



THE **SANDBOX** BLOG

Not all startups are about technology: Meet the BEEcosystem

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When you hear the word "startup," you likely think of a fledgling company that's developing some new technology—probably computer software or hardware.

But not all startups are focused on tech. Even [the Wikipedia definition](#) of the word nods to a greater scope: "Many consider startups to be only tech companies, but as technology is becoming a normal factor, the essence of startups has more to do with innovativeness, scalability and growth."

At Pilot Projects we champion those who innovate by incorporating hands-on principles, a focus on natural systems, and thoughtful design. One of our new favorites is [BEEcosystem](#), a modular honeybee hive on a mission to reconnect people with their food.

In 2012, Mike Zaengle and Dustin Betz founded [GreenTowers](#), a company that brings the outdoors indoors via aquaponic and hydroponic furniture design and vertical growing systems.

Following an introduction to beekeeping at Penn State's esteemed [Grozinger Lab](#), Dustin brought the idea of an indoor/outdoor display hive back to his team. No one else at GreenTowers had had much honeybee experience, "but after learning more about them and interacting for a little while," Mike says, "we're all hooked."

An offshoot of the company's central "Living Interiors" theme, BEEcosystem is "a tangible way to connect people with honeybees, to get their friends and neighbors talking about the pollinator crisis, which is a huge problem in agriculture right now," says Mike.

"One out every every three bites of food you eat was probably produced by a pollinator [a bee or other pollen-mover like some butterflies, beetles, moths, ants, or wasps]. Yet even the most experienced beekeepers are currently losing about one-third of their hives every year to Colony Collapse Disorder and other problems. This is a critical issue."

Literal and Phenomenal Transparency in the Transposed Beehive

Can a wall both conceal and reveal?

In their 1955 paper "[Transparency: Literal and Phenomenal](#)", architectural theorist Colin Rowe and painter Robert Slutzky posit that "transparency may be an inherent quality of substance, as in a glass curtain wall; or it may be an inherent quality of organization. One can, for this reason, distinguish between a literal and a phenomenal transparency."

Transparency is a dominant theme in the work of Pilot Projects, when it comes to working with organizations (phenomenal), and the creation of physical structures (literal). Both types of transparency are necessary building blocks of all participatory design.

I immediately thought of transparency's double definition, and of Rowe's Collage City and Slutzky's cubist paintings, when I encountered BEEcosystem. The wall-mounted beehive demonstrates both types: Through the clear (glass) panel, you "literally" see the bees inside their home (a natural impossibility), and, given the inside-out nature of the installation, we see past the opaque constructs of our own architecture.

BEEcosystem asks a number of other provocative design questions: To what degree is the very basis of architecture keeping nature outside (snow, wind, and rain; animals and insects; direct sunlight)? The project intentionally brings the outdoors in (harboring creatures with a reputation as pests, to boot)! Yet the bee's hexagonal wax "comb" is also an architecture unto itself—it has become a house within a house within a house.

BEEcosystem asks who is the home owner? Who is observer and observed? Who is producing what? Food? Shelter? Entertainment? Ecosystem services? The fact that the "owner" can consume the honey that's made inside introduces yet another layer of



A rendering showing the way a BEEcosystem could look inside a restaurant

BEEcosystem is a modular hive that attaches easily to an indoor or outdoor wall.

"It's primarily designed for residential, urban living," Mike explains. "Relatively few U.S. communities outlaw beekeeping. And unlike the few other indoor display hives we've seen, BEEcosystem works well for renters because it features a window exit unit that fits into practically any sliding window. There's a tube that the bees crawl through to get outside to fly, then they return through it to get back to the hive. You don't have to drill a hole in your wall; you just need to mount a bracket. It's very non-invasive."

"Also, this will be the first display hive we know of that will ship with the colony of bees already installed. With other hives, the beekeeper purchases a package of bees that are delivered through the mail, and then pours them into the hive—which can be very intimidating for a first-time beekeeper! With BEEcosystem, your hive installation is simplified. Plus, other displays are small and of a fixed size. Ours, like a Langstroth hive [the standard beehive, made up of stacked boxes containing beeswax frames], is modular—the beekeeper can simply attach additional hexagons to expand the hive as the honeybee colony inside grows."

Is it safe to have a bunch of bees flying around? Mike says it is.

"Honey bees are relatively docile; quite different from their more aggressive cousins like yellow jackets. They very rarely sting unless provoked. I had thought being outside in the yard with the BEEcosystem tube coming through the window might make me nervous, but after I worked with honeybees for a while, I realized they're much friendlier than I thought. You can definitely walk around doing yard work all afternoon and they won't bother you!"

Perhaps the biggest question: can one harvest honey from the BEEcosystem?

"Yes!" says Mike. "And you don't even need a centrifuge to process it. Like other top bar style hives, you can simply take a knife and cut a chunk of the honeycomb out. To transport an indoor-mounted BEEcosystem hive outdoors to harvest honey or perform other maintenance, you just remove the transfer tube, and the spring-loaded hinge locks the bees inside."

Mike, Dustin, and their team have three functioning BEEcosystem prototypes now, and will launch a crowdfunding campaign in August to begin accepting pre-orders. Fulfillment for pre-ordered hives stocked with bees will begin at the start of the next beekeeping season in spring 2016; empty hives should be shipped for delivery by this December. The anticipated cost is around \$300 for an empty hive or \$500 for one that includes bees.

"We want to lower the barrier to entry for first-time beekeepers," says Mike. "And we want to put bees in front of people and make them a conversation-starter. Bees are so important to our lives, but I don't think we're well-enough acquainted."

Better acquainting people and the nature that sustains them, using a simple and elegant hands-on design? That's the kind of startup innovation that appeals to us.

"Keep up with the buzz" on [BEEcosystem's website](#).

inversion, and honey as a "transparent substance" only sweetens the relationship.

May transparency live on as a theme in art, architecture, organizational development, and city building. We're happy to be in the middle of it all. Inside and outside, sticky and sweet.

—Scott Francisco, founder and director



Top to bottom: Painting by Robert Slutsky, Colin Rowe's Collage City, sliding glass walls by Pilot Projects

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