

Quiz #3

"Is the Spring Lake Visitors' Center Sustainable"

For this problem you are a green architecture critic who is evaluating Obie Bowman's 1988 Spring Lake Visitors' Center as an icon of the green architecture movement.

You have the opportunity rate it and to comment on its successes and failures. In June 1995, *Architecture* published the building, praising its sustainable architecture features. The article is reprinted here on page 2. Use this article and the illustrations to help make your assessment.



All illustrations from *Architecture*, June 1993.

Obie Bowman nestled the pyramid into the sparsely forested landscape. He screened the exterior with redwood louvres and clad the southeast facade in air-based solar panels. A central hearth supplies heat when solar gains are not adequate for solar heating.



To discover a glass and wood pyramid in a California forest of oak and buckeye is unusual, but the Spring Lake Park Visitors Center suits its site. Camouflaged with translucent, insulated glazing, the center whispers its welcome from the hillside. Ten miles from downtown Santa Rosa, Spring Lake Park comprises a 320-acre flood control district and nature preserve, with more than 750,000 visitors annually.

In 1988, a Sonoma County-appointed architectural selection board decided to create a park visitors center that would exemplify a sympathetic relationship between architecture and nature: in this case, the native oaks and grassy meadows of the local terrain. The building would function as a learning tool for environmental awareness, as well as house exhibits on Native American history, plant and animal lore, and the regional water system. Based on his 20-year reputation for designing environmentally sensitive houses at Sea Ranch, local architect Obie G. Bowman was chosen to site and design the center.

Bowman selected a relatively open, sunny spot on the northwest slope of an ancient lava flow overlooking the man-made Spring Lake. Because of the volcanic soil, trees in this area are fragile. To avoid the environmentally devastating effects of construction, Bowman fenced off the surrounding forest, leaving a single path from a parking lot at the site's edge, which served as the staging area. He also watered the site to reduce dust and mulched to support the trees. An arborist advised Bowman to encircle the trees with low walls, so that if the grade was raised, these rings would keep the ground around the trees at its natural level and allow the trees to take in oxygen. Additionally, the client, Sonoma County Water Agency, wrote into the contract that fines would be imposed for any tree damage. Only three trees were uprooted while building the 2,000-square-foot pyramid, and the architect wove them into a canopy over the nearby Storyteller's Cavern, a gathering place formed with large boulders removed from the site.

Bowman's response to the "push and pull" of the building's functional requirements is self-effacing, environmentally sensitive, and logical. He chose a pyramid not for its historical resonance or spiritual power or even its echo of the nearby hills, but for its efficient shape: A pyramid is a simple form to frame. The sloping structure rests on concrete retaining walls set into the grade to lower the building profile, increase energy efficiency, and harmonize with the site. A rigid steel frame supports walls of insulated glazing, capped by a cedar-shingled attic. Because of its stability and weather- and insect-resistant qualities, Bowman specified redwood for exterior louvers to screen the sun. These tiered fins change scale like the surrounding trees, whose leaf canopies become thinner as they rise higher.

The pyramidal form is also derived from the building's mechanical system: Custom-designed solar panels cladding the southeast elevation dictated the pitch of the walls. These panels function as an efficient ambient heating system by warming the air in the pyramid. On overcast days and before direct sunlight strikes the panels, a wood-burning stove supplies heat, while a catalytic converter removes particulates from the heated air. During the summer, as vents in the base on the north side draw air into the visitors center, a ceiling fan blows hot air out through attic eave vents, further reducing temperatures. The complex includes an attached, below-grade storage and office workroom, with a skylight and a sod roof, located west of the pyramid, and an amphitheater to the south. The main space contains a circular reception desk and an 8-by-14-foot, fabric-covered pavilion that houses educational exhibits.

