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Kimmo Lapintie
Aalto University
kimmo.lapintie@aalto.fi

The general theme of this issue—Global North—is not meant to suggest that the international variety of architecture and planning could be divided into two geographical categories, Global North and South, which would have their respective distinguishable identities. Rather we intend to open discussion on the inherent paradoxes in architectural styles and design solutions in which global, national, regional and local tendencies intersect. The keynotes from the 10th Symposium Architectural Research in Finland organized in 2018 and articles in this issue discuss some of these complex topics, from the post-war construction of ideal family models to recent challenges of welfare state planning.

Local identity of architecture in the Nordic countries is, of course, not very local. Modernism as a style and basic ethos is fundamentally abstract and international, not derived from local built heritage. Functionalism, on the other hand, with it biopolitical undertones, is also assumed to be valid everywhere. However, the specificity of the Nordic interpretations of modernism is what has often been seen as their strength, and it has also become a symbol of progressive creativity against regressive traditionality. Interestingly, as Marija Drémaité demonstrated in her keynote, this localized modernism could in its turn inspire young Lithuanian architects to develop their own 'local' architectural identity.

On the other hand, architecture is not just the transfer and adoption of aesthetic ideals, it also participates in the construction of ideal living. As Pirjo Sanaksenaho shows in her study of the popular and professional magazines on housing design in the 1950s and 1960s, the traditional family roles are very strongly promoted in the representations of post-war design: the wife in the kitchen, the children in their own rooms or in the courtyard, the husband reading his newspaper in the living room or occasionally bringing his catch to the wife to be prepared for food. It is an interesting question how much these ideals are also imported, but the post-war era also meant the dawn of a major change family structure with women's growing participation in work life and the consequent need of welfare services, such as day-care. There seems to be no end to this development, with the idealized core family now having become a small minority of households. The

demography in contemporary cities is dominated by singe person households and couples without children.

This also presents challenges to the welfare state and its original planning ideals of healthy and comfortable living close to nature, often in suburban neighbourhoods. As Ilari Karppi and Iina Sankala argue, this model is now in a major rupture, partly due to the rapid urbanization of a few larger urban regions, partly because of the environmental concerns of the expanded urban fabric and sprawl. Ideologically, New Urbanist ideals of traditional and compact 19th Century urbanism have become more dominant, instead of the "air-son-lumière" of modernism. The city for single households and dinkies seeking urban amenities is a different city altogether. Unfortunately, it is also a city with growing inequalities and segregation, something the modernist Utopia sought to avoid.

On the other hand, the Nordic "bird's nest" is no longer the reality that is ahead of us. The decline of the natural growth of the working-age population necessarily means that cities and nations can only grow through migration. As ethnic and cultural minorities grow larger, planning and urban design have to reorient themselves towards a more multicultural and polyvalent thinking. This is a sensitivity that modernist planning has not prepared us for, with its emphasis on biological needs of generalized human beings ("cities for people"). In her article on humanitarian architecture, Helena Sandman discusses, through a case study of affordable housing design in Zanzibar, how the "Global North" meets "the "Global South". Exposing oneself to a totally new cultural context, the architects and students have to adapt and evolve, developing a new sensitivity. It is clear that some features of the Nordic tradition—such as participatory planning and design—are also useful in these contexts, but the challenges posed, for instance, by informal housing in the rapidly growing metropolises of the South, are something totally different from the Nordic countries where everything is designed and controlled in detail. Architects of the future can, apparently, no longer identify themselves with only local, regional or national characteristics and the established practices, not even in their own country. The doors are opened, and they will not be closed anymore.

PREFACE BY EDITOR-IN-CHIEF

Editor's Foreword

Helena Teräväinen
Aalto University
helena.teravainen@aalto.fi

10th Annual Architectural Research Symposium in Finland was arranged at Aalto University in October 2018. The subtitle was Global North – Global Challenges and Local Responses in Contemporary Architecture, which we rather intended to raise discussion on the differences and similarities between Southern and Northern planning and architectural models and the perhaps future ideals – if there still are in the contracting world view.

UNESCO Education has defined: Globalisation is the ongoing process that is linking people, neighbourhoods, cities, regions and countries much more closely together than they have ever been before. This has resulted in our lives being intertwined with people in all parts of the world via the food we eat, the clothing we wear, the music we listen to, the information we get and the ideas we hold.

We were welcoming research papers in the field of architecture and urban design with regard to globalisation and its effects on architectural culture. Potential papers were encouraged to provide pragmatic case-studies of professional practice, design methods, urban planning and building projects or architectural interventions, to introduce innovative research methods or experiments in architectural education, or offer re-readings from the history of architecture. Under different subtitles we presented nine themes   starting from subjects concerning individual and universal humanity, regionalism and challenges focusing cultural heritage until global market questions and sustainable materials and methods.

The call for papers produced in the first round almost fifty abstracts from all over the world. After the double peer review into the symposium came 26 extended abstracts for oral presentations and first time also six poster abstracts. The call for full papers to be published in Architectural Research in Finland, Vol.4, no.1 was opened in January 2019, but the stream of full articles was not particularly rich, and then some authors left the process – so in the end ARF is now publishing four very well processed research articles and two interesting keynote speeches.

Pirjo Sanaksenaho writes in her keynote paper, how the concept of the Modern Home has inspired both film makers and writers of interior design books and magazines for decades. She mentions for example Jacques Tati's film *Mon Oncle* where Monsieur Hulot gets acquainted with a modern kitchen with all its machines and automation. Sanaksenaho has responded with her research to the need for knowledge about the

post-war period of Finnish architecture of single-family houses, with the new modern ideals of living on one level, with big windows, sliding doors, open fireplaces and bar kitchens. Magazines as her research material show how the family life was presented in the homes which followed the aesthetic and functional ideas first presented in journals of architecture and design.

