

MH EP05 Transcript. Produktif: Reinventing the construction value chain

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Thierry Harris: Cities, designed for protection, commons for communities to flourish. All over the world, cities have changed the way we live as humans on this earth. In 2007, for the first time in humanity, more people were living in urban rather than rural areas. The consequences of our industrial economy were affecting the environment in grave ways. It was in the 1970s that the environmental movement was truly born.

Rune Kongshaug: President Carter at the time put solar panels on his lawn of the White House, which subsequently were torn down by President Reagan.

Thierry: On this episode of Market Hunt, we explore the future of how our cities will be built.

[intro music]

Nick Quain: Entrepreneurship is hard, you need to have support there.

Thierry: In practicality, though Rune, this is an enormous task that you're challenging yourself with.

Rune: I fell in love, I easily fall in love. The most stupid invention of humankind ever.

Thierry: That must be a Norwegian thing. We're coming up with some pretty interesting ideas. [chuckles]

Andrew Casey: We've solved it.

Thierry: We've solved it all.

[end intro music]

It all started at the United Nations World Urban Forum conference in Vancouver, British Columbia back in 2005. Among the participants was Rune Kongshaug, a Norwegian-born social entrepreneur and McGill University's School of Architecture student. Rune's group was studying the impact of urban agriculture as a means to transform cities and make them more sustainable. The big idea was on developing how cities could become more self-sufficient in food, water, and energy.

Rune: 2005 also marked a year when humanity, for the first time in our history, became mostly urban. Before that, we had been mostly rural or nomadic, going from nomadic to rural to urban. Now, we are becoming increasingly urban and I think it's more and more important that cities are able to be self-sufficient in food and water and energy, and Productive House came up as a response to that challenge to see how, in particular,

individual households can play a larger part in being autonomous, yet integrated with the urban fabric and to support diversity, both cultural and ecological.

The values of Produktif still are, today, many years later, autonomy, integration, and diversity based on that project we did way back when.

Thierry: Designing for sustainability. Where did this novel idea come from? Rune elaborates.

Rune: I'm not the first social entrepreneur or pioneer who is trying to grapple with houses that are more efficient or green or sustainable. There has been a lot of attempts by pioneers like myself to make pilot projects throughout the years. There was a peak in this pioneering effort in the '70s after the oil crisis with OPEC. President Carter at the time put solar panels on his lawn of the White House, which subsequently were torn down by President Reagan. The '80s became a departure from that initial attempt at greening our economy.

I think it has done a very strong comeback lately with the onset of climate change. Now, also due to huge migrations due to war and natural disasters and looming housing crisis in and around cities, especially financial centers such as Paris, New York, London, LA, San Francisco, like the Silicon Valley, Oslo, you name it, every city core on the planet are plagued with the same problem of housing shortages.

Thierry: How about some hard numbers? Ten thousand people waiting for housing in Canada's capital city in Ottawa. Five thousand people are without even a shelter spot and living on the streets of San Francisco. London's homelessness rate has tripled since 2010. The reason behind the spike has been the soaring cost of housing prices. In fact, recent findings predict that a 10% rise in housing prices leads to an 8% jump in homelessness rates.

Rune: Current construction practices are not able to address this. As of the last five years or so, I put all my attention to reinventing the value chain of construction and figuring out better, cheaper, faster ways of building healthy homes and safe jobs, or I should say safe homes and healthy jobs because homes and jobs is very much related and I think we have to address both.

Thierry: OK. There is a major problem here in the sense that housing, the way we build, how we assemble materials and dispose of waste, it's all wrong. It's not sustainable in its current form.

Rune: It was actually in North America that we started to innovate. In a modular building solution, we precut wood, but that was like 200 years ago. Since then, Europe has gotten way ahead of the stick buildings we know about in North America now and the container homes that you're shipping on trucks and that kind of modular thinking, which is really quite backwards. If you compare with what's happening in Europe and to a certain extent, Singapore and Southeast Asia, there are now movements towards

panelized construction methods, just-in-time methods, Industry 4.0 using automation and robotics, digital platforms, big data and IoT.

All those catch phrases that people are throwing around now are making headways into construction.

