

公园城市中的城市街景空间设计

Urban Streetscape Space Design in Park City

王洪成 杨宁 陈丽君

WANG Hongcheng, YANG Ning, CHEN Lijun

王洪成 / 1965 年生 / 男 / 吉林人 / 天津大学建筑学院教授、博士生导师 / 研究方向为风景园林理论与设计、低碳园林 (天津 300072)

WANG Hongcheng, born in 1965 in Jilin Province professor, doctoral supervisor, School of Architecture, Tianjin University, his research focuses on landscape architecture theory and design, low-carbon landscape architecture (Tianjin 300072).

杨宁 / 1994 年生 / 女 / 陕西人 / 天津大学建筑学院在读硕士研究生 / 研究方向为风景园林理论与设计、低碳园林 (天津 300072)

YANG Ning, born in 1994 in Shaanxi Province, postgraduate, School of Architecture, Tianjin University, her research focuses on landscape architecture theory and design, low-carbon landscape architecture (Tianjin 300072).

陈丽君 / 1994 年生 / 女 / 安徽人 / 天津大学建筑学院在读硕士研究生 / 研究方向为风景园林理论与设计、低碳园林 (天津 300072)

CHEN Lijun, born in 1994 in Anhui Province, postgraduate, School of Architecture, Tianjin University, her research focuses on landscape architecture theory and design, low-carbon landscape architecture (Tianjin 300072).

摘要: 城市街景空间作为公园城市建设中串联城市各部分的线性空间, 构建起具有价值的景观网络。在公园城市理念的指导下, 城市街景空间将以安全、活力、绿色、特征、智慧为建设目标, 通过质变的路权转换、安全的林荫廊道、互补的立体空间、情感的城市基因、多极的低碳智慧五个途径进行规划设计, 并对国内外先进案例进行分析, 指出城市街景空间转型发展的可行性与必然性, 未来将充分发挥公园城市理念指导作用, 运用风景园林的手法统筹规划设计, 使街道真正成为绿色生态廊道。

关键词: 公园城市; 街景空间; 街景设计; 人居环境

Abstract: As a linear space connecting all parts of the city in the construction of Park City, the urban streetscape space constructs a valuable landscape network. Under the guidance of the concept of Park City, the urban streetscape space will take safety, vitality, green, characteristics and wisdom as its construction objectives, and design in five ways: qualitative change of road right, safe avenue, complementary three-dimensional space, emotional urban gene and multi-pole low-carbon wisdom. The advanced cases at home and abroad are analyzed, and the feasibility and inevitability transformation of the urban streetscape space is pointed out. The guiding role of the concept of Park City will be given full play in the future, and make overall planning and design by means of landscape architecture will be made, so as to make streets truly become green ecological corridors.

Key words: Park City; Streetscape space; Streetscape design; Human settlement environment

街景空间是城市中与市民联系最紧密的公共活动场所, 城市建设进程的日益加快使传统的街景空间迎来了新的挑战。自 20 世纪 70 年代以来, 欧美各国的街景空间建设开始了由政策到实践

的逐步转型，进入 21 世纪后，我国也开始向“以人为本”的趋势转变。2018 年提出的“公园城市”理念，鼓励把城市作为一个绿色生态体系进行系统性建设。街景空间作为连通各项城市功能区块的重要脉络，有了更高的建设目标与更加明确的建设思路，因此，探索新的城市街景空间设计具有重要的意义。

1 公园城市理念与城市街景空间

1.1 “公园城市”理念

2018 年 2 月，习近平总书记视察成都天府新区时强调：“天府新区一定要规划好建设好，特别是要突出公园城市特点，把生态价值考虑进去，努力打造新的增长极，建设内陆开放经济高地。”同年 4 月，习近平总书记参加首都义务植树活动时再次强调绿化祖国要坚持以人民为中心的发展思想，并提出：“一个城市的预期就是整个城市就是一个大公园，老百姓走出来就像在自己家里的花园一样。”习近平总书记提出“公园城市”理念后，在行业内外乃至全国范围内引起广泛热议。

“公园城市”理念将生活与生态作为发展主线，同时，兼顾生产等城市功能和活动，贯彻以人为本的生态发展观，将中国优秀的传统园林文化与现代城市规划理念与手法结合，最大化地突出园林综合效益，建设优美的人居环境。从“城市公园”转变为“公园城市”，以公园城市的理念指导城市规划，突出不同区域、层次、功能、肌理的特有属性，为居民营造宜居的城市花园空间，使市民走出家门就能感受到花园景观。