Marija Drėmaitė starts her keynote paper with a quote of Lithuanian architect Vytautas Čekanauskas recalling his first study trip to Finland in 1959: 'In Finland we really felt architecture.' The influence of Nordic architecture is often emphasized when discussing Baltic (Estonian, Latvian and Lithuanian) design in the State Socialist period. Indeed, as opportunities for tourist travel and foreign exchange programs increased in the late 1950s, the Soviet Architects' Association began to organize professional delegations that included several representatives from each of the Baltic Republics, dispatched on fact-finding missions to Finland. Drėmaitė argues that Finnish modern architecture, which was experienced at first hand during these study trips, was perceived as an acceptable model for Baltic architects who wished to belong to the international community of modern architecture, while retaining a national idiom and a distinctive character within the USSR. Together these two interesting keynote papers reflect how the modern architecture was materializing in different manifestations but still retained the central core ideals.

Helena Sandman argues in her article that to build sustainable communities in the rapidly urbanizing Global South, the inhabitants must be heard and be part of the development process. The profession of architects must adapt and evolve, too. To involve inhabitants, architects can use contextually suitable and effective design methods. Her study comprised research through design of an affordable housing design project in Zanzibar, Tanzania. She notes how professional architects are necessary (and sometimes legally required) within rapid urbanization processes, and there is a general scarcity of the profession in the Global South. Per capita, there are 20 times as many professional architects in the Global North as there are in the Global South.

The shortage of professionals engenders situations in which architects might have too many duties, come from another region, or from another social level than the inhabitants. Sandman presents how the practice of architecture can evolve and accommodate new flexible methods for inhabitant engagement in the design process. However, these methods need to correspond to local culturally specific customs not to reinforce and recreate colonial legacies.

Sara Porzilli's article presents the potentials of digital methods and techniques for the documentation of the Nordic cultural heritage. The methods are applied in two architectural examples, which then are monitored with the goals of the Madrid Document (2011). The verification of authenticity and the understanding of architectural values are beneficiaries from the current technological advancements. Porzilli argues, that the traces of the past, the presence of old buildings and traditional constructions cannot be ignored, because as a testimony of the past they provide a solid starting point for new, more coherent, sustainable, harmonic and creative urban development. In her two case studies from Oulu Porzilli demonstrates new methodological and digital tools that can support a correct documentation.

Mikko Vesisenaho and **Mirja Lievonen** are addressing (re)design of educational premises in their article. As *learning situations* diversify along with advancing ICT practices, an ever more challenging question for spatial design is: *what* provides *enabling settings* for learning? Apart from understanding the user requirements, the question is also about how well the settings are embedded into the local practices. In a (re)design process, multiple stakeholder perspectives are involved, each constrained in

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their expertise, way of articulating the topic area, and terminology used which poses a challenge to design communication. Dialogue is a key for different stakeholders to learn from others' points of view, and to establish a common ground. The authors focus here on a methodological question: how could different stakeholder perspectives be brought together to best capture information relevant to the spatial design of the educational settings? Could an articulation tool help to focus attention on relevant issues in terms of spatial design and thereby, to map contributions within a bigger picture of the project? The authors of the paper take *learning situation* as a core concept as they seek to compose a simple articulation tool to aid dialogue in a (re)design process between key stakeholder perspectives.

Ilari Karppi and **Iina Sankala** present in their article how transit-oriented development (TOD) is one of the attempts to tackle the challenges of urban design now, when strong international and domestic migration is transforming Finland's spatial setup and the Nordic welfare state model with healthy environments is in danger. The paper is based on case-study data from Tampere city region and its on-going light rail transit (LRT) construction process as an example of the current TOD thinking. It also makes references to comparable or otherwise interesting international LRT processes as discussed in planning journals or based on the authors' own observations and fieldwork.

The process of this **Architectural Research in Finland, Vol.4, no.1 (2020)** has taken some time, but after all – we are very happy to proudly publish these articles!

EDITOR'S FOREWORD

The 1950s and 1960s Modern Home
Magazines as research material

Pirjo Sanaksenaho
Aalto University
pirjo.sanaksenaho@aalto.fi

This article is based on my keynote lecture at the architectural research symposium held at Aalto University on October 25, 2018. The lecture dealt with my doctoral dissertation: *Modern Home. Single-family housing ideals as presented in Finnish architecture and interior design magazines in the 1950s and 1960s.* (Sanaksenaho, 2017*)*

Keywords: modern, home, single-family house, housing architecture, media

Introduction

The concept of the Modern Home has inspired both film makers and writers of interior design books and magazines for decades. For example, in the film *Mon Oncle* by Jacques Tati, Monsieur Hulot gets acquainted with a modern kitchen with all its machines and automation. It may be humorous to show humans as users of new technology, but it raises the question of how new ideas in modern architecture and living in homes were received. There is rather little scientific research on modern homes and single-family houses, at least in the Finnish context. My research responded to the need for knowledge about the post-war period of architecture of single-family houses, when the new modern ideals of living on one level, with big windows, sliding doors, open fireplaces and bar kitchens full of domestic appliances were presented. By choosing magazines as my research material, I was also able to study family life in these houses as it was presented in the family and interior design magazines of the time.

"I hope that it is clear, that the architects of this century have always actively engaged in an interdisciplinary discourse that uses the media to blur the line between the high and low culture, art and commerce, and that the house is their polemical vehicle. To think about architecture of the twentieth century will be to rethink the house/media interface." (Colomina, 1995)

Figure 1. **In the row house Koulukallio architect Viljo Revell,** the living room connects directly with the kitchen. Photo: Finlandia-kuva, MFA.

The aim of my dissertation was to study, through material found in relevant magazines, how the ideals of modern living were formulated in the 1950s and '60s in Finland.

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The research questions were:
What was typical of Finnish single-family housing architecture during those decades?
How did the magazines describe and create the single-family housing ideals in the 1950s and 1960s?

