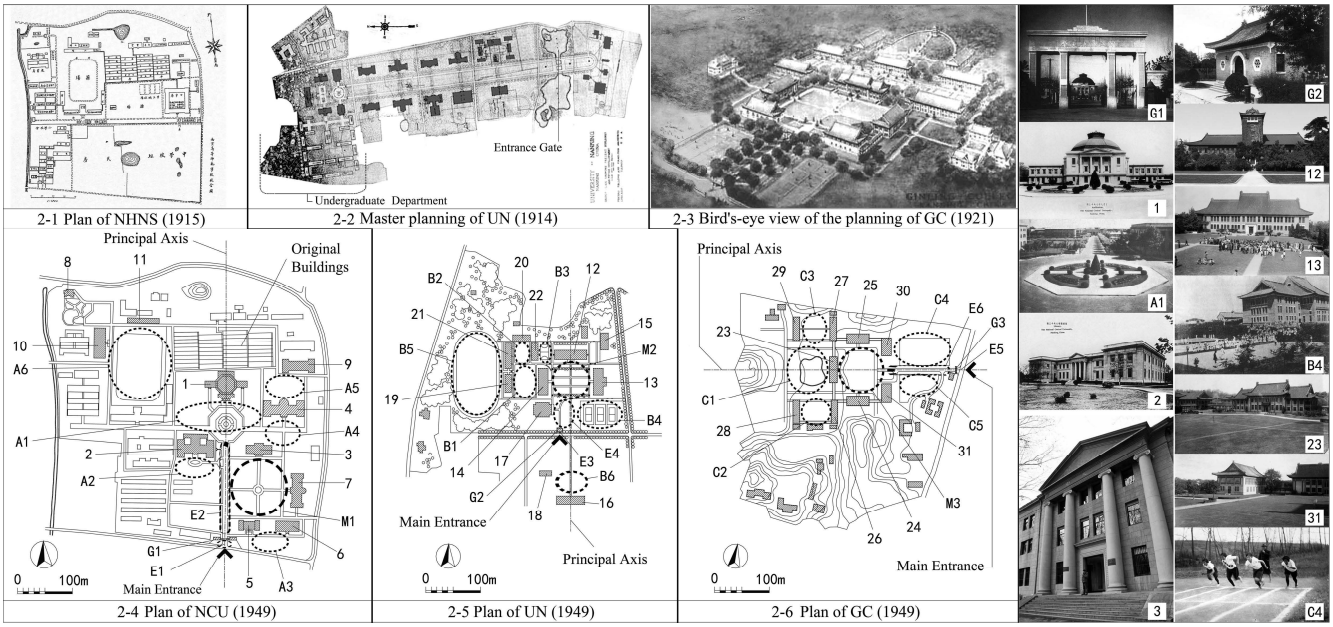
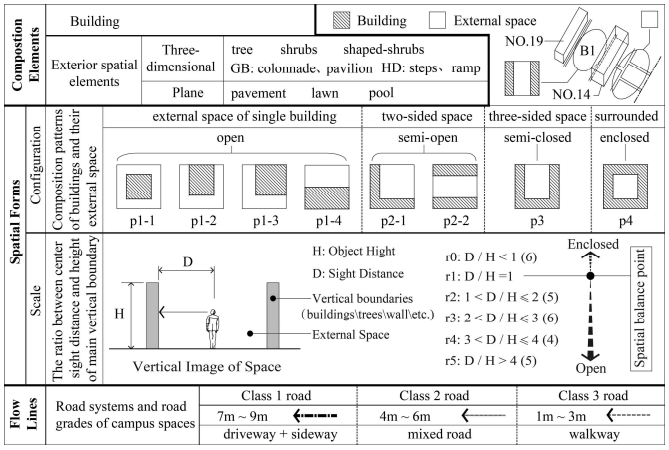


Figure-2 Plans, Planning Drawings and Pictures of Campuses[19)]

Table-3 Analyzed Items of the Campus Spaces



total （A1~A6、B1~B6 and C1~C5）. According to functional attributes, they can be classified into three types: 1) external space attached to public buildings; 2) external space attached to dorm buildings, and 3) space for sports. Please refer to Fig. 2 for the location and distribution of the above-mentioned spaces, and refer to Fig. 3 for the composition form and flow-line composition of each space.

