

## INTRODUCTION

In my first book, *Carfree Cities*, I made the case against what I call auto-centric cities, those based on intensive automobile use. I proposed a carfree alternative that would maintain the high level of access to goods and services that prevails in rich nations. Two strategies were employed. The first was to bring destinations closer together by building at moderately high density. The second was to use public transport, bicycling, and walking for personal mobility. That book only touched on what is the focus of this one: designing carfree districts. I begin with the presumption that the site under design is vacant, although many of the approaches may be useful to carfree redevelopment and infill projects. The conversion of existing urban and suburban neighborhoods into carfree areas is not directly addressed.

This book is devoted to design, not planning, of which design is a subset. We will take up regional planning, regulation, finance, infrastructure, design methods, transport planning, and project developer only as they affect design. Many of these issues were treated at some length in *Carfree Cities*.

This work is in many respects more speculative than the earlier one, much of which was founded on a review of existing urban forms and a mathematical analysis of urban density and transport systems. This book is more personal and reflects my own long experience with cities on five continents. I have been photographing for about fifty years now, and much of my understanding of beauty is framed in photographic terms. I attempt to share here my sensibilities with others on the perhaps brash assumption that they may be of some value.

It is in any case true that I have found the greatest beauty in city districts that are several centuries old, and it has been there that I have found the most rewarding photographic subjects. I have chosen almost 800 of my own photographs to share here; thousands more are available at Carfree.com. I have found much



Via San Romano, Ferrara



Madrid



Ayamonte, Spain

beauty in thousands of postcards depicting urban scenes from about a century ago, and some 150 of these are included, mainly in Part III, Elements, which will serve as a palette from which to choose principal design elements.

Perhaps the most surprising and controversial conclusion I reach in this work is that medieval urban forms are superior to everything that came before or has come since. Once the needs of automobiles (and their forebears, carriages) can be neglected, a remarkable degree of design freedom arises, allowing us to return to quirky, fine-grained, human-scaled urban areas that reflect the demands of the site and the needs of its users.

The arrangement of medieval city quarters is similar everywhere. This book adopts medieval forms with the addition of public transport to support larger populations. Until the introduction of horse-drawn carriages about five centuries ago, city streets were seldom very wide, because there was no need for more street space, which was in any case costly to provide. Indeed, narrow streets minimized the city's extent and kept the whole of a city within walking distance. Modern rail systems allow us to transport people and goods while using very little land (almost none if underground). Huge populations can be forged into a single rail-based city, like Tokyo. Medieval cities usually have loosely radial street plans, with many streets converging on the most important squares and buildings at the center. Medieval city forms can still serve us well today, and the radial street plan is uniquely well suited to rail-based transit systems with a halt at the center of each district. Medieval forms are rich and yield places that will intrigue people for a lifetime.

The book is general in its approach. The methods proposed are not specific to a particular culture but are intended to be adapted to local circumstances. Project sponsors intending to design a carfree area in accordance with the precepts of this book will face some preparatory work. Many of the methods proposed must be refined before they can be applied.

## THE CARFREE PREMISE

The arguments against intensive automobile use are better known today than when *Carfree Cities* was published. People have realized that it is time to rid ourselves of the “junkscapes” that accompany extreme reliance on cars: the ugliness, the noise, the stink, and the danger. Perhaps the most important objection is that cars rob the streets of their function as a common ground where the sense of community is nurtured.

People are also coming to understand the terrible burdens imposed on planetary ecosystems by extreme car use. Our current way of life is not sustainable over the long term and probably not even on a time scale of a few decades. We need to think in terms of greater economic *and* resource efficiency in every proposal for changing societies. We simply must do more with fewer natural resources, and we must reuse resources to an ever-increasing degree. These are not such great challenges as people assume.

The effects of heavy urban car use are now part of public discourse and will not soon be forgotten. Many people are seeking solutions. Carfree cities are not yet widely regarded as the best and most practical approach, one that also carries the bonus of a higher quality of urban life. I expect that as the seriousness of our plight dawns, and as the mirage of fuel cells and biodiesel fades, people will turn to carfree cities as the best alternative.

