

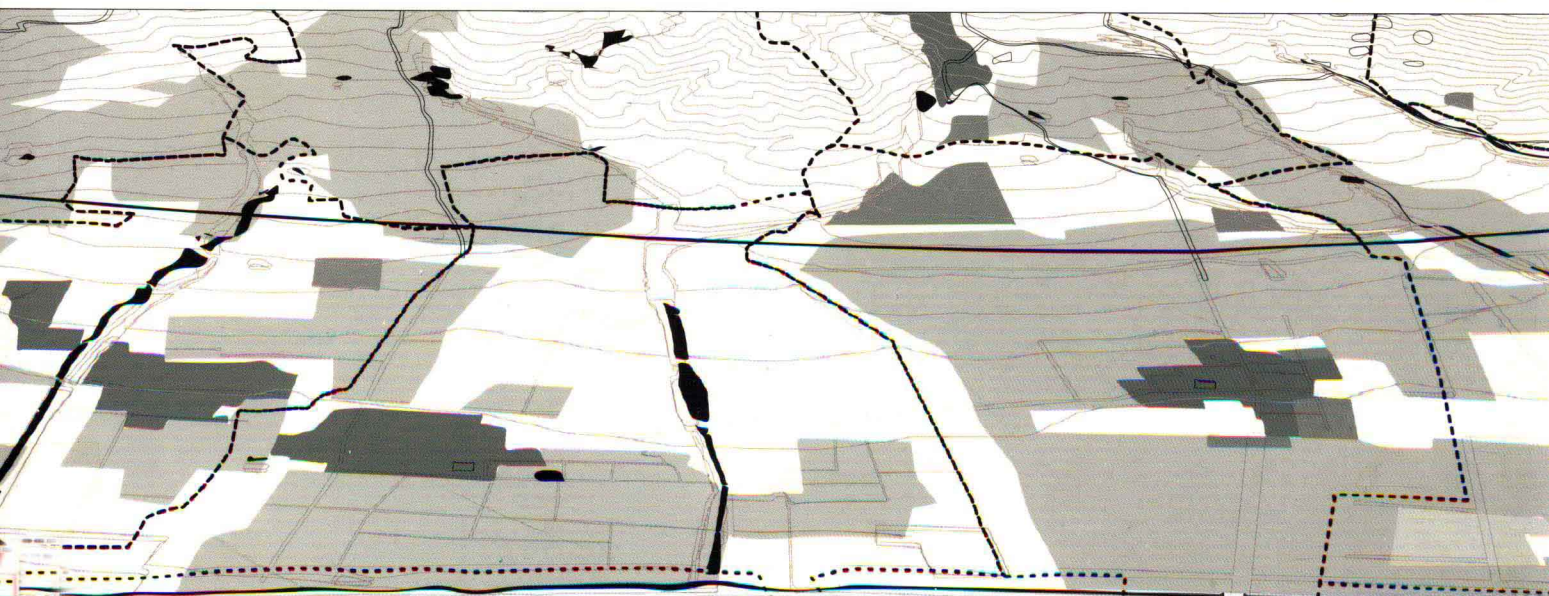
景观和生态城市主义——北京苏家坨地区多解规划

Landscape and Ecological Urbanism Alternatives for Sujiatuo, Beijing

2010年春季学期，哈佛大学设计学院设计课程成果

A Studio Research Report of the Harvard Graduate School of Design, Spring 2010

哈佛大学设计学院 编著



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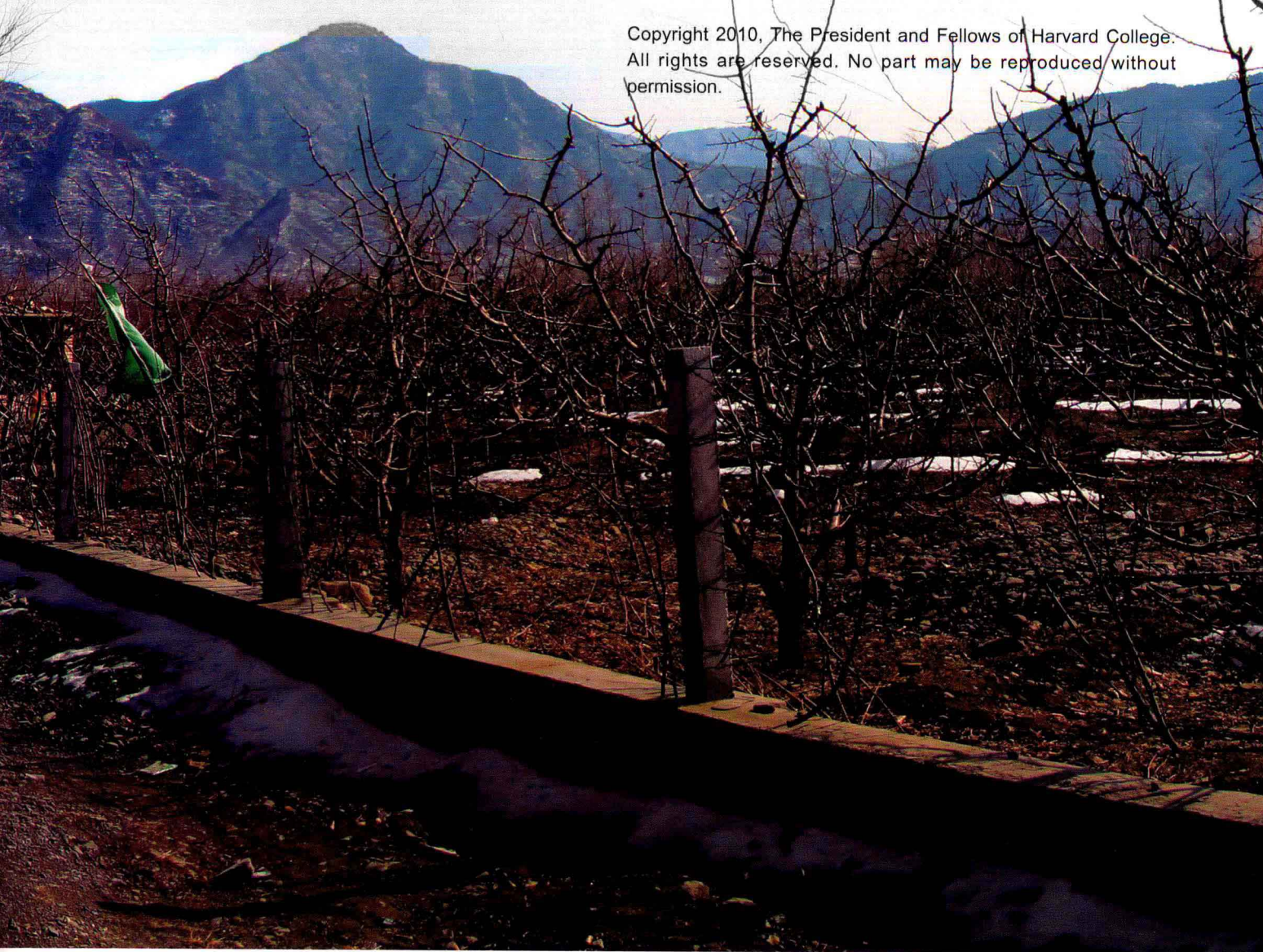
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哈佛大学设计学院在建成环境研究领域的各个方面，包括教育、信息和技术等均有着领袖性的地位。它的建筑系、景观设计学和城市规划设计学系均可授予硕士和博士学位，同时提供高级进修和行政教育课程。本书收录了高年级选修设计课程的设计成果，此次出版由哈佛大学设计学院和哈佛中国基金会共同资助。