I also studied the change in the role and position of the architect in the design of single-family houses and the changes in the family concept in the 1960s and later, comparing it with the situation at the beginning of the 1950s. Houses, as architecture of everyday life, and also as lived-in spaces, were among my preoccupations as well as the material forms they took. Single-family houses were chosen as a typology of living because their residents could more freely choose and influence the housing conditions. For the architect, the design of houses also often represents a playground for new ideas and technologies.

Research material and methods

My research material included both professional and family magazines. I checked whether the ideals of living differed between the architectural and the more popular magazines, but the study showed that the popular family magazines had also been written by specialists of the period and were similar kinds of tributes to "good taste". Architects, interior designers and art historians wrote articles for *Kotiliesi* (Home Stove) and *Kaunis koti* (Beautiful Home), which were Finnish magazines in my data that covered homes in the 1950-60s. I also included the professional magazine *Arkkitehti* (Architect) as well as the exhibition catalogues of *Suomi rakentaa* (Finland Builds) showing Finnish architecture of those decades, in order to obtain a broad picture of the professional ideals behind single-family houses of the 1950s and '60s.

The circulations of the chosen magazines were: *Arkkitehti* approx. 3200, *Kaunis Koti* 22 300, *Kotiliesi* 176 000, and *Avotakka* (an interior design magazine, founded 1967) 24 000 (Tommila, 1992). The popularity and number of readers of family magazines was 55 times greater than the number of readers of *Arkkitehti*. Nevertheless, the single-family housing ideals seem to be quite similar in all the material. The question then follows: how were the modern housing ideals presented and sold to the public?

The research material thus consisted of articles and illustrations concerning single-family houses in the magazines *Arkkitehti, Kaunis Koti* and *Kotiliesi* from 1950–70 and in *Avotakka* from 1968–70. The advertisements for model houses in the magazines were also included in the study. There were in total about 250 articles with illustrations and 35 advertisements. The study was a qualitative analysis that aimed at finding culturally significant semantics in the text and image material, and ways of studying architectural representations. I used both text analysis (Halliday, 1994; Fairclough, 1995) and image analysis (Kress-Van Leeuwen, 1996; Seppänen, 2005) for the magazine material, but the methods more familiar to me as a trained architect were scrutiny of the drawings and explanations in the representations of single-family houses. An architect acting as a researcher does not follow the same process as an art historian, media or cultural researcher or a social scientist. I read and analysed site plans and their contexts, the plans, room divisions, orientation and circulation, and I figured out the building materials, typical details and structural solutions within the limits set by media presentations. I also analysed how architects explained their designs in the articles. The structure of the thesis fell into two parts: 1. Architectural representations and 2. Home (family life) representations. Two cross-sectional themes emerged from the data. Firstly, changes in family life and in the role of women in the home and, secondly, changes in the role of the architect designing single-family houses.

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The background of single-family houses in the research context

In the history of detached houses two paths can be seen: the bourgeois private villa surrounded by nature and the working-class model house. The ideal of living in single-family houses is related to garden city ideology with its belief that living close to nature is healthy and good for children. These ideals were originally from England and came to Finland via Germany and Sweden. In the bourgeois villa, the spaces for family, guests and servants were strictly separated. In general, the private spaces, such as bedrooms, were upstairs while the more public spaces and household spaces were downstairs (Saarikangas, 2002). Alvar Aalto's Villa Mairea still represents a typical private bourgeois villa, in which public and private spaces are separated, although its architecture is new and modern, with, for example, direct access to the garden from the living room. In working class houses all the spaces were meant for the family.

International influences can clearly be seen in the housing architecture of the post-war period. The influences on single-family houses came especially from the United States, Denmark and Sweden. For example, in Mies van der Rohe's Farnsworth House, the boundaries between private and public space are especially vague, and the residents' privacy is questionable considering its glass walls. Nevertheless, the house has been a model for many architects and big glass windows and walls became one feature of modern housing architecture.

The Case Study House programme launched by John Entenza and *Arts and Architecture* magazine in the United States from 1945–1964 was an experiment in residential architecture. Richard Neutra was one of the architects who created the houses. His Mountain Home shows typical features of 1950s houses: interior spaces sliding into each other; big windows from the living room to the nature; open fireplaces, flat roofs and a roof structure visible in the ceiling. These features were widely copied in Finnish architecture and Neutra's Mountain Home was published in *Arkkitehti.*

Figure 2. Kaunis Koti 5/1957:
"The open courtyard is the core of the future single-family house."

Housing exhibitions were frequently written about in the magazines of my research, both in the professional as well as the family magazines. The most remarkable housing exhibitions in the research period were H55 in Helsingborg, Sweden, and Interbau in West Berlin in 1957, and international influences were spread by such exhibitions. One new or re-found housing typology in the Interbau exhibition was the atrium house, in which the spaces of the home were set around a courtyard. It was a housing typology that became popular later in the 1960s in low and dense housing areas. Eduard Ludwig's atrium house in Berlin was published in Finland under the heading: "The open courtyard is the core of the future single-family house" (Kaunis Koti 5/1957) (See Fig. 2). There was also an exhibition entitled *America Today* in Helsinki in 1961 which presented new inventions and kitchen appliances. In post-war Finland, the USA was greatly admired and part of this was the desire to mark the difference and separation from Russia. America meant freedom and progression in the new consumer society that followed the earlier agrarian one.

In Finland, the 1950s was a time of positive development and growth. Construction was strong and fast because new factories, hospitals, schools and apartments were needed. Finland's war reparations had been paid by 1952. The housing policy in Finland was based on the measures of the state housing committee (*ARAVA*). The ARAVA committee gave loans for reasonably-priced houses and the floor areas and features of these houses were strictly controlled. The influences of the ARAVA norms can still be seen in Finnish housing production. In the 1950s houses, the efficient use of floor area was important, so that family apartments were supposed to be less than 99 m2, which can be seen in the efficient floor-plan solutions of the houses of the period.

