ABSTRACT: To an extent, the architecture of each era is dictated by the material context prevalent at the time. Architecture’s Steel Age gave way to its Concrete Age, which is now giving way to the newfangled Timber Age. As has historically been the case, however, materially trailblazing schemes such as the latest multi-storey timber buildings tend to hide their pioneering materiality behind thin veils that make them look as if they were constructed using a more traditional (and therefore palatable to traditionalists) material palette. The authors argue that the large-scale timber façade holds the key to communicating the benefits of the multi-storey wooden buildings that will define the current Timber Age and carry it into the near future: such façades, if allowed to celebrate their wood-ness, could become ideal advertising posters for the advantages of timber architecture. Theoretical studies of historical/vernacular façade systems provide sufficient information for the compilation of a catalogue of potential timber façade articulations. These are connected to existing timber-based construction systems, whereafter different design solutions are explored through physical and digital sketches, model studies, simulations, and analyses. To further drive home the message of the significant added value of timber claddings, the scheme wraps and weaves around the existing Robin Hood Gardens development, a Peter and Alison Smithson design scheduled for demolition. The retrofit design proposal is parametrically modelled using Rhino Grasshopper and produced as physical prototypes at different scales up to 1:1. These are manufactured on a CNC router as mock-ups of protective large-scale timber façades, membranes mediating between public and private space while preserving a derelict residue of the Concrete Age into the Timber Age.

KEYWORDS: Wood architecture, multi-storey timber buildings, timber façades, CNC, prototype, Timber Age, Marshall McLuhan, Peter & Alison Smithson, Robin Hood Gardens, the Jonah Complex, weaving, point cloud, evolutionary solvers, retrofitting

1 INTRODUCTION

While the construction world seems largely stuck in the age of reinforced concrete (65 years old this year), we would argue that the world of architecture has already moved into the third Timber Age (possibly soon being played out in tandem with a Polyactic Acid Age – or similar – brought about by increasingly ubiquitous 3D-printing technologies), in which engineered timber, first used in the Church of St Luke in Formby, England, but largely set in motion by the series of designs patented by Weimar-based master carpenter Friedrich Otto Hetzer beginning in 1892, finally comes into its own as a structural material suitable for multi-storey buildings.1

1.2 THE LACK OF TIMBER HEART SLEEVES

The arrival of this third Timber Age is reflected in the number of multi-storey wood buildings that are currently being designed and announced. Despite the rise in proposed tall timber schemes in recent years, however, few of these buildings wear their timber hearts on their sleeves. Even a famous development such as the Stadthaus in London hides its timber-ness behind a pixelated pattern of white, gray and black eternit panels.2 If you make an effort to design and construct a building entirely from wood, why then clad it in a different material?

To an extent, this strange practice can be explained through arguments to do with performance and longevity.

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The Stadthaus façade consists of more than 5,000 individual panels that are made up of 70% waste timber. This provides a rudimentary explanation as to why this particular building’s designers would opt for a cement-based product (being, perhaps, the best available compromise at the time of its design) and how they could rationalise this choice in conceptual terms when linking it to the unadulterated timber structure it conceals, but it doesn’t unravel the historical timber phobia among specifiers of large-scale façades.

2 BACKGROUND AND SITE

2.1 ALISON AND PETER SMITHSON
Quite possibly the most interesting architectural couple ever, the Smithsons “were catapulted to premature architectural stardom on winning the competition to design Hunstanton Secondary Modern School in 1950”. At 26 and 21 respectively, Peter and Alison had worked in the schools division of London County Council Architects’ Department for less than a year. The win allowed them to set up their own practice. The Smithsons carefully built a solid reputation both within and outside of the architectural community by heavily publishing their relatively modest output (including their unbuilt schemes), creating a public image out of proportion with their built work, which includes The Economist Building in Piccadilly, London, the unwavering School of Architecture and Building Engineering at the University of Bath, and the Robin Hood Gardens housing complex in Poplar, East London.

2.2 ROBIN HOOD GARDENS
In 2012, Tower Hamlets Council together with the London Thames Gateway Development Corporations approved the demolition of Robin Hood Gardens, the Smithson’s famous 1960s brutalist residential estate. The decision was made in an effort to make way for a new £500 million sustainable development comprised of energy-efficient, mixed-tenure homes and an enlarged central park.

True to their anti-establishment position as radical outsiders and their raw brutalist aesthetic of the time, the Smithsons turned Robin Hood Gardens into a curiously harsh work of architecture, aberrantly devoid of kind-hearted small talk and pleasantries. It is an unforgivingly sinister essay in concrete that heroically refuses to deviate from its almost reptilian disposition. Attacked on all fronts by truly harsh and tricky site conditions, it seems to wallow in its own deliberate ugliness, making it is impossible not to sympathise with it – though not necessarily in an unproblematic way.

3 RETROFITTING & REGENERATION
The scheme combines a retrofitting strategy – turning the Robin Hood Gardens away from its current position as demolition object, towards a new life as a building woven around a “cortical concept” – with regeneration tactics (regenerative design being a process-oriented systems theory-based approach to design). The result is an exceptionally high-performing façade structure that retains the existing concrete building and its brutalist values while adding a timber enclosure that addresses its shortcomings.

4 CONCLUSIONS
Timber façades that express their materiality are not only severely and curiously underused within the fabric of our built environments; they are also capable of instrumental regenerative retrofitting of existing buildings that could be environmentally awkward to demolish. The notion of timber façade structures based on interwoven members, in particular, is a promising strategy capable of creating “deep façades” laden with programmatic functionalities and performative properties. Their value as standard bearers for the present/forthcoming third Timber Age cannot be overrated; more buildings need to wear their timber hearts on their sleeves.

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REFERENCES
[1] Hetzer received the patent in 1908. It should be noted that the 1860 King Edward College in Southhampton, is widely regarded to be the first known glulam structure.
[2] It can be argued that tall timber buildings are a lost art that is now being found anew: the tallest pre-modern wooden structure in Chinese history was the 100-metre-tall pagoda of Chang'an, built in 611 by Emperor Yang of Sui. Cf. Charles Benn, China’s Golden Age: Everyday Life in the Tang Dynasty (Oxford: Oxford University Press, 2002), p. 62.