

# 城市绿色空间作为变革的力量: 全球智慧与中国视角

## Transformative Power of Urban Green Spaces: Global Insights and Chinese Perspectives

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**摘要:** 探讨了城市绿色空间在提升人类健康和福祉方面的关键作用, 并将全球研究与中国的实际情况相结合。详细讨论了绿色景观在心理、社会和环境方面的益处, 并强调了其在风景园林、大众卫生和城市规划等多领域的重要性。其后, 探讨了绿色空间的平等使用权、最佳接触量及文化维度等关键问题。最后, 重点讨论了中国在城市化和绿色空间分配方面所面临的独特挑战, 以期为未来的设计策略和政策发展提供依据。

**关键词:** 风景园林; 绿色景观; 健康与福祉; 全球视野; 中国环境; 研究问题

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**Abstract:** This article examines the crucial role of urban green spaces in enhancing human health and wellbeing, integrating global research with a focus on China. The psychological, social, and environmental benefits of green landscapes are discussed, highlighting their importance in landscape architecture, public health, and urban planning. Key research questions regarding equitable access, optimal dose of contact, and the cultural dimensions of green spaces are also addressed. Special attention is given to China's unique challenges in urbanization and green space distribution, aiming to inform future design strategies and policy developments in landscape architecture.

**Keywords:** landscape architecture; green landscape; health and well-being; global perspective; Chinese environment; research question

## 1 背景

在过去的30余年, 风景园林学者、设计师及社区成员共同承担着大量开创性的研究工作, 以绿色景观对人类健康和福祉的深远影响为题, 产出了一系列引人注目的成果<sup>[1-3]</sup>。风景园林师在设计这些绿色空间时, 不仅将其作为美学元素<sup>[4]</sup>, 还将其作为公共卫生和城市规划的重要组成部分。目前绿色景观多方面的重要性已在众

多学科中得到了研究, 使我们对于其对人类健康的影响有了更丰富、更细致的了解。然而, 目前需要关注的研究和信息依然很多, 要完全掌握这些信息量是非常困难的。

## 2 关键问题

我们目前对城市绿地及对人类健康和福祉的影响有多了解? 接下来有哪些紧迫问题必须先解

决, 以塑造更健康的个人、家庭、社区和国家? 按照中国的具体情况, 下一步有哪些关于绿色景观和人类健康与福祉的最重要研究问题需要解决? 下面, 我们将逐一讨论这些问题, 并以向研究者和设计师提出的行动建议作为结语。

## 3 绿色城市景观的多维影响

数以千计的研究表明, 与绿色景观互动对身

体、心理、社会和精神健康都有益处。城市绿色空间不仅仅是审美的需要，也是公共卫生、社会凝聚力和可持续生活的基石。利用专业素养和能力，风景园林师的工作远远超出了美化环境的范畴：景观设计工作可以创造疗愈环境、提升教育、经济价值，以及增强应对气候变化的能力。因此，我们在诠释和塑造人与自然的关系方面发挥着至关重要的作用。这项工作对心理健康、社会结构稳定、生理健康、儿童发展、长者健康、社区经济活力和环境可持续发展方面有着直接影响。

让我们从心理健康开始讲述。数以百计的研究已经证明了人类与绿色景观互动的心理健康效益。如其对压力缓解<sup>[5-7]</sup>、情绪改善<sup>[8]</sup>、提高注意力及改善认知功能方面的作用<sup>[9-10]</sup>。越来越多的证据表明，接触绿色空间可以减轻抑郁和焦虑的症状<sup>[11-13]</sup>，绿地还可以通过调动积极情绪、增强社区安全性等渠道来促进居民的精神健康<sup>[14-16]</sup>。

此外，帮助人们从认知疲劳中恢复是绿色空间最普遍的心理益处之一。认知疲劳，有时被称为精神疲劳，是个人几乎在整个生命周期中都会经历的现象，尤其在我们日益忙碌和技术驱动的生活中更为明显<sup>[17-18]</sup>。它的表现包括注意力下降、解决问题的效率降低，以及长期的精神疲惫等。研究表明，即使是与自然短暂的接触也可以显著改善注意力功能和精神清晰度<sup>[19-20]</sup>。这不仅是一个“感觉良好”的因素，而是对生产力、情绪健康，甚至长期心理健康都有切实的影响<sup>[21]</sup>。

