The rise of the super-skinny skyscraper

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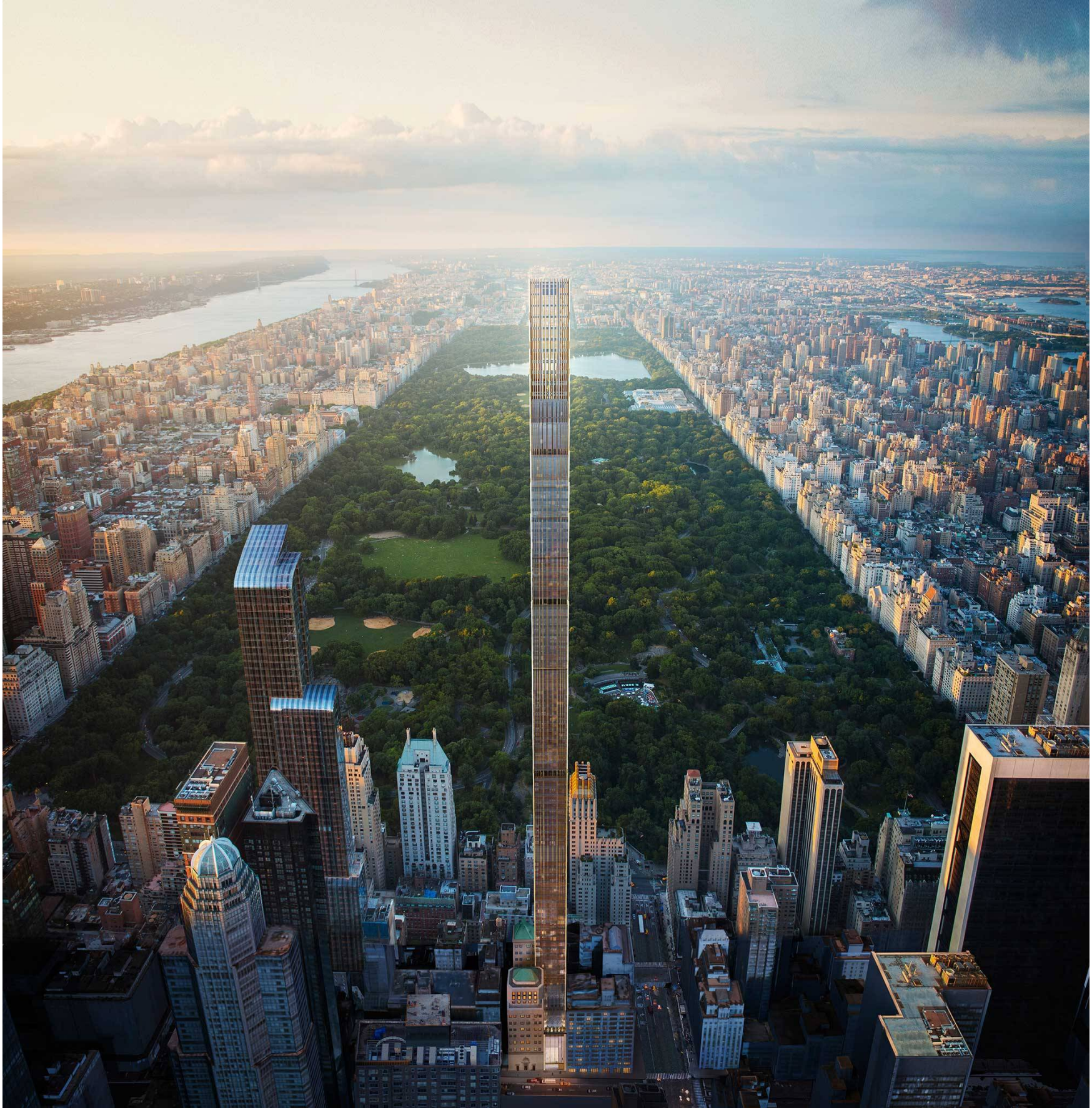
A new golden age for skyscrapers has dawned, a race to the sky on a scale we haven't seen since the frantic construction that gripped American cities in the 1920s. No fewer than 342 new buildings over 150 metres are expected to be completed in 2016. And many of the highest will be engineered by Montreal's WSP Global Inc., which became a leading expert in tall buildings following its 2000 acquisition of New York-based Cantor Seinuk.

This time, it's residential projects, not just commercial ones, that are drawing investment. As more of the world's population moves to cities, the footprints of urban areas are extending not only out, but up. And in cities where space is at its scarcest, a new breed of tower has emerged:
the super-skinny skycraper.

One of WSP's current projects is 111 West 57th Street, an American art-deco-style project with 360-degree views of Central Park. It will top out at 438 metres (1,438 feet)—about 24 times higher than it is wide. Engineers generally consider buildings with a width-to-height ratio of 1 to 10 to be "slender."

The economics of these luxury thin towers is driven by easier access to capital for developers in a low interest-rate environment, plus multimillionaire clients with the means to pay for a view. A company controlled by investor Bill Ackman paid $91.5 million (all currency in U.S. dollars) for a duplex stretching over the 75th and 76th floors of Manhattan's One57 tower last year; according to Bloomberg, monthly common charges on the unit are estimated at $23,595.

But it’s the dramatic improvements in construction materials and techniques in recent years that have made these buildings possible. Advanced computer modelling and wind-tunnel analysis help shape buildings to cut so-called vortex shredding, or wind acceleration. Using high-strength concrete, instead of steel, to build the core and shear walls helps stiffen the structures to reduce sway. So do mass damper counterweights—giant shock absorbers that offset movement in the case of high winds or earthquake. The one at 111 West 57th weighs 800 tons. Prospective buyers can rest easy: WSP says the damper is purely for the comfort of residents, not for any structural reasons.



A rendering of 111 West 57th, which is expected to open in 2018.

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