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SOME (RE)ASSEMBLY REQUIRED



A San Francisco architect reinvents an 1880s house for the modern age.



May 2011
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FINNISH DESIGN

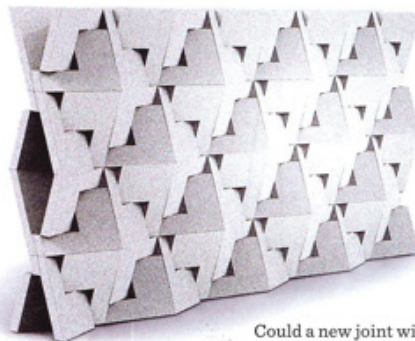
Past and Future

OBSERVED

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"Structural support mixed with the ability to collapse and pack flat is tremendous for all different kinds of applications."



Joint Venture

Assessing the potential benefits and limitations of a product designer's ambitious foray into structural invention

Could a new joint with a funny name be the answer to a wide variety of design problems, leading to improvements in everything from flat-pack furniture to large-scale infrastructure? Yes, says Dror Benshetrit, the New York City-based product designer, who is dabbling in engineering with his latest creation, called QuaDror. The multipurpose joint relies on precisely cut interlocking squares that fold open to create a self-supporting triangular base. "You can intersect two squares and lock them with a geometrical locking, without any hinge," says Benshetrit, who came up with the initial concept four years ago and has been refining it ever since. "We very quickly realized that there was a lot we could do with this geometry."



VERSUS





QuaDror first appeared as the frame for a prototype lamp for Swarovski in 2007; since then, however, Benshetrit has been focused on a range of much larger applications, including a pop-up building, disaster-relief shelters, and interlocking concrete panels for highway retaining walls. But is this one-size-fits-all approach practical? Despite his engineering inexperience, Benshetrit is confident that QuaDror is indeed a genre-busting innovation. "Structural support mixed with the ability to collapse and pack flat is tremendous for all different kinds of applications," he says.

Benshetrit did not reach this conclusion without some outside help. To fine-tune the design and study its utility in different applications, he has been working with Arup and Inneall Technology, a mechanical-

engineering consultancy. Brian Markham, a structural engineer at Arup who consulted on the design, says Benshetrit is on to something important. "What Dror has introduced is a way to get small structures up very quickly," he says. "He's not doing anything geometrically new, or really structurally new, but he's allowing erection to happen immediately. It erects itself and is stable immediately when you put it down—that's the huge breakthrough. It has both the vertical strength and lateral strength tied together."

Craig Schwitter, a principal of the engineering firm Buro Happold, offers a similar assessment. "It looks interesting as a concept," he says, pointing out that he hasn't studied the joint in detail. Schwitter notes that QuaDror makes good sense for disaster-relief shelters, where the ability to flat-pack components is key. Markham agrees that it will be most valuable at a medium scale, for things like single-family homes and highway retaining walls that fit together like Lego blocks. "Imagine if you could just drive by and drop off a retaining wall or sound barrier," he says.

Larger projects may prove more problematic. According to Markham, as you increase the size of the joints—say, for massive trestles underpinning bridges (which Benshetrit has proposed)—they start to lose their advantages, and ordinary columns will likely be more efficient. "There are obvious limitations, but there are a few applications that are *really* good," he says. "That's why we're sticking with him."  

used in
trestles,
or
airson
port,
es



g.com Watch a video demonstration of the QuaDror joint.

May 2011