在社会凝聚力方面，绿色空间设计在促进社区建设和社会公平方面发挥着关键作用。绿色城市景观鼓励社会互动，产生归属感并促进社会公平，从而与更广泛的公共卫生目标契合<sup>[22-24]</sup>。风景园林师对绿色空间元素如何影响个人行为和社会融合的深刻理解，可以在传统医疗干预的公共卫生战略基础上进一步发挥作用，从而促进社会公平。

已有研究指出，绿地分布的差异会对不同社会经济群体间的心理健康产生差异化的影响。在不同发展程度的地区，增加绿地对居民的心理健康影响程度存在差异<sup>[15-16, 25]</sup>，例如，与郊区绿地相比，城区绿地对居民的心理健康有更强的恢复效果<sup>[26]</sup>。另外，研究发现绿地对于因经济收入差异导致的健康差异可能有显著的缓解作用<sup>[27]</sup>。

绿色空间对于生理健康的促进作用也是显著的。研究发现在不同人群中，绿色空间有助于增

加身体活动、降低肥胖率和降低患慢性病的风险和系统性炎症<sup>[28-30]</sup>，并且能提升人体免疫功能<sup>[31-32]</sup>和有益微生物的多样性<sup>[33-34]</sup>。在儿童发展方面，经常接触绿色环境可以促进生理健康的成长<sup>[35-37]</sup>。另外，越来越多的研究表明，城市绿色空间有助于维持长者的健康和功能体适能<sup>[38]</sup>。尤其是风景园林师精心创造的场所可提高无障碍性和可流动性，使得长者可以充分享受绿色景观带来的健康和社交福利<sup>[39]</sup>。

风景园林师创作的绿色城市景观带来的多维效应已经越来越受到重视。关于疗愈景观，风景园林师经常与医疗保健专业人员合作，创建满足特定健康需求的专业绿色空间。无论是医院的疗愈花园，还是失智症疗养院的感官花园，绿色景观均为医疗提供了有效辅助<sup>[40]</sup>。在教育价值方面，风景园林师在将绿色空间融入校园方面创造出的教育性景观发挥了关键作用。这些户外教室让学生参与体验式学习，激发灵感、幸福感和创造力，促进学业成绩，培养学生对环境保护的关注<sup>[35, 41-42]</sup>。另外，风景园林师设计的城市绿地还可以创造巨大的经济效益。风景园林师通过提升人们的不动产财富价值和推动地方企业的成长，提升了整个社区的水平。他们的设计成为社会经济催化剂，将生态和经济健康联系起来<sup>[43-44]</sup>。最后一个例子涉及城市绿色空间在创建更具气候适应力的城市方面所发挥的作用。风景园林师利用创新设计，让绿色空间成为抵御热岛效应和洪水等气候相关威胁的自然防御系统<sup>[45-47]</sup>。例如，通过合理配置城市绿色空间，通过增加植物遮阴、调节水分蒸发、减少地表热辐射来增加空气湿度，从而有助于调节白天和夜间的极端温度<sup>[45-47]</sup>。许多研究工作表明，绿色景观不仅是审美的选择，更是创造可持续生活方式的关键基础设施<sup>[48]</sup>。

通过认识到风景园林师在设计这些空间和理解其影响方面的开创性作用，我们开始懂得绿色空间的复杂性和真实本质。这种多维度的观念为我们接下来必须解决的关键问题奠定了基础。

#### 4 需要探究的重要问题

让我们深入探讨一下未来亟须关注的重要研究问题，以解决城市快速发展带来的问题，并且最大化绿色景观对人类福祉的积极影响。

我们议程上的首要问题是绿色空间的公平使用权。随着城市化继续以惊人的速度推进，

不同社会经济及人口特征的人群是否公平地享有绿色景观的问题变得越来越紧迫，尤其是由于不平等的资源分布将加剧现有的健康差异。为解决这个问题，不仅要充分掌握绿色空间的特征，例如绘制空间地图以掌握其可利用性、绿色景观品质及其他特征，还要了解到不同社区的人群是如何及多大程度参与进来，包括在不同的时间、季节，不同的人群是如何与绿地空间互动的，以及其开展活动的种类和目的是什么。从而我们可更加全面和详尽地考虑绿色空间的公平问题<sup>[49-50]</sup>。