Although this book is written for a Western audience, carfree cities are likely to find first acceptance in China, India, and other nations with rapidly growing populations and economies. I believe that there is no other way to provide citizens of these nations with a better life while protecting the ecosystems that sustain us all. I challenge anyone to put forward a vision that would improve the quality of life in these nations at a lower cost in money, natural resources, and ecosystem damage. I think it is simply impossible, mainly because the car consumes so many resources and so much land.

These arguments are present in *Factor Four: Doubling Wealth, Halving Resource Use*, by Ernst U. von Weizsäcker, 1997. I find that book rather flawed, but it does give many examples of ways to make dramatic cuts in resource consumption without adversely affecting standards of living.



Faro, Portugal



New Urbanism, Livingston NJ

The American preference for privacy, not community, finally seems to have crested. The New Urbanism is an expression of a deep longing for communities and places to care about. Although the movement is still young, the depth of the yearning for community is revealed by the higher prices people will pay to live in New Urbanist communities.

The “car-lite” New Urbanism is not considered at length, as the accommodation of even a few cars distorts design requirements and usurps too much land: good urban design is incompatible with car use. I am certain that proponents of the New Urbanism and Smart Growth mean well. I simply believe that the methods they propose do not provide a great enough improvement in the quality and sustainability of life. New Urbanists may find some useful ideas here and would, I think, agree with many of the design principles I espouse, even though they may be uncomfortable with the arrangements I propose.

The carfree city movement in general and the approaches proposed in this book in particular are fully compatible with the growing awareness of the need to refocus our activities more locally, owing in large part to the high energy costs of shipping goods over long distances. In an era of worsening energy shortages and rapidly emerging concerns about global climate change, localization is an almost self-evident approach that ameliorates our problems. Goods worth a great deal of money will undoubtedly still move in global trade, but I anticipate that the total mass of this trade and the average distance that it moves will begin to decline soon, as measures are implemented to reduce greenhouse gas emissions and in response to rising fuel costs.

At the same time, this should not be a fear-driven process. Rather, it should be a joy-driven quest for a more sustainable way of life that better meets fundamental human needs.



Guimarães

## REFERENCE DESIGN FOR CARFREE CITIES

*Carfree Cities* presented an idealized design for a carfree city on a flat, empty site. I dubbed this the “Reference Design for Carfree Cities.” It remains the best generalized design I have so far imagined. The Reference Design was based on several factors that I wanted to optimize. It was intended as a proof-of-concept, not as an actual plan for a real city. In practice, local

requirements will almost always dictate substantial deviations from that design. The first book has stood the test of time. No significant errors have been brought to light since its publication eight years ago. No serious objections have been raised to its assumptions or hypotheses, except to the basic assumption that people might be willing to give up their cars if a good alternative were offered. The growing popularity of carfree days and the increasing number and size of carfree urban areas is evidence that people are at least interested in the idea. I therefore believe that the Reference Design for carfree cities stands as first proposed and that it is time to take up the design of carfree places. My strategy is simple: make the carfree city such an attractive alternative to auto-centric life that people will clamor for it.

I intended the Reference Design to become the standard against which carfree designs would be measured. I have reproduced the important drawings here: the Reference Topology (page 30), the Reference District (page 128), and the Reference Block (page 248). A Reference Building (page 376) is added.

Simple elements are employed: narrow streets, four-story buildings, interior courtyards, small squares, and excellent rail-based transport of passengers and freight. The Reference Design could have been built with only minor changes in 1900, by which time modern sanitation and electric rail vehicles had come into use, permitting the removal of pestilent horses from cities. These advances made possible urban environments in which high levels of public health could be maintained.

## MAJOR CHANGES TO URBAN DESIGN METHODS

This book does not pretend to be a balanced consideration of urban design in general, or even of carfree design in particular. The premise that people will accept carfree neighborhoods is not the only sweeping change I propose. My examination and experience of medieval city centers in Europe and Morocco has

For a list of carfree places worldwide, see:  
[en.wikipedia.org/wiki/List\\_of\\_carfree\\_places](https://en.wikipedia.org/wiki/List_of_carfree_places)



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convinced me that their arrangement is superior to almost everything built after the start of the Renaissance. The downfall was the shift from on-site design to paper plans. This is not an article of faith but a matter of long deliberation. Many topics in this book will be cast in terms of the advantages and disadvantages of medieval patterns as compared to later practice. In virtually every respect, complex medieval designs are more interesting and better meet human needs than later designs. Streets from the automobile age are the worst in history.

