

Visual Analysis Based on Citespace: Analysis on the Development and Current Situation of Education and Teaching of Landscape Architecture in China

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Abstract:

The landscape architecture in China since 1920, in the form of professional courses have appeared in the college curriculum has been 100 years of development, has experienced a long evolution among this, also gradually had different development model, this article deals with the landscape architecture discipline, is mainly refers to contain the agricultural science and engineering under the two categories of the development of landscape architecture discipline. Under the two different categories, the discipline of landscape architecture has made great progress at first, but there are also some problems that it is not closely integrated with the industry and industrial development. At the same time, under the development of the two categories, it is also faced with some limitations, and professional talents have not been fully developed. In view of such problems in the development of landscape architecture in China, through integrating the articles on landscape architecture education and teaching through importing citespace, this paper puts forward Suggestions and countermeasures for the development of landscape architecture in China from the perspectives of social development, the change of educational platform and the standards of professional education. At the same time we will also in the field of landscape architecture education in citespace the most outstanding contribution to the study of the top ten a sort of school, and in the field of landscape architecture is different for each school is carried out on the professional set up an integrated, found that most of these colleges, will garden (agriculture), and landscape architecture (engineering) setting in a college, so to strengthen the exchanges and cooperation between the two majors, only in this way can better adapt to the modern society to the demand for professional talents of landscape architecture. With the development of the Times, people are pursuing higher and higher quality of life, so the discipline of landscape architecture will play a more important role in the future.

Keywords:

Landscape Architecture, Citespace, Discipline, Education In Landscape Architecture, Development

1. Introduction

Before the founding of new China, in modern time universities had already appeared in the shadow of the landscape architecture discipline, early such as Zhejiang university, Fudan university, Jinling university department of horticulture and construction engineering, already opened including flowers, ornamental trees, horticulture and other courses. And the most important is the Jinling university, in 1945, has set up a viewing to the beginning of Chinese landscape architecture education [1].

After the founding of new China in the early 1950 s, with the approval of the government or the central ministry of education, Beijing agricultural university, department of horticulture, cooperation with Tsinghua university department of construction plan, this marks the official birth of modern landscape architecture education in our country, and it is also for the first time the integration of landscape architecture under the category of discipline, but very unfortunately, after this, the development of landscape architecture discipline in different kinds of patterns and the adjustment of national policy, the Chinese landscape architecture education revealed a chaotic situation [2]. Because the number to the secondary discipline education department in 1997 on the cut [3], landscape architecture graduate students were forced to merge to urban planning and design (landscape architecture planning and design) secondary discipline [4], and then in the following year, landscape architecture discipline and be forced to merge to the botanical garden specialty and urban planning, this situation was caused by the fragmentation of landscape architecture profession in our country, reduce the position of landscape architecture discipline in academic disciplines, As the same time in the training of follow-up talents, also appeared a series of problems [5]. In agriculture under the category of landscape architecture discipline, detailed, because professional and research direction of too many research direction of the research scope of cascading problems, at the same time in terms of the content of the research is more focused on microscopic molecular and biology, and biochemistry, insect and pest control and agricultural plant pathology and other professional direction relations also need to comb; And at the same time in engineering under the category of landscape architecture discipline attaches great importance to the construction practice and engineering practice for a long time, in terms of academic and theory relative to the engineering practice will always look down on some, as part of the urban planning and design, research direction cannot be subdivided again, just on the basis of studying urban planning and design disciplines to outspread, discipline connotation to deepen and discipline extension shall not extend, has always been with no obvious distinguish features of the urban planning and design.

Landscape architecture discipline social development demand and subject construction of sync, finally was improved in 2011. The department of housing and urban and rural construction department first to landscape architecture and architecture, and urban and rural planning disciplines and listed as the national first-level discipline, which is jointly formed the three major disciplines in the field of residential environment construction in China, but in fact, as early as 1999 UIA 20th world architect convention already by the Beijing charter specifically [6], architecture, city planning and landscape to the development of the trinity, However, the fact is that the discipline of landscape architecture in China only received the corresponding attention in 2011. In fact, in the field of human settlements, these three elements are also mutually integrated, complementary and developed, and only these three

elements can constitute the core of human settlements. In his article and introduction to human settlements science, Mr. Wu Liangyong also emphasized the importance of the three elements [7].

