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Sustainable Communities: What's Going on Here ?

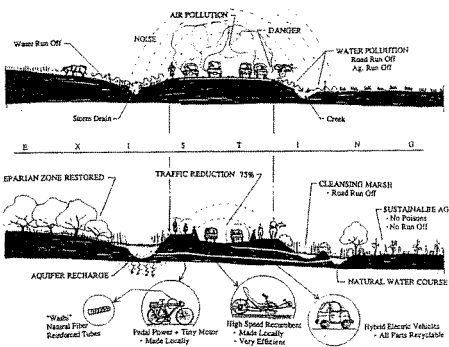
Mike Pease

The word is everywhere: “sustainable architecture,” “sustainable agriculture,” “sustainable environments,” “the politics of sustainability.” It’s a buzz word for our moment, subsuming older favorites, like “appropriate technology,” “ecological” and “energy conscious,” into an even more inclusive concept that includes references to reduced vehicle trips, mixed-use zoning, transit oriented development, infill housing and much more.

But as we develop a language to deal with our increasing awareness of the earth as a whole system — the newly popular word “sustainable” makes sense. It accurately reflects where we are in this process of self discovery: we’re beginning to see the long-term, global picture, and we’re afraid. To talk of sustainability as we do is to face the possibility, even the likelihood, that our usual way of doing business isn’t working, or, more to the point, that it won’t work for the future: It’s not sustainable.

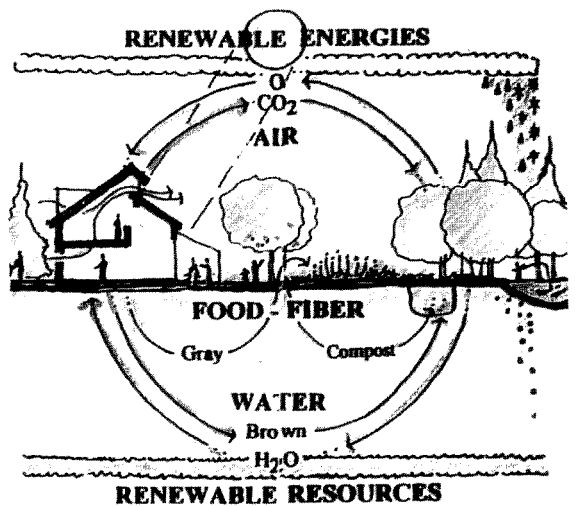
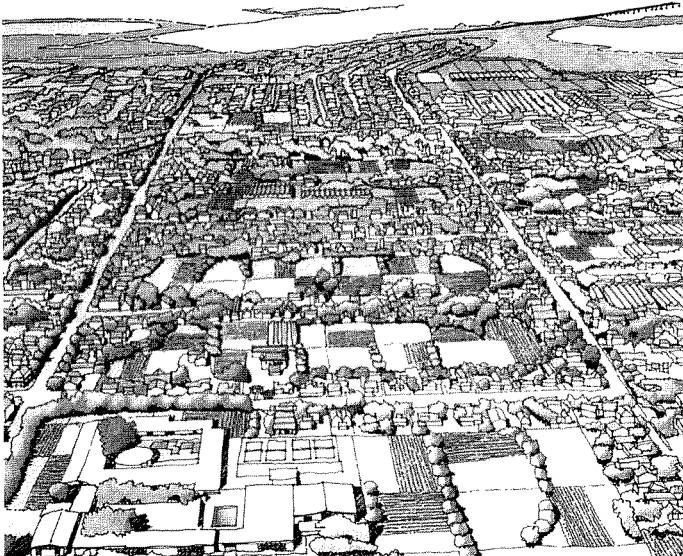
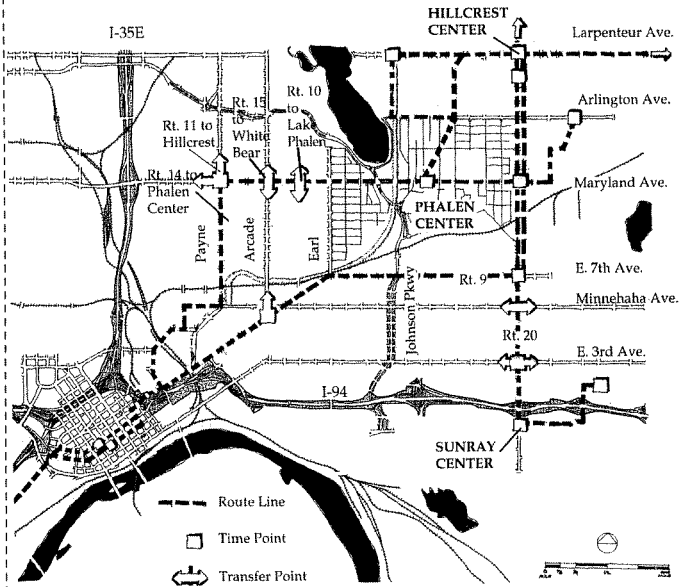
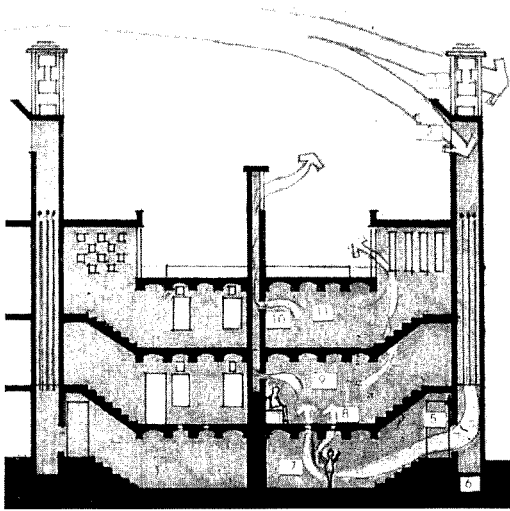
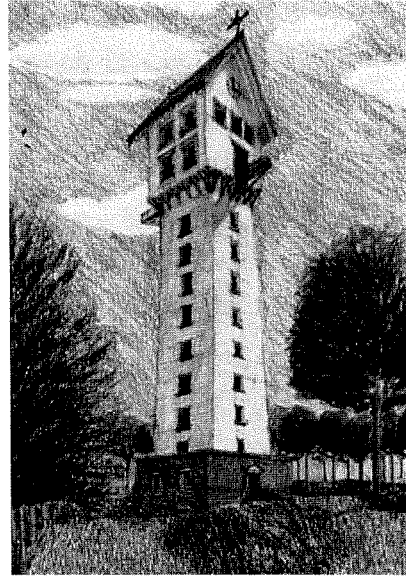
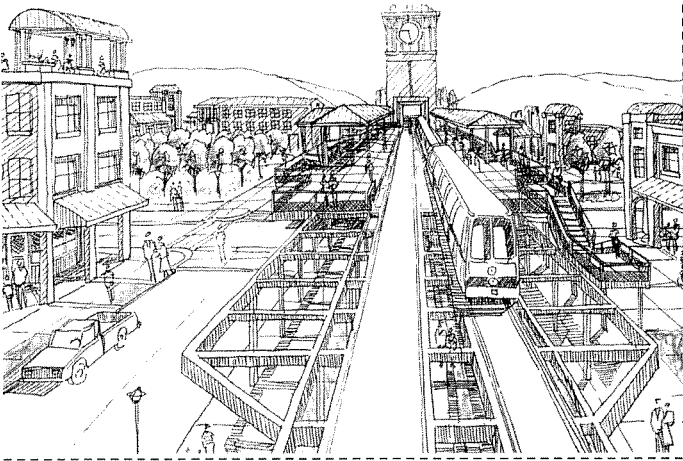
We’re beginning to see that most of the technologies central to industrialized, urbanized cultures like ours — technologies that determine our housing, transportation, commerce, agriculture, access to water and energy, waste management — and many of our social, economic, and cultural institutions are simply not viable in the face of global resource, environmental, population and political conditions. Some systems, like waste management, have been under fire for some time, and important changes are already visible. Others, like our way of producing housing, are not even issues yet for most people.

Underlying all issues related to sustainability are three fundamental economic realities. First, the resources upon which we on earth are all dependent — clean air and water, sunlight, agricultural land, plants,



(Above) Analysis from proposal for Los Osos, A Sustainable Community in a Sustainable Watershed (Morro Bay, Calif.)

(Opposite page) Clockwise from top left: St. Vincent's Station (San Rafael, Calif.), Haymount (Caroline County, Va.), Phalen Village (St. Paul), Regenerating a Profile of Place (Pullman, Wash.), Weeks Neighborhood (East Palo Alto, Calif.), A Sustainable Neighborhood in Urfa, Turkey.



animals, minerals — are in limited supply. In some cases we are already near the limits; in all areas, apparent limits are within sight. Second, throughout the world, economies are expanding, on the whole providing an increasingly higher standard of living for people, thus requiring an ever broader sharing of resources. Third, in the next 50 years, global population will double; there will be twice as many people with whom to share. Any of these three factors by itself is enough to justify an interest in sustainability; taken together, they eventually will generate a force powerful enough to wreak monumental change.

The seven projects described here (six in the U.S., one in Turkey) serve well to represent the range of work being done in the name of “sustainable community design,” at least in the U.S. The Turkish project is both a reminder that this issue is being faced in other parts of the world, and a challenge to our assumptions about what is appropriate and what is possible.

