# VERTICAL CITY: A SOLUTION FOR SUSTAINABLE LIVING

# 垂直城市：可持续生活之道

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*For Professor Edward Curtis, who inspired me beyond design and planning to become a socially and ecologically conscious architect.*

*Kenneth King*

*致爱德华·柯蒂斯教授，是他启示我超越设计与规划，*
*成为一名有社会责任和生态意识的建筑师。*

*金世海*

*For Donna, our extended families, and in loving memory of Nancy and Jack.*

*Kellogg Wong*

*献给多娜，我们的大家庭，以及同南茜、杰克*
*在一起的美好时光。*

*黄慧生*

# INTRODUCTION



# 简介

*A Public Housing New Town for 160,000 People*
*新加坡，容纳16万人的公屋新镇*

# 序言

《垂直城市》的出版恰逢其时，对于亚洲尤其如此。在这里，许多国家正经历着快速的城乡流动迁移。据我估计，如果中国、印度和印尼要在接下来的20到40年间变得和美国一样城市化，那么，中国必须建造相当于美国三倍的建筑，印度是五倍，印尼则是两倍多。总计下来，他们必须建造的东西超过美国十倍之多。这意味着，今天在美国有多少栋建筑，这三个国家总共要建造的就是这个数字的十倍。人们不禁要问，我们去哪里找如此多的规划师、建筑师、承包商和建筑材料来设计和建造这些？由此还会得出一个明显的结论，即：这些城市一定会变得紧凑压缩，其人口密度很高，人口数量庞大。尽管国土面积不小，但实际上就城市化和农业需求而言，中国、印度和印尼的土地都是不够的。

然而，土地短缺的问题可能也会带来好处。由于城市被迫变得垂直，拥挤的城市让更多的设施与服务被安置在家的附近，并使公共运输系统变得更便捷。如果与土地使用模式密切结合起来，公共运输系统能够快速运送很多人，节省时间和能源，缓解道路拥堵，提高许多人的生活质量。然后，人们就会发现，垂直城市是一个很好的解决之道。不过，在设计一个美丽且适宜居住的垂直城市环境时，政府、专业人士和普通市民必须努力让城市有效运作。在这里我想补充一点，一个垂直城市还要有公园、康乐设施、物业这些东西，以创造出一幅多种城市图景拼接而成的镶嵌画，让人们有更多的生活选择。

和大国相比，这一挑战对面积很小的新加坡而言更为严峻。我们只有约700平方公里（270平方英里）的土地，上面已经居住了500多万人，而在接下来的数十年间还会有更多的人来到这里。土地总量是有限的，但人口的增长可能是无限的。

我们的政府必须找到办法，在抑制人口增长的同时不妨碍经济发展，总结我们过去50年得出的可靠经验，规划者除了设计出更多的高层建筑，别无其他选择。我们的目标是成为一个有吸引力的贸易中心，同时保证优质的环境和优质的生活；而要达到这些目标，我们必须步步为营。

# Preface



The publication of *Vertical City* is very timely, especially in Asia, where many countries are experiencing rapid rural-urban migration. By my estimate, if China, India, and Indonesia were to become as urbanized as the USA in the next 20 to 40 years, China has to build the equivalent of three USAs, India five USAs, and Indonesia more than two USAs. In total, they have to build over 10 USAs. That means that for every building existing in the USA today, these three countries have to collectively build 10 of them.

One may rightly ask, where do we get planners, architects, contractors, and materials to design and construct them? It also leads to the obvious conclusion that these cities must be compact, with high densities and often large populations. Despite their size, China, India, and Indonesia are acutely short of land for both urbanization and agricultural needs.

However, the problem of land shortage may be used to great advantage. As cities are forced to go vertical, compact cities enable more facilities and amenities to be located near homes and help mass transit systems become more viable. If well related to land use pattern, mass transit can move a lot of people quickly, save travel time and energy, alleviate road congestion, and improve the quality of life of many individuals. It would then appear that vertical cities are a good way to go.

But governments, professionals, and citizens have to try hard to make the city work efficiently while designing a beautiful and livable vertical urban environment. I hasten to add that a vertical city must still have parks, amenities, landed properties, etc., to create a rich mosaic of urban milieus and to give people a good spread of environmental choices.

Tiny Singapore faces this challenge even more acutely than large countries. We have just over 700 square kilometers [270 square miles] of land already housing more than 5 million people, with many more to come in the decades ahead. The land mass is limited, but the population growth may be unlimited.