其次，让我们聚焦健康和福祉所需的绿色空间接触量<sup>[5, 51-52]</sup>。也就是哪种类型的绿色空间暴露是实现健康和福祉的关键性因素<sup>[53]</sup>。我们仍需做更多的工作，以确定具有哪些特征的绿色空间，以及何种剂量的绿色空间接触量是有益的。具体的细节例如绿色空间的大小、生物多样性，以及绿色空间接触的类型、频率和持续时间都需要更多的探索<sup>[2, 54]</sup>。通过仔细研究这些变量，我们可以为设计和规划提供更有针对性的建议、联接绿色空间有效从而促进公众健康的途径。

再次，纵向(跟踪)研究对理解绿色空间长期影响的重要性不容忽视<sup>[55-56]</sup>。目前大部分的研究关注绿色空间产生的即时或短暂的健康效益，尤其是在心理健康效益方面，但对于其长期的影响效应认识有限。尽管这些横断面研究能够确定绿色空间与大众健康之间的相关性，长期研究更可能揭示绿地之于健康的精妙效应，例如持续地接触绿色景观对健康的长期甚至跨越世代的影响<sup>[57]</sup>。

第四个问题围绕着文化特殊性及其在塑造绿色景观对健康的影响和作用展开。文化习俗和传统会在很大程度上改变人们与绿色空间互动的方式，从而影响人们的受益程度<sup>[58-59]</sup>。例如，日本的“森林浴”起源于日本的特色活动——静坐树下，释放正念，蕴养心神，发展出一个独特的与绿色景观接触的方式，并从中体会到绿色空间对心理健康的正面影响<sup>[60]</sup>。了解这些地域性文化的特征不仅有利于促进研究的普世性，同时揭示人与环境关系的新维度。

最后，如何将研究结果转化为有效的政策和公众意识是一个不容回避的问题，特别是在不同的区域治理结构和文化背景下的应用。此处，人工智能(AI)的发展提供了迷人的可能性<sup>[61]</sup>。先

进的数据分析和生成式人工智能可以筛选大量的环境和健康数据，从而可对特定的景观进行精准和及时的干预<sup>[62-64]</sup>。机器学习模型亦通过有效地预测各类绿色景观特征的健康效益，从而帮助城市规划者和政策制定者进行兼顾广泛性和针对性的决策。此外，虚拟现实或增强现实与人工智能的结合将为探索绿色景观对人类健康的影响提供新的工具<sup>[62-64]</sup>。

通过解决这些关键问题，我们将加深对绿色景观与人类福祉之间复杂关系的理解。我们的目标不仅仅是贡献新的学术知识，而是促进一个关键的转化：我们如何认识和投身于可丰富我们生命的绿色空间。如果这激起了你的好奇心，你会发现中国的具体情况为我们提供了一个既丰富又具有独特挑战性的研究对象。

## 5 中国问题：研究方向

为什么说中国案例在研究绿色空间对人类福祉的影响方面提供了独特性和启发性呢？由于中国拥有着多样的地理景观、快速的城市化和复杂的社会脉动，为关注绿色空间与人类健康之间相互作用的学者提供了无数的挑战和机遇。本节旨在提出一系列适宜在中国开展的关键研究方向。

首先，让我们来关注由于快速经济增长导致的城乡分化问题。关注城乡差异导致的获得优质绿色空间的机会差异是值得研究的重要问题。城市由于面临激烈的土地竞争，往往会在绿地问题上妥协，而农村地区虽然有丰富的自然空间，但却缺乏空间设计和基础设施来优化其健康效应。仔细审视这些差异可以产生更具包容性的公共健康政策以适应不同条件的地理环境。

对于绿色空间的设计元素，生态、美学和功能因素之间的和谐平衡至关重要。这个领域的研究可关注于揭示那些赏心悦目同时具有生态和功能合理性的景观特征。绿色空间提供的城市生态系统服务，例如气候调节、生物多样性、审美体验、休闲等，对于中国应对用地冲突、适应气候变化、人口迁徙移居、城市文化多元化等诸多挑战都有显著的应用价值<sup>[47]</sup>。正如近期的一些研究指出，协调好生态、美学和功能的关系将有助于避免过度规划和社会不平等负面结果<sup>[65-66]</sup>。

绿地的私有化和分配差异化是另一个需要探索的主题。从滨水地带到历史文化胜地，绿

色空间的商业价值都刺激了私有化的浪潮。这一趋势引出了一个问题：绿色空间的私有化如何影响社区居民的健康？分析公共与私人绿地对健康和福祉的贡献可以帮助解答这一关键问题。此外，不同群体的社会经济状况差异引起的绿地暴露差异也是值得重点关注的课题，这种差异既体现在结构上，也体现在质量上。