In addition, since the main entrance space is the key part for the association between the internal space and external space of buildings, it has the most centralized pedestrian flow. Based on the research into the approach space of buildings[15)], the authors investigated the composition feature of the main entrance space of various buildings in terms of plantation forms, the setting of steps and porches and the relationship between buildings and roads. Please refer to Table 2 for relevant statistical information about 31 main buildings and their main entrance spaces.

In the following, the authors will investigate and analyze the spatial composition of the campuses of these three universities and its features.

(1) National Central University

(ⅰ) Spatial Composition

G1 is the simplified style of Western classic architecture. Its receding road forms a buffer space of the entrance (E1). E2 is a broad avenue, which was originally used by foreign countries and was later brought into China. With a length of about 180 meters, it is the arterial road of this university. G1 and No.1 constitute the principal axis of this university. Through the gate-opening (6 meters high), we can see the No.1 at the end of the road (Picture G1 in Fig. 2). M1 is located on one side of the principal axis. With a flat terrain, it is in the form of three-sided courtyard enclosed by four buildings (Fig. 3). The ratio between center sight distance and building height ranges from 3 to 4, with an open space. The central axis of No.3 and No.7 divides the space into four square lawn spaces, thereby forming the traffic route (Fig. 3). At the central confluence of the cross-shaped roads, there is a small round square, on which there was a round flower bed[3)] (now a bronze tripod statue). As the external space of No.1, A1 consists of the traffic square in front of No.1 and the lawn on the left and right side of No.1. As a spatial form, the traffic square is unique among these three universities. This square has not only been the traffic hub, but also its octagonal regular flower bed[3)] (now a pool and a fountain) is in harmony with the octagonal shape of No.1 (Picture 1 and A1 in Fig. 2). A2, A3 and A4 are all spaces in front of the public buildings. Located between the two buildings, A5 chiefly belongs to No.4. The above-mentioned four spaces are based on grassland landscape. As a sport space, A6 is the most open. This spatial form cannot be found in all traditional Chinese academies. Since the dorm building of NCU was left behind from the period of the ROC, its subsidiary space is not a research object in this thesis. At the main entrances of almost all buildings, footsteps and greenbelts have been set up, with almost all plants arranged symmetrically (g2). European-style porticoes have been set up in five buildings (Table 2).

(ⅱ) Composition Features

Composition Elements: Pavements are chiefly expressed as roads and small-acreage squares. The universal application of big lawns, the interspersion of flower-beds and topiary shrubs, symmetrical avenues, European-style porticoes, and gorgeous European-style buildings (Table 2) jointly enable the entire campus space of NCU to express a completely-Westernized style.

Spatial Forms: Relatively, entrance spaces have relatively small sizes and a strong sense of enclosure. The main square takes the form of three-sided courtyard. At its center, there is an open lawn. In terms of spatial configuration form, most subsidiary spaces are open ones. The