Nowadays, with the retreat of the urbanization boom, China's urbanization problems are gradually exposed, and green space is playing an increasingly important role in the process of urban construction. 19 report also made clear that we will build the harmonious coexistence between man and nature of modernization, it has to do with traditional Chinese landscape design of "nature and humanity" concept, to create more material wealth and spiritual wealth to meet people's increasing demand of a better life, also want to have more ecological quality products to meet people's increasing beautiful ecological environment demand, Xi Jinping general secretary has mentioned many times in his speech, "green water castle peak is the treasure" ecological protection concept, which marked in the midst of modern society, people for the space quality and the protection of natural resources to higher.

2. Data Collection and Data Processing

This article is based on CNKI database from 1900 to 2019 for the landscape architecture discipline education teaching literature source, choose information visualization analysis software citespace, comprehensive data digging, according to data, information visualization methods such as shown in the form of visual landscape architecture education in the field of the development process and structure relationship, on the teaching of landscape architecture literature, information from the analysis of development course and the analysis of some key domestic colleges and universities in the status quo and development trend in the field of landscape architecture education. In the accelerated development of information society and network application, under the promotion of does, indeed, there are many visualization analysis software, such as the TDA (Thomson data analysis), VOSviewer, CoPalRed visualization tools, compared with other visualization tools citespace with cluster analysis, analysis of social network and multidimensional scaling analysis, based on the analysis of different research front and research units have more focus on the internal link between.

Order to ensure the full and accurate data we set up a file in the CNKI database, retrieval, for the landscape architecture education in the time span from 1900 to 2019 as the span, a total of 119, in the literature classification, chose the "basic science", "engineering technologyIalbum", "engineering technologyIIalbum", "agricultural technology", "philosophy and the humanities", "social sciencesIalbum", "social sciencesIIalbum," the seven categories of literature retrieval, a total of 854 articles were retrieved.

3. Research Contents and Methods

3.1. Literature source institution analysis

Since the beginning of the study, in order to understand the development status of landscape architecture education research field, we imported data into citespace for co-occurrence analysis of a research institution. The unique analysis of institutional co-occurrence in citespace can reveal the institutions that have made outstanding research contributions in this field by analyzing clusters and key nodes in the co-occurrence network. In order to make network more clear objective of co-occurrence

research institutions, and in order to improve the readability of the result, I was in the start of the study to the corresponding set of its threshold, time slice is set for one year, in the heart of the Thresholds after c, cc and former CCV in three periods before and after the threshold is set to (5,5,20) (5). In the clipping functional area, the path-finding network algorithm is selected to perform clipping operation on the network of each slice. According to the triangle inequality principle, this method selects significant relationships in the adjacent network. The number of network nodes processed by this method will not change, but the number of links will be greatly reduced to improve the readability of the network.

Finally, we got a literature sources of co-occurrence network, the network includes 88 nodes and article 54 links, their Density is 0.0141 (N=88, E=54, Density=0.0141). In the co-occurrence network, the node said the size of the document in the source of the agency, the more is proved that the institutions into the more research in the field of landscape architecture education, the link is a link between nodes and another node. It is not difficult to see that the relation between the whole node is weak. Only the larger the node is, the more connections it has with its surroundings.



Figure 1. Co-occurrence network of research institutions.

We have sorted out a series of information of the top ten institutions in terms of the number of publications and made it into Figure 1, so that we can have a better understanding of the development since the beginning of landscape architecture teaching.

We can see from the picture in the published literature in the field of the top ten research institutions, more than by at least “institute of Beijing forestry university garden”, “Nanjing forestry university school of landscape architecture”, “the department of landscape architecture and urban planning college of Tongji university”, “Beijing forestry university”, “the department of architecture and urban planning in Tongji university”, “south China agricultural university, school of forestry and landscape architecture”, “Zhejiang agricultural university institute of landscape architecture and architecture”, “college of northeast forestry university, the botanical

garden” and “school of architecture, Tsinghua university, department of landscape” and “garden school of Fujian agriculture and forestry university”. The institution that has published the most literature is the school of landscape architecture, Beijing forestry university, which has published a total of 52 papers, twice as many as the second-ranked institution, Nanjing forestry university. Of countrywide college courtyard was adjusted 1956, garden specialty to adjust from Beijing agricultural university in Beijing forestry university [8], since then, some classes of agriculture and forestry colleges successively set up or garden specialty teaching of related professional knowledge, so Beijing forestry university has prompted the Chinese landscape architecture discipline and the development of higher education was a great, then we will according to the ranking of the top 10 institutions the whole become a Table 1.

