

WHAT'S THE MATTER?

In the mid-19th century, William Morris and fellow social reformer John Ruskin launched the Arts and Crafts movement as a response to the depredations of the Industrial Revolution. They extolled the virtues of handcrafted products and natural materials and decried mass production as dehumanizing and cruel. “All cast and machine work is bad, as work . . . it is dishonest,” Ruskin said. For these Utopians, most of society’s ills could be laid at the factory gate: Poor health, economic inequality, and the exploitation of workers were all due to rapid technological change, and a return to simpler times held the promise of redemption.

Sound familiar?

This issue of *ArchitectureBoston* comes at a time when Americans are again reeling from the effects of disruptive technologies, alienated from the meaning of labor, and dispirited by a glut of cheap, disposable manufactured goods. Add to that new worries about diminishing natural resources, climate change, and the potent legacy of industrial waste, and it’s clear that new approaches to building materials are needed.

But today’s reformers are going beyond a nostalgic repurposing of elements taken from nature, such as wood and clay, to invent materials from the stuff of life itself: shrimp shells, silk threads, mushrooms, algae. In “Organic Chemistry” (page 40), Blaine Brownell introduces us to one brave new material: a biodegradable, compostable alternative to plastic made from cellulose and water—so safe it’s edible.

Rather than rail against progress, architects and designers are enlisting science and technology in the quest for more natural, less toxic, more responsible materials. New forms of cross-laminated timber (stronger, safer, more versatile) are no less noble for being engineered in a lab. Manufacturing tools and technologies from the 3-D printer to the laser cutter can recruit new materials into the builder’s repertoire or make old materials behave in extraordinary ways.

It’s unlikely that architects and builders will ever trade in the tactile joys of sanded wood or cut stone for some microbial goo. But a reconciliation of machine and maker—between traditional craftsman and digital fabricators—is possible, as Stuart Kestenbaum discovers in “Craft Brew” (page 30). “What connects [the] two groups are ingenuity and a relationship with materials,” writes the former director of the Haystack Mountain School of Crafts, “a human story that is ancient and new at the same time.”

Calculating the cost-benefit between innovative and familiar materials isn’t easy. Concrete is the most heavily used material on earth, and the industry is the third-largest contributor to carbon emissions after cars and coal-fired power plants. Because it is so heavy, it takes more energy to transport. Because it is so durable, it isn’t easy to recycle: Most demolition waste is concrete, accounting for nearly one-third of all landfills. But today, concrete can be coaxed into thin, flexible panels, or even sculpted, as technicians search for ways to preserve the material’s useful qualities while minimizing its baleful effects. And before we tear down everything constructed before the first Earth Day, it’s worth remembering that no building is greener than an existing one.

Among their many properties—strength, weight, flexibility—materials possess the gift of conversation: They speak to us, often in metaphor. Granite, marble, or other stone connotes solidity and power, so it’s often the choice for government buildings and banks. Glass suggests transparency and light, increasingly seen in public libraries. Local materials such as bamboo or rammed earth speak of respect for tradition and history.

What story will a building made of mushroom fungus tell? ■

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Photo: Ben Gebro