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这本书包括的大量有价值的工作是由设计学院的景观设计、城市规划、建筑与城市设计、景观设计与城市设计四个专业的硕士们完成的,他们是:朱莉·盖万多(景观设计),丹·哈德利(城市规划),汤姆·林(城市规划),黛安·里帕沃斯基(景观设计),阿尔帕·娜莉(景观设计与城市设计),钱德拉尼·玛宗达(景观设计),罗伯特·德·米格尔(建筑与城市设计),艾丽娜·马拉丹诺娃(城市规划),贾斯廷·谢尔曼(景观设计),丹·史蒂文斯(城市规划),蒂莫西·王(景观设计)以及周雪(景观设计)。

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前言

Foreword

彼得·罗 Peter Rowe

自改革开放以来，中国的现代化进程带来了飞速的经济发展，但很多问题也随之出现。这些问题中的任何一个都可能威胁到中国长远的可持续发展。例如，目前中国大部分人口仍生活在乡村，城乡发展差距却在不断拉大；同时，发展给生态环境带来了诸多负面影响，并且缺乏及时有效的补救，这使得工业化和城市化所带来的环境压力超过了自然承载力；区域发展不平衡的现象仍很严重；对于不可再生资源和其他资源的强烈需求，已经导致了大量的供应安全问题和社会

性冲突，整个国家的资源供应链条也在日益绷紧。围绕城市的状况来说，城市化进程使得城市边缘带以及城乡结合部的发展过于随意和浪费。在大都市区内外，耕地均普遍减少，乡村生活已受到威胁。发展的代价往往是水质、空气质量和环境质量的每况愈下。