1.2 城市街景空间

城市街景空间作为城市设计中重要的一环，成为建筑景观、自然景观及各种人工景观与城市道路之间的“软”连接^[1]。从宏观来看，城市街景空间街道是指在城市范围内，全路或大部分地段两侧建有各式建筑，设有人行道和各种市政公用设施的道路空间；从微观来看，城市街景空间主要分为垂直界面与水平界面两种，垂直界面包括建筑立面、行道树等，水平界面是主要界面，包括路面上的人车、硬质、小品、绿化等，二者共同构成城市街景空间的主要内容^[2]。

1.3 重视街景空间在公园城市建设中的价值

一方面，城市街景空间作为城市空间的“连通脉络”，是与市民日常生活联系最紧密的一部分，它将城市不同的功能区域，例如广场、公园、居住区等联系起来，与城市发展协调一致，建立起连续的城市景观系统；另一方面，城市街景空间作为市民生活的“室外客厅”，以人工手段营造城市自然环境，为市民创造连续且丰富多样的生活环境，使城市空间具备完整的功能与形态，构建和谐的整体美学。

城市街景空间作为公园城市建设中串联城市各部分的线性空间，构建起具有价值的景观网络，在公园城市理念的指导下，城市将成为一个绿色生态体系。风景园林将主动走出去，与城市规划与建筑设计相互协作，突显城市规划中绿色生态的主导位置，充分发挥公园城市理念的指导作用，在公园城市的理念的指导下，将城市各部分协调统一，运用风景园林的手法统筹规划设计，使街景空间真正成为绿色生态廊道。

2 从城市街景空间到公园城市

2.1 当前城市街景空间建设面临的问题

“公园城市”理念集中体现了“生态文明”和“以人民为中心”的新发展理念，反映了中国的城市化发展模式和路径亟待转变^[3]，因此，对城市街景空间设计提出了更高要求。目前，我国的城市街景空间建设发展缓慢，主要面对以下几个问题：第一，城市街景空间中机动车占据主导

位置,慢行空间被挤压,行人的路权得不到保障。通过对上海、天津等城市的街景空间调研发现,慢行道与机动车道的比例大多仅在 0.3:1 左右;第二,过度硬化的街景设计使绿地空间得不到应有的保障,无法提升生态质量。主要在于难以为生物提供有效的生态保障,对生物多样性的建设极为不利;第三,街景设计单一化,没有与建筑形成有效的联系。行人在步行时,不但会注视前方,也会注意到两侧的建筑,建筑立面也是街景空间的重要组成部分,而许多街景设计只是平面化的延伸,建筑所预留的绿色景观空间并未真正发挥作用,硬质的外表与绿地形成了强烈的对比;第四,城市街景在不断建设中逐渐丧失原本的特色,街景大同小异。不同的自然地理与历史文化条件,沉淀出各具特色的城市基因,但这些特征在城市街景空间中并未得到充分体现;第五,绿色低碳的设计理念在街景建设中未得到重视,造成高碳排、低碳汇的后果。有些设计过度追求景观化,而忽略了其生态效益,对城市气候改善极为不利。

2.2 基于公园城市理念的街景空间设计目标

基于当前城市街景空间由于城市发展的需求所呈现出的各种问题,以及“公园城市”理念所发挥的指引作用,提出为推动街景空间建设向更高品质发展的五个主要目标:

(1) 创造安全的街景空间。安全性是设计的首要目标,安全是人与生俱来的追求,是市民安居乐业、社会稳定的前提。实现交通有序、慢行优先、设施可靠的安全街景空间是城市发展的重要保障。

(2) 创造活力的街景空间。活力即是街道的生机,活力街景空间具有功能复合、活动舒适、空间宜人、视觉丰富等特点。打造有活力的街区景观空间能够给市民们提供舒适宜人的空间环境体验,形成富有吸引力的街道氛围,增进市民交往交流,鼓励创意与创新发等。

(3) 创造绿色的街景空间。绿色街景空间是在一种生态设计观结合多功能景观设计思维的指导下形成的街道景观设计。主要有资源集约、绿色出行、生态种植、绿色技术等特点。良好的绿色街景空间不仅能够给人们带来自然丰富的视觉体验,更能缓解环境中的生态问题,为可持续发展城市做出贡献。

