View From the Peak: Recharting an Approach to Sustainable Architecture with Kjetil Trædal Thorsen

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Images Snøhetta


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Architecture has always been about the new: novel ways to minimise impact on the environment, building structures to record-breaking heights, or being the first to engineer a one-of-a-kind material or technologies that will serve as the foundation of the architecture of tomorrow. As cities become more urbanised and the race for greater heights picks up in speed, a human connection to nature is lost.

But an architectural firm is about to change that. The multi-disciplinary studio Snøhetta, whose works ring true with purpose and draw inspiration from the essence of nature, continuously blurs the line between architecture and landscape. Since its founding in 1989, the studio has ventured beyond the realms of architecture and landscape design, and into urban design and even brand design.

In two studios located in Oslo, Norway, and New York, Snøhetta embraces a philosophy of openness and collaboration—trickling down into everything it does. Behind this boundary-breaking philosophy is Kjetil Trædal Thorsen, the co-founder of Snøhetta. Together with founding partner Craig Dykers, Snøhetta leads with a methodology of exploring traditional handicraft and cutting-edge technology, built on an inherent commitment to sustainability: shaping the built environment for the greater benefit of the Earth.

Lending an analytical eye to every project, Trædal Thorsen leads his team in distilling the extraneous down to the essential, whether it's a museum, a reindeer observatory, or a dollhouse. Projects like the Lampshade installation for i Light Marina Bay, a sustainable light art festival, provokes conversations with a bamboo structure illustrating a narrowed gap between energy and the end product; while in Tverrfjellhytta, the Norwegian Wild Reindeer Pavilion, a sinuous timber core encased within the glass-and-steel structure echoes the silhouettes of the surrounding Dovre Mountains in Norway—melding seamlessly into the wilderness landscape.

In Hong Kong we sit down with Kjetil Trædal Thorsen at Business of Design Week 2015, digging deeper into the underlying design philosophies of the studio, the issue of sustainability in the architectural landscape today—and in cities of the future.

1. Kjetil Trædal Thorsen, the co-founder of the architectural firm Snøhetta, leads projects that redefine the idea of sustainability in the architectural world.

2, 3. Designed by Snøhetta, the Lampshade installation stands out at the Singapore sustainable light art festival i Light Marina Bay with photovoltaic cells that offer shade in the day, and lighting up at night with the collected solar energy.

> “Nature works as an inspiration in creating new shapes, new forms and new possibilities. Not necessarily in the form of bio-mimicry, but in the form of emotional understanding and design direction.


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4, 5, 6. Encased in a block of steel and glass, the Norwegian Wild Reindeer Centre Pavilion overlooking the Dovrefjell mountains reveals a organic wooden inner core that mimics rock or ice that has been worn away by the elements.

The name Snøhetta represents your approach of complete integration of the landscape and architecture in the design process. What does this mean, and why is this representative of your studio?

There are a number of ways of looking at the name. One, it is related to the mountain Snøhetta located in the centre of Norway—you can say it is the point of balance of the country. In the mountain range of Dovrefjell, the highest mountain peak is Snøhetta; while back in Oslo, we established our practice above a bar called *Dovrehallen*, or the “Hall of Dovre” in English.

The mountain Snøhetta also has a beautiful, aesthetic aspect to it—an integration of landscape and architecture. It is almost like an object, but it isn’t an object: Snøhetta is a part of the landscape.

When talking about the integration of nature and buildings, what is your design process like?

Nature works as an inspiration in creating new shapes, new forms and new possibilities. Not necessarily in the form of bio-mimicry, but in the form of emotional understanding and design direction. An example is the Norwegian National Opera and Ballet, inspired by Oslo’s coastal landscape. The building itself is not landscape; it is not even an abstraction of the landscape as it is rooted in reality—it is the roof of an opera house. Architecture is not nature, but it can draw inspiration from it.


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What is our relationship to natural and human-made spaces? How does Snøhetta take into consideration all these multilayered connections?

In the design process, the aim is not necessarily to understand where you are going, but where you are coming from.

