In conclusion, we believe that the garden city as proposed by Ebenezer Howard more than a hundred years ago provides an excellent framework for a more sustainable urban form. With the addition of everything learned in the twentieth century about designing with nature for people, it provides us with a fine blueprint for a more sustainable and successful twenty-first century.

Chapter 9

The Process of Creating Sustainable Communities

Designing a new garden city or garden village neighborhood or redesigning an existing urban area requires the integration of many different requirements into a land use plan. The critical roles of aesthetics and citizen participation must also be considered. And most important, the plan must be implemented.

Earlier in the book, we examined the importance of location of the site: its climate, its proximity to other settlements and to natural resources, the availability of water, and the potential for dispersion of air pollution. We discussed analysis and mapping of the site's existing drainage patterns and natural aesthetic features and examination of its soil types, solar orientation, endangered habitat, and so on, to determine which locations are best suited to various uses: agriculture, forestry, sewage recycling, buildings, roads and paths, and parks. We discussed how these factors should determine the overall size and density of settlement the site can support.

We also looked at conceptual notions of what a settlement should ideally be like and how it should ideally be laid out—appropriate size for efficient government and a good social atmosphere, appropriate patterns of circulation, proper relationship between public and private spaces and between living and working spaces, and so on. We described a variety of technologies from which to choose—different ways of handling sewage, different ways of producing energy, and different materials and methods for constructing buildings.

At this point, however, theory and analysis can go no further. Successful integration of all these factors into a harmonious, elegant site plan depends on a designer or design team's creative ability and intuitive perception of comprehensive solutions. In the end, the design of a sustainable human envir
The Role of Aesthetics

Many years ago, when visiting a house designed by Frank Lloyd Wright, Michael became keenly aware of a pleasant feeling and realized that architecture should be judged by the way people feel when they are using the space. This criterion takes in both the functional and the aesthetic aspects of architecture. The functional aspects are fairly straightforward: people will feel less comfortable if the light glares in their eyes, if the temperature is too warm or cold for the amount of physical activity going on, if furniture is too high or too low, if there is too much or too little privacy, or if things are arranged to require unnecessary movement or to make circulation awkward. But there are more subtle and subjective factors that affect people's comfort and mood within urban spaces and determine the ambience of those spaces. Some of the factors may be purely symbolic, such as an orderly design that symbolizes an orderly and dependable world; a broad porch and a pleasant, accessible walkway that symbolize welcome; house plants that symbolize life, growth, and nurturing; or some shape that has special meaning within a culture. Other design elements may contribute to a pleasant ambience by echoing the natural forms among which humans evolved. Others may have meanings or meet subtle human needs of which even the designer is only intuitively aware.

Our visits to successful communities in Europe and the United States have underscored for us the importance of aesthetic considerations not only in home design but also in neighborhood and community design. Some public spaces are delightful, exciting, wonderful places to be—the plazas of Paris, the streets of Barcelona, the village greens in England, the paseos in Santa Barbara, the squares in Boston—whereas the look-alike strip developments and big-box retail centers found everywhere across the United States are barely tolerable places to spend time.

We believe it is not enough for the designer to be intellectually knowledgeable about human needs and ways of meeting them or even to be skilled at integrating a variety of needs into a single harmonious, elegant solution. To masterfully design nurturing spaces, one must also be intuitively sensitive to the ambience of spaces: the shades of mood and feeling that spaces evoke and the meanings they suggest. The designer must be able to arrange spaces to evoke the desired feeling, meaning, and mood, just as the poet must be able to arrange words to evoke the desired feeling and understanding in a reader's mind. The designer's task differs from the poet's only in that the elements he or she works with, unlike words on paper, must also perform concrete physical and social functions. The solutions must integrate ambience and function.

So much of the human-made environment is created without thought for visual consequences. We wonder sometimes whether this is not a sociological time bomb. People had been tampering with the physical environment for many years before the long-range detrimental effects of those manipulations, such as global warming, became obvious. The same may be true for changes in the subjective environment. It is possible that people have not yet begun to understand the negative effects of visual environments that have an oppressive ambience. Many of the problems that plague society today, such as "road rage," may stem in part from such subjective factors.

