

Preservation and Conservation of Campus Heritage Landscape of South China University of Technology Shipai Campus, China

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ABSTRACT

The Shipai Campus of South China University of Technology (SCUT) is the main component of the noted National Sun Yat-sen University (NSYSU) campus, which inherited NSYSU's campus heritage and has outstanding historic and cultural significance. However, presently its campus heritage landscape (CHL) is in a colossal predicament and urgently needed to settle. This study aims to study the significance of the CHL of SCUT and develop appropriate and innovative preservation (Pres) and conservation (Cons) solutions. The research is qualitative and adopted methods including literature review, case study, site observation, interview, and historic mapping tracing. The conclusion suggests the most suitable Pres and Cons tools for SCUT as bolstering heritage education for the public, excavating heritage laws and planning, consigning experts to approve and guide all Pres and Cons works and considering enlarging and arising it to a wider and higher level. Moreover, we are given the hint that we should lessen the happening of remotion and separation of the university campuses as possible and safeguard the integral of campus based on the public interest.

Keywords: Conservation, preservation, Campus Heritage Landscape, SCUT, NSYSU

1. INTRODUCTION

1.1 Background

With the rapid development of the Chinese economy and the improvement of the living quality of the Chinese public, the government and the public begin to keep an

eye on heritage Pres and Cons. As an indispensable sort of heritage landscape, the CHL has also altered into a hotspot of public concern. The study explores an important CHL case, which is the SCUT Shipai campus. SCUT is located in Guangzhou (GZ) City, China, and it currently has three campuses: Shipai Campus, GZ University Town Campus (GZUTC), and GZ International Campus (GZIC) (Fig. 1).

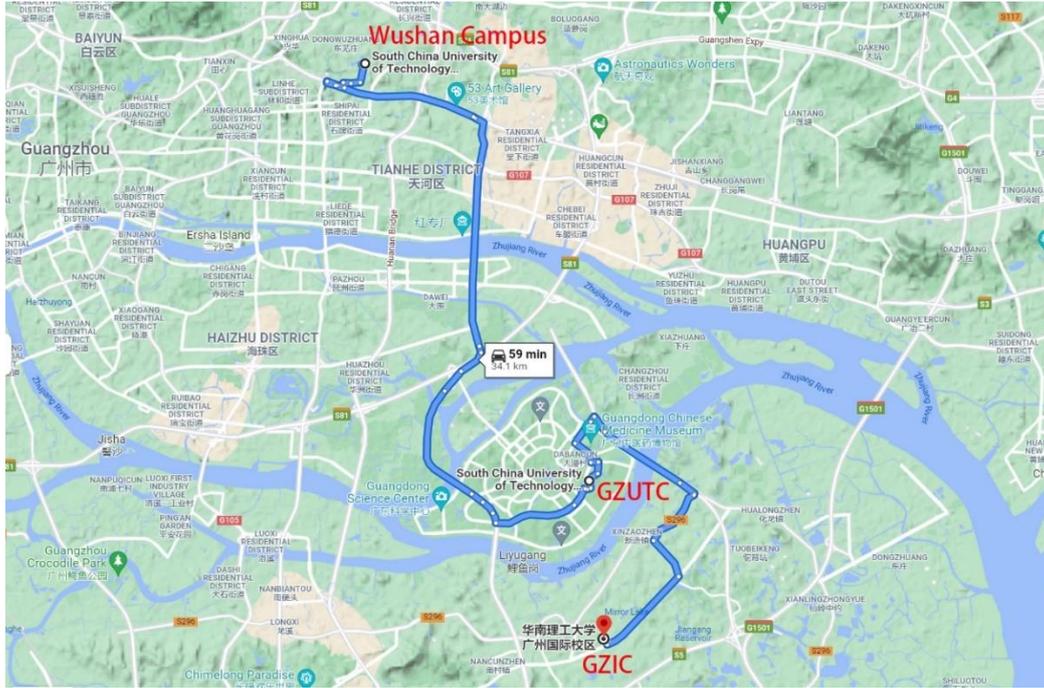


Fig. 1. Location of Shipai Campus, GZUTC, GZIC of SCUT in GZ, China

Source: Google map, adapted by author

Among these three campuses, Shipai Campus is the oldest, and it is the prototype for GZUTC and GZIC. Although the Shipai campus is of significance and has excellent value, many problems occurred regarding its CHL in recent years.

1.2 Research Problems

1.2.1 The Conflict of Campus Identity

University names are the universities' valuable intangible heritage and first impression, while SCUT hasn't been endowed with what it deserves. Its campus is

the authentic site of the renowned Shipai NSYSU, which was the first Chinese-created and planned modern university with traditional Chinese styles and features. Its creator is Sun Yat-sen (Sun). The campus environment and landscape appear very strongly in Chinese characteristics (Figure 2). On the contrary, the current Sun Yat-sen University (SYSU) originated from an American-created and planned Christian university. Until today, its campus landscape still embodies blazing American characteristics and style and features, especially in aspects including campus planning&design layout, traffic systems, etc.



Fig 2 NSYSU's stone archway and School Motto on SCUT's school badge and the main building

Source: Left photo from SCUT website

1.2.2 Landscape Fragmentation and Traffic Predicament

The broad concept of the landscape comprises a variety of natural and artificial elements and all elements are mutually influenced by each other. The natural elements such as climate, topography, and waterbody are the fundamental premise of buildings. Besides, the environment of Shipai Campus is subtropical monsoon climate, mountainous and lake-rich, with lots of

vegetation. Notwithstanding, current heritage protection is mainly based on architectural considerations. Since the surge in campus population in recent years, mountains and hills were excavated, lakes were buried, and many majestic trees were felled to build buildings to accommodate new campus residents. This situation has seriously destroyed SCUT CHL. On the other hand, the government built city roads and high-rises which cross the campus, which has split the Campus into three parts: East Area, West Area, and North Area (Figure 3).



Fig 3 City road across SCUT campus: westward (left) & eastward(right)

Excessive buildings gravely undermine the campus landscape and resulted in landscape fragmentation, and campus roads become narrow and dangerous. These

factors have led to security risks and several deaths in traffic accidents have occurred in recent years (Figure 4).



