



## Emergence of the Forest Aesthetic and the Idea of Living within Ecosystem Curves

By Jana VanderGoot

There are designed projects in the built environment where urbanism is “forest.” These artworks, buildings, landscapes, and development strategies have in common the idea of an underlying matrix, or a surrounding substance and foundation, made of a continuing and resilient ecosystem of trees, understory vegetation, wildlife, soils and microorganisms, terrestrial and atmospheric elements, and water cycling. The designers of these projects treat forest as both a base condition and a protective overlay for commercial, residential, industrial, and civic programs in even the most densely populated urban areas. In these projects forest is an architectural vernacular, or a material and design language

that has been tested, studied, and known for as long as humans have existed. The phenomenon of the “forest aesthetic,” as defined in the book *Architecture and the Forest Aesthetic: A New Look at Design and Resilient Urbanism* (VanderGoot 2018), is used to describe these projects of the forest.

As a theoretical position, the forest aesthetic responds to a handful of well-known forest projects, which emerged in architecture, landscape architecture, and urban studies in the late 1990s and into the first decades of the 21st century. The forest aesthetic book aligned the current projects with historical case studies to create cross-disciplinary inroads for more

complicated, yet urgently needed conversations about greenhouse gases in the atmosphere, toxicity of the materials that humans use to create the built environment, and the well-being of humans and other organisms on Earth.

In the discipline of architecture specifically, contemporary projects of the forest have too often been discussed as one-liners. However, when paired with new developments in landscape architecture, urbanism, and forest science, it becomes clear that the potential impact of these important conversation-starting projects is broad. For example, the Bosco Verticale (vertical forest) project in Milan, Italy by Stefano Boeri Architetti (2014) is often simply called a “forest

skyscraper.” However, pairing Bosco Verticale with earlier built work by Friedensreich Hundertwasser in Austria and Milan, Italy in the 1980s reveals a lineage of thinking about the forest in connection to buildings in the City of Milan. Digging deeper into the design of the Bosco Verticale towers also makes it clear that the towers are only a small piece of a much larger design vision called Biomilano, where the City of Milan becomes a human-forest biome. In a human-forest biome, the forest is an architectural building block used to create human habitat and also a highly effective, long-term infrastructural strategy for balancing carbon cycles and maintaining air quality in urban areas. In the Biomilano plan, metrobosco (city forests) are planted with fast growing tree species in order to remove carbon and other pollutants from the atmosphere. Metrobosco are then harvested and contained in

casa bosco (wood social housing) made possible with mass timber building technologies. The industry created by this cycling of forest urbanism is the background for living in the human-forest biome. What distinguishes this human-forest biome is that peaks in the curve of carbon dioxide and other greenhouse gases released into the atmosphere can be flattened through development and urbanism.

Another example of a built project where the temperate forest is an architectural vernacular is the Murray Grove nine-story all-timber residential high-rise designed by Waugh Thistleton Architects in London, United Kingdom (2008). In the field of architecture, Murray Grove is recognized as a prototype for the Tall Wood Building. This category defines buildings taller than 26 m (85 ft)

and built with large panelized wood, also known as mass timber construction. Cross-Laminated Timber (CLT) panels were used for floors, stairs, and external party and core walls on all eight floors above the first floor at ground level at Murray Grove.

Murray Grove helped to change building codes for medium to high-density housing. One of the first projects referred to as a “plyscraper,” Murray Grove was a break-through with regard to building code standards for fire safety that had required structural systems of high-rise buildings to be made of concrete and steel. The Murray Grove team worked to establish new codes in the United Kingdom. Soon after, the mass timber trend quickly became global. In 2015, the International Code Council (ICC), whose voting members are building and fire officials from all over the United States, adopted



ANSI CLT Standard PRG 320 to allow the construction of mass timber high-rise buildings in the International Building Code (IBC).

As Bosco Verticale is much more than a forest skyscraper, Murray Grove is also much more than its skyscraper name. Murray Grove is a project that makes an economically viable argument for lengthening the period of time in the carbon cycle when carbon is contained in Earth's crust (the biosphere, hydrosphere, lithosphere, and pedosphere). Over a decade ago, Waugh Thistleton was making what are now common ideas about carbon containment accessible to the public by describing it in their book, *A Process Revealed*. The authors note that: "Substituting concrete for timber reduced the carbon offload of Stadhaus [Murray Grove] by 300,000 kg (661,387 lbs). This is equivalent

to the entire carbon use of the building over twenty years of occupation." (Thompson et al. 2009). Waugh Thistleton's economic argument did not factor in the additional savings to be made through carbon credits for carbon contained in the wood of the building. As society moves to meet benchmarks in newly proposed legislation like the Green New Deal in the United States and the America's Pledge response to the United States' withdrawal from United Nations Paris Agreement in 2017, certified carbon credits will likely only increase in value.

In addition to mass timber, other building products are emerging from the same forest systems to help flatten the curve of greenhouse gases and toxic VOCs released into the atmosphere. Formaldehyde-based adhesives are being replaced by CNC-

routed wooden dowel and dovetail connections. Petroleum and chemical-based sealants are being replaced with shorter lived yet less toxic tree pitch resins, waxes, gums, oils, and fibers from the forest. Laser scans of solid timber now detect knot holes and flaws in order to help ensure that wood panels are airtight. This reduces some of the need for plastic vapor barriers and metal foils. (Lennartz and Jacob-Freitag 2016). Landscape-based carbon-positive technologies that can be deployed at a large scale are also being developed for decommissioned wood biomass from cleared forests that are thinned to prevent wildfires and from the demolition of mass timber buildings as they reach the end of their useful lifecycles.

These design projects of the forest all anticipate the day when people will demand the ability to

"buy local" and "organic" as they purchase homes, rent office space, or fund a development project. That market demand will signal a shift to living resiliently within the curves of urban ecosystem habitats.

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**Jana VanderGoot is an Associate Professor of Architecture at the University of Maryland, a licensed architect, and a founding partner at VanderGoot Ezban Studio.**

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#### Resources:

Yugon Kim and Tomomi Itakura of IKD (2016). *Timber City Exhibit*. Washington, D.C.: National Building Museum. <https://www.nbm.org/exhibition/timber-city>.

Marc Wilhelm Lennartz and Susanne Jacob-Freitag (2016). *New Architecture in Wood: Forms and Structures*. Translated by Philip Thrift. Basel: Birkhäuser.

Stefano Boeri Architeti. Biomilano. <https://www.stefano-boeri-architetti.net/en/publications/biomilano>.

Henrietta Thompson, Andrew Waugh, Karl-Heinz Weiss, and Matthew Wells (2009). *A Process Revealed*. FUEL Publishing.

Jana VanderGoot (2018). *Architecture and the Forest Aesthetic: A New Look at Design and Resilient Urbanism*. New York, NY. Routledge.

Waugh Thistleton Architects. Murray Grove. <http://waughthistleton.com/murray-grove>.



Cross-Laminated Timber with pre-cut openings  
Image Credit: KLH



Image Credit: DMCA