When talking about distinctive simplification, you’re simplifying your approach, instead of the content. Distinctive simplification contains complexity, like a mind map; it offers a clear understanding of where you are, what you know, what the influences are, and the effects of these different elements in one mind map. And then you simplify them into bolts—or key points—while maintaining a high degree of complexity inside each bolt; but you might not be able to deal with all the complexities at the same time. In a way this simplification is Einstein-esque: spending time to condense the content of what you’re looking for down to one formula.

This process is made possible by inviting a wide variety of professions to collaborate and discuss possible solutions, a work methodology known as transpositioning. A landscape architect might become an engineer; an engineer might become a sociologist. People fill different positions and release themselves from their existing professions—solving issues at hand not only as professionals, but also as human beings.

How does this transpositioning process affects the end result?

I think it has a great effect. If you were to sit down and design something, the end product will most likely to be within its conventional interpretations. If you design an opera house, the end product would probably be close to what a typical opera house looks like.

So how do you get into an experimental mindset when designing? This requires a redesign of the process. You cannot take for granted that the opera house is an architectural typology that you will always be happy with. So we designed the opera house through this transpositioning process, following rules that are redesigned every time. Basically, every project starts from zero.

How does the sustainability expand the possibilities of your design?

What we're trying to do now is to research the possibility of generating negative-emissions buildings calculated over durations of 40 to 50 years. The footprint needs to include the total energy used during the lifespan of the building, like energy in transporting materials, and recirculating materials after the building is decommissioned. All this must decrease over the lifetime of the building. In reality, we are not lacking in energy, but in clean energy. Localising energy production to reduce carbon dioxide emissions is really the direction we are moving towards.

What are some of the key challenges you face in incorporating sustainability into your design?

One key challenge is how conscious our potential clients are of sustainability. There is less understanding of sustainability as a key influence in decision-making—the wallet speaks the loudest.

Change is happening, more people are now conscious of these issues and are looking for solutions. Then another challenge remains: is it still worthwhile? Do you still make money? How conscious do you have to be; how do you make sure that you are doing it right? These are the three key challenges that we face when designing for sustainably on all fronts. The methodology and knowledge is there, it is just a matter of combining it correctly. There isn't a great need to invent new things all the time when designing a building with negative emissions, but you might need a knowledge of different systems—energy production and consumption—and of how they interact.

7. The low-slung form of the Norwegian National Opera and Ballet blends into the city, rather than becoming an individual sculptural entity.

8. The Opera's vast lobby is open to the public 24 hours a day, 7 days a week. Generous swathes of public space has afforded the Opera a philosophy of social sustainability.

9. Visitors are encouraged to climb onto the Opera's roof, which is accessible all-year round.

How do you find balance between environmental and economic sustainability?

This balance is hard to find. We try to tell clients that how much they will save, arguing that the cost is already paid back within 5 to 10 years. But the lifespan of building is much longer; your net gain is much higher than your initial investment. Most people look at construction budget, not at the overall budget, so it might take time to convince people of these calculations, and how it affects the economy over time.

How will the building behave after 10 years, and what will it cost then? We still get a lot of building investors who create buildings and then sell them immediately. Our clients might not be the ones who are going to pay for electricity in 10 years; it might be someone else—this speculative typology is much more difficult, because the people paying for the initial construction are not the ones that will pay for its operations after certain period of time, and are more interested in short-term profits.

> “In reality, we are not lacking in energy, but in clean energy. Localising energy production to reduce carbon dioxide emissions is really the direction we are moving towards.

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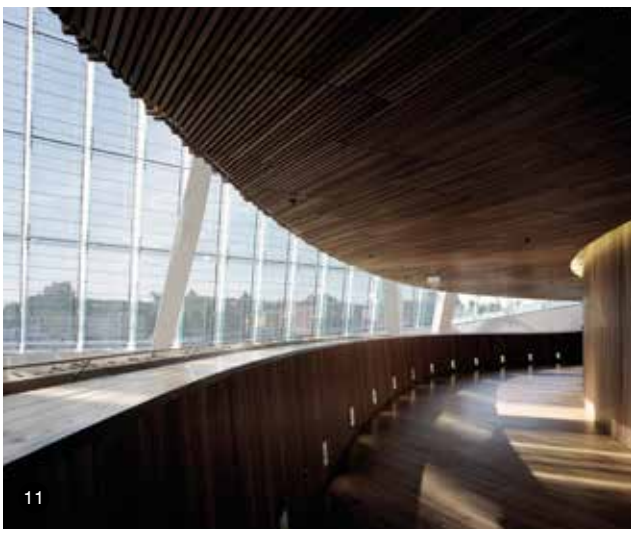

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In terms of your vision for the direction your work will go in, do you have any other thoughts on this?