Thierry: Easy there, Rune. What do you mean, big data is making it into construction? What exactly is wrong with construction?

Rune: In Europe, we see that the construction industry is lagging behind what I think the marketplace is ready for. I even saw that with the Productive House in Montreal, which was ready in 2009, 10 years ago, that the marketplace was ready, but industry was not. There seems to be a problem on the supply side. Produktif now is really working with research universities, prototyping and working with strategic suppliers in engineered wood producing laminated veneer lumber, LVL, and cross-laminated timber, CLT, because these are stable engineered products that can benefit from CNC machining and robots so that we are using these digital platforms and modern methods to try to bring up the speed, bring down the cost, eliminate all the errors on the construction site, eliminate all the waste on the construction site.

In a way, we are trying to eliminate all hand tools on the construction site and just make systems click together in a very modular way. By eliminating hand tools from the construction site, we're also eliminating all decision-making from the construction site. The idea is to make all decisions upstream during design and planning so that there is no room for mistakes further down in the process.

Thierry: My goodness, what a utopian vision of the world! Let's listen together some more.

Rune: This is a very important and ongoing debate, both internally and with our suppliers because our suppliers are looking for new markets. Ultimately, I think we will be working very closely with humanitarian organizations like Red Cross and the likes who have the logistical experience because I think that the key challenge will be logistics and the ability to mobilize really quickly and be responsive and nimble and be able to set up operations anywhere where it's called for in terms of a crisis mode type operation.

Our building blocks are built so they could equally serve in a affordable social housing market as well as the luxury market because ultimately, we can clad this in diamonds and emeralds and gold for those who want maximum bling-bling if they like that, but you can also go up the other end of the spectrum and allow people to finish the house themselves.

The goal is really to help local communities embrace some of the modular elements in our value chain such as the finishing panels so that we will always source certain

components locally. I'm not a big believer in the word disruption. In fact, I hate the word disruption.

I think we should speak of a change, of evolutionary change and sustainable change. In fact, if I have it my way, I would like to disrupt the disruptors.

Thierry: Disrupting the disruptors. I asked Rune to clarify this point a little bit further.

Rune: All they care about is quick entry, quick exit, and to concentrate a lot of means of production and capital in very few hands, and they want to fame it S-curve and make billions of dollars, but I don't think the current VC model is sustainable that way. I think we rather should look for platforms that are based on cooperation and distribution of the means of production. I don't think that's a socialist idea. I think it's actually a capitalist and competitive and entrepreneurial idea, which is anti-collusion and anti-monopolistic behavior because the idea is to give as much entrepreneurial opportunity to as many localities and individual entrepreneurs as possible.

Thierry: We've covered capitalism versus socialism, but let's not veer off topic too much. Rune is posing a very important claim here that you might have overlooked. For capital to flourish, it needs concentration. In fact, VCs, venture capital funds aim to time the funding at just exactly the right moment in order to seize maximum capital returns for their exits. They are aiming to make the most money in the fastest way by concentrating their investments and carefully timing their cash injections and their exits. VCs are planning for the end before they even put a nickel down in the potential investment. Let's listen to Anges Quebec VC investor, André Forest.

André Forest: If you want to create value, you'd rather be the biggest player in this specific geography than for the same revenue level being spread out across North America or the world. So the most dense you are, the better the value creation will be.

Thierry: Okay. Thank you, Andre. Let's get back to distributed capital to cultivate jobs and safe sustainable cities. Who is this guy, Rune, exactly, and what is his firm Produktif actually working on?

Rune: This has taken me a lot of business therapy, business coaching as I call it. Basically, Produktif today is a technology and design firm serving the construction industry. We are focusing on building a construction system made up of modular elements that we are integrating through our digital platforms.

Thierry: Fantastic. Now, what does that look like, exactly?

Rune: The goal is to make the process from design table to execution 80% faster than current practices and 20% cheaper in conventional markets, but also make a kit that is quick to mobilize to theaters of war and post-reconstruction in disaster zones so that we can mobilize this capability and enable local communities to rebuild their home.

Thierry: In theory, this sounds like a noble idea, but Rune and his team will have to contend with regulatory considerations along with just plain getting people to work with one another. How does he plan to accomplish this challenging task?