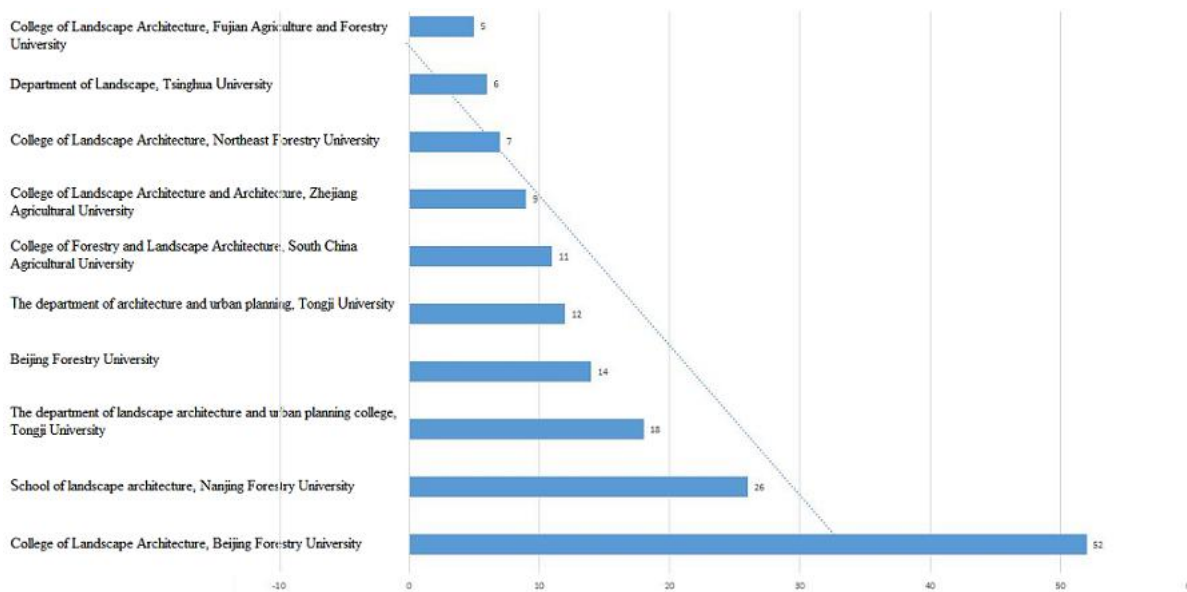


Figure 2. Top 10 institutions.

Table 1. The top 10 institutions.

Order	Count	Centrality	Years	Institutions
1	52	0.03	2005	College of Landscape Architecture, Beijing Forestry University
2	26	0.03	2007	School of landscape architecture, Nanjing Forestry University
3	18	0	2009	The department of landscape architecture and urban planning college, Tongji University
4	14	0.01	2008	Beijing Forestry University
5	12	0	2006	The department of architecture and urban planning, Tongji University
6	11	0	2016	College of Forestry and Landscape Architecture, South China Agricultural University
7	9	0.01	2012	College of Landscape Architecture and Architecture, Zhejiang Agricultural University
8	7	0	2006	College of Landscape Architecture, Northeast Forestry University
9	6	0.03	2008	Department of Landscape, Tsinghua University
10	5	0	2017	College of Landscape Architecture, Fujian Agriculture and Forestry University