对绿色景观视觉元素的传统关注也应该扩大到包括声音等感官因素。例如，研究可以检查城市绿色空间在多大程度上起到缓冲作用，吸收噪声污染，从而促进整体的社会福祉<sup>[8, 67]</sup>。进一步而言，声音景观的概念不仅仅在于消减噪声，更在于如何通过保护和创造可丰富环境和人类体验的自然声音。创造多感官的景观，包括视觉景观和听觉景观，可以提供让人沉浸其中的体验。这些丰富的感官体验能够减少精神压力和焦虑，从而从多个维度提升健康和福祉<sup>[13, 68]</sup>。

空气质量是另一个城市环境研究的关键领域。由于中国大城市的空气污染水平偏高，研究侧重评估绿色景观作为“绿肺”来吸收污染物的有效性具有重大实践价值。例如，通过确定不同植物种类的组合配置和特定的土壤条件等，以最大限度地发挥绿色空间的空气净化能力。另外，面对高密度城市(例如北京、上海等)绿化空间资源有限的情况，未来研究探索绿色空间的高效净化空气的创新方法具有重大意义。屋顶花园、垂直绿化和袖珍公园为这些人口稠密的地区提供了潜在的解决方案的同时，智能设计和城市规划也对环境净化至关重要。

此外，中国文化对绿色景观的影响也值得关注。风水和气等传统哲学中蕴含着的设计和利用绿色空间的智慧，可以从文化的维度为公众健康和人与环境的互动提供丰富的灵感<sup>[69]</sup>。风水虽然不是一个正统的学科或科学，但风水可能源自人们选择和设计居住环境的长期经验及偏好。这些来自中国人祖先的智慧可能具有重要的学术和应用价值。当然，我们需要谨慎地分辨有价值和无价值的部分，从而架起风水评价和实证研究之间的有效桥梁。

最后一点是关于政府政策和城市规划的建议。对近期开展的城市绿地空间发展计划进行反复评价是必要的。这里，人工智能也许可以起到作用：它可以提供对实时数据的分析，从而可以衡量绿色空间项目的成功程度，以及预测未来的挑

战和解决措施。

通过探索这些不同的研究方向，我们可以更全面地理解绿色景观如何与中国的独特条件产生交互效应。探索的目标不仅仅是学术性的，而是要切实改善数亿人的生活质量，从而为在这个幅员辽阔的国家创建更健康、更有活力的社区作出贡献。前面的路，需要我們自己去开拓。

## 6 行动呼吁

对于风景园林师来说，无论是学术研究还是设计实践，任务都是双重的。首先，风景园林师迫切需要将实证研究转化为可持续的设计策略。这些策略不仅需要具有功能性，更需要具有可测量的益处。其次，我们呼吁风景园林师在政策制定中发挥更大的作用，以确保绿色景观的健康效益得到认可，并大规模结合到城市和社区的发展和建设中。风景园林师的角色从未如此重要，风景园林师的使命不仅只是塑造土地，更在于改善人们的生活。风景园林师需要深刻理解建成环境对人类福祉的影响，并将这些知识转化为可行动的、有利众生的成果。

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# Transformative Power of Urban Green Spaces: Global Insights and Chinese Perspectives

(USA) William C. Sullivan, JIANG Bin\*

## 1 Background

Over the past three decades, a compelling body of research has unfolded around the profound impact that green landscapes have on human health and well-being<sup>[1-3]</sup>. This transformative work has been led by landscape architects, researchers, and community members alike. Landscape architects design these green spaces not merely as aesthetic elements<sup>[4]</sup> but as vital components of public health and urban planning. The multifaceted importance of green landscapes has been rigorously investigated across numerous disciplines, resulting in an enriched, nuanced understanding of their impacts on human health. But with so many studies and so much information demanding our attention, it is nearly impossible to keep up.

## 2 Key Questions

What is the state of our understanding of the impact of urban green spaces on human health and wellbeing? What are the pressing questions that must be addressed next to create healthier individuals, families, communities, and nations? What do the specific conditions in China suggest about the most important research questions regarding green landscapes and human health and wellbeing need to be addressed next?

Below, we address each of these questions and end with a call to action for landscape architects who are primarily researchers and for those who are primarily designers.

