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OPINION
BINYAMIN APPELBAUM

Why Do We Build Houses in the Same Way That We Did 125 Years Ago?

By Binyamin Appelbaum
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In 1969, the federal government announced that it would hand out millions of dollars in subsidies to companies willing to try something new: build houses in factories.

Then as now, America was in the throes of a housing crisis. There weren't enough places to live. Mass production provided Americans with abundant and cheap food, clothing, cars and other staples of material life. But houses were still hammered together by hand, on site. The federal initiative, Operation Breakthrough, aimed to drive up the production of housing — and to drive down the cost — by dragging the building industry into the 20th century.

It didn't work. Big companies, including Alcoa and General Electric, designed new kinds of houses, and roughly 25,000 rolled out of factories over the following decade. But none of the new home builders long survived the end of federal subsidies in the mid-1970s.

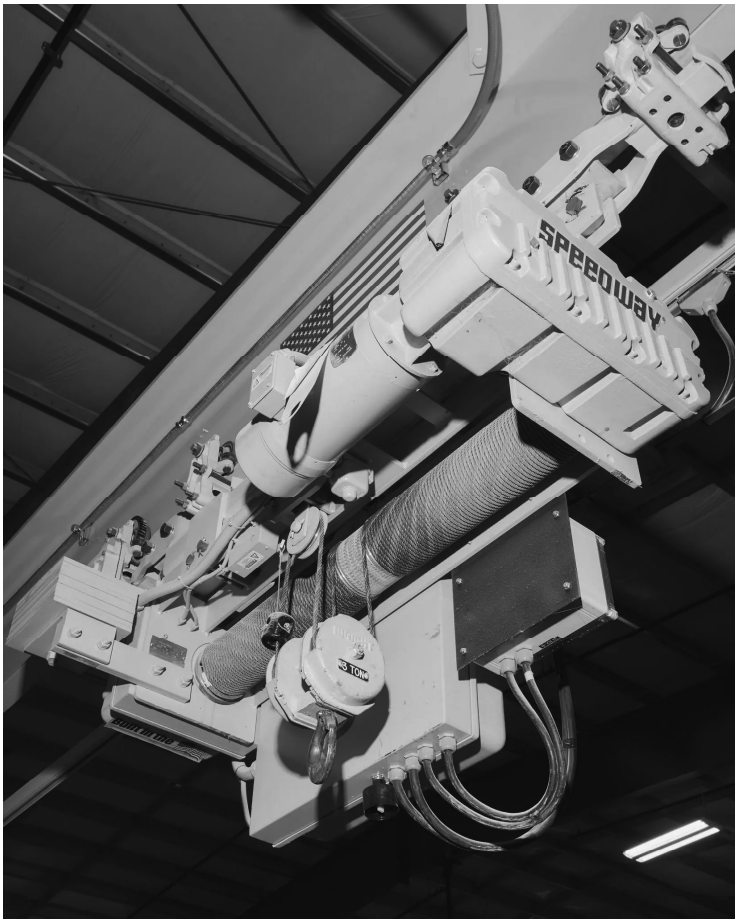
Last year, only 2 percent of new single-family homes in the United States were built in factories. Two decades into the 21st century, nearly all U.S. homes are still built the old-fashioned way: one at a time, by hand. Completing a house took an average of 8.3 months in 2022, a month longer than it took to build a house of the same size back in 1971.

Federal housing policy in the decades since the failure of Operation Breakthrough has focused myopically on providing financial aid to renters and homeowners. The government needs to return its attention to the supply side. Opening land for development, for example by easing zoning restrictions, is part of the answer, but reducing building costs could be even more constructive. Land accounts for roughly 20 percent of the price of a new house; building costs account for 60 percent. (The price of land is a larger factor in coastal cities like New York, but a vast majority of new housing in the United States is built on cheap land outside cities.)

The tantalizing potential of factory-built housing, also known as modular housing, continues to attract investors and entrepreneurs, including a start-up called Fading West that opened a factory in 2021 in the Colorado mountain town of Buena Vista. But Fading West, and similar start-ups in other parts of the country, need government help to drive a significant shift from handmade housing to factories. This time, there is reason to think it could work.