(4) 创造特征的街景空间。特色街景空间是将城市的人文与地理环境所沉淀出的城市基因通过街景表达出来,形成具有城市特色的代表性街景,是城市风貌的重要组成部分。

(5) 创造智慧的街景空间。智慧街道景观是整合街道设施进行智能改造,为人们提供智行协助、安全维护、环境治理等方面的服务,为市民创造更加便捷的生活^[4]。

2.3 基于公园城市理念的街景空间设计途径

在公园城市理念的指导下,为实现安全、活力、绿色、特征、智慧的城市街景空间建设目标,提出五个设计途径,分别是:质变的路权转换、安全的林荫廊道、互补的立体空间、情感的城市基因和多极的低碳智慧。这些途径将全方位、多角度地推进城市街景空间建设(图1)。

2.3.1 质变的路权转换

质变的路权转换,即将原本机动车为主导的交通空间向慢行交通转变,构筑以公交和行人优先为导向、与城市空间与土地利用相协调的道路交通体系,实现路权的优化分配与交通品质的整体提升。同时,注重增强地块渗透性,鼓励发展共享空间,创造更平等、更和谐的公共环境。

以伦敦市展览路改造为例,该路曾经是一条以机动车为主的喧嚣街道:机动车占据街道大部分空间且车速过快,街道绿化空间不足,人行道过窄且趣味性不强,街景空间非常单调。改造后的人行道比改造前扩宽了一倍,可以容纳更多行人;机动车经过该路段时限速 20 英里/小时,比普通机动车道慢 1/3 左右;大理石铺制的纵横交错的棋盘图案、高大挺拔的灯柱都与周围的环境相得益彰,风格协调一致的街景创造出亲切宜人的空间(图2)。

2.3.2 安全的林荫廊道

安全的林荫廊道,即发挥街道空间为生物所提供的生态廊道栖所与通道功能,利用林荫空间

串联起不同的生境斑块，为城市生物提供安全、连续的栖息地，同时改善城市环境，对维持城市生态系统正常运转和保护城市生物多样性具有重要意义，对提高街道环境质量和人们生活水平也有一定的作用^[5]。

西班牙埃米尔大道上的榕树已有六、七十年的历史，三排榕树构成了林荫道最主要的景观。林荫道位于两个机动车道的中间，一方面为道路提供降温降噪等生态服务功能，另一方面为行人创造安全的慢行环境与休闲活动场所（图3）。

2.3.3 互补的立体空间

互补的立体空间没有将街道设计局限在一个平面上，而是拓展三维立体的空间。街道两侧的建筑立面与顶平面也是营造空间的重要组成部分，将街道界面看作连续统一的整体，从城市规划的角度入手，将建筑、规划、风景园林设计协调一致。利用绿色手法将其统一在街景空间之中，共同营造自然和谐的景观（图4）。

新加坡政府制定了严格的法律法规政策，并且市民的绿色生态思想日益强化，这使得新加坡真正实现了城市与花园的融合。街道两侧与建筑的其他界面，如屋顶、阳台、墙面等绿植密布，郁郁葱葱的植被形成了立体的花园，其城市街景创造了都市宜居空间。

2.3.4 情感的城市基因

情感的城市基因即，将城市的自然特征与人文特征通过设计强化，使每个城市的独特基因充分发扬，城市街景作为一种展现城市基因的重要方式，传递着城市信息，延续着城市记忆，让城市焕发出自身独特的勃勃生机。

从不同的城市基因中可以看到：在美国赌城拉斯维加斯的街景空间设计中，设计师充分发挥想象力，通过多变的街景题材营造出一系列令人震撼、动感性极强的大尺度道路园林街景；而中国的苏州作为国家历史文化名城，城市街景中处处体现出传统文化与园林景观，因此更注重细节的处理，尤其以小景处理见长；英国拥有丘陵起伏的地形和大面积的牧场风光，其街景空间则充分展示出自然的浪漫与明快，舒适且随意（图5）。

2.3.5 多极的低碳智慧

多极的低碳智慧，即通过应用智能的措施、先进的科学理念等降低街道的碳排放，增加碳吸收，充分发挥城市街景的生态服务功能。通过利用优良的街道环境促进步行、降低园林的管理维护消耗、强调园林资源的循环再利用、在建设过程中减少碳排放等途径实现。营造智慧低碳景观是未来社会发展的必然趋势。