The change in urban form through the centuries is a fascinating topic, but the treatment in *ORDER & ORGANIZATION IN CITIES* is necessarily brief and narrowly focused. It should be noted that I define order and organization differently, although they are commonly regarded as synonyms. In this work, order relates to superficial appearance whereas organization relates to underlying physical, economic, and social forces. The two are largely independent of one another, and a given urban area can have high or low levels of either, quite apart from the other. The principal question is: why do we shift back and forth at long intervals between rigid grids and organic forms?

The proposed change to medieval design will surely be controversial, nowhere more so than in schools of Modern architecture. Similarly controversial is the proposal that carfree districts be built using a radial street plan. The all-too-familiar grid form could be imposed, but, as already mentioned, radial patterns are well suited to transit-based districts because they minimize walking distances. Radial districts can be formal and regular if people wish, but the irregular forms of the medieval period are more flexible and interesting. They easily adapt to sites that are not entirely featureless, which is nearly all of them. They are more humane than arbitrary geometric patterns.

The proposal for design by users is equally fundamental. Ever since Renaissance methods were applied to city design, it has been assumed that the best designs arose when someone had a



Salamanca

stroke of brilliance, got it down on paper, handed it to the leaders for approval, and built it, all in one go. The notion was that a single moment of inspiration was superior to centuries of accumulated design wisdom and the deliberations of thousands of people over time. This I believe to be a serious error.

Today, it is assumed that an architect or urban planner will design every new neighborhood. This approach also arose at the start of the Renaissance, and I believe that it was also a mistake. People should design their own neighborhoods, with experts serving in an advisory capacity. This book sets out to make city design accessible to everyone, in the hope that the resulting places will better fit the needs and desires of their inhabitants.

I propose not only to place design in the hands of users but also to conduct design on the site itself, not on paper. This allows people to respond to the physical constraints and opportunities of the site while designing their neighborhoods.

Finally, I propose to replace today's usual contracting methods, which are based on detailed plans and specifications, with a return to artisanship based on local vernacular styles that reflect the available materials, the local climate, and the culture of the region. Each building would be unique, which is nearly universal in medieval areas but rare in modern cities. Christopher Alexander pioneered some of these methods, which must still be regarded as experimental. These new methods also support a change to more local economies and particularly to reducing the energy costs of transporting building materials.

The simultaneous proposal of so many fundamental changes in city design and construction is a long reach indeed. However, these proposals, though compatible with one another, are also largely independent of one another. If one is shown to be an error, that need not imperil the others. I fear only that, if one proposition is invalidated, the others will be discarded without independent consideration. The methods I propose must be regarded as provisional until successfully demonstrated.



Valladolid



Madrid

## URBAN DESIGN & QUALITY OF LIFE



Lisbon

Humanity is urbanizing at a staggering rate. Not only is the population rising, but the proportion of people living in cities continues to increase. During the next 50 years, we will build more urban floor area than exists today. Given the huge investment of labor and materials, it is vital to get this work right the first time. This is especially true of the arrangement of streets; buildings come and go over the centuries, but streets endure.

The public street is one of the foundations of civilization. Until the death of the American City Beautiful movement around 1920, the need for attractive, livable streets had almost always been taken as a given, notwithstanding the use of streets as sewers and dumping grounds throughout most of history. Europe did not so quickly abandon beauty as a goal in city design, and even today European cities still value it.

