How does the built environment affect behaviour and cognition?

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Awareness about how our built environment affect behaviour and cognition has been around since humans moved out of the caves and started exploring the open landscape, building shelters for protection and comfort. Architects are trained to understand and execute the power of architecture – factoring in local, climate, cultural, traditional, technological and social perspectives – and often argue for the significance of space, light and materials to create built environments that provides for more than shelter, functionality and logistics, to encompass 'The Good Life', happiness and amplification of our collective cultural identity. What if new findings in neuroscience add further justification for great architecture?

Meeting the client's briefs, budgets and expectations can be a hard challenge, meeting architectural ambitions beyond that can be even harder. That's because quality in architecture is intangible, and not an objective term – we all know quality in our built environment when we experience it, we feel the difference between a good space and a bad space. There is a huge difference between a city optimized for humans – walkable and bikeable – versus a city that's built for cars.

On a smaller scale, each building project is a city – a prioritization between speed, function, space and other qualities. Once in a while a project comes along that contains ambitions to make a difference; like creating a peaceful place, beneficial for our mental health with spaces for people in a difficult life situation – what can be called cognitive architecture. What if every project brief was like that?

In my case it was a project in Norway: Viken Centre for Psychiatry and Counselling - a treatment centre situated in a majestic Arctic landscape, celebrating a 10 year anniversary since the 2006 opening. The architect was Stein Halvorsen, my employer and later partner. In my role as project architect I followed the process from first contact with what was to become the building committee in 20012 to the grand opening day, and experienced how vision and concepts were made into bricks and mortar; in Viken's case wood and glass.

The initial commission was simple. In the south of Norway there is a national treatment centre for mental disorders called Modum Bad, a private, ecumenical and

diaconal foundation founded by the psychiatrist Gordon Johnson in 1957. The model is semi-public, a partnership between church and state – with focus on group therapy, offering refuge for people in need of rest and rehabilitation. The initiative to build Viken was born when the Norwegian government announced that the north of Norway should have its own psychiatric treatment centre based on the Modum Bad model.

The initial sketch design was created to embody the vision, leverage the momentum and was successful in winning the regional battle for location – securing governmental funding to start the journey of realisation. Next to the architectural vision, the one-liner that described the project was: 'Architecture as a tool for treatment of mental disorders'. What if all new architecture had the ambition to be tools for wellbeing and mindfulness?

At Viken, the solitary location was made possible by the group therapy concept including long-term (8 weeks) residents. The idea of the building as a cognitive tool was planned and implemented by distinct borders between places and spaces – both outdoors and indoors, offering visitors a visible sequence from public to private and the opportunity to create individual narratives and an experiential experience – as in the city you choose when to take the step into the public, crossing often

invisible borders. Situated in the midst of an Arctic mountain landscape, Viken is a cultivated strip of land from the top of a small hill to the riverbank. Shaped like farmsteads, a human-scaled building mass creates three clearly defined protective courtyards.

As you arrive to Viken centre from 'the global world', you cross the border to 'the cultivated site' and enter 'the courtyard' you belong to during your stay at Viken. The same pattern - zooming in towards degrees of privacy – is repeated indoors. The buildings open up towards courtyards and nature for interaction with the outdoors while inside, and a sense of connection with the beautiful landscape throughout the year – wild blizzards are experienced from the safety of the solid wood constructions that embrace you. What if all architecture catered for fundamental human behavioural needs?

The idea of slow healing, mindfulness and being in the landscape – connected to the environment even while indoors – was formulated in the idea of walking yourself to good health. You can walk around the courtyard indoors, but in the mountains, to reach our own inner space – a wooden sanctuary, with view back towards 'the global world' outside from the safety your cell.

The concept required building trust through a natural and honest use of materials – weather conditions in the mountains made off-site production of the massive wood units, each bedroom cell was made nearby and came to site on trailers – two at a time. The moment the first trailer with wood boxes arrived at site was epic, shared only with the main contractor – the vision was coming to life in a bang.

Working with architecture as something experienced from the inside out is essential. Flashy sales prospects that promise luxury in generic building designs, generated from a simple, one-dimensional understanding of what the market wants will have to be replaced with responsive, restorative architecture that embodies meaning and well-being. We know a lot about how the experience of moving through and using space affects our mind. The quality of time may differ with our individual point of view spent – neuroscience can contribute to a better understanding of our built environment, to benefit and promote better solutions.