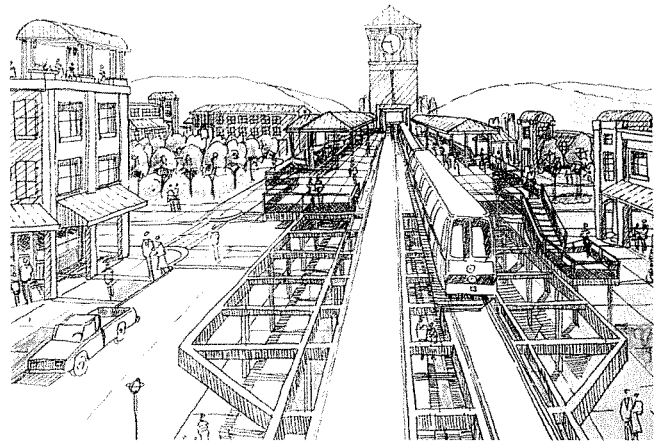
All of these projects, with their many and significant differences, recognize the need for new approaches to community design that support resource conserving ways of life. All are potential models for us as we seek new, sustainable ways to configure our world. Whether, and to what degree, these projects are truly sustainable is the essential question.

St. Vincent's Station

In this elegant scheme for what is essentially a new town, most of the features that are characteristic of sustainable community planning and design are clearly articulated: enhanced provision for walking, biking and public transit; compact configuration, with most uses located within easy walking distance from a retail center and transit connection; medium residential densities; a mixture of land uses, including residential, commercial, employment, cultural and recreational uses; and preservation of and access to significant natural areas. These five characteristics can be taken as the fundamental principles upon which all sustainable communities are built. More about each:

Enhanced provision for walking and public transit. It is well understood that our dependence on cars for moving in about cities is the primary threat to sustainable development. That is due to not only the immense resource demands of the car itself (both in its manufacture and its operation) but also the effects of the car on our settlement patterns. The car's enormous spatial demands (it is essentially a large shell that each of us carries with us on our daily rounds, demanding much space to move through when we are in it and much space for storage when we leave it) requires uses to be dispersed. Car dependent settlements work most efficiently where densities are relatively low.

One result is that we travel long distances between our daily activities, usually alone, and necessarily by car. Another is



This proposal was second place winner in an open competition, sponsored by the city of San Rafael in 1993, to generate ideas and local support for housing development on a 1,200 acre site (the first place winner had lower densities and was judged more marketable). The site is mostly agricultural and undeveloped, with some historically important buildings.

The proposal focuses on preserving and enhancing existing natural areas and maintaining some agricultural production while developing a compact new settlement that “protects and celebrates” significant existing buildings, landscapes and other existing artifacts. Areas of resource preservation include a salt marsh, a fresh water marsh, hay fields, a dairy pasture and oak woodland.

The development, for about 7,000 residents, is intended to be “self-sufficient ... with enough population and services so that residents are not forced to leave it for work, shopping or recreation.”

Connection with a proposed interurban light rail corridor is considered essential; local shuttle service links neighborhoods to each other and to the transit station. To encourage walking and biking, streets are narrow and parking is limited. Affordable housing, for rent and for sale, is included. Dwellings are primarily walkup apartments and row houses.

Project team:

Bruce Brubaker, David Early, Lisa Flaster, Nicholas Haskell, Julie Isbill, Susi Marzuola, Terezia Nemeth, Kevin Powell, Peter Waller.

St. Vincent's Station

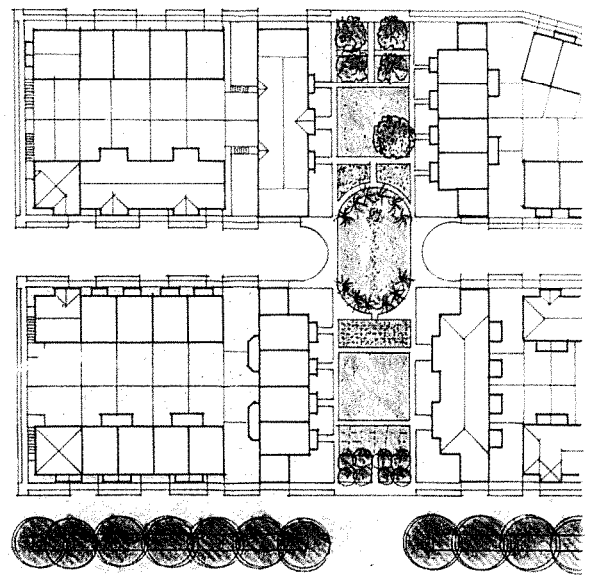


(Above) Panorama of site, looking north.

(Right) Row houses facing pedestrian way.

(Below and left) Town square.

(Bottom) Site plan superimposed on aerial photo. A freeway is to the left; San Francisco bay and its wetlands are to the right. The reactivated rail line bisects the proposed community, from top to bottom.



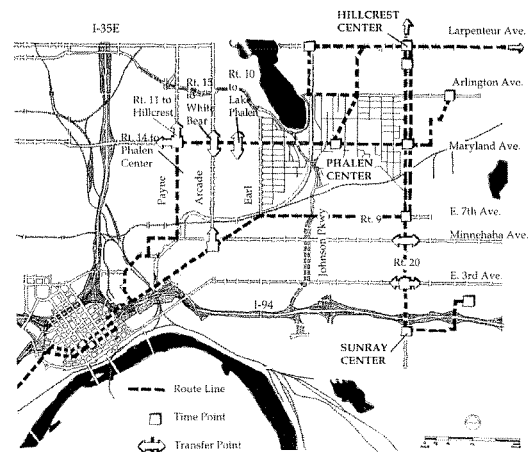
that this low density pattern requires a massive per capita outlay of resources for infrastructure (roads and utilities). As our cities spread out, the space we use is usually the farmland (itself a scarce resource) that was originally the community's source of food. Yet another result is that we are too distant from each other, physically and psychologically, to be able to share; to live "the good life," we must each own all the material supports for that life (gourmet kitchen, personal library, laundry, entertainment center, swimming pool) and we must have the space to house it all. Another, more subtle, result: because once we are in our comfortable cars it seems almost as easy to drive five miles as five blocks (especially if there's money to be saved), car-based settlement patterns create very large market areas, which support large, globally supplied retailers who can buy in huge quantities and sell cheap. The resultant global distribution system uses vast quantities of resources.

Where sustainability has become an issue, pedestrian and public transit systems are developed as alternatives to travel by car because these modes are in themselves radically more efficient in per capita use of resources, and because these modes support compactness, higher densities and mixed uses, all of which also can lead toward radical reductions in resource use.

The development of supportive, enjoyable places for walking (and the public life that accompanies walking) is one of the crucial challenges for making sustainable communities. U.S. designers are not well prepared for this job. We must look to other cultures, especially older urban cultures, for references that will help us rediscover what this quintessentially human activity is about and to imagine the immensely rich environments that can be made in support of walking and public life.

Compact configuration. To encourage walking as the primary means of transportation for daily activities and to encourage use of public transport, those daily activities, and a transit station, must be located within easy walking distance of their users. A common rule of thumb is that a five-minute walk, or a quarter mile (on flat terrain), is the maximum for easy walking between home and essential daily activities. Though there are many variables that can influence people's willingness to walk, the quarter-mile/five-minute rule is a good starting point for communities that are trying to tempt car users into the walking/transit mode. In communities where walking is taken for granted, the distances can be somewhat greater. And the design issue again: if walking is perceived as a positive experience in itself, people will walk much farther without complaint than if the walk is viewed simply as a process of getting from here to there.

"Walking," of course, is a shorthand term that also includes travel by wheelchair and travel with carts, strollers, etc. Well designed places for walking will also account for the needs of

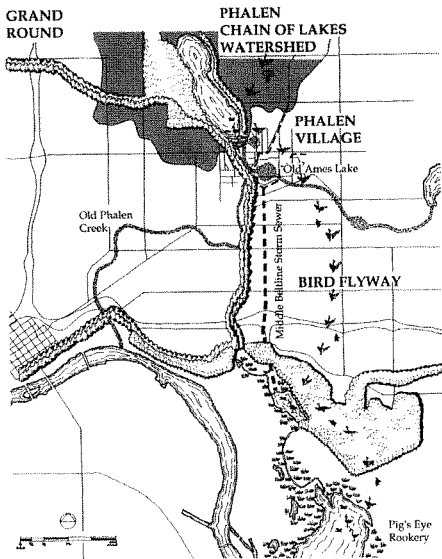


This is a proposal for redeveloping an existing piece of suburbia (a neighborhood three miles northeast of downtown St. Paul) to create a new, compact, pedestrian-oriented neighborhood and repair damaged natural systems. A shopping center, parking lot and apartment superblocks would be removed to reclaim a large wetland area, which will function as the organizing focus for the village and give it its own signature. A centrally located commercial "niche" and a limited access bus connection to downtown are at the village nexus. Residential areas are intensified and made more complex, filled in with a variety of housing types, with new streets added to subdivide the village into smaller blocks. Some of the new streets, the busway and parts of the wetland are currently being implemented, and the city of St. Paul has an option to buy the shopping center site.

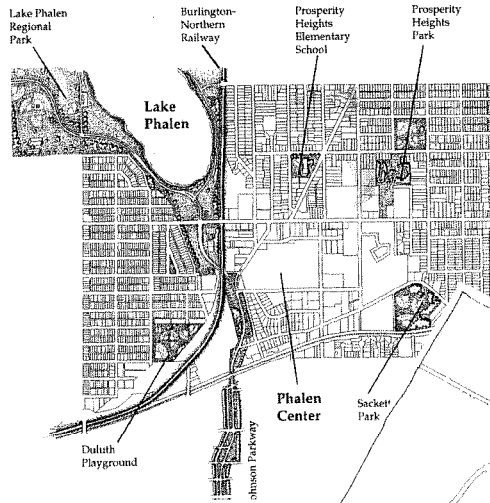
Project team:

University of Minnesota, College of Architecture and Landscape Architecture Case Study Team: Harrison Fraker (manager) Joseph E. Lambert, Daniel J. Marckel, Mark Tambornino. Advisors: Catherine R. Brown, William R. Morrish, Joan I. Nassauer, Mary Vogel. Houses into Town Studio: Dan Solomon, Catherine Clarke, instructors. Phalen Case Study participants also included Phalen Small Area Task Force, and business, resident, city and regional representatives.