There are countless design theories, philosophies, and styles that address the subjective aspect of architectural design. We will not go into them here except to mention two that we believe stand out. One is the traditional Japanese style, which emphasizes simplicity, subtlety, use of natural materials and naturalistic landscaping, and the relationship between the building...
and the garden. The second is the view expressed by John Ruskin in *The Poetry of Architecture*. Ruskin praises the architecture of simple, unpretentious buildings of the eighteenth and nineteenth centuries. European cottages and villas of this era, he says, demonstrate that beauty is born in the simplicity of a design solution and matures with the aging of a building as the building serves its function well and shows signs of use.

We believe that there is also a great deal to be said for an order and consistency in neighborhood and community design that extends to a consistency in the appearance of homes. We are not talking about the monotonous fundamental uniformity of tract homes, poorly masked by random variations in color and style of facade, but rather the opposite: a fundamental variation and individuality in design overlain with a harmonious thematic consistency. This can be seen and felt in the ambience of old European towns and more primitive villages, where consistency developed naturally through emulation and tradition, a limited variety of available materials, and an absence of rapid change in building technology.

Consistency in building style has a lot of desirable symbolism. It provides our connection to the history of the place. It suggests that good solutions do not change, that they are not arbitrary, and that appropriate materials are not arbitrary. On a deeper level, it symbolizes the possibility that unique individuals can join together into harmonious communities and societies without losing their basic individuality. It symbolizes a cooperative spirit and respect and consideration for one’s neighbors and the community as a whole.

Consistency in building style also echoes the world of nature. Consider peach trees: no two are alike, but there is a fundamental consistency in shape, color, and growth pattern that makes it easy to distinguish any peach tree from a palm tree or a rosebush or even from members of more closely related species, such as apple and plum trees. Landforms and types of rock also exhibit this patterned variation. If it is true that human perception is by evolution adapted to natural forms, then it is probably also adapted to allow us to detect the subtle patterns of these forms. Since we generally find pleasure in the exercise of our capacities, it is likely that we would experience such patterned variation as pleasurable, whether we find it in peach trees or in houses.

The greatest potential for achieving unified neighborhood design may lie not in stricter authoritative control but in people becoming aware that there are optimum materials and design techniques for particular locations and that there are aesthetic advantages and delights to a neighborhood created by a good designer using the materials most appropriate for that location.

Although an overall continuity of design is important, it is also very important for residents to be involved in creation of the overall design and,
knowledge of design concepts, the designer can develop a master plan and a set of architectural and landscaping guidelines, leaving detailed design to be determined during development with further input from residents. Before development begins, however, the master plan and guidelines can be refined through feedback gained in further talks with representative users.

Since the completion of Village Homes, there has been an increasing awareness of the importance of involving residents in the planning and design process. Research shows that direct participation, for example, the simple act of planting a tree is associated with greater satisfaction with one’s neighborhood than when trees are planted by the city, the developer, or volunteer groups without involvement of the residents.2

In the past, it has been difficult or impossible to get the average citizen interested or involved in the urban planning process because of the difficulty of conceptualizing the end result by means of two-dimensional sketches or legal zoning and planning jargon. Because of this, few people show up for public hearings. Efforts to address this challenge have led to the recent development of some excellent citizen participation tools.

One of these tools, now used extensively by the Local Government Commission, is the Community Image Survey, based on the Visual Preference Survey created by architect Anton Neelsen. It consists simply of asking people to rate slides using a scale of plus 1 to 10 for a positive reaction and a scale of minus 1 to 10 for a negative reaction. We have found this to be extremely valuable in helping people focus on the environment around them in order to understand what they like and dislike, what their choices are, and how design can be used to make their communities better.3 The Community Image Survey has been used in such cities as Reno, Nevada; Portland, Oregon; and Truckee, California to help produce general plans and design guidelines that are understood and supported by their residents.