如今，已有许多低碳智慧设施投入使用，例如，可以利用太阳能自动压缩垃圾的垃圾桶；能够监测周围环境信息，帮助政府监测城市环境质量的路灯；防盗、防涝、易于管理的井盖等。增强低碳生态理念、增加智慧设施覆盖率、增进智慧设施功能是未来街景空间可持续发展的重要措施。



图 1 公园城市理念下的城市街景设计目标与途径

Figure 1 City Streetscape Design Objectives and Approaches under the Concept of Park City



图 2-1 改造前的伦敦展览路 (图片来源：网络)

Figure 2-1 Exhibition Road Before Reconstruction (Source : Internet)

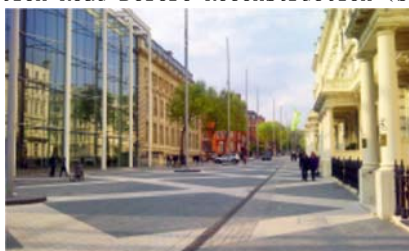


图 2-2 改造后的伦敦展览路 (图片来源：网络)

Figure 2-2 Exhibition Road After Reconstruction (Source : Internet)



图 3 榕树形成的安全林荫廊道 (图片来源：网络)

Figure 3 Safe Avenue Formed by Banyan Trees (Source : Internet)



图 4 绿色的立体街景空间

Figure 4 Green 3D Streetscape Space

3 创造可持续的城市街景空间

可持续的街景空间在形成可持续城市的视觉形象中起着重要作用，它是城市成功与否的重要因素之一，也是城市的旅游资源^[6]。城市街景空间的设计应基于设计导则，增强公众意识、强化生态价值、突出绿色低碳，通过对政府、设计师与街道使用者的引导，使街景空间在城市可持续发展中发挥重要作用。

3.1 基于街道设计导则

自 20 世纪 90 年代以来，英国的交通政策就在向整合交通和土地利用规划的方向努力^[7]。2004 年，伦敦颁布全球第一部街道设计导则——《伦敦街道设计导则》，该导则坚持以人为本的原则，宗旨是将伦敦打造成一座适宜步行、可持续发展的城市服务。此后各个国家相继推出街道设计导则，例如《阿布扎比街道设计导则》（2009）、《印度街道设计导则》（2011）等。上海作为中国城市发展转型探索的先行者，为推动街道建设更加人性化，于 2016 年编制了《上海市街道设计导则》。由此可见，未来城市街景空间应是基于设计导则进行的综合化与规范化的设计。

3.2 增强公众意识

城市街景空间的使用主体是市民，只有让使用者认同并参与设计，才能构建有活力的街道空间。因此，街道的规划、设计和实施应充分调动沿线业主、街道周边居民及社会公众的积极性。在街道建设和更新项目中搭建政府、开发商、市民的沟通平台，协调各方诉求，引导市民参与设计。同时，公众作为街道设计的主要服务对象与实际使用者，也应当树立责任意识，共同维护街景环境与秩序。

3.3 强化生态价值

目前，我国很多生态理念和措施并未落到实处，城市生态环境没有得到根本性的改善，主要原因在于人工化过于严重，导致生态系统不稳定。因此，落实生态理念并不应该过分强调设计，而是要强化生态系统本身的价值，适当进行自然化的改造，通过亲近自然的方式才有可能发挥更大作用。

3.4 突出绿色低碳

随着城市化进程的不断加速，能源消耗增多，碳排放急剧增加，进一步加剧了气候变化的负面效应，城市区域气候有可能步入恶性循环。低碳街景营建成本低、见效快，是城市可持续发展的必然选择。既有的城市街景空间营造中在可持续发展方面考虑较少，尤其是绿地景观。低碳绿地营建涉及节能、减碳、环境修复等方面，从更多层面给大家带来环保共识，是城市可持续发展的必然选择。未来建设绿色低碳的城市街景空间，将推进生态环境可持续发展，实现良好生态系统的保护和受损生态系统的修复，创造优于原景观系统的经济和生态效益，保证资源的永续利用和环境的可持续发展，实现社会资源的利用方式向集约型转变。