Phalen Village



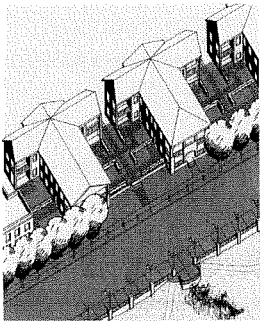
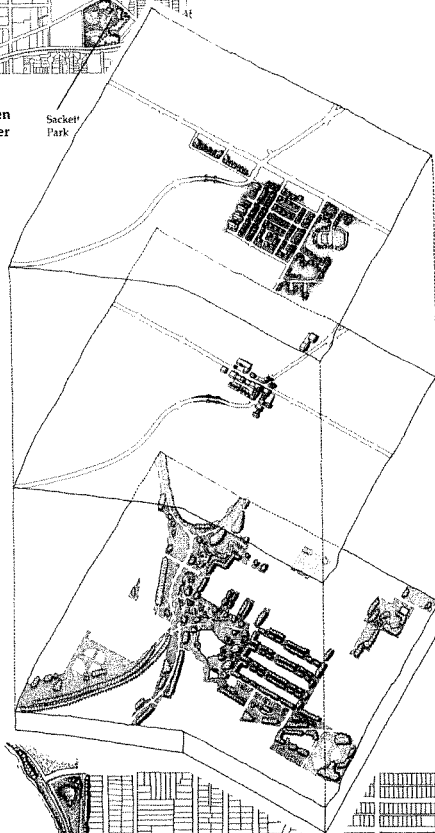
Existing contexts: (Left) Transit connections to downtown St. Paul. (Center) Wetlands and flyway. (Right) Public open space and property ownership patterns.



Proposed housing and neighborhood streets.

Transit node and neighborhood commercial niche.

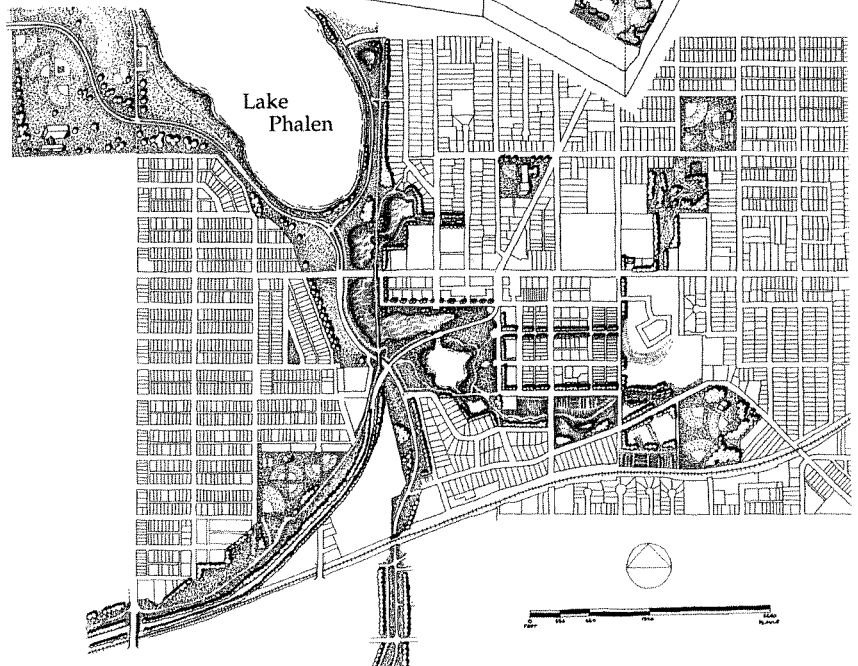
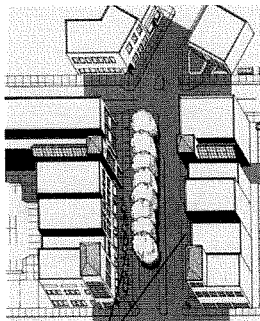
Wetland park and public open space system.



Proposals: (Top left) Detail of housing along park.

(Bottom left) Detail of "transit room" with pedestrian space, retail frontage and upper-level business and residential uses.

(Bottom right) Wetland park and open space system.



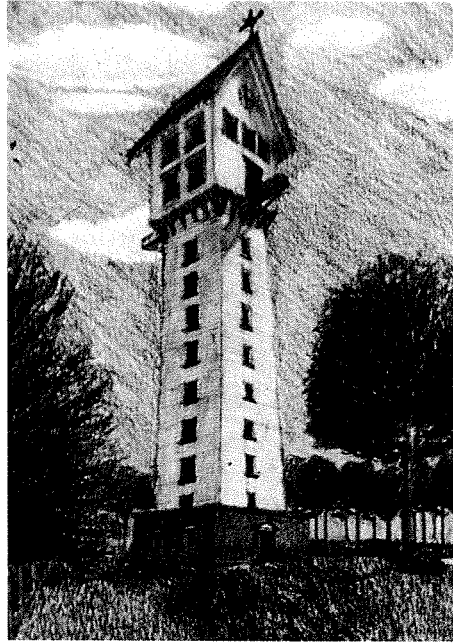
walkers who have difficulty seeing or hearing, or who in other relevant ways do not fit the average profile.

Medium residential densities. Residential densities of three to six dwellings per gross acre (dpga) are common in suburbs, and they are ideal for car use. (Gross acreage includes private and public lands, including streets, parks, etc., and a dwelling is any single household residence, from a studio apartment to a mansion.) But where the market area is based on walking, thus limited to a quarter-mile radius, those densities do not include enough people to support either basic services or a public transit system. The minimum density for transit is about 10 dpga, but 20 or 30 is much better. The higher the density, the greater the range of goods, services, social contacts, job opportunities, etc., and the more efficient the transit system will be. Above about 50 dpga, most dwellings must be in multistory buildings, which will not be tempting for most households with children (at least in the U.S.). Such densities are appropriate for some center-city areas or certain specialized areas, such as college neighborhoods.

At about 30 dpga a critical mass is reached that can support a significant range of local services. That is also the density at which travel by car becomes so difficult (due to traffic congestion and competition for parking space) that many people will opt to walk or use the transit system. While densities of 30 dpga are not unusual, in most U.S. cities they almost invariably house people without children. At this density, assuming 30 percent of land is used for non-residential activities, the average land area per dwelling is about 1,000 square feet, pretty tight by U.S. standards. Mixing dwelling types, of course, means some larger family dwellings are balanced by smaller one or two person units, but the average family dwelling site, for three to five occupants, will still be only 1,500 to 2,000 square feet.

This, again, is a huge, and essentially new, challenge for U.S. designers and developers: creating good housing, for households of all configurations, where density requirements dictate very small lot sizes. Apartments will work for some households. But for others, especially those with children, some form of row housing is probably the most viable dwelling type; row housing balances compactness with ground-level access and household autonomy, and is workable at these middle densities. Wonderful models for row housing exist throughout the world, and new construction technologies for waterproofing skylights and roof decks will allow this dwelling form to develop an even richer future.

A mixture of land uses. An ideal sustainable walking-based community provides for all its residents' needs — dwelling, shopping, work, recreation, friendships, cultural activities — within the local, walkable area. But contemporary expectations for variety in all those areas make it unlikely that a single walking-based community could support a satisfying life for most



This is a plan for a new town, in early stages of development, on a 1,700 acre site on the Rappahannock River, 50 miles south of Washington, D.C. It will include 4,000 homes, 250,000 square feet of retail space, 500,000 square feet of office/commercial space and a range of cultural and recreational facilities intended to “nurture community life.”

The plan encourages walking with narrow streets, short distances to local services, a shuttle that ties neighborhoods and the town center together and a timed-transfer connection to commuter trains. Housing of many sizes and types is planned, for sale or rent at all prices. Natural resource protection and pollution prevention are essential aspects of the development plan: preservation and support for existing plant and animal life, protection of water quality, energy conservation in buildings and recycling. The site plan preserves wildlife habitat, plant groupings and wetlands. And there is an environmental manager to administer the programs that address these concerns, both within the community and in the surrounding area.

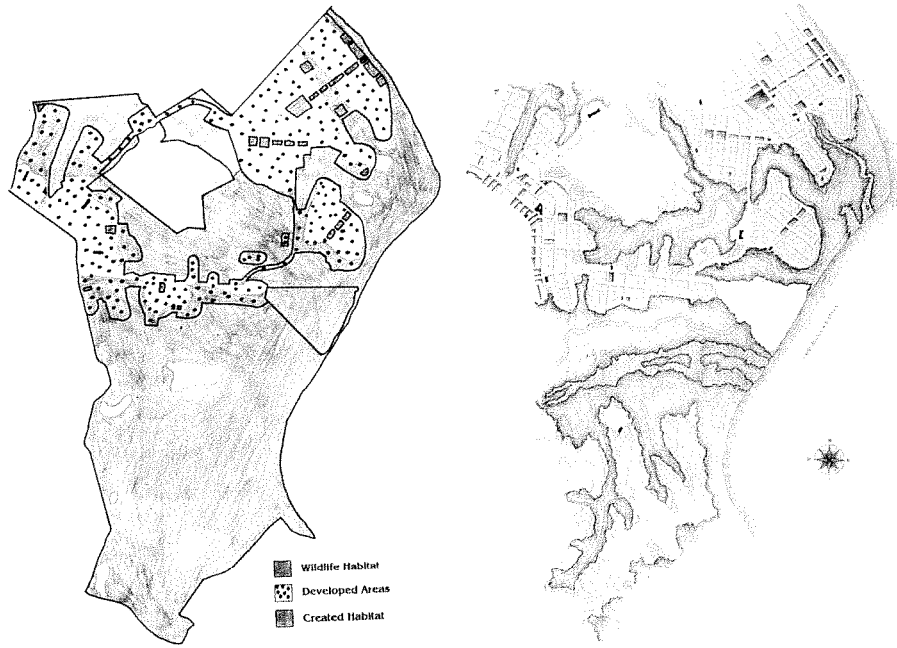
Project team:

The John A. Clark Co. (developer), Duany/Plater-Zyberk (architect and town planner), McGuire Woods Battle and Boothe (attorneys), North American Resource Management (environmental management), Remy, Kemp & Associates (traffic), White Mountain Survey Co. (civil engineers), Neal I. Payton (architect), Warren Byrd (landscape architect), James A. Harrison (archaeology).