During the past two centuries, technology has had huge effects on every aspect of life in the richer nations, and cities rank high on the list of things that have changed. Some technologies certainly benefited cities, such as sanitary sewers and safe drinking water. It was the sudden, rapid growth of cities in response to industrialization that had made them unhealthy and unpleasant places by the end of the 19th century. Terrible overcrowding, with large families living in a single room, had by 1900 led to extreme population densities in many large cities. This in turn gave rise to Ebenezer Howard's Garden Cities movement, which sought to disperse populations into semi-urban areas at much lower density. Industrial pollution is today a smaller problem than it once was in the richer nations, but the low-density suburban arrangements that have the Garden City as their origin are the cause of today's car crisis in metropolitan areas. I believe that good streets can only be built at human scale, which is only possible in spaces that need not accommodate automobiles or tall buildings. Today's densest urban areas, such as



This was Paris a few decades after Haussmann had done with it. As a model for a city, it is far better than the British industrial slums of the same era. Even so, people lived at far higher densities in the Paris of 1900 than they do today. The density of Paris today exceeds the density required for efficient carfree cities.

Paris, are often regarded as among the best urban environments. However, even moderate density is a huge burden on residents *if there is significant car and truck traffic*. Today, far too many people suffer under the noise, pollution, and danger of heavy traffic, which is, in its own way, as debilitating as the industrial pollution of a century ago. The problems are in most respects even worse in the older areas of our cities, which often see very heavy traffic in narrow, congested streets. Residents of these areas suffer from these problems in many different ways. They deserve something much better, and carfree districts can provide it.

Mistakes in the form of cities are terribly costly, and the costs are not only economic but social and environmental. We are certain to make many minor errors when building cities, but we can ill afford irretrievable blunders. In the long history of cities, minor mistakes were recognized and corrected over the centuries. Today, we fail either to see or to correct them.

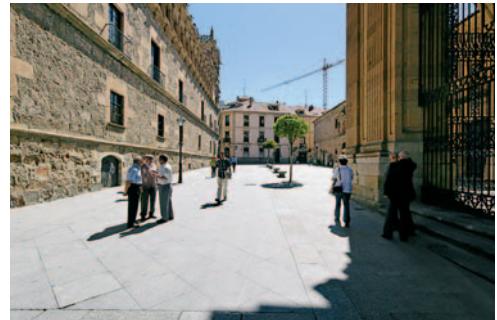
## VALUES

Values affect virtually every human activity, certainly including city design. The question then becomes: which values, whose values, and how should they be expressed? Since the beginning of the industrial revolution, the answer to that question has shifted increasingly towards values that favor the accumulation of private wealth, even if this comes at the expense of the commonweal. I believe that this set of values serves mankind poorly and that our very survival now hinges on a return to values that emphasize the common good. Certainly, the accumulation of vast private wealth has been coupled with a decline in the quality of the urban environment and in the health of the ecosystems upon which we ultimately depend for survival.

The design of cities has long been affected by the clash between Cartesian and humanist values, a clash that became more pronounced at the start of the industrial revolution.



Madrid



Salamanca



Ferrara

Olsen, 24

Since Olsen wrote (1986), feverish privatization in the industrialized nations has led to housing becoming just another commodity and public space simply one more place to make money. When we limit our consideration to profit, we cripple the discussion. Merely because other values cannot be expressed in money terms is no reason to ignore them.

Throughout history, prevailing values have swung back and forth between the precise order that characterizes Cartesian thought and the deeper, more complex but less tidy organization that characterizes Humanism. I postulate that humanist values are ultimately more satisfactory and will discuss this question at some length in **VALUES & PHILOSOPHY**. It may be that the greatest challenge of our time is to find a way through this clash without alienating anyone.

The deteriorating quality of design was treated tentatively by Jonathan Hale in *The Old Way of Seeing*. He traced the decline in the once-universal ability to design attractive objects to the start of the industrial revolution and the exchange of aesthetic values for acquisitive values. Hale's belief is supported by Donald J. Olsen, who says that the period between 1825 and 1837 saw the "growth in influence of a class that cared less about beauty than about economy and efficiency" and an "abrupt change in the standards by which people decided what was beautiful and what was not." This may be the most profound change brought about by industrialization. Certainly, innate design skills can still be found in contemporary pre-industrial societies like Bali. The origin of the decline probably has its roots in the Cartesian errors (or, more accurately, the errors of those who interpreted Descartes; see **VALUES & PHILOSOPHY**).

### THE INFLUENCE OF TRANSPORT

See *Carfree Cities*, 55-64.