Another, more expensive tool is computer simulation. Using computer technology, people can see, for example, what their street would look like if it were narrowed, if trees were added, or if height restrictions were imposed. This technique was used by the city of Orlando, Florida, to involve residents in the creation of a master plan to revitalize three declining neighborhoods in the Parramore Heritage District, the home of most of the city’s African American community. Workshops were held for each neighborhood, bringing in merchants, homeowners, tenants, property owners, and elected officials. The ultimate goal of each workshop was to answer the question “Parramore, what do you want to be?” Using computer simulation, citizens could see the results of proposed design and policy changes. This piqued people’s

Citizen Participation

Involving citizens in the design process does complicate the designer’s job. This may be why continuity in large-scale designs often seems to be achieved at the expense of user participation. On the other hand, user participation without adequate designer coordination has produced chaotic, unpleasant environments. One must steer a middle course here.

The procedures we used in the design of Village Homes provide a useful example of such a middle course. Our general strategy was to begin with an overall plan and a set of planning concepts and leave the details to be worked out as development progressed, with as much input from users as possible at each stage.

As mentioned in chapter 2, many of the ideas we implemented in Village Homes originated among a small number of people brought together to plan a community as a group. By the time the group dissolved, its meetings and discussions had helped us develop a general concept of what a neighborhood should be.

Two years later, when the way opened for us to develop a sixty-acre parcel of land on the edge of Davis, we developed this concept into a master plan for the site. We then presented the plan to friends, acquaintances, and prospective home buyers and investors to get their reactions. Their feedback was used to refine the plan.

The plan we presented to the city showed streets, lots, open spaces, and sites for recreational and commercial facilities but left the details of buildings and landscaping to be determined as the project proceeded with input from homeowners. New homeowners participated in the design of greenbelts and common areas adjacent to their homes. As the neighborhood grew, members also helped decide which community facilities should be built and finalized their design.

Similar procedures can be used in designing new towns and redesigning existing urban spaces into viable communities. A designer or design team familiar with general social, environmental, and aesthetic considerations can talk with people representative of those for whom he or she is planning to get a sense of their particular needs and desires. Then, on the basis of available technologies and the characteristics of the site and drawing on his or her

indeed, in any decision affecting the community. This helps the designer meet the residents’ needs, but equally important, it gives residents a sense of their ability to help shape their community and a feeling that the community is truly theirs.
interest in participating, assisted them in making more informed decisions, and helped them reach consensus.  

A very low-cost citizen participation technique was devised by a planner in the city of Olympia, Washington, to solve a problem of much larger scale—where to locate the 4,200 new households expected in the city by the year 2015. Participants were given photographs of well-designed housing types that fit into the local architectural vernacular so that they could see what housing might look like at various densities, from 2.5 units per acre to 35 units per acre. After this, groups of participants were given a simple map of the area—like a game board—and colored squares denoting different densities. As the "game players" attempted to fit the projected growth into the acreage provided, the trade-off between various housing densities and parks and open space became obvious. Game players might also address issues such as neighborhood parks versus large parks and proximity of housing to services or public transit.

To bring it all together, the process of designing sustainable communities
requires the use of geographic information systems (GIS) technology to prepare an integrated design solution; it requires strong artistic talent on the part of the urban planner, landscape architect, or architect to make the end result satisfying to the senses; and it requires involvement of citizens in the process to ensure an appropriate design and the development of community ownership and pride. If these steps are followed, society will enjoy the multiple benefits of more sustainable and emotionally satisfying communities.

Implementation by Local Government

The process of planning sustainable garden cities will differ from current planning procedures in two main ways. First, it will direct attention in planning to a number of social, environmental, and economic factors that have been virtually ignored in current planning. Second, it will develop comprehensive plans for areas at a much earlier stage of development; in fact, planning will have to be done prior to any approvals. This will lead to better planning because planning issues are more effectively addressed when a plan is developed as a whole rather than when it is pieced together from unrelated proposals submitted over a number of years by different developers. With a comprehensive plan already laid out, governmental evaluation and approval of developers' proposals will be simpler and quicker, saving money and time for both government and developer. The developer will also benefit from knowing more clearly in advance what sort of proposal the government will find acceptable. The reduction of red tape and time delays and the assurance of good environmental decisions could ease some tensions and open the door to a more unified effort between the traditionally opposing forces of the development industry and environmentalists.