While our government will have to find ways to curb the population increase rate without frustrating economic growth, physical planners have no choice but to plan for high-rises, drawing upon our rather creditable experience accumulated over the last 50 years. We have to walk a tightrope to achieve our multiple goals of being an attractive business center with quality environment and good life.

Let me share with you a few thoughts about how Singapore has turned what was a squatter-ridden city into a modern vertical city over several decades.

In preparing the Singapore Master Plan of 1991, the concept of urban cells (or modules) came in very handy. The city is spatially subdivided into cells at different hierarchical levels. The city of 5.5 million people is first divided into four regions. Each region, with a population of just over 1 million, is about the size of a small city. Each region, in turn, contains about five new towns. Each new town, with a population of around 200,000, accommodates an average of 10 neighborhoods, and each neighborhood is made up of around half a dozen precincts.

With this approach, our planners can assign different densities to different precincts. Gardens, schools, sports fields, lower-density housing, and neighborhood centers are interspersed with high-rise residential precincts so as to moderate the oppressive sensation often associated with extensive areas of tall buildings. This approach seems to have worked. Many visitors to Singapore have commented that our city appears to be less dense than the data suggest.

This leads to a second interesting planning concept used in Singapore: that planners have been able consciously to create an illusion of density, of city size, and of greenness. The juxtaposition of high- and low-rise precincts not only reduces the oppressive sensation of density but gives people an impression that the city is larger than its real size. By locating parks and green buffers strategically, our city appears much greener than the actual amount of green areas used.

But we have to face the fact that high-rise buildings are buildings with handicaps—of heavy dependency on elevators, of being divorced from the ground, of losing one's own identity in a big building, and so on. As early as the 1970s and 1980s, we attempted to identify the handicaps, or shortcomings, of high-rise living, and we did our level best to overcome them through clever site planning and design solutions.

The Housing and Development Board has attained a fair measure of success. Singapore's residents are happy, crime rate is low, and community spirit is strong. An important benefit of our high-rise public housing is that since 1985, Singapore has become a city with no squatters, no homeless people, no poverty ghettos, and no ethnic enclaves. With 82 percent of the people living in public housing flats, Singapore is now a city where 93 percent of the total population owns their own homes, and where the satisfaction level among public housing residents has been 95 percent in the last two decades. Clearly, it is possible to create a vertical city with

我想和你们分享一些关于新加坡如何在数十年间从一个棚屋城市转变为现代垂直城市的感想。

1991年准备新加坡总体规划时，城市单元（或模块）的概念令我们受益匪浅。城市按照空间划分为不同层级的单元。550万人的城市首先分为4个区域，每个区域人口刚过100万，相当于一个小城市的规模。然后，每个区域又包含5个新市镇，每个新市镇的人口约为20万，平均安置在10个社区中，每个社区又由6个小区构成。

通过这种方法，我们的规划师能够为不同的小区配置不同的密度。在高层住宅区之间点缀着花园、学校、运动场地、低密度住宅和邻里中心，用以缓解大片高层建筑带来的压迫感。这种方法看起来是卓有成效的。许多来新加坡的参观者评价，我们的城市看起来没有数据显示的那么拥挤。

这导致新加坡第二个有趣的规划概念的使用：规划者能够有意地创造一种关于密度、城市规模和绿意的图景。将高层与低层的小区混搭在一起，不仅缓解了压迫感，而且给人们营造了一种印象：城市比实际面积要大。通过策略性地布置公园和防护绿地，我们城市比实际拥有的绿化区显现出更多的绿意。

但我们必须面对的事实是，高层建筑也有缺陷——它严重依赖电梯，人们远离地面，在大建筑中迷失个性等等。早在20世纪七八十年代，我们就试图指出高层生活的这些缺陷或弊端，通过明智的场地规划和设计方法，我们也尽力克服这些缺陷。建屋发展局已经有了一个衡量成功与否的标准：幸福的居民区有着较低的犯罪率，强烈的社区精神。我们的高层公屋还有一个重要的收获，那就是，从1985年开始，新加坡已经成为一个没有非法占用公地者、没有无家可归者、没有贫民窟、没有少数民族聚居区的城市。当82%的人居住在公屋中后，现在的新加坡，使93%的人拥有自己的家，同时在过去二十年间，公屋居民的满意率达到95%。很显然，如果人们认同挑战，并以创造性的方法克服这些挑战，那么，创造一个拥有优质环境的垂直城市是完全可能的。