*Carfree Cities* examined the influence of transport systems on city form. Even by Roman times, urban transport limited the growth of cities and had become a burden on their residents. A transport revolution occurred in the first half of the 19th century. Steam-powered railways and horse-drawn omnibuses and trams date from this period. They allowed a city's physical extent to grow beyond walking distance and enabled the rapid expansion of cities. The introduction of electric traction around

1890 was a great boost and led to the building of subway (metro) systems in the world's largest cities, allowing them to expand beyond two million inhabitants. Horse-drawn trams were rapidly converted to electric traction. Then, the acceptance of the private automobile reversed most of the gains of the previous century. Cities stopped becoming cleaner, healthier, more attractive places to live and instead became ugly, congested, dangerous, and unhealthy. Cars enabled the explosive growth of low-density suburbs and made cities so unpleasant that suburbs suddenly became an attractive alternative.

In some European cities, the bicycle was adopted as an inexpensive and practical means to triple the distance that a person could travel with a reasonable expenditure of time and effort. The bicycle transformed some cities, such as Amsterdam, where it remains the most widely used means of transport. Even in US cities, the bicycle rapidly took root once a safe and practical model was introduced. It was, alas, just as quickly abandoned.

We must bring bicycles back into cities. They are not a universal solution, as some climates are too harsh to permit their year-round use, but even in the heat of India they are popular. Heavy snow can stop a determined cyclist, but many climates will permit cycling throughout the year, at least by hardy souls. Hilly terrain is also difficult. We must accommodate bicycles in our cities while solving these minor problems.

Carfree cities, except for the very smallest, must rely on public transport that achieves levels of service and convenience seldom attained. The means are known and have been demonstrated, most often in SWITZERLAND. In large cities, underground rail systems serve best, despite their high cost. In smaller cities, the well-proven tram (streetcar, light-rail) serves nearly as well at much lower cost. The temptation to use buses as a quick, cheap solution should be resisted, despite successful implementations in South America, most of which should now be replaced by quiet, comfortable, clean tram systems. Unlike buses, rail



When I checked into my hotel here in Basel, I was handed a transit pass valid on all public transport in the city center, doubtless having paid something for it in the price of my room. The convenience must surely encourage those not accustomed to using public transport to give it a try. The quality of service is high.

systems cannot be moved from one day to the next, thereby allowing people to make location decisions with the assurance that good public transport will remain available into the future.

### CHANGES SINCE 1945



Salamanca



Venice

The world has changed almost beyond recognition in my lifetime. A number of causes can be identified: rapidly increasing prosperity, a doubling of world population, dramatic increases in urbanization, and demand for larger dwellings. Prosperity has come at the cost of rapid destruction of natural environments, depletion of natural resources, and now, apparently, climate change. Wealth has made it possible for many individuals to own an automobile, a change that had been expected to improve personal mobility. Instead, it decimated public transport systems and increased traffic at a rate that even intensive road building could not match. Greater wealth in Europe and North America has led to a large increase in the floor space of the average domicile at the same time that family sizes have plummeted. In North America in particular, this has led to the construction of huge houses inhabited by just a few people and situated at a great distance from urban centers, barely within commuting range, even by car. People in rich nations are now “enjoying” a standard of living their ancestors could never have imagined, at the same time that social systems are being damaged and the environment assaulted. The ironic result is a declining quality of life. We must choose a different direction.

### THE SPECTRE OF MISUNDERSTANDING

It is the fate of many thinkers to be misunderstood, sometimes by those with devious ends. I fear that some of my thinking may suffer this fate, so I will address this risk. The trouble centers on the word “modern,” which has two conflicting meanings.

When not capitalized, “modern” refers to the rational era, initiated by Descartes. Cartesian thinking supplanted the earlier humanism but did not provide better answers than humanism in the search for happiness, notwithstanding the great advances it fostered in science and technology. I plead for a return to the expression of humanist values in our public spaces. This plea may be labelled irrational, but humanism is only irrational within the most narrow interpretations of Cartesianism. Humanism seeks to understand the human condition and human needs and to find enlightened, decent solutions to the challenges of life. The most mechanistic understanding of Cartesian rationalism could be regarded as irrational in the realm of human affairs, as it is not rational to ignore the influences of unconscious, irrational forces and of genetically-determined pathways of perception. The influences of non-rational forces in human affairs are large, and account must be taken of them.