The most effective way to approach this kind of planning is to coordinate it with the development of regional plans. This can be done if jurisdictions within a region agree to update their general plans at the same time. Whether this occurs or, as is usually the case, a city or county updates its general plan independently, the following steps should be taken:

1. Define the planning boundary. (It might be a city, a county, or a region incorporating a number of jurisdictions.)
2. Determine what land should be set aside as unbuildable open space.
3. Designate areas to be developed as garden cities and garden villages on the basis of their ability to produce an efficient public transit system, both within the living area and in relation to the larger regional transportation system. (The San Diego Association of Governments, Portland Metro, the city of Portland, and others are currently designating areas around transit stations for higher-density development.)
4. Produce specific plans for each garden city or garden village prior to any development within its bounds.

Development should not be approved by any jurisdiction until a specific or precise plan is complete, to ensure that the result will be a complete community or part of an effort to establish a complete community rather than the usual piecemeal urban sprawl. An example of this process can be found in the city of Oakdale, California, which incorporated the Ahwahnee Principles in its general plan. At the same time, the city established a policy that new growth could take place only in specified areas and that prior to development approval, the developer must prepare a specific plan consistent with those principles.

One obstacle to this kind of planning is that someone has to lay out money for preparation of the specific or precise plan a number of years before there is any development income to cover it. In some cases, developers or landowners will organize to finance a specific plan if they believe that they will not be allowed to develop without one. In many cases, however, city or county governments will have to provide the initiative. Some cities already provide funds for specific plans and are reimbursed later by development fees.

Currently, funds authorized by the federal Transportation Equity Act for the 21st Century (TEA-21) can be used for preparing a plan for mixed-use development around a transit stop. A few metropolitan planning organizations in California and Oregon also support such activities.

Although peculiarities of site and situation will make every garden city in some sense unique, there are considerations that apply to all of them.

For economic reasons, it is important to develop public services for a new garden city gradually, as it develops. With a comprehensive plan for the fully developed garden city in hand, it may be tempting for a government to require construction of the full-scale public facilities all at once. However, the interest on the capital required to do so is staggering and would significantly increase the price of homes. Any delays in development would make these interest costs even higher. Although development can in some cases pay for all the infrastructure necessary to support it, the infrastructure should be designed to avoid unnecessary costs and to be built in phases to avoid excessive expense.

Development should proceed cautiously and frugally. For example, when the new garden city sets up its fire and police forces, these can be housed
temporarily in an inexpensive structure that will eventually become an equipment storage building for the public works department. The city government can initially share this building and later work out of a building that will ultimately be rented to private businesses for office space, either in the town center or in one of the neighborhood centers. A permanent police station, fire station, and city hall need not be built until the area is more than half developed and able to generate adequate revenue for its construction and maintenance. Similarly, the garden city's first school for all grades up to or including junior high can be a building that will eventually house only a few grades or serve only one or two neighborhoods.

The town's public infrastructure must reflect a real effort toward simplicity, frugality, and functionality. Some of the features we advocate for noneconomic reasons, such as narrow streets and surface storm drainage, will coincidentally save money, but planners must try to economize in all other areas as well. Designing more economically will require a conscious effort because public officials, engineers, architects, and planners, as well as citizens, will have developed their standards during a period of affluence. Reasonably priced housing cannot be built without such efficiencies.