## 3 The Multidimensional Impact of Green Urban Landscapes

Thousands of studies have demonstrated the physical, psychological, social, and mental health benefits of interacting with green landscapes. Considering the compelling evidence, it's clear that urban green spaces are much more than aesthetic choices; they are a cornerstone of public health, social cohesion, and sustainable living. Landscape architects wield a powerful tool set that extends far beyond beautification, encompassing therapeutic design, economic support, and climate resilience. Therefore, our role is critical in interpreting and shaping human-nature relationships; an endeavour that has direct implications for mental health, social

fabric, physical well-being, child development, and the economic vitality of communities.

Let's begin with mental health. Hundreds of studies have demonstrated the psychological benefits of interacting with green landscapes. The positive impact on stress reduction<sup>[5-7]</sup>, mood enhancement<sup>[8]</sup>, and improved capacity to recover from cognitive fatigue<sup>[9-10]</sup> is well-documented. There is growing evidence that exposure to green spaces can reduce some of the symptoms of depression and anxiety<sup>[11-13]</sup>. Green spaces can also promote residents' mental health by eliciting positive emotions and enhancing community safety<sup>[14-16]</sup>.

One of the most universally applicable benefits of green spaces is their role in aiding recovery from cognitive fatigue, a phenomenon experienced by individuals across nearly the entire lifespan. Cognitive fatigue, sometimes referred to as mental fatigue, is a common byproduct of our increasingly busy and technologically driven lives<sup>[17-18]</sup>. It manifests as reduced attention span, diminished effectiveness in problem-solving, and a general sense of mental exhaustion. Research has shown that even brief interactions with nature can result in significant improvements in attentional functioning and mental clarity<sup>[19-20]</sup>. This is not merely a "feel-good" factor; it has tangible implications for productivity, emotional well-being, and even long-term mental health<sup>[21]</sup>.

Regarding social cohesion, landscape architects have been pivotal in designing spaces that foster community-building and social equality. Urban green spaces encourage social interaction, foster a sense of belonging, and promote social equity, aligning perfectly with broader public health objectives<sup>[22-24]</sup>. The understanding that landscape architects bring to the ways in which spatial elements influence behaviour provides a cornerstone for public health strategies that transcend traditional medical interventions, thereby promoting social equity.

Research has shown that the distribution of green spaces affects mental health differently across socioeconomic groups. Enhancing green spaces in economically and socially less developed areas can reduce psychological stress, a benefit that may be more muted in densely populated and compact urban centers<sup>[15-16, 25]</sup>. Interestingly,

the therapeutic impact of green spaces on mental health can be greater in central urban areas than in suburbs<sup>[26]</sup>. Furthermore, disparities in green space access correlate with varying levels of health inequality. Areas with more green space tend to show reduced health disparities related to low income and all-cause mortality<sup>[27]</sup>.

The role of green spaces in promoting physical health is also evident. Green spaces contribute to increased physical activity, reduced obesity rates, and lower risks of chronic conditions<sup>[28-30]</sup>. They also enhance immune function<sup>[31-32]</sup> and the diversity of human microbiota<sup>[33-34]</sup>. Regarding child development, the influence of green spaces is unmistakable. Regular exposure to green environments fosters cognitive, physical, and emotional growth, enriching the lives of our youngest citizens<sup>[35-37]</sup>. There is also growing body of research demonstrating that urban green spaces support the health and functional fitness of aging individuals<sup>[38]</sup>. When landscape architects create well designed places that improve accessibility and mobility, older adults can enjoy the health and social benefits of green landscapes as they age<sup>[39]</sup>.

Landscape architects frequently collaborate with healthcare professionals in the creation of therapeutic landscapes, tailoring green spaces to meet specific health needs. This includes designing healing gardens in hospitals and sensory gardens in dementia care facilities, where green landscapes significantly complement medical treatment<sup>[40]</sup>. In the educational sector, landscape architects have become instrumental in integrating green spaces into school environments. These outdoor learning areas facilitate experiential learning, contributing to students' academic success and fostering a commitment to environmental care<sup>[35, 41-42]</sup>. Additionally, urban green spaces are recognized for their economic contributions to communities. The work of landscape architects not only enhances property values but also supports local businesses, thus serving as a socio-economic force that links ecological and economic wellbeing<sup>[43-44]</sup>. One final example concerns the role that urban green spaces play in creating more climate resilient cities. Landscape architects employ innovative designs that serve as natural defences against climate-related threats such as

heat islands effect and flooding<sup>[45-47]</sup>. For example, by strategically allocating urban green spaces to provide shade, adjust water evaporation, and reduce surface radiation, it is possible to increase air humidity, thereby aiding in the regulation of extreme temperatures during both daytime and nighttime<sup>[45-47]</sup>. Many studies demonstrate that green landscapes are not merely aesthetic choices but critical infrastructure for sustainable living<sup>[48]</sup>.