Fig 4 current traffic status in SCUT

1.2.3 Undermined Softscapes and Hardscapes

Owing to the aforesaid reason of the high density of population and neglect of landscape elements, a large

number of older and famous trees were cut down or damaged seriously during the campus construction process, which has gravely ravaged the campus's ecological environment (Figure 5).



Fig 5 Destroyed or maltreated old trees in SCUT

Besides, many hardscape heritages with great significance are in terrible or worse plight at present, e.g., pavilions including Mingyuan Pavilion, Liuyi Pavilion Zhong Pavilion, Zhishu Pavilion, etc.

1.3 Research Questions and Objectives

The research question (RQ) is what are the significance and unique attributes of the SCUT CHL and how can we develop the suitable and best Pres and Cons tools for it? Accordingly, the research objectives (RO) are to investigate the significance and special attributes (SPA) of the SCUT CHL, examine the Pres and Cons tools in China and the world, and develop the most suitable tools for it. The RO's importance lies in verifying the SPA of SCUT CHL and best securing the heritage for the campus community and society public, which make them relish this spiritual and material wealth forever.

2. LITERATURE REVIEW

2.1 Campus Heritage Conservation Theory

This study selects many theories and definitions regarding CHL, e.g, Pres and Cons, campus, campus heritage, conservation of the cultural property, conservation science, cultural heritage, natural heritage, tangible heritage, intangible heritage, historic urban landscape, living heritage approach, material-based approach & values-based approach, critical restoration, landscape urbanism, landscape ecology, landscape-scale conservation, large landscape conservation, etc. They contribute much to constructing the theoretical framework later.

2.2 Sun Yat-sen's Chinese Dream

Sun had fought for reunifying China for a whole life. Many Chinese anarchists in the recent centuries advocated for inter-provincial autonomy, and local warlords continued endless civil wars. This phenomenon achingly disquieted Sun, and he said, "The most worrying matter in China at the moment is to implement autonomy under the name of each province to implement separatist regimes, which was the signs of disintegration". Hence, he created the National Canton University (NCU, the predecessor of NSYSU) and Whampoa Military

Academy to unify China. Moreover, he used NCU to cultivate scientific and technical elites for China, and stated, "Both countries in east and west highly attach importance to universities..., and they never hesitate to invest huge money to lay the foundation for their country".

2.3 The Patriotism Elements of SCUT and NSYSU Campuses

Lots of researchers have suggested that the NSYSU campus reflects Chinese patriotism and was closely associated with many patriotic incidents in History. (Feng, 2019; Huang, 1994; Liu, 2018; Mao & Li, 2012; Yan & Liu, 2006; Zheng, 2004). E.g, Liuyi Pavilion (located in the North Area of SCUT) was built for memorizing the renowned Chinese general Liu Yongfu, who defeated the French invaders in the famous battle of Zhennan Pass. His Black Flag Army was ever stationed at NSYSU. He later continued to fight against Japan Army invasion for a long period. Even when he was nearly 80, he requested to go battlefield to safeguard the country. His story greatly encouraged Chinese self-confidence and patriotic enthusiasm. Sun Said " Since childhood, I have admired Black Flag Army's Liu Yongfu, who is the national hero of our country." Plus, NSYSU cultivated many students from other Asian countries, which contributed a lot to Asian education (Cui, 2011).

2.4 Case Study of University Heritages

The studied cases are the most influential individual cases and organizations in the world. E.g, UNESCO university world heritages incorporating the Botanical Garden of the University of Padua, Seowon of Korean Neo-Confucian Academies, Monticello and the University of Virginia in Charlottesville, University of Coimbra-Alta and Sofia, University and Historic Precinct of Alcalá de Henares, Central University City Campus of the National Autonomous University of Mexico, the University City of Caracas and the University of Oxford. Their landscape elements were carefully summarized, which consist of tangible and intangible landscape attributes. Their Pres and Cons tools are also conscientiously studied to encompass protection areas, potential risks, and threats aspects. etc. Three

organizations are the Council of Independent College (CIC), Society for College University Planning (SCUP), and Getty Foundation (GF). Their theories and practices were summarized and extracted. In summary, the difference in their landscape attributes lies in two aspects, first natural environment aspect, including geographic location, climate, topography, and plant species depending on these conditions. Second, cultural environment aspects, including language, religion, philosophy, and factors depending on these conditions. E.g landscape style, form, layout, materials, structure, construction techniques, etc. Withal, there are many similarities regarding aspects of SPA, functions, and Pres and Cons tools. The difference in SPA is caused by local cultural and natural conditions. Overall, European countries' strengths are the collection of scientific instruments under their science tradition and colonial history, while east countries collected more artworks due to their emphasis on philosophy. There are obvious discrepancies of Pres and Cons tools emerging in the expertise and scope which are caused by many factors. E.g. social order, public heritage conception, laws, and economic circumstances in their respective countries. All case studies contributed to drawing the baseline for SCUT.

3. METHODS

3.1 Research Materials

The research materials in this study are cameras, voice recorders, recording books and pens, computers, microphones, projectors, drawing tools, tape measures, leather measures, total stations, etc.

3.2 Research Strategies

The truthfulness or reality that exists in the world can be subjectively measured, and the selection of a research methodology should be aligned with the research objectives (Abdulai & Owusu-Ansah, 2014). As per the RO, this research can only be understood in context-specific settings, and the variables are pretty difficult to measure by numbers. Thus, the qualitative method was adopted in this research.

3.3 Data Collection and Analysis

This research is an amalgam of desktop and empirical data, and the data also come from both. First, I gathered papers and historical maps from SCUT and SCAU archives, libraries, related departments, and online databases (WoS, Scopus, ScienceDirect, ProQuest, CNKI), official documents of UNESCO, CIC, SCUP, GF, and many other universities. Second, I conduct site observation, and interviews with 4 experts and professionals. They are experts in the field of this study and most of their whole life have been in SCUT and SCAU or SYSU. Data collection and analysis are regarding natural elements, including topography, climate, plants, hardscape, buildings, facilities; and artificial elements such as culture, tradition, celebrities, etc.