Sustainable development is less costly than the standard development patterns of today. Patrick Condon, an associate professor in the Landscape Architecture Program at the University of British Columbia, working with the Fraser Valley Real Estate Board, the city of Surrey, British Columbia, and the Greater Vancouver Regional District, has studied the costs and benefits of "green infrastructure." The concept includes narrow streets, gravel lanes, and surface storm drainage systems linked to a preserved and enhanced natural drainage system. They found their proposed green infrastructure standards to be considerably more economical for the developer. For example, a traditional ten-and-one-half-acre project expanded to fourteen acres to produce a more sustainable development alternative would cost $90,000 less for the land, construction, and infrastructure.6 The 1998 book Green Development: Integrating Ecology and Real Estate, written by the staff of the Rocky Mountain Institute, reports similar savings realized by those who have incorporated such measures in their development projects.7

The Local Government Commission has examined the fiscal effects of narrowing streets, providing natural drainage, and increasing the energy efficiency of housing through solar orientation and various conservation measures. A consultant developed a computer program for the commission that allows a city to input the amount and type of housing, desired street width, and other variables. Information about climate and utility prices is embed-
live—a lively community with a beautiful setting, potentially clean air, little crime, and housing at competitive prices.

What is to prevent a garden city, once developed, from growing beyond its intended size? This is a particularly important question in a comprehensively planned community because additional growth would tend to undermine the benefits of the original good planning. For example, it could occupy land intended for food or biomass production or for recreation. Development outside the distance convenient for bicycling would tend to generate amounts of automobile traffic that would cause congestion in streets and parking areas designed only for light use. Therefore, local governments undertaking garden city–type planning must take steps to keep the communities from growing beyond the optimum size. In a new town planned from the very beginning to grow only to a certain size, no one could claim to have been taken by surprise. In addition, voters in a new town would tend to be aware of the town’s development plan and the reasons behind it, and the disadvantages of further growth would be clearer to them than they would be to voters in a conventional town.

Still, in many cases it would be wise to set up further barriers to growth beyond the intended size. One method would be to tie up development options on land outside the planned borders of the town. For example, as of spring 1999, Boulder, Colorado, had purchased 28,907 acres surrounding the city. In a new town, this method should be easier because the options could be acquired before development raises their value. This could be done either by a special service district or by the developers themselves. Once all the necessary options are acquired, they could be placed in trust so that the land cannot be developed. Another way to preserve the planned size of a garden city, whether as a new city or as a district of an existing city, is to designate undeveloped land around the community as permanent open space in the general plan. The land value then would not escalate beyond the value of its current use, and this would increase the possibility that it would be affordable enough to ultimately be purchased by a land trust.

**Overcoming Barriers to a Better Process**

In any discussion of improving urban design, the question inevitably arises of why rational design processes are not in use already, why coherent plans are seldom made and are almost never followed, and what it would take to change that. Once we ask these questions, our attention turns to politics, government, law, finance, education, and culture and we find ourselves discussing procedures in a broader—very much broader—sense.

In general, the earliest human settlements evolved naturally from small groups of individuals who shared the same basic assumptions and goals. Because they had limited technology and resources, their choices were few. Moreover, technological change took place much more slowly, so the parameters of the design problem remained relatively constant, and this allowed a tradition of good design and successful solutions to develop. It was a process of trial and improvement, carried out in a much more informal and leisurely manner. The results were strikingly functional and aesthetic.

The process was somewhat more complicated in the planning of the earliest cities, but it was unified by the central power of rulers who could commission architects and planners to meld the needs of the various groups into a coherent design and execute it. Planning in Europe and the United States became more difficult as power was decentralized, interest groups became more divergent in their goals, and technological change occurred at a faster rate.

In the twentieth century, as discussed in previous chapters, many planners, architects, and social critics proposed the use of a more comprehensive design process. New towns built in the United States earlier in the century, such as Columbia, Maryland, and Reston, Virginia, created environments that are well organized as far as they have gone. The best plans put forward, including the English garden city concepts of Ebenezer Howard, were never executed to their full extent because they did not receive enough backing.

Although the 1990s brought some hopeful signs of progress in addressing ecology and community in a more comprehensive way, efforts toward sustainable community design are still far too rare. The few innovative developers who do want to produce more sustainable places for people to live face an uphill battle in getting new ideas implemented.

We believe that the basic problem is fragmentation of power and authority over the planning process. There is no unified planning authority demanding designs that integrate a variety of needs and goals. The power over planning is divided among many individuals, officials, and institutions, each concerned only with some small part of the total picture—bankers concerned only with profit and financial security, public engineers concerned only with efficient flow of sewage and traffic, and fire departments concerned only with reaching a fire quickly.