Fading West uses engineered lumber in its housing modules.

Finished houses consist of a few prefabricated boxes.



A ceiling-mounted crane is used to move walls.

Wooden platforms the size of train cars move the housing units from one station to the next.

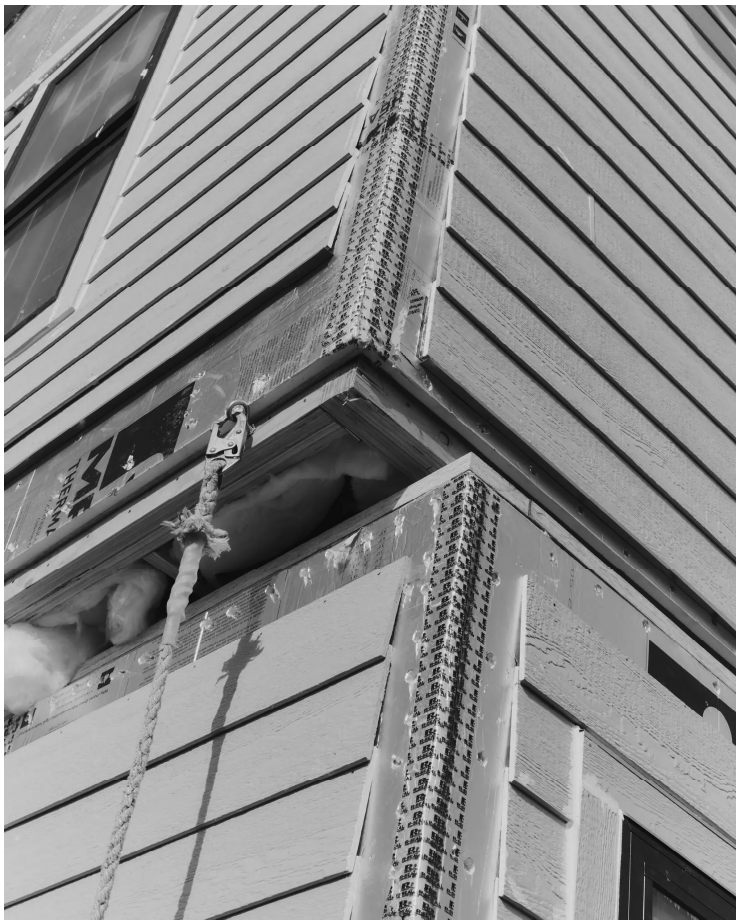
On a windy morning last month, I watched as wooden platforms the size of train cars moved down the Fading West assembly line, advancing to a new station every few hours as workers added walls and windows, wiring and insulation, dishwashers and cabinets. The finished boxes are trucked to building sites and swung into place by cranes. Houses consist of two to four boxes. Once they're knitted together, the result looks like a traditional home.

Charlie Chupp, the chief executive, previously ran a company that built and shipped all the pieces of new stores for Starbucks, Einstein Bros. Bagels and other restaurant chains. Fading West is seeking to apply a similar model to building homes and apartments. "We see ourselves as being in manufacturing, not construction," says Eric Schaefer, a former pastor who is now the company's chief evangelist, bending the ear of politicians, reporters and developers about the potential benefits of mass production — and the changes necessary to support it.

Final assembly happens so quickly that it almost seems like a magic trick. In Poncha Springs, a town 30 minutes south of Buena Vista, I watched as a crane swung a 19,894-pound box over a concrete foundation. A worker on each corner checked the fit while two more waited in the basement to connect it to the foundation. As it was secured, a truck arrived with the next box.

The team of eight workers has sometimes assembled four houses in a single day.

Cranes swing prefabricated housing units into place.



The corners of two pre-fabricated housing modules moving into alignment.

Joanna Schwartz, the chief executive of Quartz Properties, which is using Fading West's boxes to build the homes, said buyers sometimes come to see the show. "They didn't have a house in the morning and then in the afternoon they can walk through it," she said.