4 结语

城市街景空间是城市景观系统的主要组成部分，为回应“公园城市”理念的指引与城市发展的需求，打造安全、活力、绿色、特征、智慧的街景空间是未来街景设计的主要目标。为实现目标，通过质变的路权转换、安全的林荫廊道、互补的立体空间、情感的城市基因和多极的低碳智慧五个途径进行街景规划设计，它的实施需要政府、设计师与市民共同协作，从理念培养、政策制定、规划设计到服务管理等诸多环节中实现以人为本和多方统筹，才能将城市街景空间所发挥的园林综合效益最大化。



图 5-1 拉斯维加斯的大尺度街景空间

Figure 5-1 Large - scale Streetscape Space in Las Vegas (Source : photo by the author)



图 5-2 苏州注重文化细节的街景空间

Figure 5-2 Streetscape Space in Suzhou Focusing on Cultural Details (Source : photo by the author)



图 5-3 英国独具自然风情的街景空间

Figure 5-3 Streetscape Space with Natural Features in Britain (Source : photo by the author)

Among the public places of activity in the city, streetscape space has the closest relationship with citizens. With the acceleration of urban construction, the traditional streetscape space is facing new challenges. Since the 1970s, the construction of streetscape space in Europe and the United States has gradually changed in policy and practice. After entering the 21st century, our country is also exploring a change to a "people-oriented" trend. The concept of "Park City" was put forward in 2018, encouraging carry out systematic construction of cities as a green ecological system. Streetscape space, as an important channel connecting different urban functional blocks, has a higher construction goal and a clearer construction idea. It is of great significance to explore new urban streetscape space design.

1 Park City Concept and City Streetscape Space

1.1 "Park City" Concept

In February 2018, President Xi Jinping visited to Chengdu Tianfu New Area, during the visit he stressed: "Tianfu New Area must be planned and built well, especially to highlight the characteristics of Park City, take ecological values into account, strive to create a new growth pole and build an inland open economic highland." In April, when President Xi participated in the voluntary tree planting activity in the capital, he stressed again that greening the motherland should adhere to the people-centered development thought. He proposed that "the expectation of a city is to turn the whole city into a big park. When people get out of the house, they all feel like they are in their own garden." President Xi Jinping raised the concept of "Park City", which has aroused widespread discussion both inside and outside the industry and throughout the country.

The concept of "Park City" regards life and ecology as its main development contents, while taking account of the functions and activities of cities such as production. Its implementation of the people-oriented concept of ecological development combines China's excellent traditional garden culture with modern urban planning concepts and techniques to maximize the comprehensive benefits of gardens and build a beautiful human settlement. From "City Park" to "Park City", city planning is guided by the concept of "Park City" to highlight the unique attributes of different regions, levels, functions and textures, so as to create livable city garden space for residents and enable residents to enjoy the garden landscape when they going out of their homes.

1.2 City Streetscape Space

As an important part of city design, city garden streetscape has become a "soft" connection between architectural landscape, natural landscape and various artificial landscapes and city roads.^[1] From a macro point of view, the streetscape space refers to the road space within the city, with all kinds of buildings, sidewalks and various municipal public facilities on both sides of all roads or most of the roads. From a micro point of view, it is mainly divided into vertical interface and horizontal interface. Vertical interface includes building facades, avenue trees, etc. The horizontal interface is the main interface, including pedestrians, cars, hard landscape, sketches, greening and so on, which together constitute the main content of the city streetscape space.^[2]

1.3 Valuing Streetscape in Park City Construction

On the one hand, as the "connecting channel" of city space, the city streetscape space has the closest connection with citizens' daily life. It connects different functional areas of the city such as squares, parks, residential areas, etc. to coordinate with the development of the city and establish a continuous city landscape system. On the other hand, as the "outdoor living room" where citizens live, the city streetscape space creates the city natural environment by artificial means. It creates a continuous and diverse living environment for citizens, making city space have complete functions and forms, together with harmonious aesthetic integrity.

As a linear space connecting all parts of the city in the construction of the Park City, the city streetscape space builds a valuable landscape network. Under the guidance of the concept of Park City, the city will

become a green ecological system. Landscape architecture will actively engage with city planning and architectural design to highlight the leading position of green ecology in city planning. The city will be unified through the concept of Park City. By making full use of the guiding role of the Park City concept and using landscape architecture to make overall planning and design, streetscape space will truly become a green ecological corridor.