我最后想说的是，规划一座城市就像组装一件工业设计，比如汽车。不管是一座城市还是一辆汽车，其规划和设计者必须理解人的需要，以便让

产品变得简单、人性化、舒适、便于使用。对汽车而言，引擎必须完美运转。与此相似，一座城市的规划者必须熟知组成城市机器的所有部件。只有那样，他/她才能将它们组装成一个完美的运行整体。另外，如果两辆汽车同样易于操控，同样有完美引擎，购买者会选择车身设计更漂亮的那辆。同样道理，一座更漂亮的城市对投资和人才更有吸引力。

这本书进一步提升了寻找新城市形式以适应垂直城市的需求。由于现代世界中城市面临着前所未有的挑战，这一点确实很有必要。

刘太格

a quality environment if one were to understand the challenges and were committed to overcome them with creative methodologies.

The last point I would like to make is that planning a city is like assembling a piece of industrial design, such as a car. Whether it is a city or a car, the planner-designer must understand the needs of the people in order to make it simple, user-friendly, comfortable, and convenient to use. In the case of a car, the engine must function like a dream.

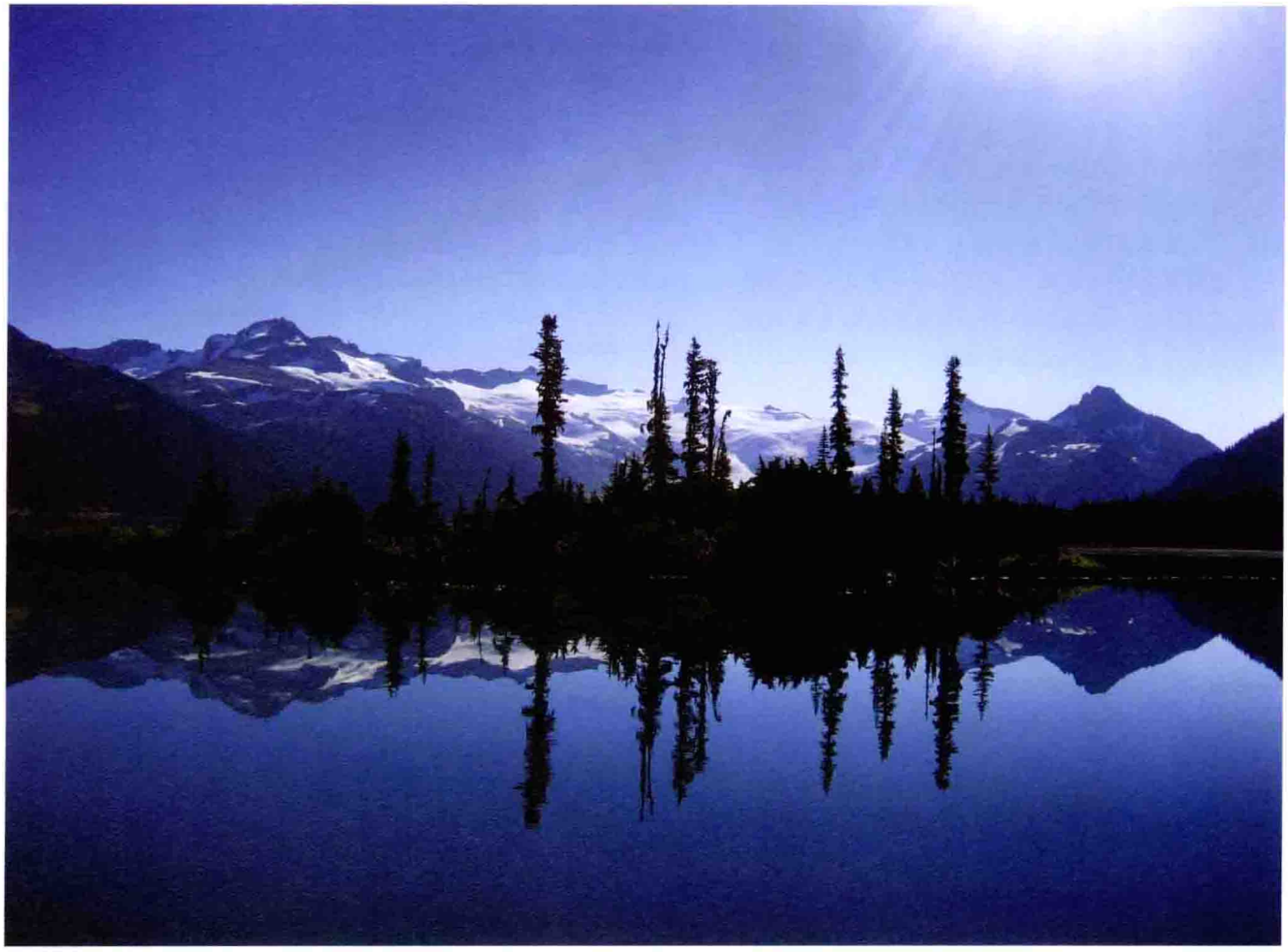
Similarly, a city planner must know intimately all the various parts required to complete the urban machine. Only then can he or she assemble them into a perfectly functioning whole. Further, given two cars with the same ease of driving and the same perfect engine, a buyer will choose the car with the more beautiful body design. Likewise, a more beautiful city will attract investments and talent.