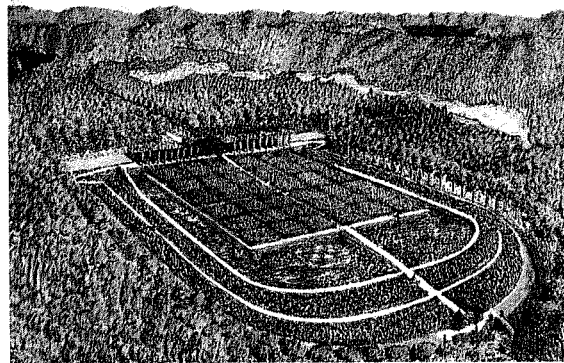
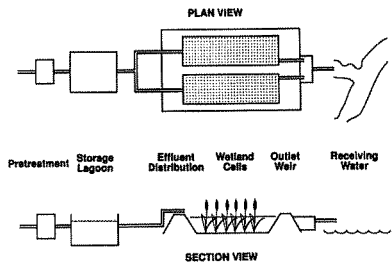
Haymount

(Right and far right) The land development plan conserves important wildlife habitat, vegetation and wetlands. At far right, blue stippling and cross hatching indicates wetlands and 100-foot setbacks. (Duany/Plater-Zyberk)

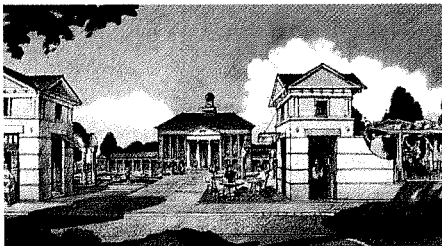
(Opposite page) A water storage tower is designed as an architectural landmark, celebrating the environmental systems that support the town. (Neal Payton)



CONSTRUCTED WETLANDS TREATMENT

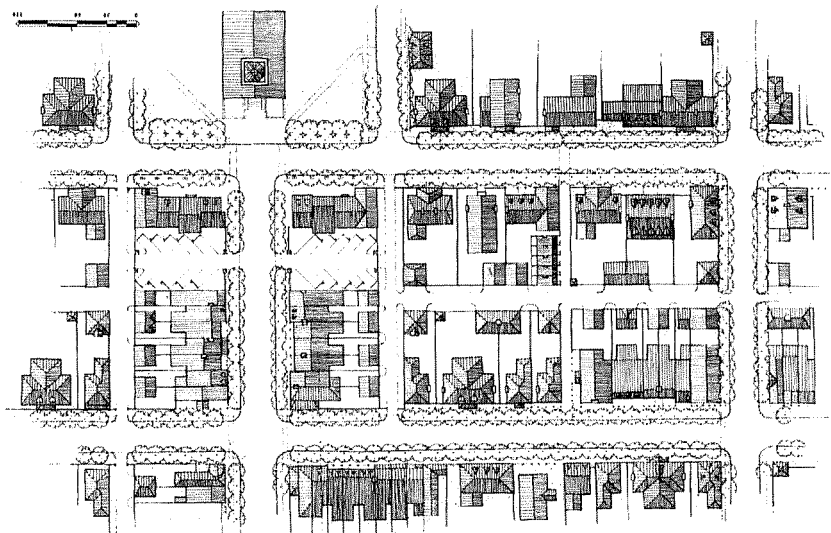


Haymount's water treatment system (far left) inspired the design of open spaces (left). (Diagram: Carrie Fischer/ John A. Clarke Co.; Drawing: Neal Payton).



(Above) Entrance to organic gardens. (Jim Wassely, Duany/Plater-Zyberk)

(Right) Typical block plan, with mixed housing types. (Duany/Plater-Zyberk)



urbanized people. Still, the more opportunities there are to satisfy one's daily needs locally, the closer the community comes to the ideal. When many walking-based communities are effectively linked together by public transit (and pedestrian and bike paths), and when each community supports a wide range of activities, the potential for structuring varied, complex and satisfying lives without being dependent on cars is high.

Preservation of and access to significant natural areas. Part of the motivation for preserving and regenerating natural areas within or near sustainable communities is that such environments are among the places to which people want access in their everyday lives. But underlying the whole concept of sustainable communities is the understanding that we humans are part of the larger web of natural systems, and that our continued healthy survival depends also on the healthy survival of the "living earth." In general, the larger the geographic area encompassed in a sustainable development, the more complex and the more prominent are the provisions for protecting and enhancing natural systems.

Phalen Village

Phalen Village covers a smaller area than does the St. Vincent's proposal, but it uses the same set of strategies, in much the same ways, toward achieving sustainability. The primary difference between these two projects is that while the physical context for St. Vincent's is primarily land, plants, animals and water, with a secondary (though important) overlay of existing buildings, the Phalen Village context is primarily artifacts — buildings, roads, parking lots, utility systems — with a secondary (though, again, very important) set of existing "natural" systems. In both cases, the objective is the same: to bring the complex of human and non-human systems into an ecologically balanced relationship.

Haymount

Again we see the same basic set of strategies, but this time in a project that is on its way toward full implementation. Besides that fact, distinguishing in itself, two things are especially notable about this project. First, an immense effort has been made here to understand the precise characteristics of the existing site, and to devise management systems for future use of the site that will not only preserve but strengthen the site as a support system for healthy life of all kinds — including, for example, a combination of "sequence batch technology, advanced tertiary treatment, and constructed wetlands, to produce discharge water cleaner than that which is withdrawn from the river"; storm water management with "constructed



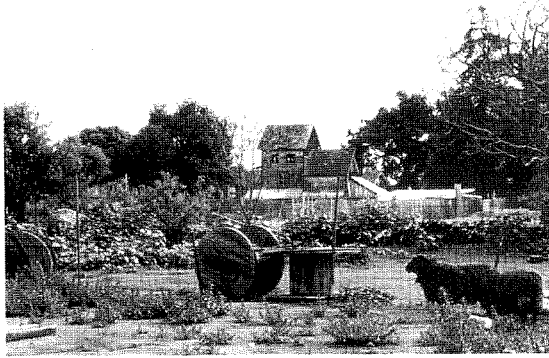
Weeks neighborhood, a 300-acre site in the heart of East Palo Alto, is a grid of very large blocks subdivided into predominantly one-acre lots. The soils are deep, water is abundant and the microclimate is very favorable for agriculture. Historically, these lots were the basis of an early twentieth-century utopian agricultural community; later, they were owned by families who successfully operated truck farms and flower growing businesses.

Contemporary East Palo Alto, including Weeks neighborhood, "embodies the urban crisis conditions facing the nation today: poverty, racial tension, crime, drugs, disrupted families, unemployment, a decaying urban infrastructure and a lack of affordable housing." This project, a joint effort by public agencies, foundations and community groups, hopes to ameliorate those crisis conditions by rejuvenating the agricultural economy that once thrived here — and is still very evident — by providing both a sense of identity and a livelihood for the existing multi-ethnic, low-income residents. The objective is to establish Weeks neighborhood as "a green village within the city," with its own local services, new housing of many kinds and a variety of local transportation options.

Project team:

Paul Okamoto (Urban Ecology), Trevor Burrowes (East Palo Alto Historical and Agricultural Society), Martha Crusius (National Park Service, Rivers and Trails Conservation Assistance Program)

Weeks Neighborhood

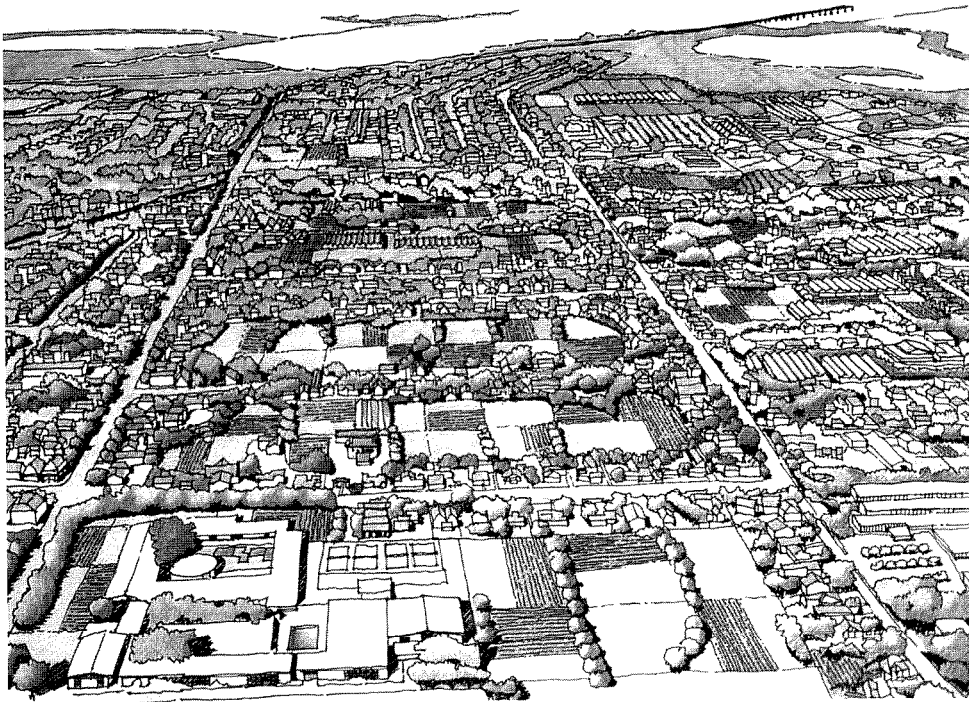


(Far left) Weeks Street community garden. (Paul Okamoto)