When capitalized, “Modern” refers to the movement closely associated with Walter Gropius and the Bauhaus in Weimar, Germany, following the First World War. It is not always understood that “Modern” is not just a design style. It encompasses an entire system of philosophy based on the exigencies of technology and mass production. Its goal was the complete rearrangement of culture and thought, “starting from zero.” Traditional art, architecture, and literature were outdated and should be scrapped. The work of Frank Lloyd Wright, which had enjoyed brief eminence in the USA, was rapidly eclipsed by the Modernists. Traditional architectural forms, especially including the Beaux Arts, were reviled. This new world view required its adherents to accept that “new” equaled “better.”

I am in this book intensely critical of Modernism. I believe that it owes much of its later influence to the “entrepreneurs” who adopted it in their quest for the riches to be gained by constructing the cheapest possible buildings. Modernism conveyed a shabby philosophical respectability and concealed the moral



Valladolid

A good introduction to Modernism may be found at:  
[en.wikipedia.org/wiki/Modernism](https://en.wikipedia.org/wiki/Modernism)  
 Tom Wolfe's *From Bauhaus to Our House* is excellent.



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bankruptcy of their design. I discuss Modernism and other systems of belief in the first chapter, **VALUES & PHILOSOPHY**.

I do not propose a return to mysticism; rather, I propose to correct some errors in the modern view of the world, errors that cause deep unhappiness in many Western people. The Modern movement was simply an error. This is the philosophical basis from which I proceed.

## ORGANIZATION OF THE BOOK

Not every reader will be interested in Part I, Theory, but I do suggest reading two short chapters: **DESIGN CONSTRAINTS** and **THE DENSITY QUESTION**, as that material is central to design. The discussion of values and philosophy is included because of their great influence on what and how we build. A theoretical framework for analyzing the choices we face in city design is presented. About two dozen axes of analysis are presented. Order and organization are the most important axes and are closely related to one another. I believe that urban areas that exhibit deep organization function best. Relatively low levels of superficial order are sufficient, and many of the best-loved urban areas are not highly ordered, such as the **VIA SAN ROMANO** in Ferrara. Organization should never be sacrificed for order. High levels of superficial order can usually be attained if desired, without harm to the underlying organization. The matter is important enough that it merits a chapter of its own, **ORDER & ORGANIZATION IN CITIES**.

The discussion in Part II, Preparation, may not interest every reader but does warrant at least skimming. The matters taken up in this Part often constrain design, and designers must be aware of them if only to conduct informed discussions with regional planners and the engineers arranging district services. The use of urban villages to improve the quality of urban life and particularly in development of a sense of community leads to a



proposal to use urban villages as the primary instrument of on-site design. The proposed method brings the members of the newly-defined urban villages onto the site, where they would conduct design down to the level of siting individual buildings. The Part concludes with a discussion of the final site program. This must include the design of the most central areas in a district, where arrangements are constrained by rights-of-way for freight and passenger rail systems.

I intend for Part III, Elements, to be used as a palette from which to compare and choose alternative solutions to common city design problems. This Part is filled with illustrations that I hope will facilitate the discussion of alternatives and the effects that various choices would exert on a particular site.

The heart of the work is Part IV, Design. Everyone involved in a project should understand that the methods and techniques of design exert a large influence on the final design. I propose a major break with the methods of the past 500 years by returning design to users, with experts playing only an advisory role. The proposed method is based on the allocation of building sites through an auction-like process. Those willing to pay for expensive locations along major squares and main streets will take the first turn in on-site design, and the major elements they arrange will become the basic armature for the design of the remainder of the district. This will be based on the formation of urban villages whose members are compatible with one another. The villagers will assemble on the site to design the remaining small streets and squares, as well as their interior courtyards and building sites. When the process is complete, the district's streets and buildings will have been staked out in final form on the land. This is an untested approach, but I believe that it recovers the methods that were used in medieval times, which produced some of our finest urban areas. Case examples are given, and the Part concludes with some thoughts on poetic spaces. Each Part carries its own brief introduction.



Venice



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