This book raises the need to seek new urban forms to tackle vertical cities. It is indeed necessary, as cities in the modern world are facing challenges not previously experienced.

Liu Thai Ker

For Liu Thai Ker's biography, please refer to the Appendix.

本文作者刘太格先生的简介，请参阅附录。



*Nature in balance, Garibaldi Lake, British Columbia.*
*加拿大不列颠哥伦比亚省加里波第湖：自然的平衡。*

# 前言

# Foreword



序言“可持续性”这个词汇指向人和自然的关系，它给人们的心灵带来共存、平衡、和谐——相比较而言，在东西方哲学之间，这些说法更加密切地与东方哲学联系在一起。一个农业社会，其存在是如此密切地与自然的兴衰起伏相关，人们总是要学习如何顺从自然那不可预测的力量，记住干旱与洪涝，富足与饥荒，阴与阳相互交替的知识，然后才能得到安心与宁静。

相似的是，在很早的西方文明中，人也将自己看作是受自然支配的。自然过于宽广无边，强健有力，神秘莫测，因而难以把握；人们优先考虑的乃是生存。人们耕种庄稼，放牧羊群；而随着季节更替，他们或者是在收获粮食、剪下羊毛，或者就是忍饥挨饿，濒临死亡。然而，随着科学的进步，人们开始相信，装备了科学技术的人类能够征服自然。这导致人们排干沼泽，砍伐森林，围堤筑坝，在开阔的平原上大量耕种作物，修建高速公路和城市。

在人类历史初期，摩西十诫是指导人与其伙伴之间相互关系的指南；戒令预告了文明的终结，乃是对人类轻率和不人道行为的惩罚。但还是难以想象，人有能力毁掉自己的宇宙——要么通过原子战争迅速地毁掉，要么通过数十亿无知个体的浪费习惯缓慢地毁掉，这些人消耗自然有限的资源，污染我们赖以获得食物的土地，以及我们饮用的水和呼吸的空气。他们没有预见到将会导致全球变暖和另一个冰河时代的可怕后果，也没有预见到对地球臭氧层的破坏将会让地球上的生物饱受癌症的困扰，而且，紫外线将会使生物发生基因突变。

如果古人预见到了人类破坏自然的潜力，那么就会有第十一条戒令：“不可浪费！”正是这种对浪费的关注推动金世海先生去完成这部著作。

金世海先生是一位美籍华裔建筑师，出生于上海。三十多年来他频繁往返于中美之间，亲眼见证了东方惊人的城市化进程，以及新建筑、新城镇的盲目建设速度和无节制扩张，也看到了耕地无可挽回的损失。他听到很多热心的对可持续性观点的公开支持，也看到了之后通常不太明显的效果。和许多熟悉近代中国的人一样，他感到惊讶的是，曾经指导人类最古老文明之一的那些坚定的价值观正在发生变化。难道说那些价值观原先反映了一个慢节奏的农耕社会，而现在它们

The word “sustainability,” in reference to man’s relationship to Nature, brings to mind powerful notions of coexistence, balance, and harmony—terms more closely associated with Eastern philosophies than those of the West. In an agrarian society whose existence is so closely tied to the ebb and flow of nature, there would be no peace of mind—or tranquility, if you will—until people learn to bend with the unpredictable forces of Nature, taking heart in the knowledge that rain will follow the drought, feast will follow famine, yang will follow yin.