本书所涉及的研究性设计课程，则希望通过对以上问题的探讨和研究，寻求一种更为可持续的未来城市发展途径。苏家坨位于北京的西北方向，地处正在扩张的大都市前沿，将其作为研究区域，具有

特殊的意义。苏家坨的区位有利于我们探讨如何管理大都市边缘带的发展需求，以及怎样整合和更新乡村生活使其更好地融入都市环境等问题。此外，苏家坨地区的环境问题也是需要探讨的，因为作为北京市重要的水资源供应保护区和地下水回补区，以及阻止沙尘暴肆虐的防护林带的主要分布区，其环境承载力已受到来自紧邻的海淀高科技园区的挑战。在中国，水问题已经与碳排放问题一道成为最紧迫的环境问题，有大约36%的城市饮用水质低于标准线。在中国的660个

城市中，有将近400个水资源供应不足，其中有至少约100个城市处于严重的缺水状态。北京以及大多数北方城市，由于其迅速增长的人口及用水需求，水资源供应长期不足。在今天80%的城市用水依赖于地下水资源的情况下，地下水正在迅速地下降至地下100~300m之间，对地下水的依赖，也使得水资源的恢复成本和污染风险急剧增加。当然，中国已经启动了大规模的引水工程来改变这一状况，有些已经建成并开始发挥作用。例如，开始于2002年的南水北调工程，



从西山远眺北京城区 俞孔坚摄

View towards Central Beijing Eastern Hills Photo: Yu Kongjian

该工程计划将中国南部富水地区的水资源引往北方缺水城市。除此之外，更为重要的集水以及水循环利用措施也应该发挥作用，尤其是在占当前水资源消耗70%左右的农业领域。在北京这个拥有大约13000个村级居民点的大都市中，无论是从环境方面还是从资源方面来看，水问题都是城市与乡村冲突的焦点。这些村庄广布在大约900km²的范围内，平均人口在每村800人左右，与广东等省份不同，北京的这些村级居民点几乎全部位于边远地区，基本上都在五环以外。在建设和谐社会的政策中，乡村环境建设被一再强调。在这一政策引导下，北京有一半的村子将会保持现状或者进行开发，出于避灾防灾的考虑，另一半则会被搬迁或者撤并。

在俞孔坚、斯蒂芬·欧文和简·赫顿的指导下，这个由哈佛大学设计学院景观设计、城市规划与设计等专业方向的同学们所组成的充满朝气的设计团队，试图在三个重要的尺度上思考和着手解决这些问题以及其他相关问题。首先，在区域尺度，即立足于整个北京都市区及其外围地区，从宏观上分析苏家坨地区的整体功能定位；其次，在苏家坨镇域尺度上，提出区域发展的总体规划；最后，在总体规划的框架内，给出场地尺度的设计方案。

总的来说，本次设计课程是哈佛大学设计学院第一次将注意力集中于中国的快速城市化进程。我们希望以此为起点，探索和提出更多可行的发展方向，以为更多的类似设计课程提供经验。

彼得·罗是哈佛大学设计学院建筑与城市设计专业的“雷蒙德·加布教授”，被授予哈佛大学杰出教授称号。

As China moves forward with its latest round of modernization, a number of issues have emerged, almost any one of which could threaten long-term success. There is, for instance, the growing divide between rural and urban development in a country where the majority still live in the countryside. There is also egregious deferment in the remediation of the adverse environmental effects of development, where industrialization and urbanization have run well ahead of natural carrying capacities. Then there are geographical and other disparities that have continued to occur between those who have profited from modernization and those who, so far, have not. In addition, there is the thirst or hunger for non-renewable and other resources that has pushed the nation into lines of supply that have stretched almost to breaking point, quite apart from threatening to result in security issues and conflicts. Closer to urban circumstances, processes of urban formation have resulted in haphazard and wasteful development, often on urban peripheries and in conurbations between cities and larger towns. Village life has been threatened both within and outside metropolitan areas, and arable land has been diminished appreciably. Water quality, air quality and environmental quality in general, has often suffered at the expense of sustained economic development, and so one could go on.