3.4 Theoretical Framework

All research methods, including but limited to the aforesaid literature review and site works can be epitomized in the theoretical framework below (**Figure 6**).

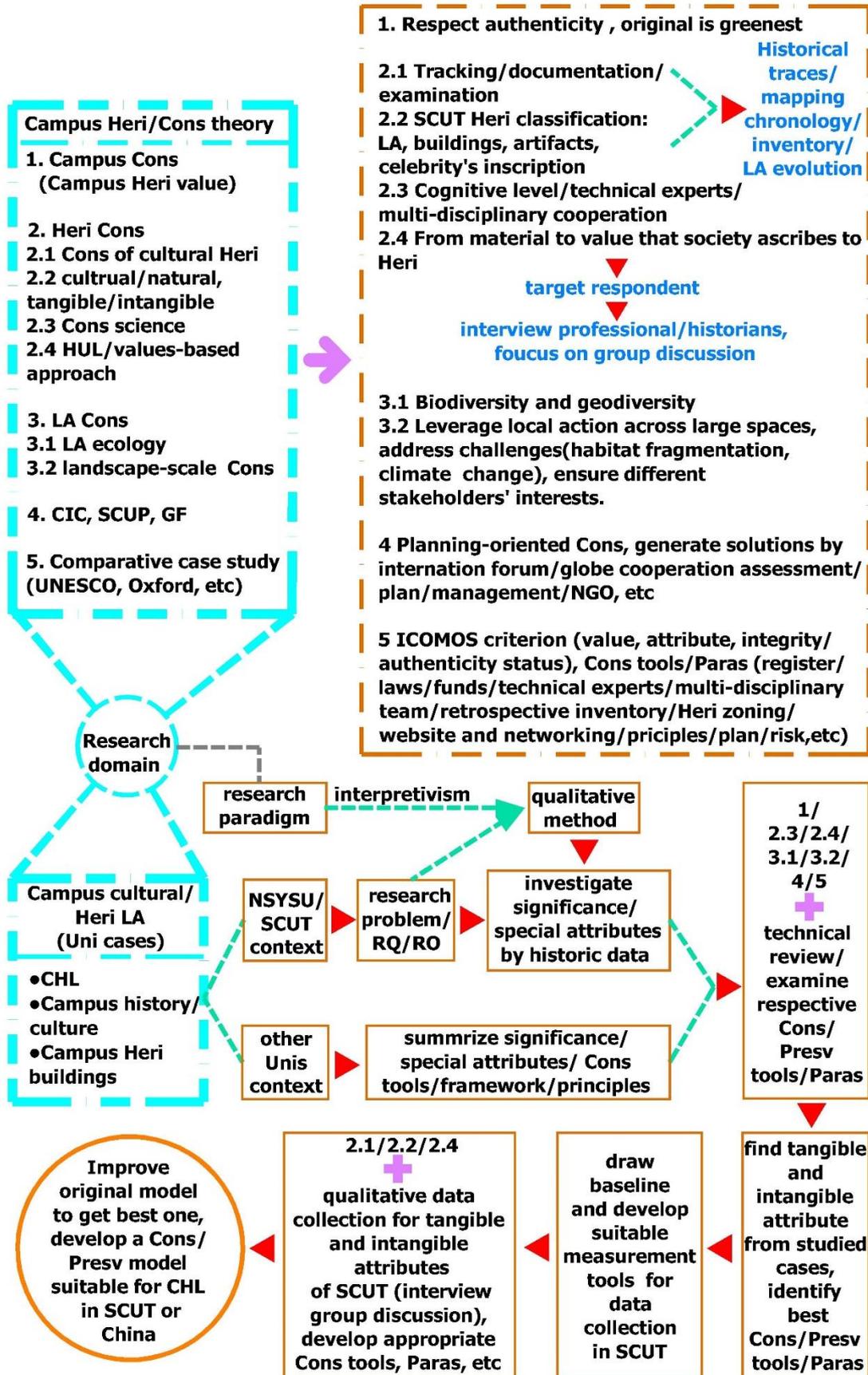


Fig 6 Theoretical Framework

4. FINDINGS AND DISCUSSION

4.1 A Miniature of Chinese Culture and Territory

The NSYSU campus is a symbol and imitation of Chinese territory and culture, embodied in many aspects including the university motto, site selection, topography, campus layout, landscape style and features, and the naming of mountains, lakes, and roads.

4.1.1 Concise Scholarship Elucidation of Chinese Classical Philosophy and Doctrine of Confucianism

UNESCO has lauded culture as “an unparalleled recognition”, and Chinese traditional culture is the cultural keynote of the NSYSU campus. Sun selected the ancient Chinese proverb “Study extensively, enquire accurately, reflect carefully, discriminate clearly, practice earnestly” and inscribed it personally as the school motto for the inauguration ceremony of NCU. The proverb was extracted from Chinese classical philosophy and the core doctrine of Confucianism “Book of Rites ” and "Doctrine of the Mean”. The campus layout also observed the traditional Chinese etiquette system and ethical order, which represents blazing conventional Chinese characteristics. Hosagrahar (2017) pointed out that culture is who we are and what shapes our identity. We should seek back to our inherent identities at born, and it can bring us a sense of belonging, which many peoples need today. I suggest this identity is our traditional culture and where our esteem and pride come from. Culture is where the genuine value of university heritage has lain. Thus, we should firstly deem SCUT and NSYSU campuses as a genre of the cultural landscape.

4.1.2 The Topography of NSYSU is Fairly Similar to China Territory

As per Chinese traditional culture, mountains and waters symbolize people’s well-being. The overall topography of NSYSU is quite similar to China, mountains and hills account for most of the campus land, and there are many rivers, lakes, and swamps. The water of lakes originated from Cen Village River in the southeast and flows forward the to the northwest, across lakes in SCAU including ZhaoYang Lake, Ningyin Lake, Hongze Lake, West Lake, Poyang Lake; and lakes in SCUT including North Lake, Dongting Lake (current East Lake, West Lake). The river and lakes are interconnected with each other. Nowadays the campus landscapes have considerably changed. Many hills were excavated to construct buildings that are mostly located on hilltops. Some original hills become pretty flat owing to consecutive construction works. Similarly, many lakes and swamps have been filled, e.g, Wushan Garden Residence was built by filling the original lake therein. The original landform of Shaw buildings of Humanities once was a swamp, and the area between the East Gate of SCUT and the South Gate of SCAU was a dam before.