Similarly, in the early days of Western civilization man saw himself at the mercy of Nature. Nature was too immense, too powerful, too mysterious to grasp; the primary focus was on survival. People planted crops and tended flocks and as the seasons passed, they either reaped and sheared or starved and froze to death. However, with the advancement of science came the conviction that human determination enabled by technology could conquer Nature. This led to the draining of wetlands, clearing of forests, damming of rivers, widespread plowing of open plains, and the building of highways and cities.

Early on in human history, the Ten Commandments served as a guide for man’s behavior toward his fellow man; warnings foretold the eventual end of the Earth as punishment for people’s indiscretion and inhumanity. But it could not possibly have been imagined that it was within man’s capacity to destroy his own universe—either quickly by nuclear warfare or slowly by the wasteful habits of billions of mindless individuals consuming Nature’s limited resources, polluting the soil that we depend on for food, the water we drink, the air we breathe. They did not envision the dire consequences that would lead to global warming and another ice age, nor anticipate the depletion of the earth’s protective ozone layer thereby allowing the bombardment of life on earth by cancer and mutation-causing ultraviolet radiation.

Had the ancients foreseen the potentiality of man’s destruction of Nature, there might well have been an Eleventh Commandment: “Thou shall not waste!” It is precisely this concern over waste that motivated Kenneth King to undertake this book.

Kenneth King is a New York–based Chinese-American architect who was born in Shanghai and has for the last thirty-plus years traveled frequently between the United States and China. He has been an eyewitness to the East’s

astonishing urbanization with its blinding pace of construction of new buildings, towns, and unstemmed sprawl; he has also watched the irreplaceable loss of farmland. He has heard the many ardent public endorsements of sustainability and has observed the often less evident results. Like many familiar with pre-modern China, he was left to wonder what had happened to those steadfast values that once guided one of humanity's oldest civilizations. Could it be that they were reflections of a slower agrarian society and that they must now make way for the demands of a faster, less patient world? What will be the paradigms that will guide modern China forward?

To better understand the complex forces at work, and to examine whether the course currently taken is inevitable or whether there might be more prudent alternatives, it was determined that the most constructive approach would be to write a book. It is hoped that the results of this exercise will generate discussion among interested readers, thereby sparking new ideas and possibilities for the future. It was in this context that I, also a Chinese-American architect with a half-century of experience working in the East, was called in to help. The hope was that our collective views and shared personal and professional insights would add resonance to the exploration.

It is important to understand that we coauthor this book as concerned observers with no pretext of being experts. Instead, for authoritative insights, we interviewed a wide range of academicians, practicing architects and urban planners, building technology specialists, and experts in such related areas as life safety, community development, land use, and, of course, sustainability.

The further we ventured, the more we learned about the enormity and complexity of the field, and the far-reaching significance of our investigation. Each conversation opened new possibilities, new experts to consult. Ultimately we had to draw our research to a close, even though there were many other experts we would like to have engaged. We hope that this book, however incomplete, may nonetheless make a contribution to the raising of awareness, and to stimulating the kind of discussion, argument, and debate that is essential to bring about change.

*Kellogg H. Wong*

必须为一个更快、更缺乏耐心的世界做出让步？引导现代中国前行的又将是哪些价值模式呢？

为了更好地理解正在起作用的各种复杂力量，为了审视当前的路线方案是否不可避免，或者说，是否有其它更明智的替代方式，可以确定，最富有建设性的方法是写一本书。希望这种行为会在感兴趣的读者之中引发讨论，从而在将来激发一些新的观点和可能性。在这种情形下，金先生请我一起帮忙——我同样也是一名美籍华裔建筑师，有着半个世纪在东方工作的经验。希望我们的一些共同看法和个人观点，能够为研究工作添砖加瓦。

作为这本书的合著者，我们只是充满关切的观察者而不是任何专家，理解这一点很重要。相反，为了获得权威的观点，我们访谈了许多不同的学者、从业建筑师、城市规划师、建筑技术专家，以及相关领域的一些专家——这些领域包括生命安全、社区发展、土地使用，当然还有可持续性问题。

我们探究得越深入，就越发了解这一领域的广阔与复杂，也更明白我们探究的深远意义。每个对话都打开了一些新的可能性，并使更多领域的专家参与进来。最后，我们不得不结束我们的研究，即使还有很多其他的专家是我们想要涉及的。尽管不完整，我们还是希望这本书能有助于增强人们的意识，激发那些对于带来改变而言至关重要的交流、争议和辩论。