2 From City Streetscape Space to Park City

2.1 Current Problems Faced by City Streetscape Space Construction

The concept of "Park City" embodies the new development concept of "ecological civilization" and "people-centered", which reflects the urgent need to change China's urbanization development mode.^[3] Therefore, the urban streetscape space design faces higher requirements. At present, China's city streetscape space construction is developing slowly, mainly with the following problems: First, motor vehicles occupy the dominant position in the city streetscape space, resulting in the limitation of non-vehicle space. Pedestrians' right of road is not guaranteed. According to the investigation of streetscape space in Shanghai, Tianjin and other cities, the ratio of non-vehicle lanes to motorway is usually only about 0.3: 1. Second, the excessive hardening of streetscape design makes the green space not be properly protected and the ecological quality is difficult to improve. The main reason is that it is difficult to provide effective ecological protection for living things, which is not conducive to the construction of biodiversity. Third, the streetscape design is too single to form effective connection with buildings. When walking, pedestrians will not only look ahead but also notice the buildings on both sides of the road. Building facade is also an important part of streetscape space, but many streetscape designs are only a complanation extension, the green landscape space reserved by the building does not really play a role, and the hard appearance forms a strong contrast with the green space. Fourth, the original features of city streetscape are gradually losing in the continuous construction, and the street scenes are similar. Different physical geography and historical and cultural conditions have formed distinctive city genes, but these characteristics have not been significantly reflected in the city streetscape space. Fifth, the design concept of green and low carbon has not been valued in the streetscape construction, resulting in high carbon emission and low carbon sink. Some designs focus too much on landscape and ignore its ecological benefits, which is extremely disadvantageous to the improvement of city climate.

2.2 Streetscape Space Design Objectives Based on Park City Concept

Based on the problems faced by the city streetscape space under the current city development demand and the guiding role played by the "Park City" concept, five goals are proposed to promote the construction of a higher quality streetscape space:

- (1) To create a safe streetscape space. Security is the most important goal in design. Security is an inherent pursuit of human beings and a prerequisite for citizens to live and work in peace and also the need for social stability. It is an important guarantee for city development to realize a safe streetscape space with good traffic order, reliable facilities and pedestrians first.
- (2) To create an active streetscape space. Vitality is important for an active street. The active streetscape space features complex functions, comfortable environment, pleasant space and rich vision resource and so on. Creating an active streetscape space can provide citizens with a comfortable space environment experience, thus forming an attractive street atmosphere to enhance citizens' communication and encourage creativity and innovation development.
- (3) To create a green streetscape space. Green streetscape space is a street landscape design formed under the guidance of ecological design and multi-functional landscape design. Its main characteristics include intensive resources, green travel, ecological planting, green technology and so on. A nice green streetscape space can not only bring people rich natural visual experience, but also solve the ecological problems in the environment, thus making contributions to the sustainable development of the city.

(4) To create characteristic streetscape space. The characteristic streetscape space is the expression of the city gene formed by the city's cultural and geographical environment through the streetscape to build a representative streetscape with city characteristics, which is an important part of the cityscape.

(5) To create an intelligent streetscape space. Intelligent street landscape is the integration of street facilities for intelligent transformation, which can provide people with intelligent changes, safe maintenance, environmental governance and other services, thus making the life of citizens more convenient.^[4]

2.3 Approaches of Streetscape Space Design Based on Park City Concept

2.3.1 Qualitative Change of Road Right

The fundamental change of the right of way is to change the traffic space dominated by motor vehicles and focus on non-vehicle traffic, and to build a road traffic system guided by giving priority to buses and pedestrians and the coordination of city space and land use. To realize the optimal allocation of the right of way and the overall improvement of traffic quality. At the same time, it pays attention to enhancing the permeability of land plots, encouraging the development of shared space and creating a more equal and harmonious public environment (figure 1). Take the reconstruction of Exhibition Road in London as an example. It was also once a noisy street dominated by motor vehicles: Motor vehicles occupied most of the street space and drove too fast. The streets lacked green space. The sidewalks were too narrow and uninteresting, and the streetscape space was very monotonous. The reconstructed sidewalk is twice as wide as before and can accommodate more pedestrians. At the same time, the speed limit for motor vehicles here is 20 mph, about 1/3 slower than that of ordinary motor vehicles. The crisscrossing chessboard patterns paved with marbles and tall lampposts complement the surrounding environment. The streetscape with the same style creates a friendly and pleasant space (figure 2).