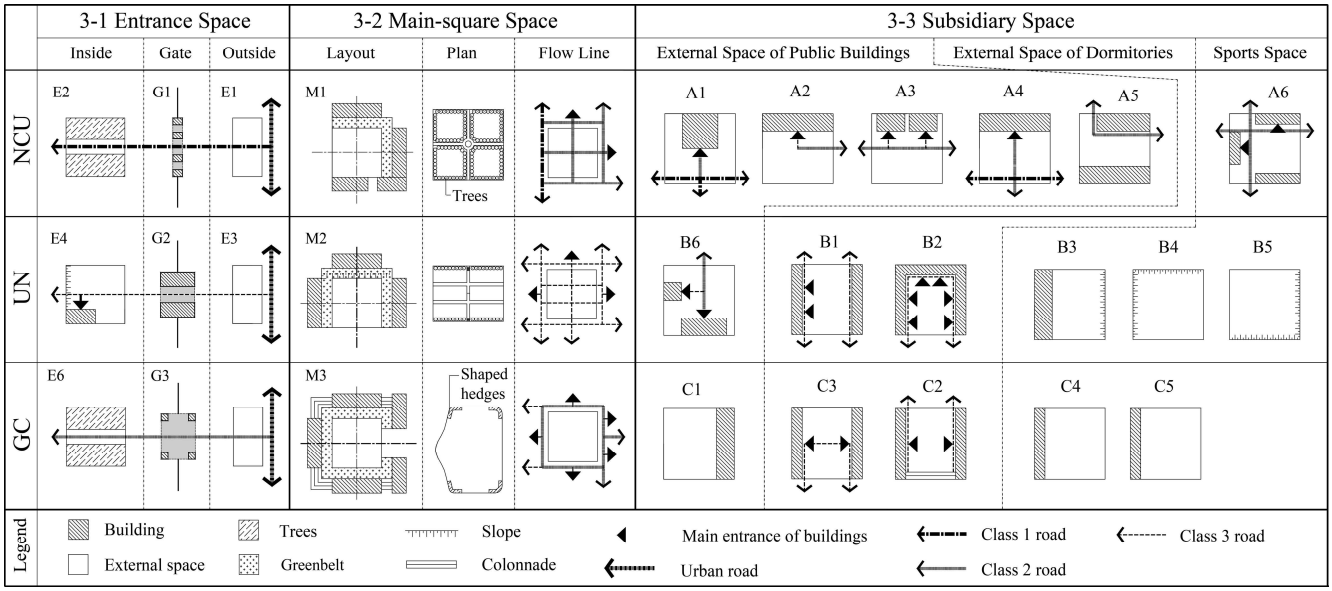


Figure-3 Analysis on Spatial Composition Patterns and Flow Lines

setting of a large-sized sport space proves that modern Chinese university education began to attach importance to all-round development and accept Western culture in many aspects.

Flow Lines: The flow-line composition of the entire campus is based on the principal axis. As the hub, the square in front of the auditorium organizes traffic flow lines. All buildings are expressed as parallel with or perpendicular to the principal axis and their main entrances are located at the center in front of buildings. Therefore, the flow-line organization of the entire space is expressed as cross-shaped and orthogonal road grids, with a clear distinction between the important and the less important.

(2) University of Nanking

(ⅰ) Spatial Composition

G2 was a temporary gate (now it does not exist any longer), in the style of corridor-type traditional Chinese buildings[3] (the door-opening is 3.3 meters high), located on the side of the principal axis, with No. 17 nearby. E3 is a buffer space between the gate and road, including a platform and some doorsteps. On both sides in front of G2 there are two symmetrical tree pools (Picture G2 in Fig. 2). E4 is the first-tier grassland space behind G2. The gate was originally planned at the southern end of the central axis of the campus. There are three sections of long bar-shaped greenbelts from the gate to the Undergraduate Department, constituting a strong axis-like introductory space (Fig. 2-2). M2 is enclosed by No. 12, No.13 and No.14, presenting a pattern of courtyard opening on one side and enclosed on three sides. This space is the central area of UN, with a flat terrain and an open lawn, the direction of which is perpendicular to the principal axis. Among the three buildings, No.12 is the main one, located at the end of the axis. Its 5-storey-high tower has become the visual focus of the entire campus space. No.12 and No.16 jointly constitute the north-south principal axis of the campus space. The lawn square is the second-layer space after entry. The subsidiary greenbelt in front of No.12 is the third-layer space. On the slope between these three spaces, plants of various species grow together, having reinforced the vertical division of the space. The roads of these two layers are connected through steps. Please refer to Fig. 3 for the flow-line structure of this space. Both B1 and B2 are residential courtyards, located to the west of M2. Considering secrecy, their spaces assume a semi-closed form. At the center of either of the two courtyards, there is a lawn space, surrounded by topiary hedges. B3, B4 and B5 are sport spaces, all of which are spaces formed through subsidence topography. Considering the interference of sports with teaching and the large-size requirement of sports ground, almost all spaces of this kind are distributed in the wide and open area on the outer side of main building complexes. B6 is the atrium space of the library. On both sides of its entrance road, there are symmetrical plants, with other areas covered with natural plants.