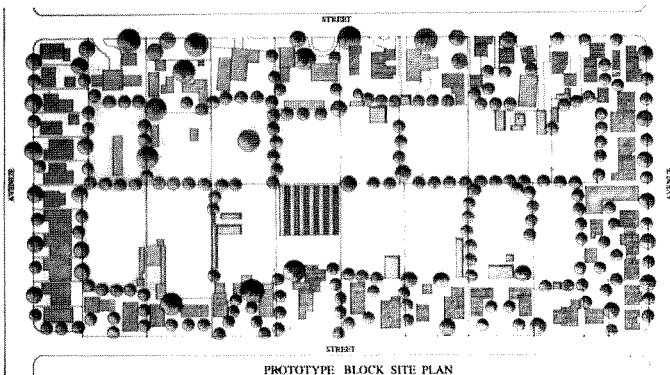
(Left) Rural scene in East Palo Alto. (East Palo Alto Historical and Agricultural Society)



(Right) Aerial photo of East Palo Alto (Pacific Aerial Surveys)



(Above) Proposed vision of Weeks Neighborhood. (Paul Okamoto)



(Right) Conceptual block plan, showing residential lots with small agricultural plots. (Paul Okamoto)

PROTOTYPE BLOCK SITE PLAN

wetlands, porous pavement, fascines, grass and block parking areas and infiltration strategies”; a water delivery system designed to leave the riverbed, riverbanks and underlying aquifer undisturbed; management plans that consider habitat preservation and enhancement for 302 identified animal species and major plant groupings; and a landscape code regulated by an environmental manager.

The second item of note here is that the design for this project is by the architecture and planning firm of Duany/Plater-Zyberk, in Miami. This firm’s Seaside project in Florida, begun in the early eighties, and similar subsequent projects, has provided much of the imagery and theoretical base for projects everywhere whose purpose is to create healthy, sustainable communities (the other firm whose impact has been similarly profound is Peter Calthorpe Associates, San Francisco).

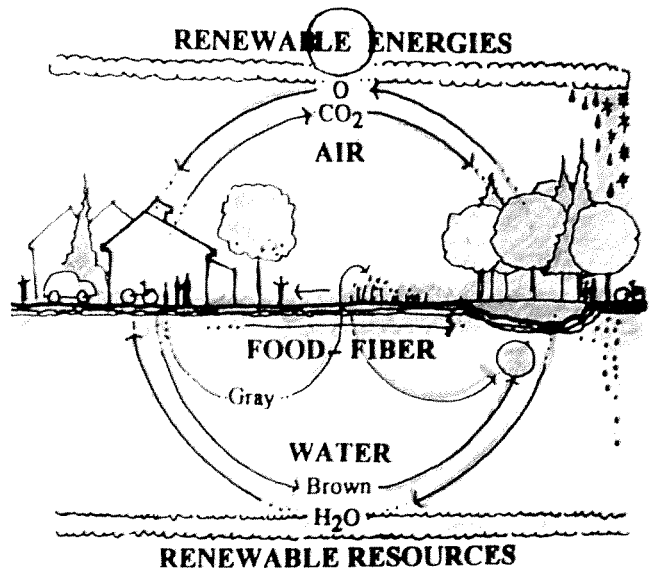
Weeks Neighborhood: An Urban Agricultural Village

The importance of this project for our understanding of sustainable community design is first in its focus on the development of food production as a primary part of the community’s physical and economic structure. Every community needs food, and a lot of it. In most “advanced” communities that need is satisfied by a process that often moves the basic foods over very long distances: from origin, to broker, to processor, to wholesaler, to retailer, to consumer, at an immense total cost in resources. Localizing that process, for food and for other essential goods, is part of creating sustainable communities, not only because it minimizes the transportation component in goods processing but also because it provides local work for local residents (another way to reduce transportation costs).

The Weeks Neighborhood project is also important as a general experiment in sustainable economic development for existing communities, and it is especially important for its intention to bring together existing resources (in this case local agricultural land and the local farming tradition) and existing residents to create a viable new structure. Whether it succeeds or fails in its objectives, there is much to be learned here.

Pullman, Wash.: Regenerating a Profile of Place

This study uses Pullman, a town of 25,000 in eastern Washington, to describe a “theoretical and practical program for the sustainable regeneration of an existing city.” It includes prescriptions for strategies at five levels: *region* (greenbelt, holding lakes for spring runoff, local renewable energy sources); *city* (strengthened city center, “Main Street” develop-



This study, an entry to the American Institute of Architects’ 1993 “Call for Sustainable Community Design Solutions,” uses Pullman, a town of 25,000 in eastern Washington, to describe a “theoretical and practical program for the sustainable regeneration of an existing city.”

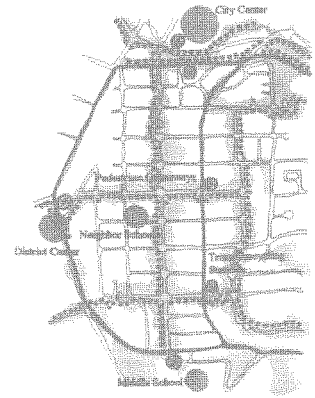
The proposal uses ecological modeling techniques to demonstrate how locally available land, water, air, food, fiber and energy can be used as a sole source for sustainability. It includes design strategies and analysis of costs and benefits at five scales: *region* (greenbelt, holding lakes for spring runoff, local renewable energy sources); *city* (strengthened city center, “Main Street” development, support for walking and public transit, energy conservation through building codes, water conservation and reuse programs, recycling programs); *district and neighborhood* (access to community facilities and transit, increased densities, “green” pedestrian streets), *cluster* (infill construction and increased building development in yards, setbacks and unneeded rights-of-way); and *dwelling* (conserve runoff, recycle solid and liquid wastes, family gardens, energy conservation).

Project team:

Bashir A. Kazimee, Tom J. Bartuska,
Michael S. Owen.

RESOURCES and ENERGY VARIABLES MODELING SUSTAINABILITY

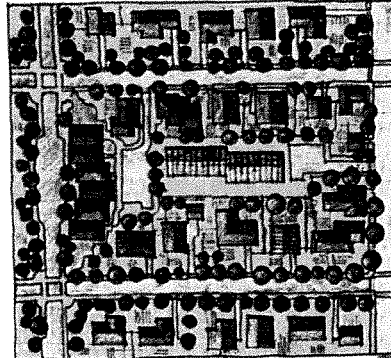
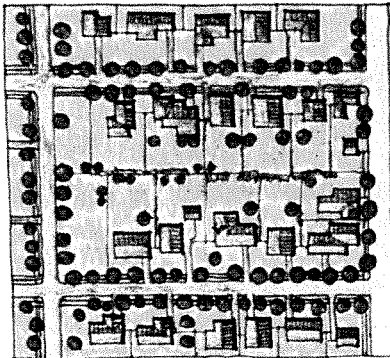
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WATER one can only live 2-3 days without water		H ₂ O use	E: Existing	
		Input	E: Existing	
		Input	E: Existing	
		Proposed	P: Proposed	
FOOD & FIBER one can only live 2-3 months without food		F/F imported	E: Existing	
		Local	E: Existing	
		Imported	P: Proposed	
		Local	P: Proposed	
ENERGY The primary exchange agent in Ecological Systems		Imported	E: Existing	
		Local	E: Existing	
		Uses	E: Existing	
		Proposed	P: Proposed	
HOUSEHOLD ENERGY shifting from non-renewables to renewable resources		Transport	E: Existing	
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		HVAC+WH	E: Existing	
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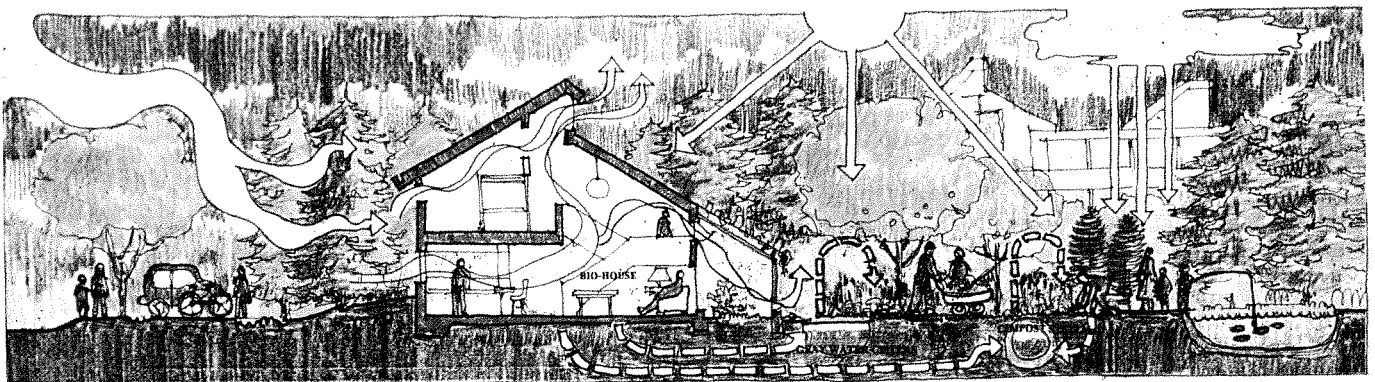
(Above right) Conceptual district and neighborhood plan.