4.1.3 The Naming of Mountains, Hills, Lakes, and Roads

The mountains, hills, and lakes were named after the most Chinese famous mountains and great waters, and their respective positions were also approximately in line with their locations in the Chinese territory (Feng, 2019). To pay close attention to and monitor the changes in these mountains, hills, and lakes landscapes, I have numbered them as below (**Table 1, Figure 7**).

Table 1 Names of mountains, hills, and lakes

Mt-01	Huangcongling	Mt-22	Yi	Mt-43	Min
Mt-02	Tangnu	Mt-23	Lao	Mt-44	Nu
Mt-03	Liang	Mt-24	Tai	Mt-45	Yun
Mt-04	Taiyue	Mt-25	Zijin	Mt-46	Menhua
Mt-05	Yang	Mt-26	Mao	Mt-47	Wuling
Mt-06	Tu	Mt-27	Xianxia	Mt-48	Taiping
Mt-07	Yanmen	Mt-28	Tiantai	Mt-49	Jiaozhi
Mt-08	Hua	Mt-29	Yu	Mt-50	Mengzhu
Mt-09	Hongtao	Mt-30	Lang	Mt-51	Tianbao
Mt-10	Taihang	Mt-31	Dai	Mt-52	Jiaozhi
Mt-11	Heng	Mt-32	Putuo	Mt-53	Luofu
Mt-12	Yan	Mt-33	Feng	Mt-54	Jiulian
Mt-13	Jieshi	Mt-34	Niancang	Mt-55	Heng
Mt-14	Jiu	Mt-35	Mt. Gold Mine	Mt-56	Lu

Mt-15	Song	Mt-36	Mt. Xiu	Mt-57	Dageng
Mt-16	Yuquan	Mt-37	Cong	Mt-58	Huang
Mt-17	Daxian	Mt-38	Qilian	Mt-59	Phoenix
Mt-18	Longmen	Mt-39	Tianti	Mt-60	Wuyi
Mt-19	Dabie	Mt-40	Helan	Mt-61	Zijing
Mt-20	Tianzhu	Mt-41	Tian	Mt-62	Xingao
Mt-21	Jiuhua	Mt-42	Emei		
WB-01, 02, 05	Anonymous	WB-03	Hongze	WB-04	Hongze
WB-06	Hongze	WB-07	Dong Ting	WB-08	Anonymous
	current Ningyin Lake		current East, West Lake		current North Lake

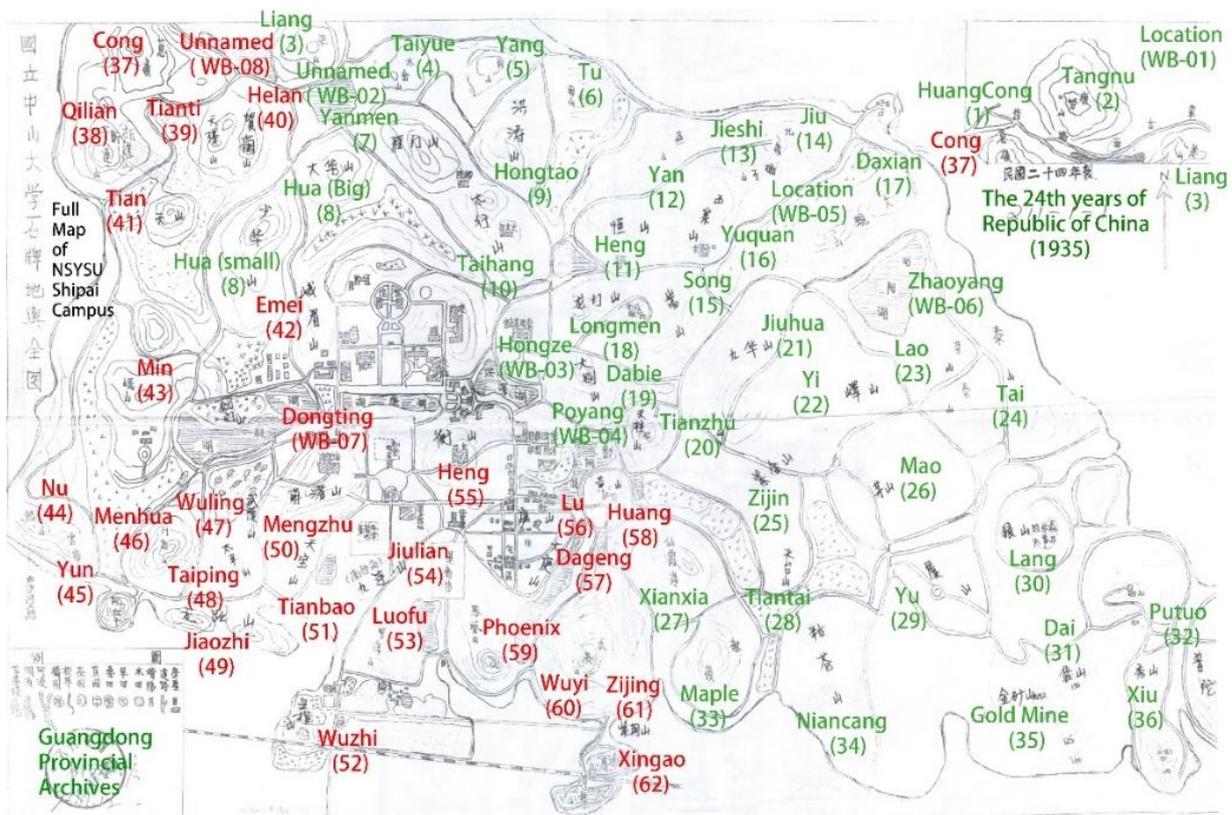


Fig. 7 Distribution map of mountains, hills, and lakes of NSYSU

Source: Archive of Guangdong Province, adapted by the author

Alike, the naming also applies to roads, and more famous rivers and incident elements were added, like Chang Jiang (Yangtze River) Road, Huang He (Yellow River) Road, and 9.18 Road (Mukden Incident), etc. Until today, these names are still utilized by SCUT, SCAU, and other bodies inside the scope of the NSYSU territory.