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Professional magazines presenting the architecture of single-family houses

Out of my analysis of the professional publications dealing with housing architecture (*Arkkitehti* and *Suomi rakentaa* exhibition catalogues) arose four main types of houses: private villas in natural surroundings, row houses, atrium houses, and the modular constructivist houses of the 1960s.

At the beginning of the 1950s, private houses were designed as unique villas surrounded by nature and the location of the house was chosen according to the heights and orientations of the site. Villa Ervi, a house designed by the architect Aarne Ervi for himself, was widely published in all the magazines of my research. There were many new technical inventions, such as underfloor heating, and the room division was like a modern home, although there still remained a room for a domestic help. There was a hobby room in the basement downstairs, which became typical in the 1950s (Arkkitehti 9-10/1952) (See Fig. 3).

Figure 3. Aarne Ervi: Villa Ervi. Photo: Aarne Ervi, MFA.

The row or terraced house is a building type which became popular in the 1950s. The first examples of this were built in the early 1900s in Finland, but they were first known mainly as workers' housing. The row house was a compromise between a flat and a house, and it was said to provide a good environment, especially for children. In the 1950s, the row houses were situated according to the landscape and its contours. Hilding Ekelund was one of the masters of housing architecture in the 1950s and his terraced house in Munkkivuori was part of a composition of two lamella houses and a garage building. The house plans were pile-shaped, widening out towards the living room and the park. Later in the 1960s, there was a return to the grid plan and the gardens of the row houses were fenced off instead of being open to the larger landscape.

Tapiola, a garden city district of Espoo, was important for my research period because it was a turning point in housing design. Low, single-storey modern individual houses offered homes for families in a green environment within walking distance of services. Swedish housing districts, such as Guldheden in Gothenburg and Friluftstad in Malmö, were the inspiration for the designers of

Tapiola. The same architects designed both the town plan and the apartment blocks and for this reason new housing typologies could be created. Houses by the architect Jorma Järvi were presented in the magazines *Arkkitehti, Kaunis koti* and *Kotiliesi*. The row house, Koulukallio, designed by the architect Viljo Revell, has all the living spaces upstairs and garages downstairs. This was such a new kind of architecture that it received criticism in *Kaunis Koti* magazine. However, connecting the living room directly with the kitchen was a reflection of the new family life, where there was no live-in domestic help and it was the mother who was working in the kitchen. There was no need to hide this any longer(See Fig. 1).

Figure 4. Aulis Blomstedt: Chain houses. Photo: Heikki Havas, MFA

The room layout in the row houses typically consisted of a living room, kitchen and dining room on the ground floor with the bedrooms upstairs. Aulis Blomstedt designed row houses for Tapiola that were called "chain" houses (*ketjutalot*) (See Fig. 4). In *Kaunis koti* magazine there was an interview with a resident of a chain house who had been surprised that there was no longer a room for a domestic help, so one was made in one of the upstairs bedrooms (Kaunis koti 5/1954). The architects Heikki and Kaija Siren also designed many row houses in Tapiola. New technology, such as wooden prefabricated wall elements, was used in the row houses on Kontiontie road. Craft manufacturing was changing to industrial prefabrication.

Atrium houses, as one type of row house, were typical of the changes of the 1950s and '60s. They were said to be peaceful oases in cities, family houses that were close to nature. Cell-like apartments were part of the bigger entity and structure of housing areas. The density of the atrium house districts was close to that of the districts of apartment blocks. The architect Jaakko Laapotti, who was a professor of housing design at Helsinki University of Technology, designed

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many atrium houses, such as Tonttukallio, Haukilahti and Bergåsa. They were white minimalistic houses with horizontal volumes and black details. In the Haukilahti atrium houses, the view from the courtyard was above ground level.

Figure 5. The atrium house, Tonttukallio, architects Jaakko Laapotti and Toivo Korhonen.
Photo: Heikki Havas, MFA

Amongst the single-family houses, there were also atrium solutions, such as Marjatta and Martti Jaatinen's house, also in Tapiola. It had a square plan, with the service spaces and kitchen in the middle and the other rooms around it. It was exceptional in the Tapiola garden city area, because its courtyard was strictly fenced. Toivo Korhonen's own house in Lauttasaari was based on a modular grid and in the middle was a Japanese-style inner courtyard (See Fig. 6). Korhonen wrote in Arkkitehti magazine: "We live our own life in peace" (Arkkitehti 4-5/1961). The modular grid became a trend in the 1960s houses.

**Figure 6.
Toivo Korhonen:
The architect's own house.**
Photo: T.Korhonen, Arkkitehti 4-5/1961

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Architects became interested in modular constructivism and building systems in the 1960s as a counter-reaction to heroic expressive architecture. Social housing and urbanism became a mission for young architects and modular systems and dimension coordination were a big interest. Aarno Ruusuvuori was a professor at Helsinki University of Technology and his thinking inspired many students. Aulis Blomstedt was another fore-runner for the new generation of architects. Modular experiments were carried out, especially on single-family houses and summer-houses. The architect Kirmo Mikkola's atelier row house and House Thorsbo were examples of these. Gullichsen and Pallasmaa's Moduli 225 was designed for summer use. Pre-fabricated Domino Houses designed by Raimo Kallio-Mannila and the Bungalow House system were general construction systems in which the same building parts could be used to create many different solutions.

In the changeover to the new decade of the 1970s, Space and future utopias were being widely discussed in the magazines. Alongside the rectangular modular systems, round forms began to appear in both architecture and furniture design. Plastic and fibre-glass were used in buildings, such as the Futuro house designed by Matti Suuronen. Futuro as well as Eero Paloheimo and Yrjö Kukkapuro's atelier were also published internationally. Traditions were being questioned and mobile housing and movable housing units in the city structure were regarded as possible future scenarios. The British Archigram group even suggested that a human house is like clothing, in which you connect heating, energy sources and information. Architecture is no longer needed. However, in practice, the houses of the 1960s were often prefabricated and standardised. The same house type was used for an entire housing district, built by a construction company. Suburban districts were built, such as Hakunila and Seutula in Vantaa and Puisto-Kaarila in Tampere.