The Beijing Studio described in this volume, took up squarely with a number of these issues in a search for more sustainable futures. In particular, the Sujiatuo area, on the north-western periphery of the expanding Beijing metropolitan area, which served as the studio site, quickly brought into focus

the need to manage, if not control, peripheral urban development, as well as to find ways of integrating and updating village life into metropolitan circumstances. In addition, the environmental carrying capacity of the area, that also serves as an important watershed and recharge area for Beijing's water supply, and as a zone of reforestation in the face of dust storms moving in on the city, is now being threatened by outward urban development from the nearby high-tech growth pole of Haidian. Together with carbon emissions, water is China's most pressing environmental issue, with some 36 percent of urban drinking water below standard and as many as 400 of 660 cities without adequate supply, including at least 100 in seriously depleted condition. Beijing, like much of northern China, is naturally under-supplied with regard to its burgeoning population and their increased needs. Today as much as 80 percent of the city's water supply is dependent on ground-water resources, which are sinking rapidly to depths of 100 to 300 meters below the surface and incurring sharp increases in recovery costs and risks of contamination. Massive viaducts have been planned and partly constructed to alleviate the situation, such as the South-North Water Diversion Project, beginning in 2002, bringing water to the city from the water-rich south of China. More earnest water harvesting and recycling clearly must also play a role, particularly in the agricultural sector, currently with around 70 percent water losses. Also, with some 13000 village-level settlements in metropolitan Beijing, the water issue is one where rural and urban circumstances and resource needs collide. Spread out over nearly 900 square kilometers, these

villages have average populations of about 800 inhabitants and, unlike other parts of China, like Guangdong Province, are almost entirely in outlying locations, beyond the fifth ring road of urban Beijing. Under the doctrine of a "harmonious society", there has been a re-emphasis on rural circumstances. In the Beijing metropolitan area this may lead to about half the villages being maintained and developed, with the other half being relocated or removed mostly to avoid hazardous environmental conditions.

Able to lead by Yu Kongjian, with Stephen Ervin and Jane Hutton, this design studio, with a mix of students drawn from the Graduate School of Design's Landscape Architecture Department and the Department of Urban Planning and Design, ambitiously set about to address these and other related issues at three important scales of consideration. The first was the regional scale of the broader metropolitan area and beyond, including Sujiatuo's role within that area. The second was devising a plan or strategy within the confines of the Sujiatuo area, and the third concerned more detailed design proposals within the scope of those plans and strategies.

In essence, this exercise served as the first of what are proposed to be several such studio exercises, centered on the conditions of China's rapid urbanization as a test-bed for exploring proposals that lead in the direction of more viable, if not sustainable, future outcomes.

Peter Rowe is the Raymond Garbe Professor of Architecture and Urban Design at the Harvard Graduate School of Design and Harvard University Distinguished Service Professor.

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课程简介

Studio Introduction

中国北京是世界上扩张最快的大都市区之一，也是对城市规划 and 景观设计学的研究和实践而言最具挑战的区域之一。在过去的30年中，北京城区面积已经拓展了700%，人口也翻了一番，达到了1700万，且人口和建设用地仍在持续增长。随着发展的不断深化，我们不得不日益紧迫地关注诸如环境恶化、水资源短缺、土地荒漠化、空气与水污染、交通拥堵、

乡村人口流动，以及文化身份丧失等问题。2010年春季学期，在俞孔坚教授的主持下，哈佛设计学院开设了一门名为“景观与生态城市主义——北京市苏家坨地区多解规划”的高年级研究生设计选修课程，试图从景观规划设计和城市规划协作的视角，对上述问题作出专业性的回应。

苏家坨镇由若干个村庄组成，总面积约88km²，以其生动的景观、

农业、文化遗产和丰富的生物多样性而闻名。约有51000人居住在苏家坨的山前平原地带，但最近的城市扩张已经出现向山坡地扩张的趋势。依据整个北京市的城市总体规划要求，当地政府鼓励高科技产业在此发展，并增加当地人口。

本设计课程要求学生关注在快速城市化进程中通常会被忽略的种种生态和社会问题。学生们需要为整个苏家坨地区，特别是苏家坨

浅山地区提出地区性的发展战略规划，并以此为依据，就某个具体问题进行深入考虑，并通过场地尺度的具体设计展示其总体规划设想的可行性。因此，跨尺度地思考问题是景观与生态城市主义规划与设计过程中的重要组成部分。同样，为实现设计的可持续性，多学科之间的相互协作是必要的。景观设计、城市规划和城市设计等专业的硕士研究生们需要共同解决诸如如公共政



从杏园中眺望七王坟村 2010年春季 俞孔坚摄

View through Apricot Orchard, toward Qi Wang Fen Village Spring 2010 Photo: Yu Kongjian

策、住房、卫生、农业、社会公正、历史文化遗产以及公共空间的种种综合性问题，而不是把发展与保护区别对待。课程要求学生通过设计方案，建立一套包容了生态服务、文化生活，以及经济产品在内的综合性规划方案。