3.2. Integration of research institutions

Based on the results of the study, we conducted a systematic integration of the research institutions. The first is the school of landscape architecture at Beijing forestry university and Beijing forestry university, both of which are associated with beilin. The history of Beijing forestry university can be traced back to 1902, when the metropolitan university of the university of forestry in agriculture. In the early days of the founding of the People's Republic of China, in 1952, the department of forestry of Beijing agricultural university and the department of forestry of hebei agricultural college were merged under the adjustment of the national universities and colleges. Then in 1956, the department of architecture of tsinghua university and the department of architecture of Beijing agricultural university were merged into Beijing forestry university. In 1960, it was officially listed as one of the 63 key universities in China by the ministry of education. University enrollment expansion in 1999, Beijing forestry university to recruit garden, landscape architecture undergraduate class seven, in January, 2004, Beijing forestry university and Peking University combined with landscape architecture professional education institutions, such as for landscape architecture discipline study status and present situation, the ministry of construction, the state forestry administration, and under the organization of association of Chinese landscape architecture, arguments from various perspectives began to set up and its degree in landscape architecture. In September 2017, it was selected into the national "double first-class" list of world-class universities for discipline construction, and has been playing a leading role in landscape architecture education. In terms of the setting of the major, landscape architecture is classified as an engineering major in the school of landscape architecture, while the major of landscape architecture is also in the school of landscape architecture but is an agricultural major. Therefore, the specialty setting avoids the phenomenon that the research is light and the practice is heavy, or the engineering practice is heavy and the theory is light, and the specialty setting is very reasonable.

In addition, the school of landscape architecture of Nanjing forestry university ranked second in terms of published literature. The school was formerly known as the department of forestry of central university (founded in 1902) and the department of forestry of Jinling university (founded in 1910). In 1952, Nanjing forestry university was merged into one of the only three higher forestry universities in China. In 1955, the forestry department of Huazhong agricultural college (formed by the merging of Wuhan university, Nanchang university and the forestry department of Hubei agricultural college) was merged. In 1972, it was renamed Nanjing forestry industrial college. In 1983, it was renamed Nanjing forestry university. In 1988, three disciplines of the university were selected as one of the first batch of national key disciplines. In 2014, the university was selected as one of the first batch of pilot universities for the reform of the education and training program for excellent agricultural and forestry talents. Until August 2019, Nanjing forestry university has been selected as a "national university of typical experience in innovation and entrepreneurship", and the school of landscape architecture in Nanjing forestry university, like Beijing forestry university, also has a major in landscape architecture (agriculture) and landscape architecture (engineering).

The "department of landscape, school of architecture and urban planning, Tongji university" and "school of architecture and urban planning, Tongji university", both belong to Tongji university. The following year it was renamed Tongji German medical school; In 1912, it merged with Tongji German engineering school, which

was not long after founded, and was renamed Tongji German medical engineering school. Until 1923, Tongji university was officially named; In 1927, it became national Tongji university, one of the earliest seven national universities in China. In the setting of landscape architecture related majors, there are also landscape architecture (agriculture) and landscape architecture (engineering).

Followed by “school of forestry and landscape architecture of south China agricultural university” and “school of landscape architecture and architecture of Zhejiang agricultural university”, ranking sixth and seventh. In terms of the setting of majors, the school of forestry and landscape architecture of south China agricultural university also sets corresponding landscape architecture majors (agriculture) and landscape architecture majors (engineering). Zhejiang agricultural university also sets the corresponding landscape architecture (agriculture) and landscape architecture (engineering).

Finally, there are “school of landscape architecture, northeast forestry university”, “department of landscape architecture, Tsinghua university” and "school of landscape architecture, Fujian agriculture and forestry university", ranking eighth, ninth and tenth. Their literature on the education and teaching of landscape architecture is 7, 6 and 5 respectively. Northeast forestry university, formerly known as the forestry department of agricultural college of Zhejiang university and the forestry department of northeast agricultural college, merged the forestry department of Heilongjiang agricultural college. In the setting of landscape architecture related majors, landscape architecture (agriculture) and landscape architecture (engineering) are set up. The school of architecture of Tsinghua university, the predecessor of the department of architecture of Tsinghua university, was founded by the famous architect Liang Sicheng in October 1946 and later in 1988. By the end of 2012, the school of architecture consists of the department of architecture, the department of urban planning, the department of landscape architecture, and the department of architectural technology and science. The landscape architecture school of Tsinghua university only has landscape architecture (engineering). The predecessor of Fujian agricultural and forestry university is the agricultural department of fujian union university, founded in 1936, and the agricultural college of Fujian province, founded in 1940. The seven full-time undergraduate majors in the school of landscape architecture of Fujian agricultural and forestry university also set corresponding landscape architecture majors (agriculture) and landscape architecture majors (engineering).