4.2 Existing Bodies Being in the Territory of NSYSU

Right now, lots of new bodies have emerged in the territory of NSYSU, and they are surrounding or nearby the SCUT. To clarify these current bodies and their respective locations. I overlapped a current map with the original NSYSU map based on their actual proportions and undertook a meticulous site survey to confirm (Figure 8).

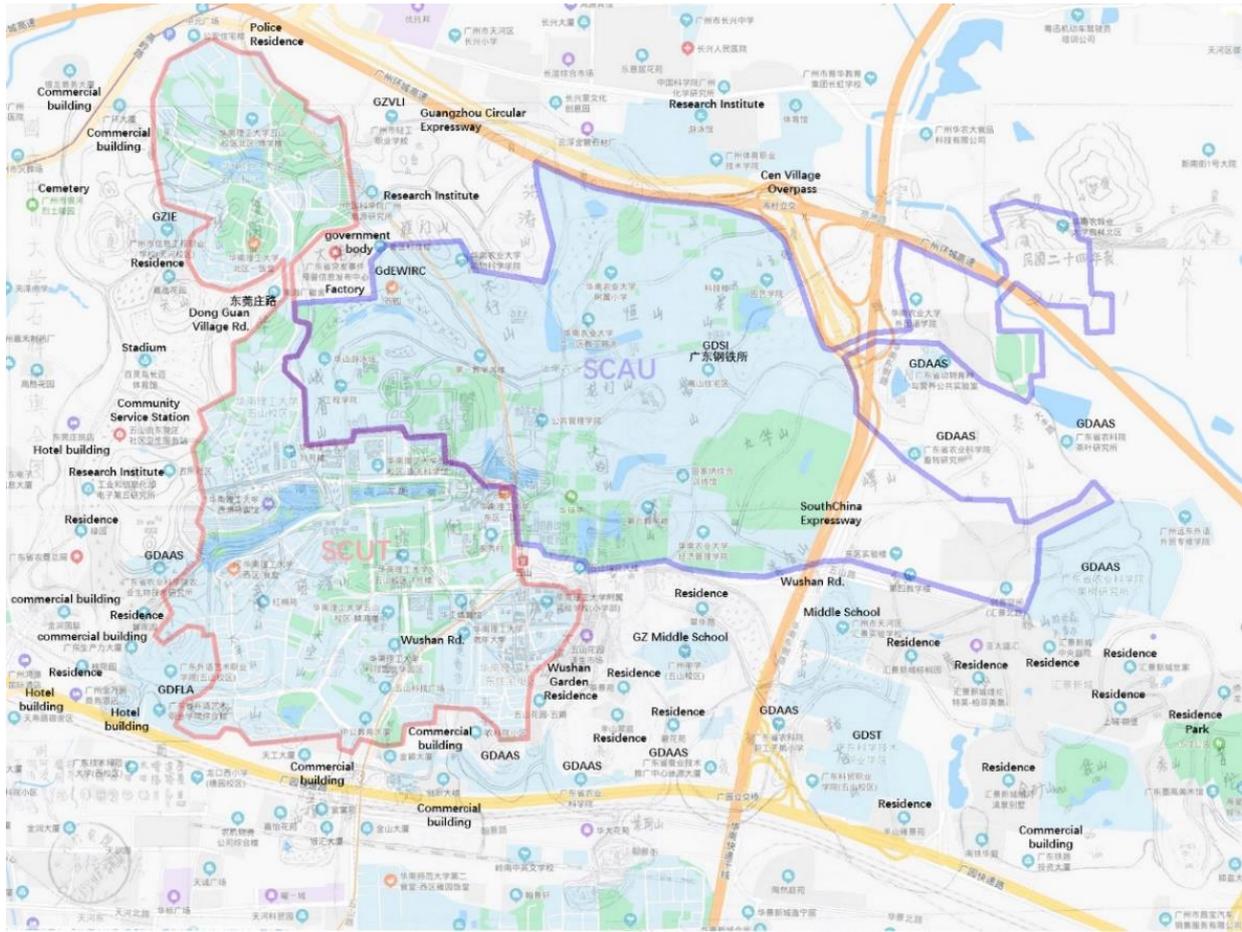


Fig. 8 Current entities in NSYSU Campus territory

Source: Gaode map, Guangdong Archive, adapted by the author

Upon survey, I find except for the area of SCUT, SCAU, the other areas have altered into many new bodies, constituting Guangdong Academy of Agricultural Sciences (GDAAS), various other research institutes, vocational schools, middle schools, residences, commercial and hotel buildings, government bodies, community service station, stadium, city roads, etc. Even in the heart of SCAU, there is still an independent institution, Guangdong Provincial Steel Institute (GDSI). However, SCUT and SCAU remained its core area and inherited most of the campus artificial heritages of NSYSU.

4.3 Dilemmas of Landscapes in Boundaries Areas

Many problems occurred in the boundary area between SCUT and neighbor bodies, which are often dirty, messy, and even exist potential security risks. E.g, the boundary area between SCUT and Guangdong Teachers College of Foreign Language and Arts (GDFLA) are mostly retaining walls, and there are huge differences in elevation on both two sides. This status has laid potential dangers for both buildings on the mountains top and nearby ground areas at the mountain foot (**Figure 9**). In addition, there is a garbage station in the boundary areas of SCUT and SCAU, where was once the core area of NSYSU, and is presently next to the tallest building, Liwu Building in SCUT (**Figure 10**).



Fig 9 The border between SCUT and GDFLA



Fig 10 The border area between SCAU and SCUT

4.4 Summary of Proposals of Expert and Professional

Below is the summary of interviews of experts

Table 2 Summary of Proposals of Expert and Professional

regarding the significance and unique attributes (SQA), Pres and Cons tools (PCT) of SCUT and NSYSU (Table 2).