(ⅱ) Composition Features

Composition Elements: Almost all pavements are expressed as roads. In terms of planting configuration, there are both natural plantings and regular plantings, as well as both traditional plant allocation, Western-style topiary hedges and big-lawn landscape. The planting design and architecture of this kind combining both Chinese and Western elements (Table 2) jointly constitute the unique campus space in both Chinese and Western styles. In addition, the setting of steps and ramps in many spaces has very well met the requirement of slope topography conditions. Moreover, the abundant change of height differences among different platforms has also added the sense of hierarchy and the interest of spaces.

Spatial Forms: In terms of the configuration relationship between external spaces and buildings, there are two forms of enclosing from three sides and one form of enclosing from two sides, with all others being open forms. The main square is very open. The dorm courtyard is located beside the main space, with a strong sense of enclosure. All sport spaces take advantage of the subsiding topography, and two larger-size sport spaces are located on the outer side of the campus. Although there are a small number of spaces on the campus, there are abundant spatial feelings.

Flow Lines: Based on campus planning, the configuration of main buildings was firstly decided and then the traffic flow lines were organized. Based on the principal axis, the road system is distributed in a parallel or perpendicular way. All roads are footpaths, with no obvious distinction between the important and less important. The entire road system and buildings are configured as a whole.

(3) Ginling College

(ⅰ) Spatial Composition

G3 was a four-column traditional Chinese building[3] (so far, it has been re-established). With G3 receding, and enclosing walls on both sides contracting internally, E5 has come into being. E6 is a straight avenue,

with a length of about 150 meters. In the original plan, there was a screen wall on the road just opposite the gate, and there was a memorial archway at the end of the avenue. These factors and the gate jointly constitute an entrance space full of traditional characteristics (Fig. 2-3). Located in the central area of the campus, M3 assumes a semi-closed spatial pattern enclosed by 5 buildings on four sides, with a flat and smooth site and its central area being a complete lawn space. Inside all corners of roads around the lawn space, topiary hedges are gown. With its spatial direction perpendicular to the main axis, it forms a contrast with the vertical space of entrance. Five buildings are connected through colonnades. The setting of colonnades connects architectural spaces as a whole, and expresses cares about women as well----avoiding exposure to the sun and rain. Located on the axis, No. 23 is the main building of this space, with its central roof rising. All the main entrances of the five buildings face the square, and are covered with greenbelts (Table 2). Just as shown in Fig. 3, the flow line of this space is shaped like a tetragon. The road in front of the main building is designed in a curve, possibly embodying the femininity of women. It also echoes the natural water-bank line behind the building (based on the speculation of the author). Considering the requirement of privacy, C1, C2 and C3 are located in the rear of M3. At the center of C1, there is an artificial pool with a curved bank. Plants of various natural forms grow around the pool. Therefore, C1 is expressed as a space of "backyard garden" full of traditional Chinese characteristics. C2 and C3 on both sides present semi-closed grassland landscape, serving as spaces of dorm courtyards. Adjacent to the buildings, entrance roads of the four dorm buildings are not accompanied by any greenbelts. Distributed on both sides of entrance roads, both C4 and C5 are open sport spaces.

(ii) Composition Features

Composition Elements: Almost all pavements are expressed as roads. Lawns are extensively applied. In particular, the complete central grassland of the main-square and topiary hedges around it constitute campus landscape featured by modern Western courtyards. Natural plantings and water-surfaces and colonnades convey the appeal of traditional Chinese gardens. Gardens and buildings of this kind combining both Chinese and Western elements jointly constitute the unique spatial culture of campus.

Spatial Forms: The forms of the eight spaces of GC are configured clearly. Centered around the main square and based on the main axis, they are distributed strictly symmetrically. The avenue at the entrance has reinforced the sense of the depth of campus spaces and highlighted the open sense of the main square. The separate setting of the spaces of dorm courtyards and sports expresses the consideration of different functional requirements. This kind of independent and separate spatial structures is different from the mixed layout of traditional Chinese academies.

Flow Lines: Based on campus planning, the main buildings and the road system were sequentially designed, which are unified as a whole, with a clear distinction between the important and the less important. The direction of flow line is based on the principal axis. From the gate to the each building's entrance, flow lines are arranged in a parallel or perpendicular way, thus constituting a grid system. The setting of colonnades constitutes an open internal traffic.