(Left) A model of how a city's use of resources can be analyzed and balanced in a sustainable plan.

(Opposite page) Conceptual model of sustainable human-environmental relationships.



Proposal for filling in typical block with row houses and a community greenhouse.



Conceptual sketch of energy and water flows through a typical single-family house.

ment, support for walking and public transit, energy conservation through building codes, water conservation and reuse programs, recycling programs); *district and neighborhood* (support for local cultural facilities, increased densities, “green” pedestrian streets), *clustering* (infill construction and increased building development in yards, setbacks and unneeded rights-of-way); *dwelling*s (conserve runoff, recycle solid and liquid wastes, family gardens, energy conservation).

This is not so much a proposal as a description of a general process, essentially a planning and design guide for sustainable redevelopment of existing urban areas. Besides the particular strategic advice given for each level of decision making, its special value is in its clear articulation of the range of scales, from regional plan to construction detail, that impinge on issues of sustainability, and its implicit clarification of the intertwining of apparently disparate actions taken within and between scales.

The greatest challenge to effective conversion to sustainability comes from the fact that cities and towns have over the past half century been restructured in myriad systematic, interconnected ways to respond to the automobile as the primary means of transportation. Now, for example, even if we want to walk more, distances between functions are too great, and the per capita cost of even the simplest sidewalks is prohibitive. Even if we want to give up cars for public transit, the low densities won't support public transit systems. Even if we want to share more facilities instead of owning everything individually, we're too distant from our neighbors to make that possible. Even if we want mixed-use neighborhoods, our car-based regional economies undermine small, local enterprises. And so on.

If there is any single principle that is fundamental in planning for sustainability, it is this: Within a given area, whatever the scale, random improvements will not work. They may even be counterproductive because sustainable communities are structurally different from car-oriented communities. Effective change must recognize that what is needed is the replacement of one whole system by another very different — indeed, essentially opposite — whole system.

Los Osos: A Sustainable Community in a Sustainable Watershed

Like the Pullman study, the Los Osos project is a process guide more than a specific proposal (though it does include specific proposals). It is a guide for sustainable development of essentially rural areas, with extensive advice regarding preservation and support for natural systems, as well as instruction for appropriate ways to integrate human development with those natural systems.

Los Osos is a rural/suburban area that has experienced severe drought for the past seven years. This study, essentially a strategy for sustainable regional development, focuses primarily on water issues, proposing that the region's watershed boundaries (the area within which all surface water drains to a common collector) be considered the focus of all planning decisions. It was one of seven winning entries in the American Institute of Architects' 1993 "Call for Sustainable Community Design Solutions."

Detailed strategies are proposed for water use, water treatment and land uses that will allow the area to regenerate as a healthy habitat for plants and animals — including people. The study includes suggestions for developing locally-generated construction materials, alternative transportation systems (including new types of cars and bikes), and solid- and liquid-waste recycling systems, which recover valuable resources. It specifically proposes the development of a community center, conceived as the cultural and political heart of the watershed-defined region and seen as an important strategy for both generating and maintaining community involvement in long-run sustainable development.

Project team:

Polly Cooper, Marilyn Farmer, Jacob Feldman, Ken Haggard, Henry Hammer, Brian Kesner, Jora Clokey, Margot McDonald, Mark Mondor, Dan Panetta, Jennifer Rennick, Randy Reynoso, Bill Whipple.

(Opposite page):

A “fractal scan” of the Los Osos project area, demonstrating the nested interrelationship among the site and design strategies at various scales.

FOCUS 1

BIOME

Evergreen Sclerophyllous Forests Scrub Woodlands. This unique biome is characterized by a Mediterranean Climate- short mild wet winters and long dry summers.

FOCUS 2 WEST CONTINENTAL COAST

Cold upwelling ocean currents along a series of parallel coastal ranges produce a rich environment characterized by a microclimate of foggy summers.

FOCUS 3 CENTRAL CALIFORNIA

Los Osos, third in a series of self-similar bay-valley-city configurations descending in scale from north to south, could serve as a prototype for cities to the north, if developed sustainably.

FOCUS 4 WATERSHED

The Los Osos Valley, Morros and Irish Hills drain into Morro Bay at the northern edge of Los Osos. Morro Bay is the last intact marine estuary south of Monterey Bay.

FOCUS 5 LOS OSOS

Los Osos- named for its concentration of grizzly bears during the 1700's- is at a crossroad in its current development pattern.

FOCUS 6 NEIGHBORHOOD

EXISTING:
-no cohesive neighborhoods
-automobiles necessary

PROPOSED:
-development of community
-automobiles less necessary

FOCUS 7 LOTS AND BUILDINGS

EXISTING:
-suburban pattern wasteful
-automobile dominant

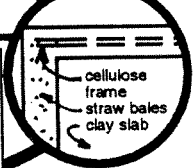
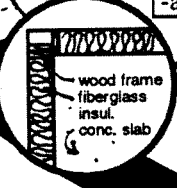
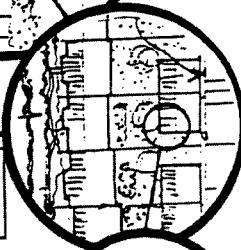
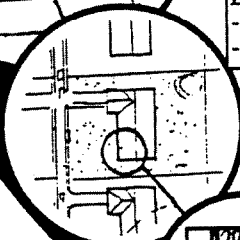
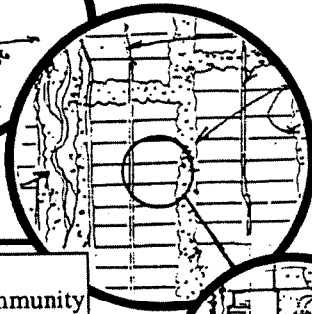
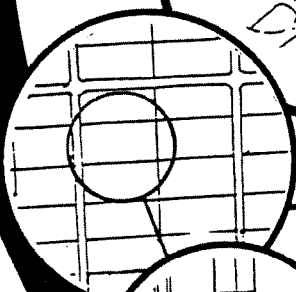
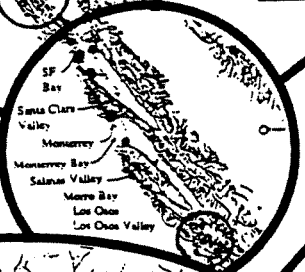
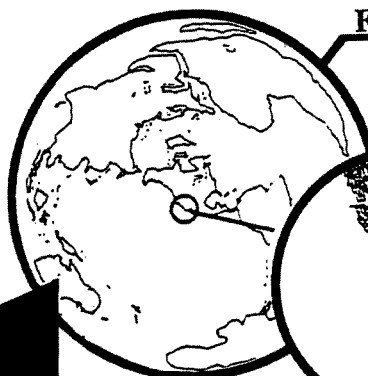
PROPOSED:
-new patterns efficient
-transportation enhanced

FOCUS 8 STRUCTURE / MATERIAL

EXISTING:
-wood from Washington
-insulation from Ohio
-high embodied energy

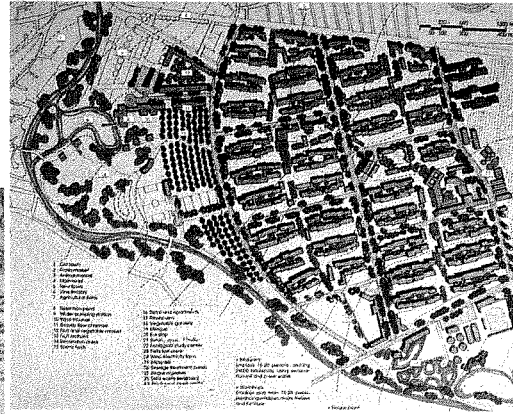
PROPOSED:
-reconstructed cellulose struc.
-local straw bale infill walls
-low embodied energy

FOCUS 9 DECAY / RECYCLE

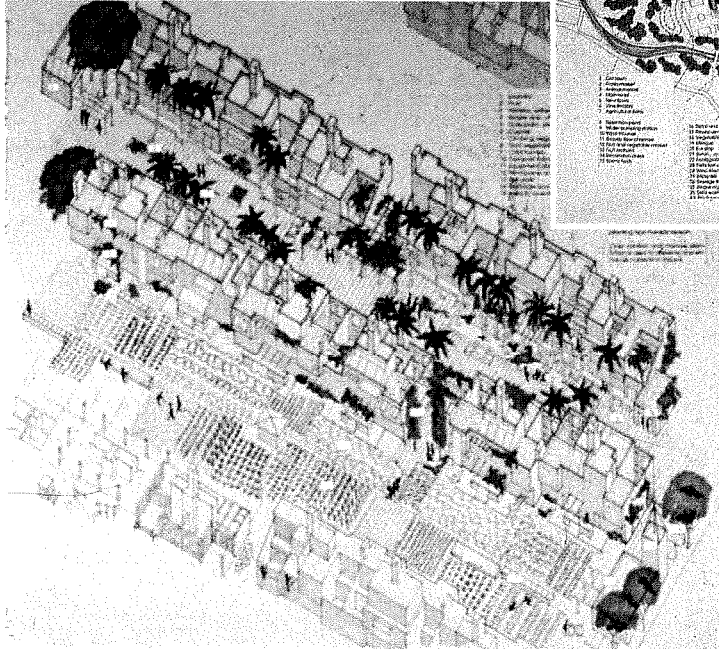


A Sustainable Neighborhood

URFA, TURKEY

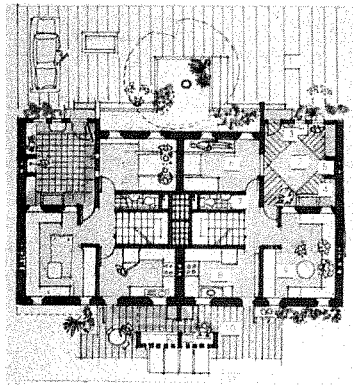


(Above) Site plan of proposed extension of the city.