Bengt Lundsten and Esko Kahri's entry in the Kortepohja town planning architectural competition in 1964 in Jyväskylä was a turning point. The grid plan was designed in a multidisciplinary team of sociologists, traffic planners, structural engineers and landscape architects (See Fig. 7). The new housing area was described as beautiful, extraordinary and fresh (Kotiliesi 22/1969). In 1970, single-family houses were now said to be selfish and to take up too much space. The first Finnish housing fair was organized in 1970 in Tuusula with the aim of re-awakening the production of single-family houses because apartment blocks were dominating the construction.
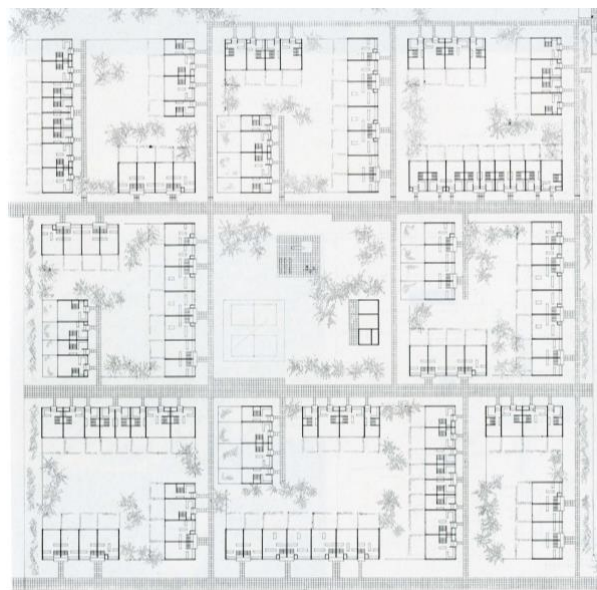

Figure 7.
Bengt Lundsten & Esko Kahrl:
Row houses in Kortepohja.
Arkkitehti 3-4/1967

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Family magazines presenting homes

The part of my research that dealt with interior design and family magazines rested on the most common topics of the magazine articles: housing exhibitions, international influences, Tapiola, material and form experimentation, and standardised house types. The presentation of the features of the modern home in my thesis was based on the various room functions. It is notable that in the magazines the residents of the house were present in the images, whereas in the professional magazines the houses were shown as objects without people.

In a typical modern home, the living room opened up towards the outside nature through big windows. There was also usually an open fireplace. The dining space was part of the living room and, behind sliding doors, there would be a bedroom or work room. The father's place was usually in living room, sitting on the sofa reading the newspaper or watching the fire. The bedroom was the most private space in the home, and if anybody was there, it was a woman (See Fig. 8).

Figure 8. Bedroom in the row house, Koulukallio, architect Viljo Revell.
Photo: Finlandia-kuva, MFA

Children's rooms were part of the contemporary discussion in the 1950s concerning mothers who worked outside the home. At that time, it was still believed that a good mother stayed at home with the children. Women were, however, seen as 'experts' in the home, who therefore needed appropriate working conditions. Children's rooms were also specifically designed for them, including the furniture. The hobby room, which was a new space in the '50s houses, was usually in the basement or garden wing, and it appeared to be meant for men and boys. The need for a hobby room was also part of the contemporary discussion about family life. When there was something for everybody to do at home, the unity of the family was preserved.

Rational workspaces and kitchen appliances were typical of the modern home. The rationalisation of housework had been in focus since the 1920s when the functional laboratory-style kitchen had been developed. The kitchen was standardised and new materials, such as stainless steel and laminate tops, were easy to maintain. Bar kitchens had already arrived in the USA in the 1940s, but they first came to Finland in the 1950s, as can be seen in the Tapiola homes.

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In the magazine images of the kitchen, there was usually a woman. In my data, there was a man in the kitchen in only one picture, and he was bringing his fishing catch home. Practicality was also regarded as an ideal in the design of service spaces, such as cloakrooms, cupboards and laundry spaces. Washing machines arrived to alleviate the housework and walk-in closets were new inventions in 1950s Finland.

Saunas have been connected to the Finnish bathing culture for centuries. They had earlier been in separate buildings in the yard or garden, but, in the 1950s, saunas started to come inside the houses. Swimming pools became common in Finland in the 1960s. Energy-saving and water consumption were not issues at that time, and having a swimming pool inside the house was described as "a friend for the sauna and substitute for a lake" (Kaunis koti 4/1966).

During this period, the garden changed from being part of the larger landscape into a small fenced area with a limited view. The plants chosen were flourishing and big-leaved, such as rhododendrons. The design of the gardens was based on the contrast between natural elements and simple architecture. In the images, the people in the garden were generally children (See Fig. 9).

Regarding the number of persons that appeared in the magazine images of the homes, most frequently there were children (56), then women (45) and lastly, men (28). Women were mostly depicted in kitchens, men in living rooms and children in their own rooms or in the garden.

Figure 9. Children were most frequently in the garden images.
House Lammin-Soila, by architects Reijo ja Tyyne Lammin-Soila.
Kaunis koti 6/1962

Discussion

Two themes emerged from my analysis of the research material: family life and changes in the role of the architect. It was possible to observe, in the articles and accompanying images, the ways that family members used the home spaces and possible to see the ways in which the position and role of the architect changed in the design of houses from the end of the 1960s.

