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## Tall, thin, curvy, gorgeous - and heating the winter sky

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*They offer great views and enviable densities, but transparent glass towers can be big energy hogs. Lisa Rochon digs down to find out who's to blame - and how to move forward*

At night, they glitter, they sparkle, they stand as quintessential beacons of futurism. Scrutinized in the bright light of day, however, transparent skyscrapers are starting to be understood for what they are: environmentally toxic, and harbingers of a devastating urban scenario.

A recent attack on the "architectural pornography" of the 82-storey Aqua Tower in Chicago by Ted Kesik, a University of Toronto professor of building science, has caused a serious rethink of the glassy skyscrapers that now dominate cities like Vancouver and Toronto, where another 132 towers are currently in the process of being built. To Kesik and other building scientists, the uninsulated concrete slab floors that sweep seamlessly from Aqua's interiors out to its exterior balconies are typical of abysmal cold-climate design.

"Take your clothes off, attach a series of highly conductive fins, like the kind they put on motorcycle engines, to the skeleton of your body, and go stand outside in January," wrote Kesik to his architectural students and colleagues, the day after Jeanne Gang, the Aqua's award-winning architect, delivered a standing-room-only lecture at the University of Toronto. "Then tell the person who is dressed for winter they are boring, overly practical people who are squashing creative expression among the affluent members of society. ...The 'in crowd' rules, viciously."

Aqua's gorgeously curvy building has been splashed across design magazines, but the truth is that - like legions of glass towers elsewhere - it's slowly heating the winter sky. According to the American Institute of Architects, buildings (of all types) produce as much as 48 per cent of greenhouse gases in North America, and consume 68 per cent of electricity. Especially wasteful are glass towers, many of which also use inferior-quality window-wall systems that can start to leak after just five

years. Imagine the technology of cars or computers regressing - rather than advancing - by fifty years. That's the architectural monster that has been created with glass towers.

Who's to blame? Just about everybody.

Condo buyers and commercial tenants, say developers, are demanding transparent towers with sky-high views. "If you have a tower without balconies, the marketing guys will say they cannot sell it," says David Pontarini, architect of 70-storey One Bloor, a landmark condominium now going up in Toronto that includes gourmet kitchens but a dearth of energy-saving thermal breaks between its luxury interior units and organically sculpted balconies.

Except in rare instances, meanwhile, developers refuse to pay the premiums required to produce a truly sustainable tower - and no, a green roof and some solar panels don't cut it. All the while, architecture schools are churning out grads who know more about urban densification and media-savvy stylish forms than how to detail architecture that is beautiful, sustainable *and* made to endure - especially in a tough northern climate.

Kesik predicts an average shelf life for today's glass towers of only 15 to 20 years, provoking a massive new problem of how to retrofit them when the glass starts to fog and condensation leaks inside. By contrast, the brick-and-masonry towers that saw their heyday in the sixties and seventies may have come with thin glass and no insulation - but they're incredibly durable and fairly easy to retrofit. How to replace the skin of contemporary glass towers, especially those that are nearly 80-per-cent transparent? Evacuation will likely be required, so that the skin can be peeled away, one floor at a time.

Is there hope? Ontario's just-released update of its Building Code is a good start, one that will heavily penalize developers for creating buildings whose cladding is more than 40-per-cent glass. That's more in line with the Nordic countries and much of Europe, where the high cost of energy has created crisp, engaging buildings that use about half the energy of ours.

The Marilyn Monroe-esque Absolute Towers in Mississauga deserve recognition for installing thermal breaks to prevent energy waste - they should post that kind of information on the buildings' front doors. Information is empowering: Energy Star ratings for buildings could educate

consumers to make the right purchases, just as such ratings do these days with appliances.

Developer Tridel is making its own efforts - working with the Toronto Atmospheric Fund, an arm's-length city agency that arranges loans for energy-efficient construction. Tower Labs, meanwhile, which consults on clean and renewable technologies and materials, has been modelling the energy performance of Tridel's tall towers.

With that in mind, citizens of Toronto should demand a template of sustainability and superior design for all major developments now in the works. Consider the recently proposed \$295-million development planned to rise above the Gardiner Expressway at 10 York Street. Though the banal design has a long way to go, it's refreshing to learn that thermal breaks are being researched to contain energy within the 75-storey residential tower, being developed by Tridel and city agency Build Toronto. Such is the hard work of passionate city-building.

I admire the innovative and anchoring work of an architect like Jeanne Gang, who notes that Aqua puts about 750 households on a third of an acre, allowing people to walk from their home to their jobs and to culture and recreation. "The most important thing we can do for the environment is live in compact cities with mass transit," argues Gang, "that reduce the reliance on the car and other resources."

This sounds wise and practical, but, like Kesik, I want architects to reach for the sky when they create tall buildings, rather than allowing them to perform poorly just because they look great and are right downtown.

*For more on Lisa Rochon's insights about design from around the world, visit her blog, [chasinghome.org](http://chasinghome.org).*