5. Comprehensive Consideration

As we can see from the above-mentioned investigation and analysis, on the one hand, the structural features of campus spaces of these three universities are all expressed as (Please see Table 4 and Fig. 4): (1) the principal axis+ stub-end buildings + main square in the style of

Table-4 Analysis on Composition Elements and Spatial Forms

	NO.	Trees	Shrubs	Shaped-shrubs	GB	HD	Pavement	Lawn	Pool	Scale	Configuration Patterns	Composition Patterns of Typed Spaces
		Spatial Composition Elements										
Entrance Space	E1						●			r0	p1-4	Outside
	E3		●			●	●	●		r0	p1-4	
	E5						●			r0	p1-4	
	E2	●					●			r0		Inside
	E6	●					●			r0		
	E4	●	●	●		●	●	●		r4	p1-4	
Main-square Space	M1	●		●			●	●		r4	p3	M. S.
	M2	●	●	●		●	●	●		r4	p3	
	M3	●	●	●	●		●	●		r4	p3、p2-1	
Subsidiary Space	A2	●		●			●	●		r3	p1-4	External Space of Public Buildings
	A4	●	●	●			●	●		r2	p1-4	
	C1	●	●		●		●	●	●	r3	p1-4	
	A1	●	●	●			●	●		r2	p1-2	
	A3	●					●	●		r3	p1-2、p1-2	
	B6	●	●	●		●	●	●		r2	p1-2、p1-2	External Space of Dormitories
	A5	●	●				●	●		r3	p2-2、p1-3	
	B1	●	●	●			●	●		r2	p2-2	
	C3		●				●	●		r3	p2-2	
	B2	●	●	●			●	●		r2	p3	
	C2	●	●		●	●	●	●		r3	p3	
	C4	●	●				●	●	●	r5	p1-4	Sports Space
	C5	●	●				●	●		r5	p1-4	
	B3					●	●	●		r0	p1-4	
	B4					●	●	●		r5		
	B5	●	●			●	●	●		r5		
	A6	●					●	●		r5	p2-1、p1-3	
Sum		20	16	10	3	8	26	22	2			

Legend: Building, External space, Greenbelt, Urban road

Scale: r0(6)、r2(5)、r3(6)、r4(4)、r5(5)

( ): Figures in brackets are the statistics number.

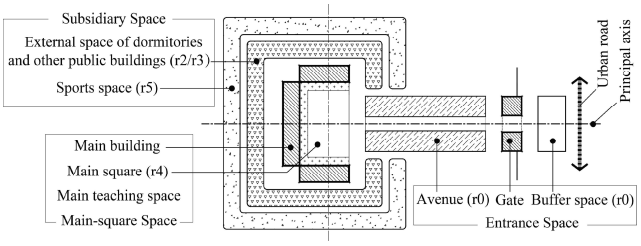


Figure-4 General Composition Pattern of Campus Spaces

three-sided courtyard + lawn space; (2) Two spaces have come into being in the entrance space, with the gate as a demarcation point. The outer space is a small-sized buffer space, while the inner space is an avenue-style introductory space. (3) The moderate-sized dorm courtyards are spatially arranged behind or beside the main space of campus out of consideration of functions. (4) The large-sized sport spaces are arranged on the outer side of the campus. This feature indicates that the spatial construction of university campuses in the period of the ROC in Nanjing is marked by sublation of the spatial layouts of traditional Chinese academies, e.g. the spatial structural features represented by four famous academies in ancient China[20]: symmetry along the central axis; more than one courtyard; enclosed quadrangle and strict hierarchy system[21]. In addition, all the more, this feature is expressed as the imitation of the

layouts of modern Western university campuses, especially the impact of the ideology of American campus planning at that time, namely: the modern university campus planning represented by that of University of Virginia[22]: symmetry along the central axis, main space in the style of semi-open three-side courtyard, stub-end main building, broad and vast lawn, etc. From the planning figure of UN and GC, we can more obviously feel the impact of this kind of planning and design ideology (Fig. 2). This indicates that a compromise has been reached on the construction of university campuses during the collision between oriental and Western culture. From one side, this also reflects the society at that time: the invasion of Western culture and the yearning of Chinese society for Western culture during the transition period from the feudal society to the capitalist society.

