

The Future of Architecture: Moss, Not Mirrors

Plants and lichens on a concrete wall used to be a sign of decay, but soon they might be a sign of sophistication.



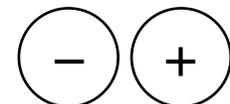
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For most architects, moss and lichen growing up the side of a structure is a bad sign. Building materials are designed specifically to resist growth, and much research has been done to develop paint treatments and biocides that make sure the concrete and wood and bricks that sheath a building aren't colonized by living things. But a new group is trying to change all that. Instead of developing

surfaces resistant to moss and lichen, the BiotA lab wants to build facades that are “bioreceptive.”

[BiotA lab](#), based in University College London’s [Bartlett School of Architecture](#), was founded last year. The lab’s architects and engineers are working on making materials that can foster the growth of cryptograms, organisms like lichens and mosses. The idea is that ultimately they’ll be able to build buildings onto which a variety of these plants can grow. Right now, they’re particularly focused on designing a type of bioreceptive concrete.

Marcos Cruz, one of the directors of the BiotA lab, says that he has long been interested in what he sees as a conflicted way of thinking about buildings and beauty: “We admire mosses growing on old buildings, we identify them with our romantic past, but we don’t like them on contemporary buildings because we see them as a pathology,” he says. Cruz says that he wants the BiotA project to push back against the idea that cleanliness is the ideal that buildings should strive for. “Architects were wearing a straightjacket, that only in the last 20 years architects started shredding off.”

Richard Beckett, another director of the BiotA lab, says that he’s interested in the project flipping the usual way that buildings are designed, at least in a small way. “Traditionally architecture is a top-down process, you decide what the building will look like, and then you build it. Here we’re designing for a specific species or group of species, the material and geometry we’re using is so specific that it only allows certain species to grow.” It’s controlled chaos.

Both Cruz and Beckett talked about a particular way of thinking about their buildings that they said was different from most architects. “Every architect you speak to talks about the skin of the building,” says Beckett. It’s this metaphor that everybody uses in completely different ways.” But they want to propose a different way of seeing things. Instead of skin, the lab wants people to think of the exterior of a building as bark. “Not just a protective thing, a host; it allows

other things to grow on it, it integrates as well,” says Beckett. Here’s how Cruz explains it: “Barks are mediators between the internal conditions of a tree in which all sorts of species can grow on this bark and enrich the environment with an ecology that’s unthinkable without bark.”

In the larger scheme of things, the BiotA work fits in with the recent push to “green” buildings and architecture. Often those efforts come by way of things like living walls full of plants, or green roofs. But these living systems can be expensive and hard to maintain. Sometimes all the plants die, and have to be replaced.

Cruz tells a story of a plant nursery in East London that had a green wall. “When I saw it for the first time, I thought it was wonderful!” he says. But six months later when he passed the nursery again, he noticed that the plants were all dead and falling off the wall. “A year later, much to my surprise, they were putting up steel panels with photographs of a forest on them,” he says, laughing. Basset and Cruz say that their system is far lower maintenance. Lichens and mosses want to grow on things anyway, and require very little upkeep.

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The idea of bringing nature into cities might seem normal to people today—parks and gardens and green roofs are scattered across many of America’s cities. But the idea of including green spaces in a city is a relatively new way of thinking about urban life. “The idea of including nature inside of a city is a pretty foreign concept to most urban cultures from the 18th century all the way back,” Benjamin Stanley, who studies the history of urbanism, told me. Previously, when nature was included in urban settings, it was for a specific purpose: sacred trees, plots for growing food, hunting land to show the wealth of a monarch. The

idea of including nature in the design of our buildings—as a decorative element, as a way to soften cities, or connect people with nature—is new, and represents a profound shift.

The BiotA team is still in the early phases of testing the materials they're working on. They're not sure, for example, exactly how much carbon these lichens might draw down, or how much rainwater they might prevent from going down the storm drains. But that's not really the point, says Beckett. "It's certainly not our aim to break records for carbon. That's not the sole driver of what we're doing. That's the difference between architecture and engineering; engineers would do the other stuff," he says, referring to making materials maximally sustainable.

The lab also has a long road ahead of them when it comes to working with construction companies. Beckett says that it will be about five years before they can hope to have their concrete facades on buildings. They're not sure how much the material will cost, but Beckett compares it to earlier living walls. "The aim is for it to be certainly cheaper or at least comparable in terms of installation price, but then much cheaper after that, as there would be no maintenance or upkeep costs," he said.

The point about maintenance is key to the look of the buildings that Beckett is imagining. Making a structure bioreceptive doesn't mean moss would suddenly grow whichever way it wants to on the building. Instead, the team is designing surfaces with geometric patterns, channels in which the moss can grow. "It's about controlling it so people think it's attractive," says Richard Beckett, another director of the lab. "It needs to look intentional, not just this complete coverage. I don't think people would like that."

In this way, the BiotA project is a hybrid of the two ways of bringing nature into a city. It's not an open green space, and it's not quite a sacred tree, but it's somewhere in the middle. "It sounds like they sort of want to let nature grow and have complex patterns, but they also want to control it to their own aesthetic

vision,” said Stanley. “It’s still talking about controlling nature for human purposes.”

ABOUT THE AUTHOR



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