2.3.2 Safe Avenue

The safe tree-lined corridor uses the function of the street as a habitat and channel for the living things. The tree-lined space is used to connect different ecological environment patches in series to provide a safe and continuous habitat for city creatures and improve the city environment. It is of great significance to maintain the normal operation of city ecosystem and protect urban biodiversity. It also plays a role in improving the quality of street environment and people's living standards.^[5] Banyan trees on Emile Avenue in Spain can date back to 60 or 70 years ago. The three rows of banyan trees constitute the main landscape of the avenue. It is located in the middle of two motorways. On the one hand, it provides ecological services such as cooling and noise reduction for the road, and on the other hand, it creates a safe walking environment and leisure space for pedestrians (figure 3).

2.3.3 Complementary Three-dimensional Space

Complementary three-dimensional space means that street design is not limited to one plane, but expanded into three-dimensional space. Building facades and roof planes on both sides of the street are also important components for building space. The street interface is regarded as a continuous and unified part, and architecture, planning and landscape design are coordinated from the perspective of city planning. The green technique is used to unify them in the streetscape space to create a natural harmonious landscape (figure 4).

Strict laws, regulations and policies formulated by the government having been increasing public concern for green ecology, Singapore has truly achieved the integration of city and garden. Other interfaces between the both sides of streets and buildings, such as roofs, balconies and walls, are full of green. The lush vegetation forms a three-dimensional garden, and its city streetscape creates the best space for city life.

2.3.4 Emotional Urban Gene

The city gene of emotion is to strengthen the city's natural and human characteristics through design, so that the unique gene of each city can be fully developed. As an important way of showing city genes,

the city streetscape conveys the city information, continues the city memory and gives the city a special vitality.

From different city genes, we can see that in the streetscape space design of Las Vegas in the United States, the imaginative designer has created a series of spectacular and dynamic large-scale road landscape with varied streetscape themes. In contrast, Suzhou, as a national famous historical and cultural city, its city streetscape reflects traditional culture and landscape. Therefore, it pays more attention to details, especially the small landscape. In addition, Britain has hilly terrain and a large area of pasture. Its streetscape space is full of natural romance and brightness, free and comfortable (figure 5).

2.3.5 Multipolar Low-carbon Wisdom

Multipolar low-carbon wisdom means reducing street carbon and increasing carbon absorption through intelligent measures and advanced scientific concepts, so as to develop the ecological service function of city streetscape. By using the excellent street environment to promote walking, reducing the management and maintenance consumption of gardens, emphasizing the recycling of garden resources, and reducing carbon emissions in the construction process, the goal of low-carbon can be achieved. Building a intelligent low-carbon landscape is the inexorable trend of social development in the future. Today, many low-carbon intelligent facilities have been put into use, such as garbage bins that can be charged by solar energy and automatically compress garbage. Setting of street lamps to monitor the surrounding environment and help the government control the quality of the city environment; Anti-theft, anti-waterlogging, easy-to-manage manhole covers, etc. Increasing the coverage rate of smart facilities, improving the functions of smart facilities and enhancing the concept of low-carbon ecology are important measures for the sustainable development of streetscape space in the future.

3 To Create Sustainable City Streetscape Space

Sustainable streetscape space plays an important role in forming the visual image of a sustainable city. It is one of the most important factors for the success of a city and also a tourist attraction.^[6] The design of city streetscape should be based on design guideline, to increase public awareness and ecological value, and emphasize green and low carbon. The streetscape space plays an important role in the sustainable city by guiding the government, designers and street users.

3.1 Based on Design Guidelines

Since the 1990s, Britain's transportation policies have been oriented towards the integration of transportation and land use planning.^[7] In 2004, London issued the world's first street design guideline-London Streetscape Guideline, which adheres to the people-oriented principle and serves to make London a city suitable for walking and sustainable development. Since then, streetscape guidance have been published in various countries, such as Abu Dhabi streetscape guidance (2009) and India streetscape guidance (2011). As a pioneer of China's city development and transformation, Shanghai issued "Shanghai Street Design Guidelines" in 2016 to promote street construction with humanity. It can be seen that the future city streetscape space should be a comprehensive and standardized design based on design guidelines.