Throughout these research institutions that have made outstanding contributions in the field of landscape architecture education and teaching, their professional Settings are very reasonable. They will divide landscape architecture related majors into two parts: landscape architecture (agriculture) and landscape architecture (engineering), but they will not be divided into two schools if they are all set in the same college. Among the top 10 research institutions, only Tsinghua university, Tsinghua university school of architecture, has landscape architecture (engineering) as its major. All other schools have landscape architecture (agriculture) and landscape architecture (engineering) in the same college.

4. Development and Suggestions of Landscape Architecture Education in China

Although the development of the discipline of landscape architecture in China is increasingly rapid due to the social demand, a series of problems also arise behind such development.

4.1. Education of landscape architecture does not match social needs

This is what we have mentioned before. With the progress of science and technology and the improvement of people's living standards and quality of life, human beings, under the great pressure of population, land, resources and environment, will also require a more ideal material life and spiritual life. Therefore, people's awareness of the protection of resources, land and environment will inevitably increase [9]. This puts forward a new demand for the existing landscape architecture major. The demand for urban green space, land garden and garden culture will be further improved, but the current academic attestation and design level related to landscape architecture have not reached the level matching the social demand. This is both an opportunity and a challenge for the discipline of landscape architecture [10]. Therefore, deepening the education and discipline reform of landscape architecture has become an inevitable trend. Only in this way can a large number of professionals with corresponding qualifications be trained for the market [11].

4.2. The cultivation of landscape architecture talents is not comprehensive

Up to now, our country in a number of science and technology, agriculture and forestry and comprehensive universities have landscape architecture related professional courses. Before the early years of agricultural universities in the landscape architecture major Settings are also mostly agricultural. But in the latest professional directory, we can see even now is in many colleges and universities to class of agriculture and forestry, in landscape architecture courses set will be divided into two kinds of education mode, agriculture and engineering at the same time put the landscape and landscape architecture in belong to the same college, under the arrangement of strengthen the exchanges and cooperation between the two, to fully improve the efficiency of the relations between and among production [12]. But this is only a small number of schools, we can see that these schools are agriculture, forestry and very strong professional colleges, they have natural advantages in landscape architecture field, but nowadays there are still a lot of comprehensive universities and weak in agriculture and forestry department of colleges and universities there are still only garden in professional Settings in the ministry of agriculture, or landscape architecture in our engineering. In terms of course setting, agricultural and forestry colleges and universities focus on landscape architecture and horticulture, engineering colleges and universities focus on engineering architecture and urban planning, and comprehensive universities focus on engineering architecture and urban planning [13]. Such as Tsinghua university architecture schools also only landscape architecture (engineering), such as Wuhan university comprehensive colleges and universities as well as related to the landscape architecture discipline of landscape planning and design, but it is even a research direction under the city planning major, so the existing institutions and professional settings, there are many weakened the phenomenon of landscape architecture specialty, lead to the curriculum, individually, to make the landscape architecture discipline talent cultivation system, talent cultivation is not comprehensive [14].

4.3. The combination of landscape architecture education and industry development is not close enough

Landscape architecture specialty in practice often involves many fields, including landscape engineering, plant protection, landscape management and so on, all aspects, all kinds of skills are needed for the development of the industry talents, system of a single reason, but by colleges and universities to meet the social demand for the diversity of landscape professional talent, the current landscape architecture industry of the country's workers, more than 20 million people, but with higher education workers, only about 1 million people, the development of industry of institutions of higher learning landscape architecture professional supply and demand of talent cultivation at present is completely unable to match [15]. At the same time, there is also the problem that students' employment expectations are too high and the demand for regional development of landscape architecture does not match [16]. Most graduates of landscape architecture major in universities hope to find jobs in big cities, but this will lead to the shortage of landscape talents in small and medium-sized cities. In view of the problem that the education of landscape architecture is not closely related to the development of the industry, it is suggested to strengthen the role of practice on the basis of learning, and build a landscape architecture education platform of school-enterprise cooperation, academic exchange, inter-school communication and practical education [17].

5. Conclusions

The continuous development of landscape architecture education career, is a matter of implementation of sustainable development and human happiness and health, at the same time, the development of landscape architecture career also made many contributions to the society as a whole, so we have these landscape architecture related researchers and industry practitioners have a responsibility to promote the improvement of the landscape architecture education and reform, is the only way to create a better sustainable living environment.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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