



© Frank Harmsink

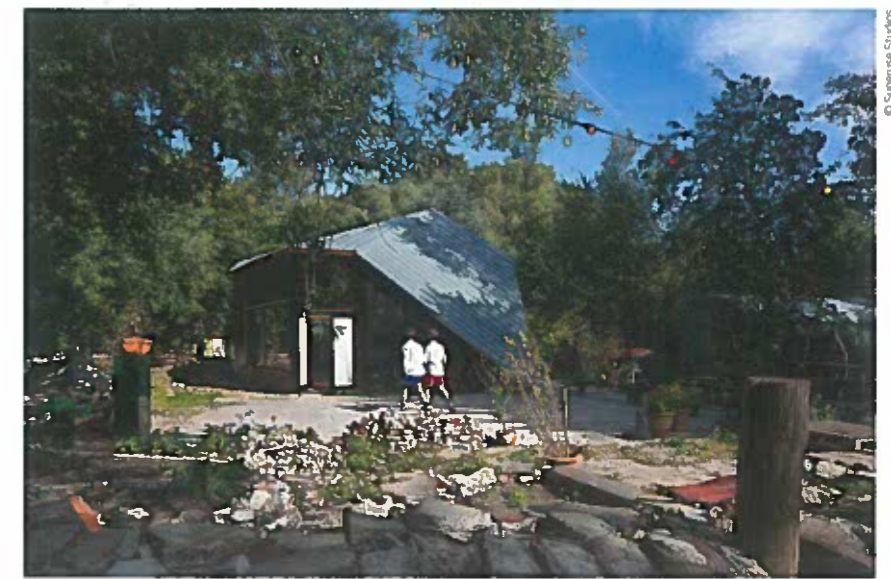
# PAVING THE WAY

HOW TO GIVE VALUE TO WASTE AND DESIGN SUSTAINABLE ARCHITECTURE

*By now it is no longer a secret that up to 7% of the global carbon dioxide emissions have their origin in the building sector. As the world population grows every day, the necessity of limited natural resources for new buildings do likewise. We need a sustainable solution for the future of the planet. Probably the most effective way of reducing emissions is to rethink, reuse and recycle what is already there. Even the most efficient production process still has a higher impact on the environment than avoiding production as far as possible.*

Without integrating the waste flows of the building sector into a circular economy, an enormous amount of material gets irreversibly lost. Construction waste shouldn't be understood as such; even though selective demolition might seem elaborate and the knowledge about it is still not very common yet, the great saving potential is worth the effort. We have created huge *urban mines* which to recycle could be a valuable source and effective step towards a sustainable future in favor of both: humans and nature. As long as producing anew is the most time- and cost-efficient way to build a house, a change is not to come. The *Superuse Studios* take in a pioneering role when it comes to reuse in the field of architecture and interior design. They decided to push reusing to its limits by making the "superuse" of material their credo. The ambition: thinking about architectural design as a circular process instead of a linear one right from the beginning. The claim is to reach the highest possible proportion of second-life materials and bring them together in a high-quality design.

One of their signature projects is the *Buitenplaats* on Brienenoord, a small island in Rotterdam. The old camp house had to be demolished and the design of a new building for the foundation *Grondvesten* was demanded. In general, a minimal ecological footprint and a Social Return on Investment Ratio of 10:1 was requested. There were two specific challenges that *Superuse* had to tackle during the planning process as well. First, the only connection to the mainland was a bridge only able to carry up to 15 tons of weight – even an empty truck would be too heavy. And sec-



© Superuse Studios

As a community production consisting of the reused materials, the new *Buitenplaats* camp house translates the atmosphere of the old one into a viable alternative for the future.

ond, the budget of the foundation had its limits. The logical consequence was to carefully dismantle the old building and reuse as much material as possible. For this reason, they spread all components on the grass to be able to review their resources and transfer them into a 3D CAD model. Everyone participated with devotion and several community members were invited to experiment with the materials and design a new building for the community in workshop format. The incredible outcome was that 65 % of the new pavilion – including the foundation – had already been parts of the old one. 30 % were recycled components transported less than 140 km and only 5 % had to be produced from scratch. The foundation is now able to organize social, cultural, artistic, culinary as well as educational events in an absolute unique location. Interacting with the small forest around, the new camp house in Brienenoord has become a creative open space of and for the city of Rotterdam.