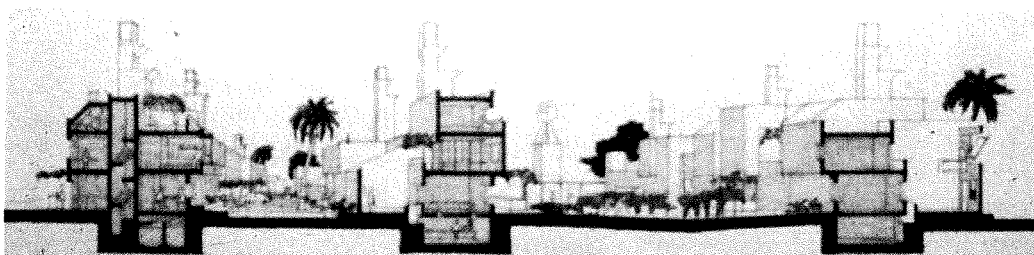
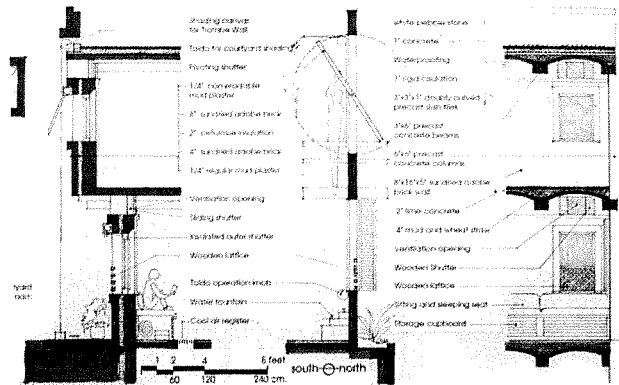
(Left) Detail of housing clusters, showing traditional architectural and urban characteristics — narrow streets, courtyards, walls, small openings and flat roofs.

(Opposite page) Section through the cooling towers.

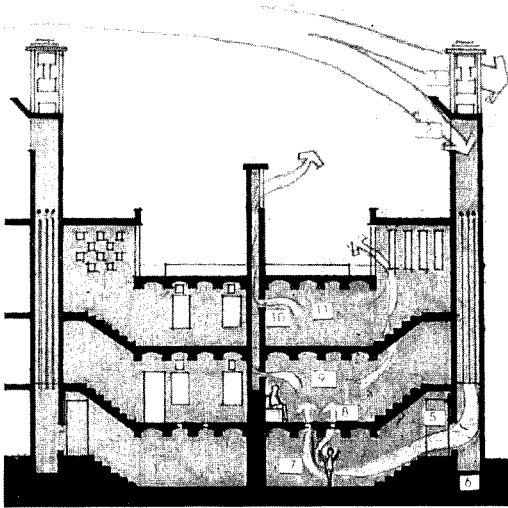


(Left) First-floor plan of typical house.

(Right) Section showing details of materials and cooling and ventilation techniques.



Section through several housing clusters.



The case study is a new neighborhood for 3,500 to 4,000 residents, mostly immigrants from villages, on a 360-acre site at the edge of Urfa, Turkey, an existing city of 750,000. The proposal, prepared for the American Institute of Architects' 1993 "Call for Sustainable Community Design Solutions," was awarded the UNESCO prize for best student project.

The approach borrows heavily from traditional building and planning strategies in Turkey to create culturally familiar forms using simple, time-tested urban patterns and technologies. It includes mixed-use neighborhoods with services within walking distance; small, pedestrian-dominated alleys that organize neighborhood life; allowance for many routine activities (cooking, laundry, gardening, building) to be done collectively; trees and trellises to shade public spaces; organization of dwellings in response to climate conditions (including a traditional basement retreat from hot weather); cooling towers for natural ventilation; and cisterns to collect rainwater for reuse.

Some new forms and technologies are used, too — the provision of large garden areas adjacent to each block of dwellings is not a traditional arrangement, for example. There are trombe walls (interior masonry walls next to south-facing glass; they trap and absorb the sun's heat for later reuse), precast concrete building elements, solar cookers, biogas generators and solar and photovoltaic panels.

In general, the proposal relies on local materials and labor-intensive technologies for construction and maintenance, and it emphasizes water conservation, waste treatment and natural heating, cooling, and lighting. Much emphasis is placed on developing of the neighborhood as a largely self-sufficient community, culturally and economically.

Designer

Can Elmas.

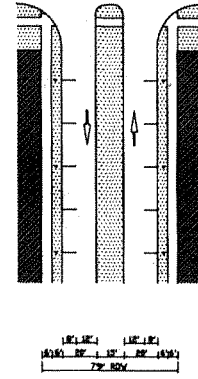
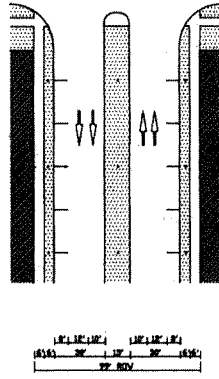
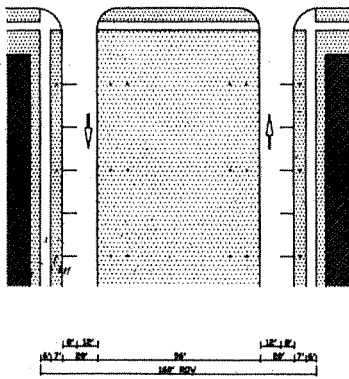
One of the many strengths of this study is that it presents a simple and coherent philosophical framework for sustainable development, broad enough to be useful in projects at any scale, in any context. It stipulates four qualities thought to be characteristic of sustainable communities: *holistic* ("composed of interdependent and interconnected subsystems at multiple scales"); *diverse* ("diversity in biological, social, cultural and economic systems, at all scales, is necessary for both healthy operation in the present, and for healthy adaptation to change"); *fractal* ("composed of [nested] and interacting systems whose fundamental qualities, processes, and physical forms appear self similar at many scales"); and *evolutionary* seeking greater efficiency over time through "iteration, feedback, and chaos."

A Sustainable Neighborhood in Urfa, Turkey

On one hand, this proposal takes the general issues outlined earlier much farther than the U.S. projects do, and it is far more thrifty in its use of resources. On the other, the context is radically different than that of the U.S. projects: Turkish cities are still, by and large, pre-automotive, dependent on walking, bicycles, animals, carts and public transportation for most travel, although car use and ownership is increasing. Mixed-use, high-density neighborhoods are the norm in Turkish cities, thus the cultural habits related to that kind of living do not have to be learned. Family farming is already part of the culture, especially for low-income squatter families, so this cultural pattern does not have to be learned. And the technologies for construction, waste and water management, and climate control proposed here are, with few exceptions, derived from traditions long in use and still visible in the culture at large (though fast eroding).

None of this diminishes the value of the Urfa proposal; it is probably as radical in its own context as the more limited U.S. projects are in theirs. Certainly it is intrinsically interesting and instructive as an example of what sustainable community design means in another culture, another physical context. But it is even more important than that, especially for us whose working context is the U.S. or similar industrialized cultures, because it tells us how much farther it is possible to reach. It asks us to ask ourselves, "Is this really far enough?"

The most serious potential flaw in all the work presented here may be just that: It may not go far enough, even for a first step. At issue is the most basic question: What do we mean by sustainability? This question is almost never definitively answered, yet without a definitive answer we are left with no real basis for measuring our successes or failures.



Defining Sustainability

My concern is the implications of the three trends that I outlined earlier: the earth's limited supply of resources, expanding global economies and massive population increases. Consider this: in 1970, the U.S. contained six percent of the world's population but used 34 percent of the world's energy resources; in 1988, the U.S. population was five percent of the earth's total and used 25 percent of the earth's energy resources. U.S. per capita use of energy resources shrank by seven percent during that time, due to increasingly stringent conservation measures, but total U.S. consumption increased by 11 percent (the difference attributable to population growth). During the same period, worldwide consumption of energy resources increased by 55 percent and per capita worldwide consumption of energy resources increased by 12 percent.

The U.S. figures by themselves seem encouraging, implying that if we try a bit harder we might reach a steady state. But looking at the worldwide figures and adding in what we know about the limited supply of energy resources, there is good reason to believe that in the coming decades the availability of energy resources in this country will be radically diminished. Essentially the same is true for metals, wood, agricultural land, fisheries, drinking and irrigation water, and clean air. Demand is up, and increasing; supply is limited and dwindling.