在扼要的场地分析和横向案例研究之后，学生们立足于大北京市区这一宏观背景，为苏家坨地区规划一个区域尺度的战略方案，这一过程历时三个星期。在区域尺度的规划中，学生们需要考虑的问题有：解决由人口增长带来的发展问题；建立可以提供生态系统服务和加强生物多样性的生态基础设施；强化农业生产；提出一套综合了运输、能源和城市服务的系统；提供新的住房、教育、就业和娱乐机会，并与研究地区之外的北京大都市区建立联系；支持苏家坨文化遗产和社会经济方面的要求；改善苏家坨农村居民的生活环境；解决诸如水、空气污染、水土流失、供水不足等环境问题；减少现在和未来的碳排放；最后提出可以支持上述方案的政策设计和操作性意见。

根据现场实地考察的经验和期中汇报的反馈，学生们有五周时间来确定其区域规划方案中的核心概念，为之后的小尺度场地设计做好准备。区域战略解决的是发展的框架，即如何在保障地区生态功能和文化遗产完整性的基础上，在发展和保护中寻求平衡；场地设计则通过特定目标的方案推演和政策设计，为区域战略在小尺度的具体实现给出实例。

本课程的研究和设计实践涉及了相当大的地域范围和广泛的内容，所提出的多解规划方案，在深度和广度两个方面可为快速城市化区域的急迫需求提供借鉴。

Beijing, China, is one of the fastest developing urban regions in the world and among the most challenging places for the study and practice of urbanism and landscape architecture. In the past 30 years, the city's area has expanded by 700%, the population has doubled to 17 million, and both population and land consumption continue to rise. As development continues, pressing concerns include rapid environmental degradation, severe water shortages, soil desertification, air and water pollution, crippling transportation restrictions, displacement of village populations, and erasure of cultural identity. The Graduate School of Design Option Studio, "Landscape and Ecological Urbanism: Alternatives for Sujiatuo, Beijing", offered in the Spring of 2010, set out to consider how landscape and urban planning might collaboratively address these concerns while intervening in the momentum of development.

The township of Sujiatuo, composed of several villages and covering an area of about 88 km², is famous for its panoramic vistas, agricultural production, cultural heritage, and rich biodiversity. While 51000 people inhabit the basin terrain in Sujiatuo, development is only now expanding up the hillsides. As part of an official plan to encourage high-tech development in the area, and more people are attracted to this area in the next decade. The studio brief asked students to allow for this scale of development, but to engage the ecological and social complexities and diverse constituencies that are often erased in the face of rapid

urbanization. Students were asked to develop both a regional strategy for all 100 km² of Sujiatuo, as well as generate a design strategy for a single aspect of their regional plan, reinforcing its agendas and testing its physical manifestation at a small-scale. These requirements posited that the interplay between these two scales is a necessary and critical aspect of landscape planning and ecological urbanism.

The scope of the brief necessitated interdisciplinary collaboration and a critical engagement with the ubiquitous term of "sustainability". Students in the Masters of Landscape Architecture, Urban Planning, and Urban Design joined forces to address a range of concerns from public policy, housing, sanitation, agriculture, social justice, historic preservation, and public space. Rather than separating "green" and "development zones", the brief asked students to develop infrastructures through which ecological services are performed, cultural life plays out, and economic production occurs.

After a brief site analysis and global case study phase, students had three weeks to develop regional strategies for Sujiatuo, while considering the larger Beijing Metropolitan Area. Students addressed the following challenges, to: relieve development pressure by accommodating increased population; propose a framework of "ecological infrastructure" to provide ecosystem services and enhance biodiversity; intensify agricultural production; propose a system of integrated

infrastructure (transportation, energy, municipal services, etc.); provide new housing, education, employment, and recreational opportunities; connect to regional & municipal plans and systems outside of the study area; support cultural heritage and socio-economic conditions in Sujiatuo; improve the livelihoods of Sujiatuo village residents; address existing environmental issues, e.g. water & air pollution, soil erosion, water supply depletion, etc.; minimize carbon footprint of both existing and new developments; and finally to articulate new policies and guidelines in support of the above goals.

Drawing from observations gathered during the field trip and mid-review feedback, students then had five weeks to identify a critical aspect of their regional strategy for Sujiatuo to develop at a smaller scale. While the Regional Strategies responded to the broad questions of "What kinds of development should occur? How do we maintain the area's culture and heritage?" and "How can we balance development and conservation?" the site strategies provided examples of how the regional strategies might play out at a small-scale, through specific design and policy interventions.

The student research and design proposals included here have taken on a vast area of land and broad scope of work. Each team or individual has by necessity focused on a single strategy for regional and local development in Sujiatuo; collectively, the diversity of approaches suggests the range and breadth of creative design responses required in rapidly urbanizing areas.