The second representative project of *Superuse* is the *BlueCity* Offices they developed in cooperation with the *COUP Urban Producers*. Located in a reused discotheque of a former tropical swimming paradise, the offices are the beginning of an enormous conversion process; the building extends across 10,500 m<sup>2</sup>. *BlueCity* is a prototype within the city of Rotterdam where circular economy and sustainable development can be explored and tested on a small scale – a symbol of the new economy. Reusing the building and most of the material for the interior design, the architectural concept itself is part of the circular approach of *BlueCity*. Turning the 1,300 m<sup>2</sup> of the discotheque into a hundred working places gives creative start-ups and scale-up companies the opportunity to develop their utopias for a circular economy and turn them into reality. Design and project companies like *Verdraaid Goed*, *Masters that matter*, *Better Future Factory*, *the ifund foundation* and *Superuse Studios* themselves are part of the 90% circular institution. The spectacular reused surrounding between slides and hot tubs motivates to think outside the box and experience a prototype of a sustainable future. By being able to analyze and link every production, waste and energy process in



© Superuse Studios (2)

The unique interior of the camp house offers a creative space in Rotterdam for cultural events of all kinds.

## Interview with Jos de Krieger, partner and architect at Superuse Studios

—  
Helena Busmann

**The name *Superuse* sets a high standard and tells a lot about your ambition. What is the motivation behind this name and what was the initial trigger for your approach?**

The trigger dates back a long time. Jan Jongert and Césare Peeren founded the office in 1997 when I hadn't even joined. Initially they were trying to apply reuse in architecture and interior projects, but a contractor said he didn't want to take the liability and the risks – so they did it on their own. Basically, they felt like this was something that needed to happen in the built environment because just as it is now, it is one of the most wasteful and energy-consuming sectors of our society. They devoted 15 years – from 1997 until 2012 – to working on this topic to see if it could actually become viable within the architecture scene. That's why the former name of the office was *2012architects*. During these 15 years, the method and platform *Superuse* were developed and also the book *Superuse* was published. After 2012 we had to figure out a new name and it seemed like *Superuse Studios* was the most appropriate to continue the work of *2012architects* as a broader firm with the concept in mind that our work is locally orientated. We can have an idea about waste in Germany, Austria, in the US or in China, but in order to actually design with it, you have to be on site. That's why we went for *Superuse Studios* – the idea is that there could be several studios in the future operating under the flag of *Superuse*.

**It often seems like building and producing from scratch instead of using what already exists is easier or maybe less expensive. What would you say?**

I wouldn't say it's more difficult but I would say it's easier to not do it. It's a matter of choice and it's a matter of externalizing costs. Using materials that are off the shelf still in most cases externalizes environmental damages, certain social minimums and profits to shareholders – basically supporting a global economy. The reuse of material is always in favor of a local economy as actual people do real work dismantling buildings and preparing the material for its new application. All this work has monetary value, but these expenses can be saved elsewhere and environmental damages are being reduced. Of course, there will be transport as well, but using a window frame from Rotterdam in Den Haag still requires a shorter travel than using an aluminum window frame that is made from bauxite mined in Suriname, sent to a factory in Iceland where it's melted, transported towards a production factory in Germany, and finally assembled on a building site in Den Haag. So, yes, it feels easier – but buying off the shelf actually includes many steps that you don't have to take as an architect, that you don't see. I would say it's a fake kind of easy.