Rune: Again, I will have to distinguish between 3D volumetric approach that you see in North America where you are shipping and stacking boxes, and the 2D panelized approach which you're seeing mostly in Europe. There also is a hybrid approach where you kind of take the best of the two worlds. That's what Produktif is doing. For certain systems such as mechanical rooms where you have a certain degree of equipment like solar panels or batteries or toilets, those elements are, by definition, 3D and our best to package in pods and therefore, should be specified as 3D elements or volumetric elements.

However, all the parts such as floors, walls, roofs are much better to package and ship as flat pack. That does not put a strain on transport and volume.

Thierry: Just so we are clear here, we're talking about pre-packaged flat panel packaging for a home and pods or box packaging for 3D things like toilets, sinks, and cupboards. Okay, back to Rune.

Rune: Definitely, there are limits to how big a module you can put on a truck and ship down the road. Now, there are certain companies that do a great job at volumetric stacking or boxes, such as...

Thierry: IKEA?

Rune: Marriott.

Thierry: Wait, what? Marriott?

Rune: Marriott hotels are doing a fantastic job in doing offsite construction of entire hotel rooms that are beautifully fitted and then they're transported on truck to site and hoisted into place by a crane. They do it very well and it's hard to beat what they do, but mostly in North America, you see a very poor job. In fact, what you're seeing is that people are doing conventional construction in a warehouse with the same exact problems of the supply chain or a regular construction site, except that you're doing it under a roof. Then they put boxes on the truck and then they have enormous pitting problems and trade problems that are symptomatic of all the problems of construction today.

In Europe, I think they're about 20, 30 years advanced in doing panelized approach where they do a flat-pack truck to the site and then they hoist panels and connect them on site. I've studied and I visited a lot of factories in Europe and I've been able to pinpoint what's the next step and challenge for those state-of-the-art factories to make the last step of the transition into Industry 4.0. I'm trying to apply those lessons learned

from the best in class and also bring some innovation to the table in terms of streamlining the entire process.

Thierry: Okay. Proof of concept, yes, that's nice, but where does Rune intend to commercialize his products and services?

Rune: I fall in love easily and one of my love affairs is with a Finnish company. They produce laminated veneer lumber. They are a cooperative of I think 60,000 foresters that responsibly manage their forest supply and are part owners in this international conglomerate that has a couple of billion dollars in revenues a year. They ship everywhere in the world. They are laminated veneer lumber panels, and I have a very good relationship with them.

Thierry: Excellent. We are a small fish pairing ourselves with a much larger fish. Wouldn't be the first one. What are the criteria which helped you forge this trailblazing relationship?

Rune: Everyone I work with have to pass a two-step test. First of all, I think there has to be shared values. If they don't recognize climate change or see the housing crisis as a looming factor on the horizon, then I think it's difficult for me to relate. Secondly, I think they have to be firm believers that there will be a massive paradigm shift away from the competitive paradigm towards a cooperative paradigm.

Thierry: Transformational change in the fundamental way we engage in trade, commerce, and capital allocation, please continue.

Rune: Bright minds and architects and engineers and construction professionals realize that we have to take our professional vocation seriously and put our heads together to try to unite against the enormous challenges we are facing. That comes back to your previous question about disruption versus transformative change. I think those people who are only focused on capital fall back into this short-term trap.

Now, if everyone is thinking five-year is long-term and everyone is making decisions based on short-term considerations, meaning less than five years, then I believe the only social entity left on this planet actually making long-term decisions is the family unit who theoretically at least make decisions for grandparents, parents, and children. That's three generations. I think in a society, we got to be able to make decisions that are a little bit longer term than the five-year plan.

Thierry: Family units, business imitating this mode of long-term thinking. No fear of sacrificing short-term profit for long-term sustainability, okay, but again, where?

Rune: We are working in early stages of discussions with waterless combustion toilets in Norway. And they, like Bill Gates who is chasing a solution to the water-based toilet, water closet which, I think, is the most stupid invention of humankind ever, taking a clean hard-earned water resource which is scarce and then mixing it with [bleeps] which is actually a great resource both for agriculture, and then urine which is actually an amazing resource for agriculture as well. Then they mix all those hard-earned resources and in a swoop of less than a second, we have created a huge liability to society that very few people can afford to treat.