By recognizing the seminal role of landscape architects in both designing these spaces and understanding their impacts, we can appreciate the complexity and essential nature of green landscapes. This multidimensional view sets the stage for the critical questions we must address next.

#### 4 Important Questions to Pursue

Let's examine research questions that lay the groundwork for future inquiries into the impact of green landscapes and human well-being.

First on our agenda is the question of equity in access to green spaces. As urbanization continues at a staggering pace, a pressing concern is whether the distribution of green landscapes is equitable across various social and economic demographics. This question is particularly significant because unequal access can exacerbate existing health disparities. To address this issue, it is necessary not only to comprehensively understand the structures and characteristics of green spaces through mapping their availability, their quality and features, but also to understand how different communities engage with these green spaces. We should also explore the extent to which different populations interact with green spaces during various times and seasons, as well as the types and purposes of activities that these population groups carry out. By doing so, we can consider the issues of green justice in a more comprehensive and thoughtful manner<sup>[49-50]</sup>.

Shifting our attention, let us consider how much green space contact is necessary for health and well-being<sup>[5, 51-52]</sup>. That is, what type of exposure to green space is necessary<sup>[53]</sup>? We need greater understanding of the impact that varying dose of urban nature might have. While it's clear that green spaces are beneficial, the specifics—like size of the space, diversity of the plants and animals, and the kind of exposure—the frequency of exposure, duration of exposure, density of vegetation—are less understood<sup>[2, 54]</sup>. By carefully examining these variables, researchers can offer more targeted recommendations for design and

planning, enriching the dialogue on what makes a green space truly "effective" for public health.

Next, we focus on the importance of longitudinal studies to understand the long-term impacts of sustained interaction with green spaces<sup>[55-56]</sup>. Much of the current research provides snapshots, offering valuable but limited insights into immediate benefits of exposure to urban nature. This is particularly true for studies focusing on mental health. Although these cross-sectional studies can identify correlations between green spaces and public health outcomes, long-term studies will likely unearth more subtle effects<sup>[57]</sup>, such as how constant exposure to green landscapes might contribute to chronic health outcomes or even generational shifts in public health metrics.

Our next question centers on cultural specificity and its role in shaping the health impacts of green landscapes. Cultural practices and traditions can significantly modify how people interact with and benefit from green spaces<sup>[58-59]</sup>. For instance, the concept of "forest bathing" in Japan provides a unique lens through which to view and experience the mental health benefits of green landscapes<sup>[60]</sup>. Understanding these cultural nuances can make research more globally relevant while also uncovering new dimensions of how humans relate to their environments.

Finally, as we explore future research, an unavoidable question is how findings from this research can be translated into effective policies and public awareness, especially in varied governance structures and cultural contexts. Here, artificial intelligence (AI) offers intriguing possibilities<sup>[61]</sup>. Advanced data analytics and generative AI can sift through massive sets of environmental and health data, enabling precise and timely interventions in specific landscapes. Machine learning models are on the verge of being able to predict the effectiveness of specific green landscape features, thus aiding urban planners and policy-makers in decision-making processes that are both scalable and personalized<sup>[62-64]</sup>. The integration of virtual reality or augmented reality technology and AI will provide new methods for exploring the impacts of green landscapes on human health<sup>[62-64]</sup>.

By addressing these pivotal questions, we will deepen our understanding of the complex relationship between green landscapes and human well-being. The aim is not merely to add to the existing body of knowledge but to fuel a transformation in how we conceive of and engage

with the green spaces that enrich our lives. If this piques your curiosity, you'll find the specific conditions in China to offer a case study that's both rich and uniquely challenging.

#### 5 Specific Conditions in China: Research Directions

In examining the impact of green landscapes on human well-being, China stands as a uniquely instructive case study. With a diverse geographic landscape, rapid urbanization, and intricate social dynamics, China offers a myriad of challenges and opportunities for scholars focused on the interplay between green spaces and human health. This section identifies key avenues for research tailored to the Chinese context.