At the end of the 1960s private villas had come to be regarded as elitist commissions and it was said that architects should concentrate on solving societal problems and focus on town planning. There were demonstrations in the Department of Architecture at the University of Technology in 1968 and the professional architecture magazine was politically left-minded. Previously, the architect was regarded as the master of the building project and the name of the architect was always mentioned in the presentations of houses in the magazines. However, at the end of the 1960s the names of architects disappeared, at least in the advertisements of model houses. Thus, anonymity in architecture and design increased and it was even questioned whether it was a misuse of architects' time to design private houses.

In my research data, single-family houses and modern homes are simply representations of real homes. We don't get the full picture from the magazines of what living was actually like in the houses at that time because we only see ideals of homes. What was essential about the modern home was the division between public and private space. The boundaries between public and private were not only visible in the plans of the houses but also in the way housing was related to the media. Rooms started to merge into larger living spaces and externally through big glass windows and doors to the garden, and gardens became part of the greater context of the neighbourhoods. The line between private and public space became vague (See Fig. 10).

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The architecture of houses developed in parallel with urban design and town planning. In the 1950s the houses were situated freely and related to the natural surroundings, whereas in the 1960s the grid plan returned and houses were designed according to modular principles and system thinking.

The phrases and words that were repeated in the texts of the magazines of the 1950s included practical, functional, spacious, simple. In the 1960s, the words changed to inexpensive, light, pre-fabricated. In the journalists' texts of the 1950s, the professionalism and reasoning behind design solutions were based on such phrases as "The architect says…" or "According to scientific research…". However, by the end of my research period in the1960s, the professional was no longer equally valued, and it was even suggested that private individuals could design their own houses.

The research showed that there is a cyclical process in housing ideals and family values. The ideal of family housing in the 1950s, that is, a single-family house in a garden-like district, became, in the 1960s, a prefabricated apartment in the suburbs. The construction of single-family houses increased again in the 1980s, which became its most active period after the War.

The media that deals with housing has increased enormously since the 1960s. In Finland alone there are nowadays around ten magazines focusing on living and interior design, in addition to several TV programmes and numerous related blogs. Reading through some current interior design magazines, I noticed that family members have changed their places in the home since the 1950s and '60s. Men can be seen playing with children and women might be sitting on the sofa with a laptop. The family is more of an equal unit than it was in the illustrations of the 1950s.

The media had and continues to have an important role in conveying housing ideals. Nowadays, we, the general public, produce our own representations of ideal homes for the social media. The residents themselves have taken on the role of reporters, choosing for themselves what to show, and how. Nevertheless, the ideals of living still continue to be constructed through texts and images.

Figure 10. Row house, Otsonpesä, in Tapiola, architects Heikki and Kaija Sirén, 1959. Photo: Pietinen, MFA

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Symbolic Geographies,
Nordic Inspirations and Baltic Identities

Finnish Influence on the Development of Post-war Modernist Architecture in Lithuania during the State Socialist Period

Marija Drėmaitė
Vilnius University
marija.dremaite@gmail.com

Abstract

'In Finland we really felt architecture,' Lithuanian architect Vytautas Čekanauskas used to say when recalling his first study trip to Finland in 1959. The influence of Nordic architecture is often emphasised when discussing Baltic (Estonian, Latvian and Lithuanian) design in the State Socialist period. When new residential districts in the 1960s were built among the trees in established pine forests, as happened in Āgenskalna Priedes in Riga, Mustamäe in Tallinn, and Lazdynai in Vilnius, Tapiola in Helsinki was most often cited as a source of inspiration. Indeed, as opportunities for tourist travel and foreign exchange programmes increased in the late 1950s, the Soviet Architects' Association began to organize professional delegations that included several representatives from each of the Baltic Republics, dispatched on fact-finding missions to Finland. But why did Finland become so important in the development of Baltic post-war modernism (1959–1969)? In this paper it is argued that Finnish modern architecture, which was experienced at first hand during these study trips, was perceived as an acceptable model for Baltic architects who wished to belong to the international community of modern architecture, while retaining a national idiom and a distinctive character within the USSR. Appropriating the regionalist features of modern Finnish design, the Baltic architects designed an urban environment which has been seen as exceptional, appropriating western cultural models much more quickly and with greater passion, and which has thus been labelled as 'the Soviet West'. It is important, therefore, to examine how Baltic architects pursued more individualised solutions; how ideological requirements were imposed during the Socialist period; and what precise Nordic and, in particular, Finnish architectural influences (tangible and intangible) played the most important role. The main source for this paper was archival research and the author's interviews with architects.

Keywords: Socialist modernism, Lithuanian school of modern architecture, modernism in Lithuania, Nordic influence, Vilnius, Lazdynai, Composers' Village, Čekanauskas

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I would argue that Baltic post-war modernist architecture (1956–1968) was strongly influenced by Finnish modernism, because the latter became an acceptable model for Baltic architects who wished to belong to the international community of modernist architecture, while retaining a national idiom and a distinctive character within the USSR.

Introduction

Architectural modernism in the post-war Baltic sea area, especially the socialist modernism of the former Soviet Baltic Republics, Estonia, Latvia and Lithuania, faces revision as regards the East-West interrelationship in culture during the Cold War (Caldenby and Wedebrunn 2010; Kalm and Ruudi 2005). The Baltic Republics have been described as exceptional, appropriating western cultural models much more quickly and with greater passion, and have thus been labelled as the 'Soviet West' or 'an inner Soviet abroad' (Gerchuk 2000, 82). I would argue that Baltic post-war modernist architecture (1956–1968) was strongly influenced by Finnish modernism, because the latter became an acceptable model for Baltic architects who wished to belong to the international community of modernist architecture, while retaining a national idiom and a distinctive character within the USSR. Finnish architecture played a special role in this process of modernization because it could be experienced at first hand during study trips in the late 1950s and 1960s (Kalm 2001; Hallas-Murula 2005; Drėmaitė 2013; Reklaitė 2014; Daubaraitė and Žukauskas 2018).

