

DESIGN RECKONING IN THE WEST

BY HADLEY ARNOLD

The western United States, like much of the world, faces water scarcity challenges routinely addressed by scientists, engineers, water managers, farmers, and policy makers but barely recognized by designers of the built environment. In 2011, we at the Arid Lands Institute at Woodbury University partnered with the California Architectural Foundation to host the William Turnbull Drylands Design Competition: An Open Ideas Competition for Retrofitting the American West. By placing design in the ring with science and policy, we hoped to find radical, pugnacious beauty in new water thinking. Our brief, issued to designers from all disciplines, posed four profound challenges:

Break the water–energy nexus. In the engineered West, growth = water + energy. There is no growth—slow, smart, agricultural, urban, or otherwise—without water, and across 500,000 square miles, water doesn't arrive without a lot of energy (much of it coal fired). In an overtaxed feedback loop, the more energy we use to deliver snowmelt across deserts and mountains, the more we contribute to a warmer atmosphere and shrinking snowpack, which requires more energy to chase it. How do we deliver, use, and reuse water without adding more energy?

Anticipate variability. Two-thirds of the water for the West's 30 million people comes from snowpack. Current climate models suggest 30 percent to 70 percent of western snowpack will disappear by 2070. The hydrology of the West is expected to be one of increased variability (prolonged droughts, diminished snowpack, and more intense seasonal rains). How do we design buildings, neighborhoods, farms, and economies to dovetail with variability?

Reinvent infrastructure. While we strain to deliver diminished snowpack, our cities are 85 percent impermeable. If rainwater, stormwater, and wastewater together form the largest undeveloped sector of western water, how can good design convert these perceived liabilities into local assets?

Sow social equity. In both the industrialized and the developing world, those most vulnerable to climate change's impacts are the poor, the sick, the young, and the elderly. Minimizing this vulnerability requires conservation and efficiency, diversifying supply, and dispersing storage. How can distributed systems be designed and fabricated for affordable implementation?

The competition set out to generate adaptive visions for the Anthropocene West. More than 200 teams from 13 countries submitted proposals that ranged in scale from the single-family dwelling to redrawn international boundaries. Several themes emerged:

The dynamics of form are fluid dynamics. Architecture adapted to a water-scarce environment “thinks like a watershed.” Sequencing water systems in section is the primary driver of design, and the theater of water's passage through space is central to architectural and urban experience.

Single-purpose infrastructure is over. The new landscape of hydrologic variability requires dual-nature infrastructure: rapid saturation and slow release; plentiful storage and disciplined consumption. Hardscape is perforated to recharge aquifers. Wetlands become low-carbon water treatment. Asphalt is plowed for agriculture. Aqueducts roofed by solar panels become photovoltaic generators. Habitat preserves are designed to produce food and agriculture to produce habitat.

Water's variability should be made visible. Many submissions embraced changes in water supply as a basic condition of life—and therefore design opportunity—in dry lands. From the domestic to the civic scale, designers used legible systems to register, meter, index, and communicate variable water supplies.

Boundaries can be redrawn. Some of the strongest conceptual projects occurred purely in plan. The lines of the Jeffersonian grid itself were questioned and redrawn. A “wet border” allowed for shared watershed management between the United States and Mexico; water management techniques of Native and Ibero American traditions were inserted into industrialized street grids; suburban lots became networked dryland farms.

We see this array of propositions as “silver buckshot” at varying scales, elements of a new grammar of design for arid lands that is variable, flexible, recombinant, and responsive to local culture, values, habitat, and economy. Is this regionalism? Doubtful. Every continent on earth will be struggling with these challenges and could look to the American West as a leader. ●

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