Jianjun Cheng	
Introduction: Prof. of SCUT, graduated from SCUT, Senior Application Consultant for Kaiping Diaolou and Villages (UNESCO-inscribed) cultural heritage, member of Chinese National Cultural Heritage Administration Conservation Expert Committee, director of Institute of Cultural Heritage Conservation of School of Architecture in SCUT.	
SQA	The Pres and Cons of SCUT CHL are significant both in historical and practical aspects. It not only lies in excavating history but more focus on a summary of the history and a guide for the future. It is also essential for the current campus construction and its future development. This field should be studied completely.
PCT	I agree with the concept of buildings as an element of the landscape, and the CHL should be treated as a collection of various elements as a whole. Protecting the campus's natural environment is the most fundamental, such as topography, wind environment, microclimate, etc. If these factors are not studied in-depth, the entire environment will be affected. First, protecting topography including the mountain system,

	<p>the water system, and then the buildings and plantings, should be such a sequence. Second, the climate is a very important aspect and needs to be protected, because different constructions will affect the microclimate. This place also lacks in-depth research. Such as a lack of research on the wind environment. In the past, the old buildings were often low and open, the southeast wind was very strong and was easy to blow into the garden, which made the courtyard full of vitality. In case the surrounding buildings are high in the south and low in the north, and the courtyard will be flooded by the north wind, the whole environment is cold, and the plant can not grow well. New buildings are often bulky and influence the ecological environment, such as the Banshan Park between Building 1 and Building 2 on the campus. Similarly, due to the lack of understanding of this environmental element, such a situation occurs in the Shipai Garden, its construction affects the entire wind environment. The Wushan Garden has blocked the air outlet, and the southeast wind cannot blow in while the west wind will in. It has been affected to a certain extent and it is necessary to pay attention to similar situations. Construction work needs to match the local climate, which is something inherent in itself. In the subtropical microclimate of the Shipai area, the north wind must come from the north in winter, and there is a lot of north wind which is north-south in SCUT. On the contrary, in summer, the southeast wind is more. In this situation, we must ensure that good ventilation exchange in the garden well then can get a better ecology, and this will be beneficial to the health of the campus staff and students. Now the software is relatively developed, a simulation of this should be undertaken for the entire campus, and the wind environment, temperature, and humidity should be explored and discussed. Thirdly, regarding buildings, the original main layout of NSYSU of the building cannot be changed and needs to be paid attention to at all times. The heritage buildings should be fully revitalized and utilized.</p>
	<p style="text-align: center;">History experience reference</p> <p>we can refer to Australia's Burra Charter to evaluate cultural heritage in the way of elements, this method of protection is simple and quite effective in Pres and Cons of heritage according to Hongkong's experience.</p>
	<p style="text-align: center;">Future study exploration</p> <p>Guangzhou is the first city to lead the ethos in modern times in China, regarding applying for UNESCO World Cultural Heritage, NSYSU can unite Whampoa Military Academy, and other heritages surrounding Guangzhou or nearby areas. To consider the perspective of a typical representation of the social transformation period in China society, highlight the socialness, public welfare, and progressiveness, which requires a long-term process.</p>
	<p style="text-align: center;">Qi Lu</p>
	<p>Introduction: Prof. of SCUT, member of Guangdong Provincial Cultural Heritage Conservation Expert Committee, expert of Lingnan Traditional Garden, children of teachers of Department of Architecture in SCUT.</p>
<p>SQA</p>	<p>NSYSU has a very important historical value that can witness the context and evolutionary process of campus development. These are of great significance and must be studied. In addition, its education was well-known and cultivated many intellectuals and talents for China.</p>
<p>PCT</p>	<p>First, the originally planned campus of the NSYSU area is enormous because it has been visioned for future development. SCUT, SCAU, and related bodies divided from NSYSU should be considered together for the Pres and Cons work. The key point should focus on SCUT and SCAU since they are the core components of the NSYSU campus. The crucial is to protect the overall layout of the NSYSU campus and the overall style and features. A few houses or dead trees can be renewed as identified as a necessity, but the overall keynote of Pres and Cons must keep consistent with the original campus. Second, arrange conservation experts to implement related works, rather than some university leaders making a quick decision. Third, the essence of conservation is planning, and protection and control must be carried out from the source of the planning, and landscape planning must be considered first. It can not simply be done as an architectural plan or urban planning, but the overall control combined with parts control, e.g., the areas of lakes and buildings. The</p>