Political and economic reforms initiated by the Soviet leader Nikita Khrushchev, known as the 'Khrushchev Thaw' (1954–1964), enabled closer ties to be established between the West and the Soviet Union. This was clearly illustrated by the rapidity of Soviet adoption of Western technologies, standards and design canons, as several researchers have demonstrated (Péteri 2004, 113–123; Kohlrausch, Steffen and Wiederkehr 2010). Reform in construction and architecture was driven by the goal to combat a housing crisis and provide a separate apartment for every Soviet family by the 1980s. It called, therefore, for making the process of construction faster and cheaper and for validation of pre-cast concrete construction. The Soviets were drawn to socially and technologically advanced French and Nordic housing policies, as witnessed by the growing number of official exploratory visits by architects, builders, and construction engineers from 1955 onwards (Report 1956; Erofeev 2019).

The favourable Soviet view of Finland (exemplified by the Agreement of Friendship, Cooperation and Mutual Assistance, known as the Finno-Soviet Treaty, 1948) resulted in numerous technological and expert exchange programmes. Publications about Finnish architecture began to appear in the Soviet press in 1956, and Khrushchev visited Finland in 1957. He was much impressed by what he saw in Tapiola, a modern residential suburb of Helsinki, and even directed Soviet planners to design several satellite new towns around Moscow (Kazakova 2018, 313–321). New residential districts were also the target of a *Gosstroi* (State Construction Committee) delegation to the Nordic countries in 1957 (Report 1957). The delegation of eight members, headed by Vladimir Kucherenko, the head of *Gosstroi*, spent thirty days (from 4 October to 5 November 1957) visiting new mass housing districts, planning offices and construction facilities in Sweden, Norway, Denmark and Finland. The newly developed satellite towns Vällingby (of Stockholm) and Tapiola (of Helsinki) were of special interest. Impressed by the landscape design in the housing districts, and by the economic profile and quality of finishing materials in the homes and public buildings they visited, the delegation recommended that the Soviet government acquire several production lines from Nordic manufacturers.

Theoretical Approach: Symbolic Geographies of Soviet Baltic Modernists

Susan E. Reid has observed that direct intervention by the regime in architecture made a fresh start mandatory, effectively giving the signal for a re-appropriation of international modernist design principles (Reid 2009, 99–100). For Baltic architects political reform in construction played an important, although different, role. The Thaw encouraged a process of cultural liberation that was characterized by a clear re-emergence of national, Western-oriented and modernist aspects of

culture. Architects and designers were able to return to modernist aesthetics known from the pre-war period of independent national states and foreign architectural magazines. In the Baltic Republics modernism was a long-awaited turning point in architecture, since it was always connected with an alternative, even national, approach. John V. Maciuika noted that 'by grafting westward looking orientation onto local traditions, architects at the Baltic periphery of the Soviet Union kept alive an historical ambition to be included in a Western European national and cultural community' (Maciuika 1999, 24).

Modernist architecture in the three Baltic Republics was closely connected with the emergence of a new generation of young local architects (born around 1930 and graduating in the mid-1950s), who felt a kinship with international modernism and favoured retaining their own national identities, seeking to avoid appearing too 'Soviet' in style, as can be understood from their interviews (Čekanauskas 2006; Brėdikis 2011). The young Lithuanian architects appointed to work in state planning and design institutions between 1955 and 1957 began to raise questions about issues that were particularly relevant to a national style of modern architecture: identity, construction materials, and the relationship between buildings and their surrounding landscape.

The concept of 'symbolic geographies', developed by György Péteri in his book *Imagining the West in Eastern Europe and Soviet Union*, can be helpful in understanding the goals and strategies of the young Lithuanian architects. The author showed 'how human agents, in particular historical and cultural contexts, define themselves by locating themselves spatially as well as temporally, drawing the boundaries of social spaces where they are *within*, and relating themselves and their spaces to others' (Péteri 2010, 2–3). What makes these socially and historically situated processes critically important is their intimate relationship to the formation of identities.

As the socialist realist programme was ditched and Lithuanian designers sought to create something alternative to Soviet architecture, the 'Golden Era' of national architecture, namely the modernism of the independent Republic of Lithuania (1918–1940), became an important source of inspiration and can be seen as a *temporal symbolic geography*. The building that first delineated the transition from Stalinism to modernism and illustrated well the aspirations of the new generation of architects was dedicated to architecture. The State Urban Construction Design Institute in Vilnius (architect Eduardas Chlomauskas and engineer Česlovas Gerliakas, 1959–1961) was the first building to be specifically constructed for a large state design office (employing over a thousand people) and it featured numerous clear influences from 1930's Kaunas architecture. The heritage of Kaunas modernism of the 1930s played a significant role in shaping post-war Lithuanian modernist vocabulary, not only through the continued use of similar materials and construction technologies but also symbolically. Nevertheless, according to architect Justinas Šeibokas (1929–2015), by 1960 Lithuanian architects of his generation 'had seen enough of pre-war Lithuanian architecture' and sought new, modern sources of inspiration for their work and self-identity (Šeibokas 2010).

Another wellspring of inspiration, which could be described as a *spatial symbolic geography*, was the contemporary Western architecture increasingly accessible through foreign journals and magazines. However, knowledge of international developments in the late 1950s was scarce. As opportunities for tourist travel increased in the late 1950s, the USSR Architects' Association (UAA) began to organize professional delegations who were dispatched on fact-finding missions to 'capitalist countries'. Previously, members of the Lithuanian SSR Architects' Association (LAA; each national republic had its branch subordinate to the UAA) had travelled on several official visits to socialist countries such as Poland and Czechoslovakia, but missions were more often organized to different cities within

The concept of 'symbolic geographies': 'how human agents, in particular historical and cultural contexts, define themselves by locating themselves spatially as well as temporally, drawing the boundaries of social spaces where they are within, and relating themselves and their spaces to others' (Péteri 2010, 2–3).