None of these problems is unimportant, but the official concerned with only one of them usually prefers to solve it in the easiest and most direct way. He or she has no responsibility for the overall plan and therefore no incentive to be creative or flexible in solving his or her own problem. The firefighter will want wide streets instead of considering smaller, more maneue-
include residents and potential residents. Approached in this way, design can be an incredibly rich and satisfying process for everybody involved and can restore residents’ feeling that their neighborhoods are truly their own. Such an approach can also permit enough diversity and experimentation in neighborhood design to demonstrate what works and what does not.

Comprehensive planning will be politically feasible only where the general public understands the goals and assumptions of good planning and where individuals are ready to speak out and take action to see that such planning is implemented. Therefore, the role of education, both formal and informal, cannot be overlooked. The relationship between people and the environment should be stressed in school in the earliest grades, and such education should be continued throughout a child’s formal schooling. Films, books, and class curricula need to be expanded to include more in this area. Education of the general public must also take place. Again, films, books, courses, and seminars should be developed to broaden the public’s knowledge.

The city of Davis became nationally recognized in the 1970s for its environmentally sound planning policies. It is no coincidence that the University of California, Davis, is the site of one of the country’s first graduate programs in ecology. The citizens’ group that was responsible for many of the city’s innovations in energy planning was made up primarily of ecology graduate students. They so inspired and impressed the rest of the town with the urgency of responding to the energy and environmental crisis that constructive change became a possibility. Participating firsthand in the Davis experience taught us the value of a citizenry with a well-rounded education.

More recently, the city of Portland has become a model for better planning, admired by many across the country. This area of Oregon takes a regional approach to transportation, integrates transportation and land use planning, and has successfully limited urban sprawl and preserved farmland. The city has also taken the lead in downtown and neighborhood revitalization. This community places a high degree of emphasis on citizen education and citizen participation. Anyone who turns on a television set in Portland is likely to find a program in progress educating Portland’s citizens about regional planning efforts. These examples demonstrate that communities that have educated citizens with a broader, more interdisciplinary outlook can make a transition from an unsustainable living environment to one that is ecologically sound.

verable fire engines; the banker will want to stick with plans that have been financially successful in the past. Any designer who wishes to see a comprehensive design adopted and executed today is likely to be forced into the role of educator, conducting special presentations or seminars for those in positions of authority to help them see beyond their individual areas of concern. At first, these efforts are likely to be met with some impatience or annoyance: “Why are you telling me all this? All I need to see is the sewer plan.” Eventually, they may be rewarded with interest or even support, but a lot of patience and tenacity will be required, as well as the working capital needed to keep the project going in spite of constant delays.

We think that the real hope for improving urban design lies in planning entities developing more comprehensive design solutions that rely on both environmental information and citizen input. These entities should then be able to carry out their plans in the face of a certain amount of opposition from traditional outside authorities. At the same time, planning entities must gain authority over large enough regions to allow them to develop integrated, coherent regional plans. What is “large enough” depends on the sort of planning involved. For example, development of a coherent watershed plan for the Tennessee Valley required a planning entity covering portions of several states.

A regional planning approach therefore requires a hierarchy of planning entities. Regional planning agencies should locate growth sites both for new urban development and for redevelopment within existing cities. They should integrate all the pertinent information into one map using GIS. They should coordinate the planning for energy, water, agriculture, natural habitat preservation, recreation, and transportation within the region. Once the regional planning entity identifies a proper location, local planning agencies should handle the actual design of new towns (preferably planned as garden cities) or redevelopment areas under their jurisdiction. Within each of these local areas, there should be a community planning commission with jurisdiction over its own planning.

This hierarchy is intended to locate more of the decision making as close as possible to the place being affected, to allow for public input before major decisions are made, and to provide future users with more access to those who make the final decisions. This seems to be the most democratic way to approach planning. The planning process offers the greatest potential if the overall layout is designed in advance, including basic systems such as circulation, energy management, waste management, and major social services. As the settlement is developed, the more detailed design of individual buildings and neighborhoods is carried out by smaller planning groups that