One direction would be to relook cities. Urbanisation is on an upward trend, so I think we need to look at our cities in a different manner. We still perceive them with an outdated mindset; if you look at Paris, it was built to secure and control its inhabitants. It sounds great on paper, but the fact is that they are coming from a totally different political system. What I would be interested in is what a real democratic city looks like. How do you give those ideologies the physical shape of a city? What does equality mean, what do property lines mean in relation to the social-democratic way of thinking? What does accessibility mean in reality? That would be a research area that I am interested in.

10. Evoking the grandeur of classical theatres of the past, the Main Hall features a cavernous, horseshoe-shaped room and a chandelier composed of hand-cast glass bars backlit by LED lights.

11. The gently curving hallways offer unobstructed views of the city and fjords.

12, 13. The Powerhouse Kjørbo was designed as a negative emissions building: locally produced solar panels provided over 250,000kWh of energy each year—more than what the building consumes.

Which are some of the most effective solutions that you have found in minimising the environmental impact of your buildings?

If we maintain that carbon dioxide as an important factor when it comes to ecological and environmental aspects, then there are things that work. Let us look at material: materials with no components that are in any way glued or mixed together, like metal and glass, has turned out to be a very helpful way of looking at possible recirculation methodologies. We will see a significant effect just by simplifying solutions, through a cleaner use of materials.

Systems, and the coordination between these existing systems, have also turned out to be really important. Of course, we're always in a dilemma when it comes to insulation elements and how much natural ventilation should be in a building. It has been very useful to us to move in the direction of natural ventilation. But if it is being used individually, there may be a slightly higher energy consumption level than fully controlled ventilation systems.

When choosing sites, an environmental consideration is that it should be a place where you cannot do anything else. You don't build on agricultural land: if you can produce fruit on the plot of land where a building is to stand, then it is the wrong place. As buildings are manmade, they are not dependent on the land for growth, unlike plants. Buildings can sit on any steep mountain site as it is constructed, so there is no need to utilise agriculturally viable locations for the purpose of building architecture. We should be looking for challenging sites for architecture, seeing the decrease in the total amount of agricultural land in the world.

14. The Powerhouse Kjørbo was designed as a negative emissions building: locally produced solar panels provided over 250,000kWh of energy each year—more than what the building consumes.

15, 16. Inside the powerhouse: the upgrade to modern office spaces offers a conducive indoor environment.

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What are some projects you have done that you feel most positive about, in terms of how it has fully embraced all the different levels of sustainability?

Well, that sort of engagement is usually related to the latest project that I'm working on. We can always do things better. There is no such thing as the most perfect project for us; what we can do is to continuously look for ways to reach that point.

Our projects do embrace sustainability in different ways. For example, the first project we started with, the Bibliotheca Alexandrina, was a very important project with great socially sustainable attitude, but the environmental element of the architecture wasn't developed to the extent I would have liked today, as it was designed in 1989.

The opera house, in a similar manner, was trying to redefine the idea of an opera house. As such, it is a very socially sustainable building when it comes to opening up to people—one can even call it democratic. We managed to introduce environmental systems, but it still wasn't a negative-carbon-footprint building.

The buildings we've done that have a negative carbon footprint are an office building outside of Oslo, called *Kjørbo*, and the ZEB Pilot House in Lavik, Norway. These buildings are focused on environmentally sustainable elements, which may be not as important from the perspective of social sustainability. Therefore, we are still looking out for the perfect project where everything is ideally combined into one large solution. CG

17, 18, 19. The ZEB (Zero Emission Building) House maintains a characteristic tilt in a southeastern direction, with an array of solar panels and collectors installed on its roof. Despite the myriad of energy-saving features throughout the home, the ZEB House remains grounded with well-chosen materials and a general home-like atmosphere.