*黄慧生*

For Kellogg Wong's biography, please refer to the Appendix
关于黄慧生的传记，请参阅附录。

*New York is the largest, safest, and most racially and ethnically diverse city in the United States. It is also the greenest, with some 27,000 acres [10,925 hectares] devoted to public parks and a mobility rate of 82 percent on public transit, bicycles, and on foot. If New York were an independent state, it would rank lowest in per capita energy use.*

*纽约是美国最大、最安全、种族和族裔最多元化的城市。它也是环保的绿色城市，约有27,000英亩（10925公顷）的公园，82%的城市移动依赖公共交通、自行车和步行。如果纽约是一个独立的州，它的人均资源消耗将排在最低。*

# 自序

# A Personal Note



我是一个城市居民，在上海出生成长，之后在香港生活了三年，伦敦生活了五年，1960年定居纽约。上世纪70年代后期，中国向世界开放后，我很多时候就在上海和曼哈顿之间来回奔波。期间，我也在巴黎和苏黎世待了很长的时间；还有太平洋沿岸的城市古晋和马来西亚的打京那峇鲁、吉隆坡，韩国首尔，新加坡和日本东京，更不用说像北京、天津、台北以及许多规模庞大正在发展的中国城市。

我喜欢城市，因为它的效率，生活所需皆近在咫尺。你可以通过公交或步行十分便捷的出行，完全不需要拥有汽车。我喜欢城市生活，它丰富多样、有趣而充满精彩，人们在餐厅里、公园中、音乐会上或只是街头偶遇，就被赋予了发生社会交往的机会。而非每日里孤零零地驾车通勤、再孤零零地驾驶回家，将自己关进那绿草白栅封锁下的独户居所中，浪费着宝贵的时间，同时污染着环境。

我确信有人会不同意我的说法，尤其是在美国。从托马斯·杰斐逊开始，美国人就有将城市当作疾病和罪恶中心的广泛误解。许多环境主义者强化了这种反城市的偏见，他们认为，城市是最大的能源消费者，也是地球上最大的污染源。这话没错，城市现在大约只占整个星球3%的面积，但却消耗了大部分的自然资源，排放出全球80%的二氧化碳和其他数量巨大的温室气体。

但是，从个体的角度看，情景却非常不同。在纽约这样人口稠密的大城市中，人均能源消耗量大大低于美国的其他地区；人们可能会感到惊讶，美国人均能源消耗量最高的地区是怀俄明州的空旷平原。和居住在郊区的人们相比，普通纽约人消耗的电能和汽油，使用的水资源要少得多。他们占用着更少的土地，产生较少的垃圾和有害气体，总之，对环境的破坏程度要更小。很显然，就这一点来说，在濒临危险的生态系统中，我们需要学学这样的城市经验。

对中国和其他发展中国家正在发生的、规模空前的城市化进程而言，这些经验显得尤为迫切。例如，如果中国一直建设不断扩展的新城市以容纳大量外来人口——人们预料这会在接下来

I am an urban dweller. I was born and raised in Shanghai, after which I lived in Hong Kong for three years and then in London for five before settling in New York in 1960. Since the late 1970s when China opened to the world, I've pretty much split my days between Shanghai and Manhattan. Along the way I've spent a good deal of time in Paris, Zurich, and Pacific Rim cities like Kuching and Kota Kinabulu in Malaysia, Kuala Lumpur, Seoul, Singapore, and Tokyo, not to mention Beijing, Tianjin, Taipei, and a host of other large—and growing—Chinese cities.

What I like about cities is their efficiency and adjacencies and the sheer convenience of being able to move around on foot or public transit, quickly and inexpensively, without ever having to own a car. I like the rich variety, interest, and excitement—the fun—of city life, and the opportunities for social interaction in restaurants, concerts, parks, or in spontaneous exchanges on the street rather than being isolated in a car, wasting and polluting precious hours while commuting back and forth to work, pulling into a driveway, and disappearing into a single-family house sealed off behind a tidy green lawn and white picket fence. From an environmental perspective, the American dream is a petrol-dependent nightmare.

I'm sure there are people who would disagree with me, particularly in the United States, where, dating back to Thomas Jefferson, there's been widespread misapprehension about cities as centers of unhealthiness and vice. Many environmentalists reinforce this anti-urban bias. Cities, they say, are the greatest energy consumers and the greatest polluters on Earth. It's true. Cities currently cover only about three percent of the planet yet they devour the lion's share of its natural resources and emit about eighty percent of global carbon dioxide and significant amounts of other greenhouse gases.