Let's begin with the urban-rural divide intensified by China's fast-paced economic growth. There is a pressing need to study equitable access to quality green spaces within the context of this growth at the rural-urban fringe. Cities, grappling with intense competition for land, often compromise on green spaces, while rural areas, although naturally abundant, may lack the design and infrastructure to optimize these spaces for public health. Scrutinizing these disparities could result in a more inclusive approach to public health policies across different geographical settings.

As for the design elements of green spaces, a harmonious balance between ecological, aesthetic, and functional factors is essential. A focused set of studies in this area could unveil the characteristics that make green spaces not only beautiful but also practical and ecologically sound. The urban ecosystem services provided by green spaces, such as climate regulation, biodiversity, aesthetic experiences, and recreation, have significant implications for China in addressing various challenges. These challenges include issues such as land use conflict, climate change adaptation, population migration, and cultural diversification in cities<sup>[47]</sup>. Insights from research in this area will aid in averting negative outcomes like aggressive planning and social inequities, as noted in recent studies<sup>[65-66]</sup>.

Privatization presents another avenue for exploration. The commercial attractiveness of green spaces, ranging from waterfronts to historical sites, has led to a rise in their privatization. This trend begs the question: How does the privatization of green spaces impact public health within communities? Analyzing the health and well-being contributions of public versus private green spaces can shed light on this critical issue. The disparities

in socio-economic conditions among different social groups are worth emphasizing in terms of the differential exposure to green spaces, including both structural and qualitative differences.

The conventional focus on the visual elements of green landscapes should be broadened to include sensory factors such as sound. Research could examine the extent to which urban green spaces act as buffers, contributing to overall well-being by absorbing noise pollution<sup>[6, 67]</sup>. Moreover, the concept of a soundscape extends beyond mere noise reduction. It involves preserving and cultivating natural sounds that enrich the environment and human experience. Creating multisensory landscapes, which include both sight and sound, can offer more immersive experiences. These enriched environments have the potential to reduce stress and anxiety, thereby enhancing human health and well-being across multiple dimensions<sup>[13, 68]</sup>.

Air quality is another critical area of interest in urban environments. Given the high levels of pollution in major cities, research into how effectively green landscapes act as "green lungs" absorbing pollutants, is critical. Such studies could identify key factors, such as the variety of plant species and specific soil conditions, that optimize the air-purifying capacity of green spaces. Additionally, the scarcity of green space in densely populated cities such as Beijing and Shanghai calls for innovative solutions to efficiently purify air. Options such as rooftop gardens, vertical greening, and pocket parks present promising alternative for dense cities. Alongside these options, smart design and urban planning play an essential role in enhancing air purification efforts.

Cultural influences on green landscapes also warrant attention. The impact of traditional philosophies like Feng Shui and Qi on the design and utilization of green spaces could offer rich insights into the cultural dimensions of public health and environmental interaction<sup>[69]</sup>. Although Feng Shui is not a traditional discipline or science, it was developed from long-term experiences and preferences of people in selecting and designing residential settings. The wisdom from our ancestors may possess significant academic and practical value. Still, it is important to carefully distinguish the valuable aspects from those that are not valuable and establish an effective bridge between Feng Shui evaluation and empirical research.

Finally, regarding government policies and urban planning, multiple assessments of recent urban green spaces initiatives is necessary. Here,

artificial intelligence might have a role to play, offering real-time data analysis that can measure the success of greening projects and predict future challenges and potential solutions.

By exploring these diverse research directions, we can develop a comprehensive understanding of how green landscapes intersect with China's unique conditions. The objective is not merely academic, but aims to create tangible improvements in the quality of life for hundreds of millions, thereby contributing to the creation of healthier, more vibrant communities across this vast nation. So, where does that leave us.

## 6 A Call to Action

For landscape architects, both in academia and in professional practice, the mission is twofold. First, an urgent need exists to convert empirical research into sustainable design strategies that are not just functional but measurably beneficial. Second, there's a call for a greater role in policy development to ensure that the benefits of green landscapes are both recognized and integrated into our cities and communities on a grand scale.

The role of the landscape architect has never been more crucial. It's not just about shaping the land but about improving lives, deepening our understanding of how the built environment influences well-being, and turning that knowledge into actionable, public-good outcomes.

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