**What is your strategy for finding materials for a project and how is your team set up for this unique planning task?**

It started with doing single projects and creating harvest maps for them. You collect quite a lot of data – just like in every architectural project – and afterwards you have gained more knowledge than you can apply in just one design. We needed a way of sharing this knowledge and bundling it into a coherent package in order to be able to retrieve it. This is how the interactive digital *Harvest Map* developed – meaning that besides doing the design work as architects we also do what we call scouting. We scout material and we stay in contact with suppliers, demolition companies, etc. Since we are more the pioneering kind, we always explore new materials and try to implement them into architecture. This is still our main sphere of activity. We use for example rotor blades from wind turbines, steel offcuts from industry sites or basically everything that is part of a waste flow and doesn't have a function anymore. We ask ourselves: "How can we apply this in architecture?"

**How is your design process organized - do you find material first and then develop the design or do both depend on each other?**

Both definitely depend on each other. Currently, we have such a broad knowledge of what could be available that we can start designing with window frames without knowing exactly what kind of window frames we will find. But the journey towards the final product is a dynamic one, a continuous back-and-forth between designing, harvesting, reshaping the design, compiling a shopping list, re-designing again and purchasing the material. After all that, we can start to talk about the ultimate design. In some cases, this is a bit more intensive than in others, but in the end it really has the potential to help you a lot. Sometimes you only have very few options to choose between because the materials and their individual conditions lead you through the design process. It's a bit more of a puzzle than traditional architecture but I think architects and designers actually enjoy that extra layer of complexity rather than seeing it as a burden.

**According to the process of deconstructing buildings and using the materials again, is there something you would like to improve about construction methods for new buildings?**

We are really fond of the *Shearing Layers Model* of Stewart Brand that basically shows that a building has several layers like the structure, the skin and the services. They all have different lifespans. We try to respect those different lifespans by not intersecting or intertwining them. You wouldn't want to make the structure of a building with a lifespan of up to 100 years dependent on an installation system with a lifespan of 15 to 20 years. These things should be flexible. Many companies make demountable buildings their core business, so they don't necessarily need to focus on reusability. But even if it is demountable, the main quality should still be to design a high-quality space where people want to come together and stay. Because a building that lasts 200 years could be more sustainable than a demountable building that lasts 25 years and has been rebuilt eight times. It is a tough discussion to say which one is better than the other. In

general, buildings shouldn't be monofunctional by intent; they have to be adaptable on the long run. Although until all buildings are like that, we have to reuse what they offer us, instead of wasting our materials.

**Right now your concept is still an exception in the building sector. Does your method have the potential to be used on a wider scale in the future?**

Luckily, we are not the only ones. There are other companies that work like we do. Usually, it's like one or two players in every country that reuse on an architectural scale. In The Netherlands, there are a few companies that have done similar projects, but a limited amount of their total work is done like that and it's more on a client basis than an office policy. In this sense, we are probably one of the exceptions and we don't have side-production of row-houses that brings a basic income to the company, we do reuse in architecture for a living. That has always been our goal – and meanwhile we are pioneering, paving the way for all these other companies to show that it can be done. Currently we are discussing the options of a tax shift where tax on labor is reduced and tax on material is being increased. On the one hand, it would be more economically viable to dismantle a building. On the other hand, almost every material on our planet will reach scarcity at some point. So even things that feel like they are everywhere – like concrete, steel, wood – in fact, they are all limited. Keeping in mind that the population is still growing, we should use as much labor as we want to compensate the lack of natural resources by reusing them. And if it takes a bit longer, that's fine, too. Because we will have new labor in the end and hopefully that will give meaningful jobs and lives to people that can add value to the bigger community at large.

**Thank you very much for the inspiring conversation.**



—  
JOS DE KRIEGER

is one of the partners of Superuse and has been working on the reuse of materials for almost 15 years. He was creative director for Festa and speaker at TedX in Christchurch (NZ) in 2016. Currently he is a research mentor for TU Delft graduate students at the Faculty of Architecture. Superuse Studios has a focus on the latent properties of used materials and how these offer a value to new products and buildings. Their work is based on the Blue Economy, a holistic view of nature, mankind and economy with the aim of avoiding waste and rather returning everything to the material cycle.