	campus capacity should be calculated for long-term planning.
History experience discussion	
The relocation of the campus to other places and their separation and merger had a great impact on the university because it have to construct new buildings to meet the needs of teachers and students, which resulted in a campus landscape fragment. Otherwise, the sale of commercial residences on campus has led to an increased population of residents in non-faculty and students, which heightens the pressure on on-campus population capacity in SCUT.	
Shaofeng Chen	
Introduction: Architect of Architectural Design and Research Institute of SCUT, children of teachers of Department of Architecture (DA) in SCUT, graduated from DA, SCUT in 1986, ever presided or participated in many Chinese universities and other types of planning&design projects, and won many awards in international planning&design competitions or from Chinese Ministry of Education and Ministry of Construction.	
SQA	First, the site selection of NSYSU was very successful. In the case of topography, Shipai Area is a strategic location and has always been a site for the garrison. It is a dividing point between the Nanling Mountains and the alluvial plain of the Pearl River Delta. Second, the entire campus also has a very high historical value. E.g., the names of the lakes and roads today all follow the name of NSYSU. The 9.18 Road was built to remember the national humiliation after the 918 Incident. In addition, the Yongfu Pavilion has a long history. Liu Yongfu was a very famous general in China who won the victory against France's invasion. All of these are very noted historic events and have high patriotism and educational significance. Third, campus culture is its value, and the value comes from social recognition. The evolution of these historical humanities and the invisible spiritual pillar left to people is extremely important. The tradition of rigorous scientific spirit and humanistic care of NSYSU is the spiritual core of a university, and any university should pursue it. Fourth, until today, the most outstanding landscape of SCUT is still the legacy left by NSYSU, such as the central axis, lakes, etc, which is a relatively large planning pattern.
PCT	First, the campus of SCUT can never be studied alone, and it should be researched together with SCAU, for they originated from the same university historically, and even it needs to negotiate with SYSU. As it took away all the historical files when the university moved. Second, the conservation cannot be limited to the architectural major. It is a deviation that the domestic viewpoints that architecture major is higher than landscape major. Third, Arrange experts who understand campus, history, humanities, landscape, and culture completely to set up a campus planning and design management committee, which was independent of administrative management. The committee should guide all campus planning and construction, including all aspects of the landscape. It cannot be managed by the principals, who are often transferred frequently due to many factors, e.g, promotions. They cannot gain insight into the campus and make solutions, and the campus construction is a very long process and built day by day. The campus elements also have a very long historic continuation, e.g. lakes, houses, etc.
History experience discussion	
Years ago, the governor of Guangdong Province Huang Huahua suggested that SCUT and SACU be merged into a new university: South China University. Later, the mayor of Guangzhou Chen Jianhua called for demolishing the boundary wall between the SCUT and SCAU and applying for a national cultural heritage protection unit as a whole, these are good proposals. Now, all bodies argue for every inch of land due to limited land resources. Next to the Liwu Building of SCUT, the core and most valuable area of the NSYSU campus was turned into a garbage dump.	
Genjin Ni	
Brief: Prof. of SCAU, graduated from SYSU & SCAU, Vice-Chairman of Chinese Agricultural History Society, Vice President of Forestry History Branch of Chinese Society of Forestry, Director of Chinese Society for History of Science and Technology, Member of Guangdong Provincial Conservation of Ancient Books Experts Committee.	

SQA	<p>First, the CHL is extremely precious, which has addressed the question of where we come from. Second, the NSYSU campus is unique and is the earliest national university built by the Chinese under the rules and characteristics of modern universities. Third, the universities Sun Yat-sen invested the most energy into were the NSYSU and Whampoa Military Academy. NSYSU was established under the advocacy and promotion of Sun Yat-sen and has a great influence. Undoubtedly, these CHLs are the universities' precious wealth. The university names are also an important cultural heritage and should not be changed optionally.</p>
PCT	<p>First, you must hold a more open and broad vision, considering SCAU and SCUT as a whole. In terms of heritage, they are the same university in history, which should not be separated, or you can not understand the layout and inner features of the campus. SCUT and SCAU should enhance communication and cooperate regarding the Pres and Cons. We also need to consider other parts of NSYSU, e.g., surrounding research institutes, etc., and even the Wenming Road Campus, and the campuses in Yunnan and northern Guangdong that were moved to during the Anti-Japanese War. Second, plants are best divided in terms of their function, e.g., the Bamboo Garden of SYSU. Ancient and famous trees must be protected, and they cannot be cut down at will. If these trees are related to celebrities, there should be relevant introductions. E.g, Thailand Princess came here to plant trees. Third, special collection rooms should be established to accommodate scientific instruments. Fourth, books are also very valuable. For example, Deng Zhiyi's Soil Survey Report is the earliest county-level soil survey in China. Li Yin's Guangdong Chemical Industry News may be the earliest chemical journal in China. The protection of those books should be strengthened, and the SCAU, SCUT, and SYSU should cooperate during the Pres and Cons of NSYSU heritages. E.g., regarding some books, the former volumes are collected in SYSU, and the latter volumes were collected in SCAU. Chinese State Council recently issued a notice on strengthening the protection of ancient books. Fifth, celebrities and their anecdotes should also be protected, e.g., Ding Ying. The life experiences of these old scientists and their attitude toward scientific research, the pursuit of truth, the work spirit of scientific research, and the attitudes of rejecting academic misconduct are all very precious heritages. Sixth, to enhance oral history methods, oral history makes history lively and interesting, and can also provide many things unrecorded in the documentation. Regarding this aspect, the urgent is to save the memory history of NSYSU, and it is recommended to carry out in the way of organization. The key is to create a system to protect it and repair the old as the old, this is a general principle, and find out all the heritages and established an inventory and classified.</p>
<p>Future research exploration</p> <p>The NSYSU campus is very representative and distinctive. It can be considered to apply for this UNESCO world cultural heritages in conjunction with other places, and then the campus will be included in a higher level and wider conservation. According to the experiences of current successful application cases, this will be a long-term process and requires a lot of data collection and excavation. E.g, SYSU Professor Peng Hua has successfully applied Mount Danxia as a UNESCO World Heritage.</p>	

5. CONCLUSION

5.1 Enhance Heritage Protection Education

It can be inferred the problems mentioned earlier are mainly caused by low public heritage protection awareness. Ergo, the first solution is to enhance public heritage education. As UNESCO points out, education is crucial to the long-term preservation of heritage sites. The public's awareness of CHL is the determinator for their participation in protection or damage. We must articulate

to the public its historic, cultural, and scientific significance, and let them know it is the valuable experience accumulation and experimental field of Sun's lifetime of painstaking effort to establish schools. It also has a close kinship with many other Chinese historical celebrities, and we must persuade the public believes money is unable to rectify errors. On other hand, we should try every means to stimulate and facilitate the public to participate in the protection. E.g, encourage the public to establish private heritage funding to protect heritages. Many developing countries have very private conservation funding, such as GF, which has funded lots

of protection of American university heritages.

5.2 Dive into Heritage Laws and Planning

The heritage laws, especially conservation planning aspects shall be designed strictly based on public interest and further clarified and facilities to implement. E.g, regarding the boundary between public and private rights (Liu, 2006). The different departments of government that made the laws or regulations should enhance collaboration to push the specific implementation Furthermore, governments from the country level to the local level and the social public shall monitor together to ensure implementation effectively. Moreover, formulate a Pres and Cons Plan, that explicitly deals with heritage protection from a planning-oriented perspective and combines overall planning and partial planning. As per the experience of UNESCO world universities heritages, rich countries often achieve higher conservation status by buying nearby land or enlarging the scope of the core zone and buffer zone. The government can think more

about this point since Guangzhou's economic level has already approached developed countries. E.g, Padua University bought lots of nearby lands to form a heritage-protected circle for their botanical garden, and the Seowon of Korea set quite large buffer zones for protection. Concurrently, the experiences obtained from this study are in future city planning, we should have a prospective vision for campus planning and forbid city roads across the campus.