On the other hand, in terms of the style construction and spiritual pursuit of campus spaces, NCU expresses a completely-Westernized style, while UN and GC express a style combining both Chinese and Western elements. It can be inferred that private church universities and national universities are different in the construction requirement of campus styles. We can also notice from this difference that national universities funded by the government enjoy financial advantages and pursue Westernized style all the more, thus expressing the "grand" and "internationalized" spirit of the government. From the number of faculties and students of NCU (Table 1), we can also notice the pursuit of "grandness". Moreover, this Westernized style is consistent with the objective of the "Party-oriented education[23]" of the National Government----to promote the Westernized political ideology with a view to reinforcing the ruling status of the National Party. Just like government agencies built by the National Government, both buildings and courtyards express an obvious Westernized style[1]. In contrast, the campus spaces of the private church university founded by foreign missionaries not only fully demonstrate the Western gardening culture, but also attach importance to the expression of Chinese native gardening culture. This can better reach the missionary purpose by adapting to Chinese customs and catering to the psychology of Chinese. Just like some church buildings, the builder strived to build them in the traditional Chinese style to reach the same purpose[24].

6. Conclusions

Based on the above-mentioned investigation and research, we can conclude that the spatial composition of university campuses in the period of the ROC in Nanjing has the following characteristics:

(1) In terms of the elements of campus spaces, the large-acreage open lawn landscape and cross-shaped orthogonal road-grids constitute the planar characteristic of campuses, thereby forming the keynote of Western style; (2) In terms of spatial layout and forms, there is a controlling principal axis which commands all buildings and spaces on the campus. In addition, the setting of main buildings in the principal-axis and stub-end style expresses the collision and integration of Chinese and Western culture; (3) An open space of three-sided courtyard has emerged on the basis of the enclosure of buildings. As the main space for public communication among students and teachers, this space embodies a kind of absorption of the planning philosophy of new-style American universities; (4) In terms of the functional layout of campuses, dorms and classrooms are separated from each other, and a sport space is newly added, embodying a kind of absorption of the culture of Western modern universities; (5) Different education-offering entities have different requirements for the spatial construction of campus environment. The composition of campus spaces not only represents physical composition, but also reflects the "political" or "religious" appeal of builders.

Therefore, the future research topics will include the constituent features of the campus spaces of socialist universities built after the founding of the PRC in 1949 as well as the way in which they embody the political philosophy of the government authorities.

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16) Perkins, Fellows & Hamilton Architects was founded in Chicago (USA) by Dwight Heald Perkins (1867-1941). This group of architects constituted the famous "Prairie School" in the American architectural history in the late 1890s.
17) Henry Killiam Murphy (1877-1954), an American architect, was a representative personage of the renaissance of traditional Chinese art of architecture. He presided over the design of a series of church universities including Tsinghua Imperial College and Yenching University, as well as many other buildings.
18) The information about the buildings, including "name", "function", "age" and "designer", is based on references 3), 4) and 6). The determination of the "style" of buildings is based on reference to Literature 2).
19) Fig. 2-1, 2-2 and 2-3 are respectively quoted from references 8), 6) and 7). Picture A1, 13 and 31 are quoted from reference 3). Picture G1, G2 and B4 are quoted from: Chen H. (Photography) (2002): Old Buildings in Nanjing University with a History of One Hundred Years: Nanjing University Press, Nanjing, 196PP.
20) Four famous academies in ancient China include: Bailudong Academy, Yuelu Academy, Songyang Academy and Yingtian Academy. In ancient China, academies carried a spiritual temperament and cultural mission similar to those carried by modern universities.
21) Liu W. (2005): On the Environmental Construction and Cultural Image of Academies in Ancient China: Guangdong Social Sciences, (6), 88-92.
22) University of Virginia designed by Thomas Jefferson (1743-1826) typically represents the American-style layout of university campuses.
23) Party-oriented education means that a ruling party spreads a set of political theories and ideologies of its own throughout the society through all kinds of publicity and education techniques, so as to reinforce its ruling status, Refer to: Jiang B. (2012): The Creation of National Central University and the Campus Politics in Post-revolution: Journal of Sun Yat-sen University 52(1), 78-87.
24) Previously mentioned in 2), p402.