But by the yardstick of the individual, the picture is very different. The per capita energy use of dense cities like New York is significantly lower than elsewhere in the country; it might come as a surprise that the highest per capita consumption is in the wide open plains of Wyoming. Typical New Yorkers consume far less electricity and gasoline and use far less water than their suburban counterparts. They occupy less land, produce less waste, produce lower noxious emissions, and in general inflict less damage on the environment. Clearly at this point in our imperiled ecology, we need to learn the lessons that such cities can teach.

Given the unprecedented urbanization taking place in China and other developing countries, the need is urgent. If China, for example, keeps on building sprawling new cities to accommodate the massive migration that is expected to continue for the next thirty years, there won't be enough land to grow food. There won't be enough water or other resources. And if, with their new found wealth, people continue to buy cars in record numbers, the ecoconsequences will be calamitous, not just for China but for the world.

We no longer have the luxury of thinking about such problems, least of all about their solutions, in isolated terms. This is a war—a battle for survival—that will not be won in small uncoordinated skirmishes. It is not just an issue of per capita usages but of global stewardship, reduction, conservation, and commitment.

It is neither reasonable, nor possible, to try to stop human energy consumption. But we can use our resources more intelligently, more sustainably. We have the knowledge and the wherewithal. And, with the right leadership, we have the ability to succeed. We need to revisit familiar patterns and determine whether they are valid or are actually destructive and merely sanctioned by habit. We must understand and embrace the need for change and give full rein to our imagination so that we may benefit from new and emerging technologies and creative ideas.

For years I toyed with the notion of setting forth my ideas in a book. Ironically, my most altruistic and lofty aspirations were unleashed by the grim urban reality of bumper-to-bumper full-stop traffic. What could possibly be the problem, I wondered in the back seat of a taxi. It turned out that service crews were making an underground repair. The roadbed had to be opened and excavated, the utility repaired, and then the street resurfaced with heavy equipment. The entire operation took days, while the repair itself required just over an hour. The inconvenience and cost, the exasperation, the lost time, and the idling pollution of so many cars for such a long period all struck me as so destructive and unnecessary. There just has to be a better way! This incident was the seed that launched my quest to eliminate as much as possible the urban problems that we've inherited, to find a better way to accommodate human needs, and to design a modern sustainable city.

We can no longer live our lives without regard to the impact we have on the environment. Nor can we feel self-satisfied in our new Green awareness and determination to curtail or halt environmentally damaging actions. For the

的30年中持续下去——那将不会有充足的土地用于种植作物，也将没有充足的水源和其他资源。而如果人们凭借新积累的财富，不断无节制地购买汽车，那不仅对中国，而且对世界而言，造成的生态后果都将是灾难性的。

我们不再享有孤立地一个个思考这些问题的奢侈了——更别说去思考解决方案。这是一场战争，一场生死存亡的战争，不可能通过没有谋划协调的小战斗来赢取。这不是一个人均使用量的问题，而是在全球范围内进行管理、减排、保护和承诺的问题。

想制止人类消耗能源，这既不合理也不可能。但我们可以更加明智、更加可持续地使用能源。我们拥有知识和资金，在正确的领导下，有能力获得成功。我们需要重新检视业已熟悉的行为模式，确定它们是否是正当的或者实际上是有害的（仅仅因为习惯使然）。我们必须理解并坚信改变的需要，充分发挥想象力，这样我们就可以从新近的技术和创造性观念中获得帮助。

多年来，我一直想在一本书中阐述我的看法。讽刺的是，我最无私和高尚的志向是在一次严重的交通瘫痪这一城市恶疾中诞生的。我坐在出租车后座思考，问题可能出在哪里？原来维修人员在进行地下维修：道路必须清空挖掘，然后修复管道，再之后街道还要用重型机械重新铺设整个工程要费些时日，而修复工作自身则只需要一个多小时。造成的不便和多出的成本，浪费的时间，以及产生的令人恼火的情绪，如此多汽车长时间空转产生的污染，都让我觉得这些是具有破坏性的、不必要的。一定有更好的办法！这件事是个起源，使我开始努力探索，来尽可能解决我们继承下来的城市问题，同时，找到更好的方法满足人类的需求，并设计一个现代、可持续发展的城市。

我们再也不能不顾对环境造成的影响而生活了，也不能仅仅因为力图减少或停止环境破坏行为的“绿色环保”意识和决心，而感到洋洋自得。为了我们的孩子，仅仅满足于“不那么糟糕”还远远不够；我们必须调整方程式，做出积极的贡献。除了完全扭转形势，我们别无选择。我们为什么不采纳在这世界上任何角落正在发生的优秀经验，并注入想象力地去创造新的可能，