苏家坨：设计场地的地理背景 Sujiatuo, Beijing: Context

从阳台山前俯瞰南安河村 俞孔坚摄

View towards Nan Anhe Village, Yangtai Shan (Mountain) beyond Photo: Yu Kongjian



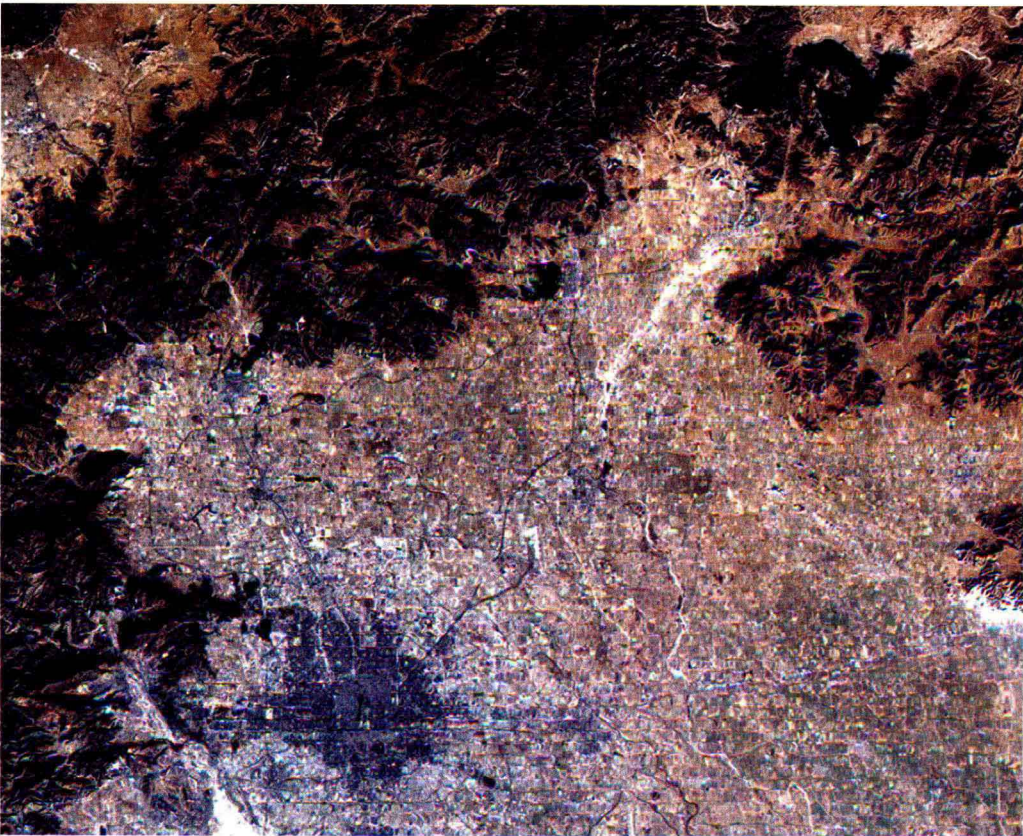


北京的城市扩张 Growth of Beijing

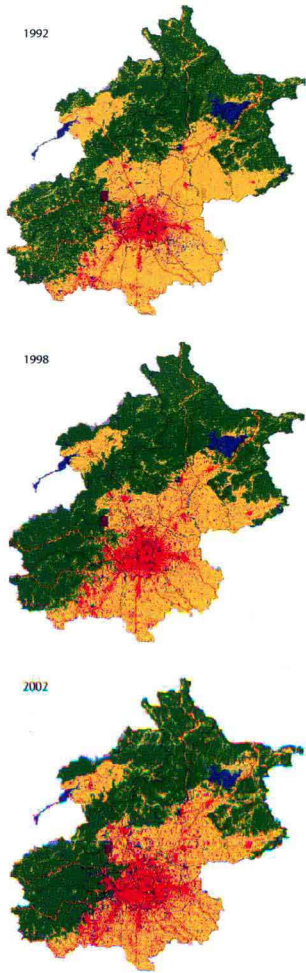
北京城区从其核心（紫禁城）向各个方向扩展，预计到2020年，北京市的人口将达到2000万。众多的官方规划和措施都在寻找能在特定区域（例如东-西向，而不是南-北向）控制人口增长的办法，或者用农业带、绿化带阻隔城市蔓延，但混乱的土地权属和开发却在很大程度上造成城市各方向的随意增长。另外，基础设施的修建，如六环路和过境公路的扩建都已经造成了一些区域的发展压力，像海淀区的东西部地区就是如此。

The Beijing metropolitan region is expanding outward from its core (the "Forbidden City") in all directions, as the city's population is forecast to exceed 20 million by 2020. Various official plans and initiatives have sought to constrain growth in particular regions (east-west, for example, not north-south), or by sector (preserving agricultural land and open-space), but the vagaries of land ownership and development processes have led to largely unregulated and haphazard

overall growth in all directions, accompanied by infrastructural frameworks such as the Sixth Ring Road and transit line extensions that have funneled development pressures into certain areas such as the Haidian east-west region.

