

# Modern architecture: A house deconstructed

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## **Mark Jarzombek and Vikramaditya Prakash, Co-Founders of the Office of (Un)Certainty Research (a collaboration dedicated to rethinking modern architecture), take us on a journey of a deconstructed house**

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Professor Vikramaditya Prakash of the University of Washington and Professor Mark Jarzombek of MIT are co-founders of the Office of Uncertainty Research. This collaboration is dedicated to rethinking architecture in a modern context. The office investigates different aspects of architectural production at the planetary scale. They recently studied a just-completed, modern house in Seattle, asking a simple question: Where do all the materials come from? As it turns out, the building industries, even some of those associated with sustainability, make it difficult to trace the origin and flow of materials. Some of this is because materials like rubber are obviously involved in a complex array of processes, many of which are proprietary in nature. Some of it is simply because there are no publicly available records, whether purposefully or not.

It is probably fair to say that only a tiny per cent of the story is even knowable. This might not be so problematic except for the fact that compared with buildings made just a few decades ago, modern houses rely increasingly on advanced materials, additives, and extensive supply chains. The use of chemicals in construction materials, for example, has expanded dramatically in recent decades. The steel in the house, for instance, was made with additives that make it last longer and be more durable. It was even coated with an invisible layer of rubber polymer. All of this has significant hidden environmental and human costs.

### **Origins of the materials used to build the house**

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Because of the global supply chain, materials now move around the globe with the ease of a computer click. That, too, would not have been the case some fifty years ago. When the Office of Uncertainty Research began to put together a map of all the mines that were necessary for the construction of the house, they found that the sourcing of materials spanned the globe. The wood in the Seattle house, which was marketed to the client as sustainable, came from a forest in Germany and was then brought to Indonesia for processing. The metal came from a recycling plant in Bangladesh. And the additives for the concrete came from mines in Africa and Canada.

These findings reveal that the oft-desired 'elegance' of modern architecture, which relies heavily on steel, concrete, rubber, glass, and wood, conceals deep ethical and environmental challenges, most of which are unknown, surprisingly perhaps, even to its architects. The complex chemistries and convoluted journeys of each of the building's components raise crucial questions about the true nature of the stories our houses silently carry. Schools of architecture have yet to adequately address these issues in their pedagogy.

### **What about the processes of production and labor?**

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Concern is not just about the origins of the materials used to build the house, but also about the processes of production and labor. A factory in Minnesota made the glass for the house. Why there? Some billion years ago, it was the site of a huge lake that was subsequently covered with soil. Since that sand has not been disturbed by wind and erosion, it is an ideal source for the much-valued sand needed for fracking. The sand is harvested through a strip-mining process that leaves indelible and, in many cases, irreparable scars on the land. A by-product of the process is sand of a lower quality that is sold to glass companies that have set up fully robotized factories nearby. The glass for the house in Seattle was made in a massive factory with only five workers, most of whom just push buttons in the control room. No wonder glass has become the cheapest cladding material for buildings.

Jarzombek and Prakash also describe the vast array of invisible background laborers that were required for the house, from miners in Africa (some of whom work in illegal mines) to factory workers in Asia to the actual contractors on site. The house itself is, in fact, more or less hand-built by a wide array of tradespeople. Additionally, Jarzombek and Prakash describe how the unseen labor of microorganisms in the soil contributes to the lifecycle of natural materials such as wood. Altogether, this register emphasizes the global and multilayered nature of labor, highlighting the often-overlooked contributions of workers and ecosystems in the construction industry.

In one particularly striking example, Jarzombek and Prakash explain that the Seattle house was partly built from recycled steel, a fact that the suppliers celebrated. However, the duo points out that this material most likely came from an unregulated facility in Bangladesh, where discarded ships are salvaged by the hundreds, releasing toxic chemicals and gases into the environment while workers are treated extremely poorly.

## **A House Deconstructed**

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The book that discusses all of this, *A House Deconstructed* (Aktar Press, 2024), which was part of an exhibition at The Venice Biennale of 2021, also gets us to understand the different time scales that are involved when we talk about these materials. Steel was formed from atoms created during supernova explosions in the aftermath of the Big Bang, which eventually became part of the Earth. Unlike steel, which is many billions of years old and came to Earth mostly via asteroids, the wood in the house, which was grown on this planet, might be 150 years or so old. The concrete, made of sand and gravel, might be from material made perhaps only a billion years ago through geological processes. In other words, a house is a compressed essay on cosmic and planetary interconnections and their associated forces.

## **Modern architecture practices impact on the planet and its inhabitants**

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These findings hope to broaden our understanding of the deep history of modern architecture, while calling for greater awareness of the global and ethical dimensions of construction in our practice and teaching. Through their book, the researchers ultimately

hope to raise awareness of the profound impacts that our architectural practices are having on the planet and its inhabitants.

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