Fading West says houses from its factory can be completed in as little as half the time and at as little as 80 percent of the cost of equivalent handmade homes, in part because the site can be prepared while the structure is built in the factory. A 2017 analysis by the Terner Center for Housing Innovation at the University of California, Berkeley, found similar savings for the construction of three- to five-story apartment buildings using modular components.

Factory building has other advantages, too. It can reduce waste, maintain higher standards of consistency and produce homes that are more energy efficient. It is not subject to rain delays.

It also offers a solution to the home-building industry's growing problems finding enough qualified workers, especially in high-cost areas. Manufacturers like Fading West can build where labor is cheaper and then ship homes to the places where people want to live.

A completed module is towed from the facility.

But there are good reasons modular housing has remained the next big thing for a long time.

One basic problem is that houses are large objects, and unlike cars or airplanes, they are not designed to move. The result is that the savings from factory production are partly offset by the cost of transportation. (Some companies reduce transportation costs by shipping homes in smaller pieces, an approach pioneered by Sears and other retailers of "build your own home" kits in the early 20th century, but that just shifts the cost from transportation to assembly.)

The volatility of the housing market is also a problem. Traditional home builders rely on contract workers who are easily dismissed during downturns. Factory builders, which have high fixed costs, tend to go bankrupt. Housing downturns have ended a long line of ambitious and well-funded efforts to create the Model T of the housing industry. In 2006, on the cusp of the most recent housing crash, factory builders produced more than 70,000 homes. Since the crisis and the resulting wipeout, annual production has not exceeded 30,000 houses.

Neither volatility nor transportation costs might matter if factory home builders could match the efficiency gains found in other kinds of mass production. Brian Potter, a senior infrastructure fellow at the Institute for Progress, a nonpartisan think tank focused on technological innovation, gives the example of the Ford Taurus. Experimental models of the 1996 Taurus were built by hand, which cost almost half a million dollars per car. The car eventually retailed for less than $20,000.

Factory home builders have struggled to streamline construction. Mr. Potter spent several years looking for ways to make housing construction more efficient, an effort he narrated on a fascinating blog, before concluding that significant progress wasn't likely. "Almost any idea that you can think of for a way to build a single-family home cheaper has basically been tried, and there was probably a company that went bankrupt trying to do it," Mr. Potter told me.

I think the history of the auto industry provides reason for more optimism. One lesson is that progress requires production at scale. There are a handful of car companies that each make millions of cars, and hundreds of home builders building a few hundred homes a year. Fading West, which aims to produce as many as 1,000 homes a year, says that isn't enough to justify investments in automation.

Efficiency gains also come from doing the same thing over and over again, but the idiosyncrasies of local building codes make that impossible. In Colorado alone, by Mr. Schaefer's count, there are more than 300 distinct building codes, requiring adjustments for each new batch of homes. Fading West found that it had to use different roof designs for homes headed to the city of Fairplay and to a development just outside the city, because the county has stricter snow load regulations.

A crane being repositioned to build the next group of homes.

Snow falls on a Fading West modular home as it waits for finishing touches in Colorado.

A sequel to Operation Breakthrough could help the industry overcome those challenges. The Canadian government's Rapid Housing Initiative is providing support for large-scale modular manufacturing by setting tight construction deadlines for affordable housing projects that obtain government funding, an approach the United States could emulate on an even larger scale.

The government also can push for the standardization of building materials and building regulations. Herbert Hoover, the great champion of industrial standardization, who during his years as commerce secretary in the 1920s worked successfully to establish uniform rules for products such as paving bricks, milk bottles and blackboards, argued that establishing consistent standards was the nearest thing to a free lunch. It would increase productivity, benefiting companies, workers and customers. Florida and California will always have somewhat different building codes, because hurricanes and earthquakes pose different challenges. But there is no reason for Colorado to have 300 different codes.

If it seems far-fetched that the government could revolutionize the home-building business, take a look at what sits on top of a growing number of American homes. The government has driven the spread — and driven down the cost — of solar panels through decades of investment and subsidies.

It's time to pay similar attention to the buildings underneath.

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