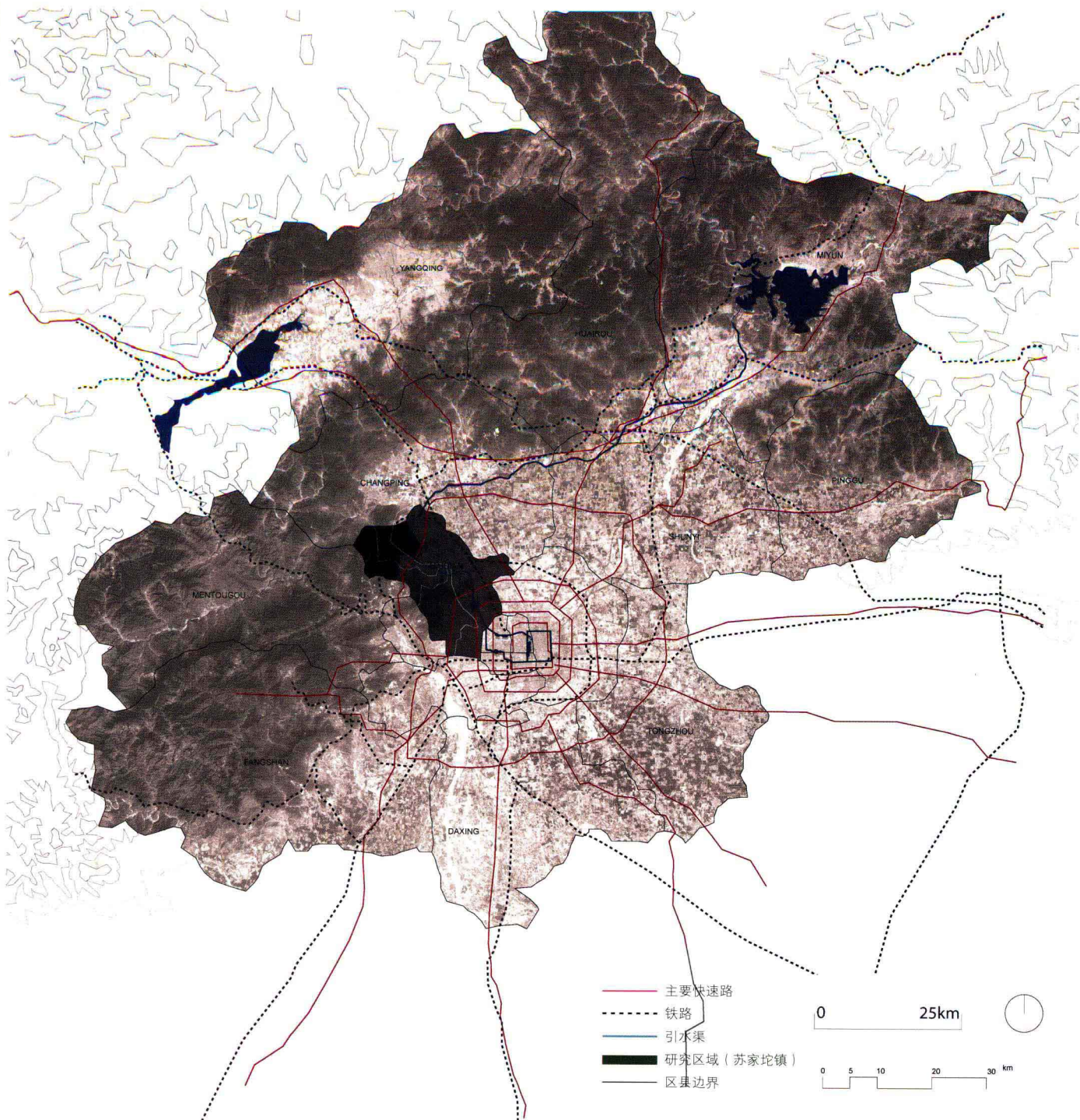


北京中心及其北部区域 资料来源: IOSAT
Central Beijing and its northern extents Source: IOSAT



北京人口增长
资料来源: 北京市规划委员会, 《北京城市总体规划 (2004-2020年)》

Beijing Population Growth
Source: Planning Bureau of Beijing Municipal Government, Beijing Master Plan (2004-2020)



