

# DISTRIBUTION'S BRAVE NEW WORLD

By John Salustri

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**F**lexibility. In a word, that's the key to warehouse/distribution design today. It's also one of the major takeaways from the final installment of DesignFlex 2030, the joint research series being produced by IAMC and SIOR.

The traditional distribution center is under siege, by such forces as Three-D (and now 4D) printing; by new consumer delivery expectations; by the Maker's Movement; by pneumatic tubes, drones and driverless vehicles. In the face of this onslaught, "We can no longer look at properties in the same old way," says Corrine Nowak, manager of SIOR's thought leadership initiative and senior manager of the SIOR Foundation. "A property today needs to be designed for future use, so it can be repurposed." Design is all about flexibility, she says.

## Challenging Core Assumptions

Earlier papers in the joint DesignFlex series dealt with the technological and social enhancements to the food processing and biopharma businesses. This coming work, due out this fall, is in a way much more impactful, promising to document how "the fundamental

assumptions are changing," says author Ann Moline.

Technology's hand in the growing disruption is both direct and indirect. Direct in the expanding presence of 3D printing and drones, etc.; indirect in the way it is changing consumer expectations. End-users are increasingly expecting same-day or 24-hour delivery, forcing new responses such as last-mile service.

This trend, along with the growing stream of advanced technologies, is forcing new locational, format, and hiring decisions, all raising questions about long-held core beliefs. "What is inventory?" Moline asks. "What are the base supply inputs going to be versus what's going to be manufactured on demand by a 3D printer?" Such questions will rock the foundations of how we understand distribution.

The changes of the past, says IAMC executive director Tate Godfrey, such as "increased ceiling heights, automated product selection, and inventory controls, will pale in comparison to the sea changes envisioned in this report. The companies and communities that recognize those impending changes are the ones that will survive and thrive."

DesignFlex research team member Karl Heitman agrees, adding that it can be difficult to process the enormity of these changes as an organic whole. "We're witnessing a significant, rapid shift in the supply chain," he says, "and it's a systemic change. I'm amazed at how prepared everyone is for the changes they see. But it seems everybody's working independently, on specific areas within the supply chain." It is a primary goal of the paper to provide an overall, unifying vision.

SIOR's Nowak agrees and believes that, judging by the progress the industry has made to date and its desire to learn more, essentially, practitioners "get it." They "are starting to understand, and they're clamoring for information on technology, how it's changing and where it's going. They understand that today they need to be thinking about what will happen tomorrow.

"Of course," she continues, "not all the expectations will be reached. We all thought we'd have flying cars by now. But change is coming down the road."

## From Big and Regional to Small and Local

It would be impossible in the course of this article to do justice to all of the above-listed drivers of change. But here is a sampling of what the industry is in for:

"Our distribution centers today are big boxes holding inventory that just sits waiting for an order," says Heitman. "In the new model, a consumer can order a product and it'll be manufactured on demand and delivered automatically." In Heitman's example, the production is handled via 3D printing and the delivery by autonomous vehicles. But it could just as probably come via pneumatic tube, blimp or drone, all real technologies that can cut into the potential market share of driverless trucks.

As a result, adds Moline: "You won't need massive truck bays, and you won't need to be close to a highway or a rail link."

## Sea Changes for Real Estate, Labor

Also changing the face of distribution are initiatives like the Maker's Movement, which promises to bring productivity to the community level, further challenging the need for big-box distribution centers and "decentralizing manufacturing into multi-node capitalistic ventures," says Heitman, founder and principal of the Chicago-based architecture firm that bears his name. "With manufacturing and distribution localized, inventory carry and regional transportation costs will approach zero."

This, says Nowak, presents the opportunity for adaptive re-use of closer-in B facilities. Borrowing from an Asian model, "maybe it's time to think vertically." Blueskying a bit, there's also potential opportunity for re-use of garages as

driverless vehicles and services like Uber and Lyft render existing facilities empty.

The implications for labor are obviously huge, touching not only how we hire but the national economy itself. "Labor is affected immediately," says Heitman. "Labor costs are diminishing as low-skilled, low-wage jobs give way to automation, and high-skilled, high-pay jobs in advanced mechanics and software programming take their place."

Simultaneously, he continues, "We've worked with companies coming into the U.S. simply because they can get lower energy costs for product that they can then export back to their native countries." As this trend continues, labor will diminish as a driver of the economy and energy will grow.

One major challenge for the research team is to pinpoint the way real estate strategies will emerge in 2030. "People are asking for something tangible," he continues. "But form follows function, and until we understand what the functionality will be, we can only talk about trends."

Moline agrees, and at this writing, the research team is absorbing interviews and research from a variety of disciplines in a discovery process. "We start with the big-picture changes that will have a strong influence on distribution and make some baseline assumptions around those trends. Then we narrow these considerations down for their impact on particular communities and industries, garment manufacturing or medical devices, for example. How will these considerations change the way I think about warehousing and my distribution center so I can get my goods to my customers?"

Two things are clear in the midst of this massive upheaval. First, says Heitman,

"The distributor that we know today will be obsolete by 2030 because products will be produced on demand and delivered directly. That one statement wipes out a lot of the thinking about how real estate is positioned."

Tate Godfrey agrees. "The pace of change being explored in this report will render many existing buildings and systems obsolete," he says, "and the big box distribution facility could go the way of the grist mill. The impact of these changes on corporate real estate portfolios and on community landscapes will be as significant as any in history. Recognizing changes in future distribution will allow companies and communities to adapt to existing real estate inventories as well as position themselves for the future standards of supply-chain efficiency."

Second, as we said at the top, adaptation means only one thing: Flexibility. "You have to figure out how to adapt as the industry itself and everything around it undergoes fundamental change," says Moline. "Facilities must have built-in flexibility to morph into as-yet-unknown future states that can accommodate a new status quo that will probably be a constantly moving target." Otherwise, you risk "immediate obsolescence and losing your shirt because you have to walk away from buildings that don't meet your functional needs from the minute you open the doors."

"Traditional definitions of warehousing and manufacturing are quickly becoming dinosaurs," says Nowak. "We've got to start thinking outside the box." It's a question of survival. ♥

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