*Utility repairs disrupt traffic in midtown Manhattan, creating delays, pollution, and safety risks for pedestrians and motorists.*
*管道维修扰乱曼哈顿中城的交通，给行人和驾驶者造成时间延误，污染和安全风险。*

发展出现代生活的新模式。这就是这本书想要说的全部内容。

*金世海*

sake of our children, it is not enough to settle for doing less that is bad; we must reformulate the equation to make a positive contribution. We have no choice but to turn things around. Why not take the best aspects of human habitation from wherever in the world they might occur, fuel them with imagination to create new possibilities, and develop new paradigms for modern life. That's what this book is all about.

*Kenneth S.H. King*

For Kenneth King's biography, please refer to the Appendix.

关于金世海的传记，请参阅附录。

# 鸣谢

# Acknowledgments



本书是我许多杰出的同事、聪慧的朋友以及亲爱的家人们共同努力的结晶。就这本有关我们星球未来的书籍的付梓，我无法用语言来充分概述这个全球大家庭共同合作所做出的贡献。对那些富有责任感的居民和专家所取得的成就，我感到惊奇和骄傲，同时也让我对人类作为一个整体所能收获的东西充满希望。

首先，让我感谢我的团队，他们不懈的协调、组织和编辑是这项工作的基础。首先要提及的非珍妮特·亚当斯·斯特朗博士莫属，从一开始她就参与到本书工作的各个方面——从收集研究材料、采访、写作、编辑到协调本书其它的贡献者——这是一项需要高度耐心与自律的任务，没有她孜孜的奉献，本书是无法面世的。大洋彼岸中国的协调工作由尊敬的张以国博士主持，中文翻译工作由陈珊珊博士领导的优秀团队完成。

特别感谢莱因哈德·罗伊在本书写作过程中提出的出色建议，以及他为解释本书中部分概念而绘制的画作。对那些同我们分享知识的建筑师、规划师、学者和其它专业人士，我们也想对他们给出的专业意见表达尊重和谢意。我们的访谈进程先从纽约开始，在那里我们与一些好友进行了讨论，这些人包括杰出的结构工程师，莱斯利罗伯特森建筑事务所的莱斯利·E·罗伯特森；著名的系统工程师马文·马斯以及他博学的同事——克森蒂尼事务所的斯科特·西塞。之后，我们继续与我们在贝聿铭建筑事务所的前同事进行谈论，这些人包括：来自科恩佩特森福克斯建筑事务所的威廉·佩特森、海因吉斯建筑事务所的幕墙专家罗伯特·塞弗里、曹·麦克恩建筑事务所的曹慰祖。

研究工作使我们接触并与很多人建立了深厚友谊，这些专家有巴克莫汉德斯公司的垂直运输专家里克·巴克；宋腾添玛沙帝工程事务所的结构工程师潘子强；以及垂直农场的先驱者迪克森·德波米耶，正是他将我们引荐给奇斯+凯斯卡特建筑事务所的格里高利·奇斯。形—式建筑事务所的阿杰马勒·阿克塔什分享了他关于最新建筑技术的渊博知识，而且还让我们会见了他的老师，霍克国际有限公司的卡尔·卡略托。在与斯基德莫尔、奥因斯与梅里尔建筑事务所的T.J.哥特斯蒂埃纳、奥雅纳的阿肖克·瑞吉、以及山姆·施瓦茨工程公司的爱里希·阿西门的会谈中，我们收获颇丰。在成书的最

This book is the result of a rich harvest from many brilliant colleagues, as well as wise friends and dear family members. There is no way to adequately express my appreciation to this global community for the myriad contributions that helped bring forth this vision for our planetary future. I am in awe of what we have achieved as a group of committed citizens and professionals, and that gives me hope for what humanity can achieve as a whole.

Let me begin by thanking the team whose untiring efforts to coordinate, organize and edit have been the backbone of this effort. At the top of the list is Janet Adams Strong, Ph.D. who went beyond the call of duty to integrate the many parts of this book`s vision from research, interviewing, writing, editing, to managing all the contributors. A challenging task that required great patience and discipline this book could not have happened without her dedicated effort. Across the world our efforts in China were smoothly coordinated by our esteemed friend Dr. Yiguo Zhang along with the professional translation team spearheaded by Dr. Shanshan Chen.

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