北京行政区划图 制图：里帕沃斯基、德·米格尔
Beijing Districts Image: Lipovsky, de Miguel

海淀区规划简介

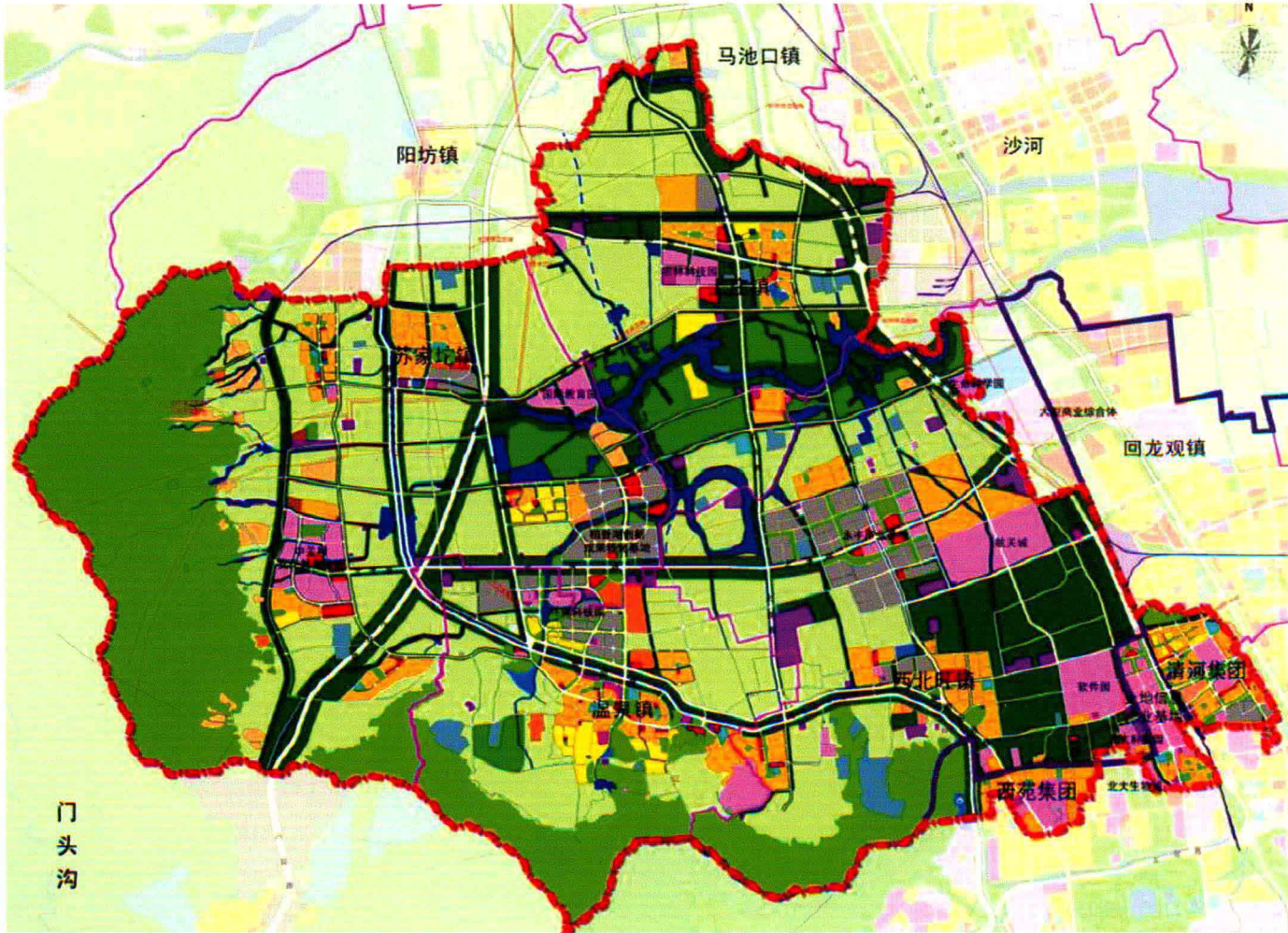
Haidian District Plan

除了其教育资源之外（中国科学院，以及包括北大、清华等在内的一系列著名高校都坐落于此），海淀区的高新技术与科学研究发展也非常著名，它被人们称为“中国的硅谷”，“中关村”也坐落在海淀区。海淀区的规划侧重于高新技术产业和服务业的发展，居住新城的修建，以

及对重要的开放空间和生态保护区的保护。

In addition to its educational resources (the Chinese Academy of Sciences as well as a dozen famous colleges and universities are located here), the Haidian district is also noted for its high-tech and scientific research developments, giving it the nickname “China’s Silicon Valley”,

“Zhongguancun” is here too. The official Haidian district plan calls for major new developments of high-tech industry and services, coupled with residential new-towns, and preservation of important open-space and ecological reserves.



海淀区新镇整合规划（2005-2020年） 资料来源：海淀区政府
Comprehensive Master Plan of New Towns in Haidian (2005-2020) Source: Haidian Government