Thierry: Rethinking the entire workflow of the modern toilet is beyond our scope today, but if you wish to learn more about this, I strongly suggest you listen to Reid Hoffman's interview with Bill Gates on what his foundation is doing about it. Check out the *Masters of Scale* podcast, Episode 55. Back to Rune, rethinking the entire workflow of how we build buildings and the components inside of them.

Rune: The point is to, like you did with the Norwegian school lunch or with dental hygiene or with washing your hands or collecting garbage in the street, we learned that with kids in Norway and kids brought that knowledge home to their parents. I think if we want to reach grownups like Greta of Sweden has so well-demonstrated, I believe we have to start with the children and the youth in order for grownups to change their ways.

Thierry: Now, in terms of the current state of affairs, you have definitely some great ideas. You're still hunting for applications and for markets in terms of where, how, and at what cost your ideas will be implemented. One of the big ones in the construction industry is it's a very highly regulated industry. You have to have building permits. These building permits are controlled by municipal governments and certainly are not having any incentive towards innovation even though as we can see city after city declaring as a city that there is a climate crisis and that we have to do something about it.

Well, once that's done, they don't really have an answer of what's the next step that they're going to take. I think that what you're trying to do, and please correct me if I'm wrong, is to position yourself as to when people will finally wake up, they'll finally be able to have a solution which you've been working on for years because this is complicated stuff, folks. It takes time and it takes some very hard thinking with some very smart people, and some failures as well along the way in order to have the learnings to be able to put something out there that is cheap, reliable, and sustainable in order for it to work. What would the Rune now tell the Rune five years ago about building sustainable development projects?

Rune: "Don't use your own money. [chuckles] Find backers that believe in you." I'm impatient and I felt this was already coming. I spent a lot of my own money because I really believe in what I'm doing. I know the time is coming, but I miscalculated how long it would take.

At the time, I also thought the phone would ring off the hook, it didn't. I therefore had to do a crossing of the desert, asking myself what was wrong, why isn't the market ready? In the end, I came to the conclusion that people are very entrenched in their ways and they will beat a dead horse into the ground before they realize that there is a new more viable, like a blue ocean strategy that can be pursued instead of this, again, competitive bloodshedding that is going on right now. People are waking up to it, talking about platform, cooperation, all of these things, but still, I believe very few people are actually understanding and incorporating it into their business models.

I think you have had to live it and suffered a bit like I have in order to fully embrace. You also have to be tested, hence, the crossing of the desert where, do you really have the guts and the courage and the staying power to believe truly and all the way in what you seeing coming? I believe now, this time around, I've surrounded myself with people that complement myself and therefore, we have a much better team. We have a hardcore team that share values.

I think sharing values and value-based leadership is becoming more and more important this day and age where anyone can Photoshop and fabricate fake news and invent credibility, but authenticity, you're not being authentic about what you believe in, and proving it through your steps and your actions and your history, ultimately, that's the hard currency. Do you have the guts and the authenticity and the staying power to go all the way?

Thierry: One can never underestimate the courage it takes to pursue a vision despite everyone around you hanging on to the status quo. Rune aims to be catalyst for this cultural shift in construction. He has indeed paid a dear price but nevertheless, has a very clear idea of what solutions he can bring to the table to solve these sustainability issues. He must now hunt for how to commercialize his ideas and insert them into current markets, or perhaps simply, create a new one.

Rune: We are trying on the technical side and believe me, the technical side is the easy part. The hard part is the cultural side, is actually having people start thinking differently about the value chain and how to work together, The technical side is relatively easy. The main challenge is to get a minimal viable product out. By minimum, I mean the smallest thing that is viable that we can sell within a profit and a product, of course, that we can put our name and brand on.

Thierry: What are cities like Tokyo, Munich and others doing to lead the way to create healthy, inclusive, and integrated urban areas? Have we reached a point in time where the market is ready to hear Rune's story? I think so. Those ready to lead the charge are young, motivated people who see the urgency to act. People want green, but they just can't find it. Pioneers like Rune Kongshaug are aiming to hunt those markets. We'll see where he lands as we prepare for our next conversation.

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