5.3 Entrust Experts to Manage All Facets

Invite experts who understand the campus landscape, history, culture, planning, and architecture completely to set up a campus planning and design committee. The committee members must be well-qualified and responsible for approving and guiding all campus planning and construction works. The urgent matter is to rescue the heritages being damaged or in dreadful conservation circumstances, such as Mingyuan Pavilion (Figure 11).

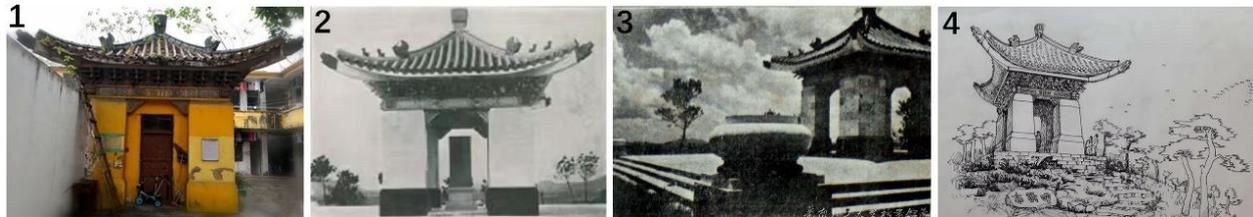


Fig 11 Current and original appearance, proposed protection scheme of Mingyuan Pavilion

Source: 1, 2, 4 photographed and drawn by Shaofeng Chen, 3 from SCUT Archive

Forthwith conservation implements should be conducted, e.g, constructing small gardens or squares in the surrounding area. Other pavilions should carry out similar actions to enhance protection, too. Regarding NSYSU historically celebrities, we can fabricate sculptures for these celebrities in outdoor areas as much as possible and benefit more staff, students, and the public. Moreover, take a simulation of the environment for the entire campus and all possible elements, including wind environment, temperature, humidity, mountains and hills, lakes, plants, buildings, facilities, etc. Accordingly, a further evaluation regarding campus heritage can be taken and formulated advisable schemes. The committee shall also carefully manage softscape, e.g. forbid cutting trees, examine all trees in the campus area, make a detailed inventory, and designate staff for all planting and maintenance works, etc. Furthermore, as aforesaid

dilemmas in boundaries, SCUT Should actively collaborate and negotiate with SCAU, GDFLA, and other surrounding neighbor bodies to solve the problems. The purpose is to pursue a win-win situation and to protect the NSYSU campus heritages together. SCUT should also need to negotiate with SYSU since as per interviewee recalled because it took away all the historic files when NSYSU moved to the current campus.

5.4 Suggestions for A Further Study

The heritages in the surrounding area of SCUT are suggested for further study, and they are components of NSYSU and important heritages in Guangzhou. E.g, the stone archway and stele in GDAAS, and stated in engraved records, which were produced in the same period as NSYSU. (Figure 12).



Fig 12 The stone archway and stele in GDAAS

Moreover, by virtue of the Qing Government’s “Canton system” policy, Guangzhou (Canton) is the earliest city to vision the world in China. As per experts’ opinions (see appendix) , the study can be further considered by uniting Whampoa Military Academy and other heritages in Guangzhou or nearby areas to apply for UNESCO World Heritage. We can learn from the experience of successful cases, and the topic could consider a "typical cultural representative of China in the social transformation period". The highlights are heritage socialness, public welfare, and progressiveness. It will put the heritage of NSYSU and even heritages in Guangzhou into a wider and higher protection level, which will contribute to carrying forward Chinese culture and influence.

In summary, the conclusion suggests the most suitable Pres and Cons tools for SCUT as promoting public heritage education, deepening heritage laws, and planning, designating experts to approve and guide all works, and enlarging the study to a wider and higher level.

6. IMPLICATIONS

On the ground that factors including historical wars and governmental decisions, etc, the campus landscape of NSYSU was hugely influenced as a result of relocation and splits, which has made the Pres and Cons work quite complicated. Although many years there are always lots of governmental or civil voices to suggest SCUT and SCAU campus be protected as unitary campus heritage, or even merge the two universities as a new South China University, it is very hard to push. On the other hand, the campus is the genuine value of the university, and there are verified important connections between the campus

environment and educational achievement (Dober, 2005; Ekman, 2011). The growth and development of university education is a process of long-period accretion, which need a stable campus environment (McGirr & Kull, 2011; Song, 2015). Thus, we should ponder over and minimize the matters regarding relocation and splits of university campuses. Furthermore, we should deem campus land as an extremely important public interest resource and prevent being despoiled and encroached by private interests.

ABBREVIATIONS

- CAS: Chinese Academy of Sciences
- GDAAS: Guangdong Academy of Agricultural Sciences
- GDSI: Guangdong Provincial Steel Institute
- GDFLA: Guangdong Teachers College of Foreign Language and Arts
- GDST: Guangdong Vocational College of Science and Technology
- GZIE: Guangzhou Vocational College of Information Engineering
- GZIC: Guangzhou International Campus
- GZUTC: Guangzhou University Town Campus
- GZVLI: Guangzhou Vocational College of Light Industry
- NCU: National Canton University
- NSYSU: National Sun Yat-sen University
- SCAU: South China Agricultural University
- SCUT: South China University of Technology

SYSU: Sun Yat-sen University

AUTHORS' CONTRIBUTIONS

Xubo He: conducted data collection, site survey, and interviews and wrote the manuscript.

Nor Atiah Ismail: examined the article and make suggestions for revision as my main supervisor

Sumarni Ismail, Noor Fazamimah Mohd. Ariffin: helped perform the analysis with constructive discussions as my supervisor committee members.

Shaofeng Chen: Provided important heritage historical information, photographs, hand-drawing, and conservation recommendations.

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