Dr David Eagleman recently claimed that the world each of us humans experience is unique, as the world is a construction filtered through our sensorial tools to be put

together by neurons in our brain. From this perspective there is no proof that Viken Centre worked according to the intentions of architects and the building committee. Interviews and surveys with visitors and employees have been held recently, but we do not have the results yet. What we do know come from basic feedback – many have spoken highly about being so close to nature while protected by warm wooden interiors, the fresh air and the unique peace of the Arctic mountains. But to what extent the architecture has become the tool it was meant to be, is unsure. What if neuroscience can bridge these gaps in knowledge, and give us a better understanding of how architecture really works?

A building design is often driven by the architect's ambition and objective to create and realise a monument, to becomes an architectural legacy balanced with stakeholder's interests – particularly the contractual clients. This simple equation is still shaping our cities – developers seek established 'architect brands' for commercial success. In the business world John Elkington proposed a 3P (People, Planet and Profit) bottom line a couple of decades ago – currently profit alone is not a sufficient measure. Building on that Anne Lise Kjaer launched the 4P model in 2012 – adding Purpose as the final P. What if society demanded a multi-dimensional 4P evaluation of our built environment?

Research and development in neuroscience about how our brains are influenced by our built environment has the potential to make the intangible landscape of quality and purpose more visible. The smart and thinking city of the future will be our main arena for human participation and social interaction, even more so than what we see in cities today. The complexity and activity of big cities resembles the complexity and activity in our brains, as new technology and tools makes everything in the city accessible – people behave like neurons in our brain by connecting and exploring the right places to create experiences and memories. Given these tools the human experience of complex cities is no longer dependent on a clear built structure – given opportunities for free movement the complexity has become accessible for all. What if we unlearn traditional order and structure, and explore chaos as an organising principle?

In a technological trajectory of the future, cities will become machines of supply chains and function. Danish landscape architect Stig L Andersson has worked with the idea of nature and built environment as complementary – not two separate entities. Filling our urban environment with wild nature will enable us to return to human state where we can use the full potential of our sensorial tools. What does it

mean to be human in the city of the future is a question we have to address. Even as virtual reality blends with our built environment, the significance of architecture will belong in the real. As digital tools makes any configuration of space manageable, the quality of our built environment will be defined by how well it cater for our need for human efficiency and good experiences.

Inspired by the likes of Christopher Alexander and Juhani Pallasmaa, recognizing the power of our senses, while refining and defining the new pattern language will be the way forward. The influence from neuroscience and new neurological evidence will create new opportunities to improve our world, and provide data-driven decision strategies to make our built environment better. Our bodies contain a certain set of sensorial abilities, when any sense deviates from ‘normal’ other senses will step in and contribute to make sure the brain input cover as much as possible – creating rich experiences and memories. In the same way, supporting each other and in filter input to create our environment will enrich our ability to adapt, and stay human. Living in today’s city, our sensorial toolbox is limited by the total quality of the built environment – as sounds, smell, taste, space and haptic experiences are limited compared with what’s going on in nature. What if cities were developed to mimic what’s going on in nature?

Rethinking of urban space and environment is happening around the world, and successful interventions like the High Line in NY and the cycle snake in Copenhagen have become symbols of new city life. In Medellin, Sergio Fajardo has managed to create openings in the massive metaphorical wall people growing up in the communes are faced with – by identifying, verifying and highlighting opportunities, and make them visible and usable for all citizens. The way our cities work today, doesn’t have to be the only way – what future cities must offer is great experiences, fit for a neurological system such as ours.

To achieve 'The Good Life' architecture and the built environment is significant. The built environment can become cognitive tools for people’s wellbeing, and provide safe enclosures combined with opportunities for complex sensorial and social experiences. As we learn about new discoveries in brain research and neuroscience that support the idea that humans are shaped by our built environment, the neuroscientist will become a new important player in shaping our world. Rather than architects ‘fictionalized’ point of view, there is a prospect for real neurological impact on architecture. A better understanding of people’s behaviour in a world where orientation is easy, navigating the real needs and wants of the future can only be

better. What if our built environment becomes cognitive architecture – to improve and promote 'The Good Life' for all of us?

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