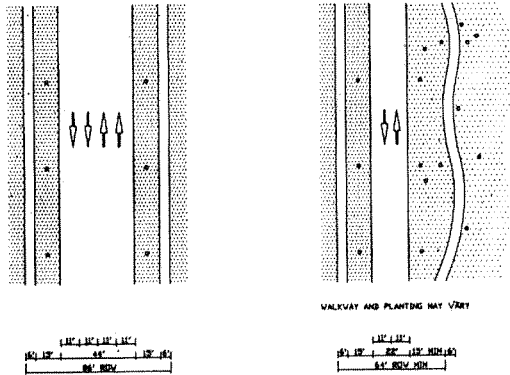
So what do we mean by sustainable? Sustainable for whom? For how long? If we are only concerned about sustaining the present adult generation of mainstream U.S. citizens, what we are doing now will probably work, though we may have to beef up our military capabilities (we are, after all, still using five times our share of the world's energy resources, and we use other resources in similarly disproportionate amounts). If we're concerned about sustaining people in our own society who currently have low incomes, or are homeless, or without jobs, we are obviously not doing enough to spread resources to

where they are needed; if we're concerned about sustaining the next generation of Americans, our own children, not to mention generations beyond theirs, and if we are concerned about equal access to resources for other citizens of the world, the changes we must make in our way of life are far more extensive than most of us are willing to contemplate. I assume that our definition of sustainability must be based on the urge toward long-term global equity, for both moral and pragmatic reasons, and my guesses about the effectiveness of our seven projects as sustainable communities are founded on that assumption.

It's Still Suburbia

Certainly the general thrust of all the projects shown here is exactly right: higher densities, mixed uses, local economies, recycling, stewardship of the land, support for walking, biking and public transport. These are all clearly appropriate and necessary. And these projects serve the immensely important purposes of raising the issue of sustainability to a higher level of awareness (perhaps the most important purpose, at this moment) and of contributing to the developing discussion about what we must do to prepare for a future of scarce resources.

But it is clear that the general model that is being proposed (best seen here in St. Vincent's and Haymount projects) will not produce sustainable communities. One of the model's fundamental tenets is that the basic organization of U.S. urban neighborhoods of the 1930s, with family houses on small lots facing onto a grid of relatively narrow streets with sidewalks, is an appropriate pattern of development that, when coupled with appropriate design and zoning restrictions (to insure lively neighborhoods, safe sidewalks and a mixed-use local economy, among other things), and when served by a public transit system, will lead to sustainability. All U.S. attempts to move toward sustainable communities — real or theoretical, on new ground or in existing places — essentially follow this model.



A range of street sections from the plan for Haymount. The designs attempt to balance the demands of the car with pedestrian movement and open space. But can a plan for a community that makes using cars convenient be considered sustainable? (Duany/Plater-Zyberk).

We're making a big investment in this model, but it has a fatal flaw. A basic assumption of this model, and of every project we see here, is that whatever else we do, everyone must be able to have doorstep access to a car, and everyone must be able to get from home to anywhere else by car.

The history of this century is clear: as long as travel by car continues to be doorstep accessible, cars will be the dominant mode of transport. And as long as cars dominate the transportation picture, densities will have to be limited to suburban levels; public transit will not be efficient; streets will not really be for people on foot; economies cannot be truly localized; neighborhoods cannot become real communities; and families will still have to own most of the space and equipment needed for a good life.

What is being reproduced here is, in fact, the same set of circumstances that led to the destruction of the pedestrian- and transit-based urban structure typical of the 1920s and earlier. In today's urban structure, which is far, far more supportive of car use than cities of the 30s, 40s, and 50s were, why would we think that people will walk out their doors, ignore their cars, ignore the goods, services, jobs, cultural opportunities and social life that is available in the larger region, and that their cars can so easily allow them to have? Of course we will use our cars if they are there and we demand low enough densities to allow comfortable driving and easy parking. We will use the nice little neighborhood center if we feel like it, but we'll do most of our real shopping at the big retail centers on the freeway. We'll use transit if our jobs happen to be easily accessible at the other end, but we'll do most everything else by car. And most of us will still get to work by car, because most jobs these days are not in places that are easily accessed by transit.

The hard truth is that truly sustainable communities — dense and compact, with a localized economy and a rich and complex public life — can only develop where cars are not a practical choice for travel within the community. Are the new neighborhoods and new towns we have examined here sustain-

able? The neighborhood for Urfa, Turkey, probably is. But the answer must be no for the other projects. If we are concerned about equity, if we are thinking about future generations, if we believe that resources are severely limited, we must then recognize that sustainability requires a more radical reformation of the suburban structure.

A Step in the Right Direction?

Even if these U.S. projects do not go far enough, do they move us in the right direction? In most ways, yes, they do. Certainly the emphasis on support for public transit systems is a positive, progressive step; so is the preservation and enhancement of natural systems: the reclamation of natural areas in Phalen, the rejuvenation of farmland in Weeks, the rebuilding of the watershed in Los Osos, the stabilization and strengthening of plant and animal systems in both St. Vincent's and Haymount, all would be permanent changes for the better. And, again, all these projects have immense long-run value for their roles in raising the level of awareness of sustainability issues.

But while the approach to urban land use in these projects will create some resource savings, in the long run it is a dead end. By emphasizing the importance of walking and transit, mixed uses and increased density, the model proposed here will help us take the next steps. But the places described in these projects will not be part of that next set of steps. When the time comes that we see the global resource picture for what it is, we will have to accept the fact that no urban structure that is dependent on cars, no matter how efficient the car is, will work. These communities, with all their insights, are still too dependent on cars, still too low in density. Like other car-oriented parts of the urban fabric, these places will have to be ripped apart — streets rebuilt, buildings and infrastructure replaced, land divisions revised — in order to accommodate a fundamentally different, sustainable structure.

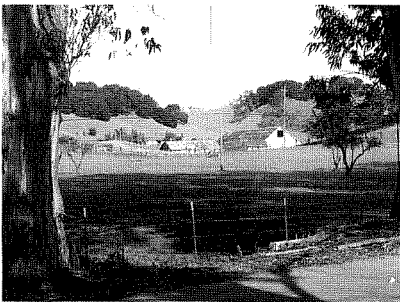
Left Out: Connections, Adaptability, Longevity

Some readers may use this discussion to help in formulating a set of principles for the design of sustainable communities. Thus I feel some obligation to mention three potentially important concerns that should, I think, be part of the thinking in the design of any sustainable community, but that were not explicitly mentioned by the authors of these seven projects.

One is the importance of connections within, and especially between, neighborhoods. All of the projects clearly provide for a transit system that expands any single neighborhood's range of options. But today there is also the possibility of including as part of any community's infrastructure a sophisticated, interactive information system that allows people to know what possibilities are available throughout the community — meetings, menus, sales, cultural events, schedules — and to make reservations, pay fees, etc. This is very significant: historically, one of the major drawbacks of living in a small village or neighborhood has been that the only options one really can know well are the ones that one sees every day. An effective information system shifts the balance between dependence on the local neighborhood and access to the larger community, allowing a greater measure of autonomy without destroying the essential face-to-face nature of the neighborhood.

The other two concerns are related. No designer can anticipate the kinds of support systems — rooms, buildings, shelters, plazas—that will be needed as a local economy evolves. Thus an essential aspect of planning for mixed uses is making sure that physical systems can be used in a variety of ways over time, easily adapting to changes in patterns of use — today a residence, tomorrow a shop, next day an office, then a residence again. One way to do that, of course, is to design places for the short run only, assuming that they will be torn down and replaced when the next use comes along. But the other concern is for longevity. The efficient use of resources demands that our physical constructions be largely permanent; we can't afford to continue to discard the materials and energy invested in construction every time a new use comes along.

The need for both adaptability and longevity create yet another challenge for designers: how to make structures that are both fundamentally permanent and adaptable to a wide range of unanticipated use through time. It is a problem that older, traditional communities worldwide have had to solve for survival; we would do well to look to such communities for advice.



(Above) The landscape of the St. Vincent's site.

(Below) A proposed neighborhood next to a working farm.

Illustrations courtesy Terezia Nemeth.



The Place of Sustainability

Happily, in a journal entitled *Places*, all three of the site-specific U.S. projects shown here, Phalen Village, St. Vincent's and Haymount, are specifically and effectively concerned with the way their communities will become places. Phalen Village does this by giving new life to an older natural area overwhelmed by human incursions, then restructuring the built areas so that the whole village street system orients to that recreated parkland. The latter two go to great pains to shape new communities that respect the specifics of existing topography, plant life, climate and, in the case of St. Vincent's, historically important existing buildings. All three celebrate the particulars of the land and the history of its use, and they help us all to understand what it means to make places.

On the other hand, not one of these seven projects brings that thinking down in scale beyond the site plan. Within the sometimes truly beautiful and powerful land-based forms of the overall plan we find consistently the same geometric streets layouts — rectilinear grids, Bath-like circuses, great Haussmann diagonals, and the geometric sites and formalist buildings that respond to such gestures. All are forms forced

onto a reluctant local landscape, all relics of a tradition in which the land was the enemy — or at best, merely a tool, a floor on which to build — and dominance by humans was the only possible objective. For sustainability's sake, if for no other reason, it is surely time to reconsider this set of assumptions. Some traditions, after all, may need to change.

And this too is an issue for sustainability. The quest for sustainable communities, sustainable landscapes, sustainable architecture, leads us toward a reevaluation of our relationship to the earth at every scale. This quest asks us, demands of us, that we call into question those aspects of our culture that separate us from the realities of plant and animal life, geology, topography and climate, and find a new way of designing that lets us be part of all that, that lets us celebrate our humanness — our triumphs, our insights, our hopes, our history — but that also lets us celebrate our connection with the non-human universe. Our cultural history in recent centuries has been increasingly anthropocentric. That anthropocentrism is as clear in our architectural and planning paradigms as anywhere, and that will have to change. More than anything, the call for sustainability is a call for a new understanding of the meaning of place.

The St. Vincent's and Haymount communities are shaped clearly and respond to the larger landscape. But once the line between landscape and town is drawn, the rules change — in the design of buildings, streets and open spaces, concern for existing natural systems is abandoned.

(Right) Community space in Haymount conveys little idea of the surrounding landscape character.