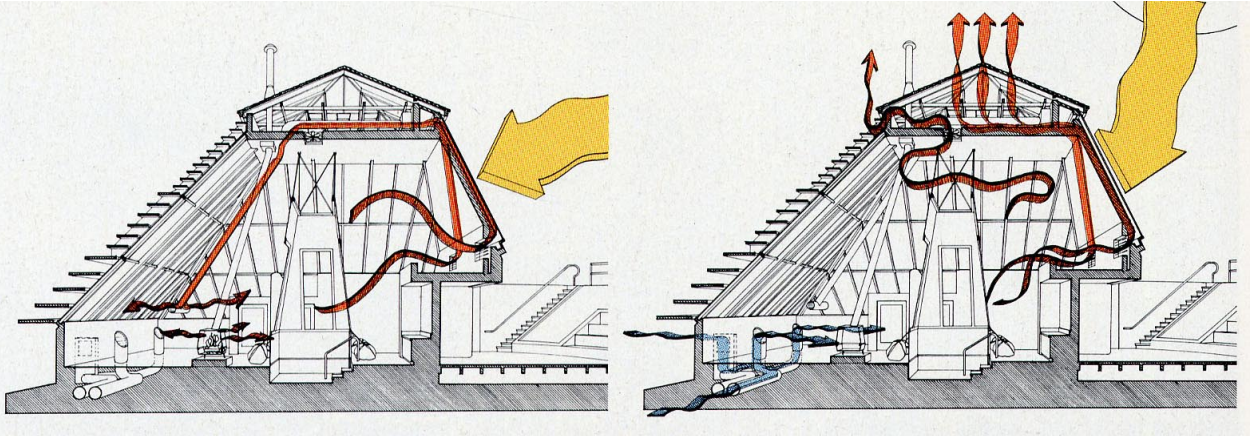
Bowman's methodical approach to site selection, design, and construction has created an environmentally sensitive visitors center. While the architect admits his design is grounded more in logic than in lore, the panoramic views of the nature preserve from the observation deck transcend the ordinary.

—Justin Henderson

Critique

1. Point out **four** features of the design that work toward sustainability. **Explain** why they are effective for a Visitors' Center in California.

4 points



*Heating and Cooling sections—the attic fan pushes solar heated air into the building in winter and hot air is vented through the attic and eave vents in summer with cool air drawn in from the north. **Southeast is right!***

1

2

3

4

Improvements

3 points

2. Suggest **three** improvements that would make the building more sustainable and could be integrated with the existing building. **Explain** each of your suggestions. Use sketches and diagrams to make your intentions clear.

1

2

3

3 points

Building Rating

3. Use the SBSE Regeneration-Based Checklist to rate the building, then interpret your results, ultimately answering the question, "Is it sustainable?" Explain your rationale.

Regeneration-Based Checklist for Design and Construction											
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Project:											
degeneration			sustainability				regeneration				
	-100 always	-75 usually	-50 sometimes	-25 a bit	0 balances	25 a bit	50 sometimes	75 usually	100 always		
the site	pollutes air									cleans air	
	pollutes water									cleans water	
	wastes rainwater									stores rainwater	
	consumes food									produces food	
	destroys rich soil									creates rich soil	
	dumps wastes unused									consumes wastes	
	destroys wildlife habitat									provides wildlife habitat	
	Imports energy									exports energy	
	requires fuel-powered transportation									requires human-powered transportation	
	Intensifies local weather									moderates local weather	
	excludes daylight									uses daylight	
	uses mechanical heating									uses passive heating	
	uses mechanical cooling									uses passive cooling	
	needs cleaning and repair									maintains itself	
	produces human discomfort									provides human comfort	
uses fuel-powered circulation									uses human-powered circulation		
pollutes indoor air									creates pure indoor air		
the building	is built of virgin materials									is built of recycled materials	
	cannot be recycled									can be recycled	
	serves as an icon for the apocalypse									serves as an icon for regeneration	
	is a bad neighbor									is a good neighbor	
	is ugly									is beautiful	
		negative score 2200 possible								positive score 2200 possible	
final score:											