3.2 Enhancing Public Awareness

Citizens are the main users of the city streetscape space. Only when the users recognize and participate in the design can an active street space be constructed. Therefore, in the planning, design and implementation of the streets, it is necessary to make the owners along the roads, residents around the streets and the public participate in actively. In the street construction and renovation project, a communication platform for the government, developers and citizens will be set up to coordinate all parties and guide citizens to participate in the design. On the other hand, the public, as the focus of street design, should also establish a sense of responsibility and take the initiative to maintain the environment and the streetscape order.

3.3 Enhancing Ecological Value

At present, many ecological concepts and measures in our country have not been implemented, so the city ecological environment has not been fundamentally improved. The main reason lies in the excessive artificialization, which leads to the instability of the ecosystem. Therefore the implementation of the ecological concept is not only through design, but also to strengthen the value of the ecosystem itself. It is better to transform ecosystem in a more natural way.

3.4 Highlighting Green and Low Carbon

With the accelerating process of urbanization, energy consumption and carbon emissions have increased dramatically, resulting in more negative effects of climate change. The climate in urban areas may enter a vicious circle. Low-carbon streetscape construction costs low and takes effect quickly, which is an inevitable choice for the sustainable development of the city. The concept of sustainable development is rarely considered in the design of the existing city streetscape space construction. Low-carbon green space construction involves energy saving, carbon reduction and environmental restoration. It is an inevitable choice for the sustainable development of the city to raise the public's environmental awareness from more aspects. The future construction of green and low-carbon city streetscape space will promote the sustainable development of the ecological environment and realize the protection of good ecosystems and the restoration of damaged ecosystems. It will also create economic and ecological benefits superior to those of the original landscape system, ensure the sustainable use of resources and the sustainable development of the environment, and realize intensive utilization of social resources.

4 Conclusion

The city streetscape space is the main component of the city landscape system. In order to meet the guidance of the concept of "Park City" and the needs of city development, building a safe, active, green, characteristic and intelligent streetscape space is the main goal of streetscape design in the future. In order to achieve the goal, streetscape planning and design are carried out by five methods: Fundamental change of the right of way, safe tree-lined corridors, complementary three-dimensional space, city genes of emotion and multipolar low-carbon wisdom. Its implementation requires the cooperation of the government, designers and citizens. Only realizing the people-oriented concept and coordination of all parties by idea cultivation, policy formulation, planning and design, service management, etc. Can the comprehensive benefits of city streetscape space be maximized.

参考文献 (References):

- [1] 王洪成 . 城市园林街景创作浅识 [J]. 中国园林 , 1999(4):23-24.
WANG Hongcheng. A Brief Understanding of Street Landscape Creation in Urban Gardens [J]. Chinese Gardens, 1999 (4): 23-24.
- [2] 郭顺 . 国内外大都市建成区街道设计导则的比较研究 [D]. 北京建筑大学硕士学位论文 . 2018.
GUO Shun. A Comparative Study of Street Design Guidelines for Built-up Areas in Domestic and Foreign Metropolises [D]. Master's Degree Thesis of Beijing University of Architecture, 2018.
- [3] 吴岩, 王忠杰, 束晨阳, 等 . “公园城市”的理念内涵和实践路径研究 [J]. 中国园林 . 2018(11).
WU Yan, WANG Zhongjie, SHU Chenyang, etc. [J]. Discussion on the Concept & Practice Approach of "Park City". Chinese Gardens. 2018 (11).

[4] 上海市规划和国土资源局 . 上海街道设计导则 [Z]. 2016.

Shanghai Bureau of Planning and Land Resources. Guidelines for Street Design in Shanghai [Z]. 2016.

[5] Kazemi F, Beecham S, Gibbs J. Streetscape biodiversity and the role of bioretention swales in an Australian urban environment [J]. Landscape and Urban Planning, 2011, 101(2):0-148.

[6] Rehan, Mohammed R. Sustainable streetscape as an effective tool in sustainable urban design[J]. HBRC Journal, 2013, 9(2):173-186.

[7] Michael R.Gallagher, 王紫瑜 . 追求精细化的街道设计——《伦敦街道设计导则》解读 [J]. 城市交通 , 2015(4):56-64.

Michael R.Gallagher, WANG Ziyu. Pursuing Fine Street Design: Interpretation of London Street Design Guidelines [J]. Urban Transportation, 2015 (4): 56-64.

(整理: 赵迪 译: 戴晨峪)