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'We really felt architecture there,'
the famous Lithuanian post-war modernist Vytautas Edmundas Čekanauskas (1930–2010) recalled.

Figure 1. Flyers and brochures from trips to Finland in the 1960s, private collection of V. E. Čekanauskas

the Soviet Union (Moscow, Leningrad, Kiev, Kaliningrad, or Sverdlovsk). Three or four such trips were organized each year, with delegations usually consisting of twenty or so architects.

During the official fact-finding trip to Finland, which was organized in June 1959 by the UAA, a group of twenty-one specialists from the Baltic Republics and Leningrad (today St Petersburg), including six Lithuanian architects, were allowed to visit the most desirable West (Materials 1959). 'We really felt architecture there,' the famous Lithuanian post-war modernist Vytautas Edmundas Čekanauskas (1930–2010) recalled (Drėmaitė, 2006, 32–39). A second Soviet delegation of twenty-six specialists visited Finland in August 1959, which included six architects from Lithuania representing major design institutes, mainly chief architects and engineers (Materials 1959). In 1960 UAA organized three missions to Finland, including a total of ninety Soviet architects (Materials 1960), and one delegation was made up exclusively of nearly thirty Lithuanian architects (Mačiulis 2011, 39). From 1959 onwards foreign travel was made easier for local republican trade union administrations to organize, facilitating further visits by Lithuanian architects to Finland in 1961, 1963, 1964 and in later years. The proximity of the Baltic Republics to the Nordic countries made it a benchmark for Lithuanian architects, with Finland the most frequently visited country for fact-finding trips.

Destination Finland: Lithuanian Architects Meet Architecture

What did they visit, and what was their impression? Routes of architectural tours re-created from official documents and personal archives (Program 1959; Daubaraitė and Žukauskas 2018) reveal that, over a period of ten days, delegation members ordinarily visited several brick and wood processing factories, new residential complexes and apartment houses, the University of Turku (designed by Aarne Ervi, 1956–1959), Jyväskylä University (Alvar Aalto, 1950) and Säynätsalo City Hall (also Aalto, 1950–1952) and the highlights of modern Helsinki: the Olympic stadium (Lindegren, Jäntti, 1934–1952), the House of Culture (Aalto, 1955–1958), the National Pensions Institute (Aalto, 1952–1956), and the suburb of Tapiola. In June 1959, architects were given the opportunity to meet with Tapiola's designer, Aarne Ervi, and later visited the offices of Alvar Aalto (though the prominent architect was away at the time). A similar opportunity was offered in 1964 for a delegation of Lithuanian builders and construction engineers, only with Jyväskylä replaced by Tampere and a visit to the Lenin museum there (Program 1964). These well-prepared tours proved the high efficiency of Finnish travel agencies in showing modern architecture to the groups of Soviet architects.

Archives also show that architects were allowed to make requests for foreign travel (though not always fulfilled), and Nordic countries featured more than others in these requests (Files 1961). One needed to belong to the Architects' Association to be allowed to join the carefully controlled and supervised trip, which on its own had to be approved by the central boards in Moscow. Candidates were carefully selected and it was obligatory for the groups to be 'convoyed' by *Intourist* guides (mainly *KGB* employees). In later years, Finnish travel agencies began specializing in organizing tours of modern Finnish architecture and construction trade fairs for Soviet technocrats.

The positive approach to Nordic architecture was well reflected in the official media of the period. The main Lithuanian professional magazine *Statyba ir architektūra* (Construction and Architecture) in 1961 started publishing articles about Finnish and Swedish architecture alongside reports from the Socialist countries. With the introduction of Nordic architecture, the hostile approach towards western modernism started to change, because advances in technology were recognized. A characteristic example is a paper by Jonas Minkevičius, an
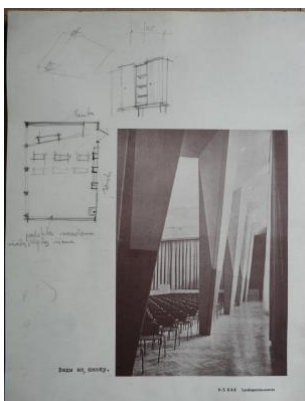
official commentator of contemporary architecture in Soviet Lithuania, where obligatory ideological critique of Western capitalism was still present, yet technological advances in housing construction were positively presented: 'Finnish architecture is exceptional among the other Nordic countries because it is moderate and nationally distinctive. Disregard the fact that most of the buildings are individually designed (sic!), they feature creative method and careful respect for nature. Finnish architects do not achieve this through fashionable formalism, nor through the application of traditional architectural ornamentation. Contemporary Finnish architecture is deeply embedded in the folk tradition and features rational simplicity, organic connection to nature, and moderate composition' (Minkevičius 1961, 9–12). The author referred to the 'people's tradition' in an attempt to match regionalism to an official Marxist ideology, but Lithuanian architects did not appear to be attracted by obligatory rhetoric. They saw much more than effective housing construction, and shared sincere emotional attraction when describing their own experiences of the Nordic architecture.

Architects Algimantas Mačiulis (Mačiulis 1961, 20–23), Nijolė Bučiūtė (Bučiūtė 1964, 21–23) and Eugenijus Gūzas (Gūzas 1965, 34–37) emphasized the connection of architecture with the natural environment, the use of natural local materials, and the excellent use of natural terrain and trees in Tapiola. Builders and engineers published very favourable impressions of the high quality of construction in Finland and Sweden (Statybos metodai… 1961, 23–26; Sargelis 1964, 27–28; Matijošius 1965, 10–11). All their texts almost glorified Nordic design and construction, its novelties, quality, functionality, economy, logic, materials, and relation to the natural environment.

Figure 2. Vytautas Edmundas Čekanauskas presents an album of Vilnius drawings by Mecislovas Bulaka to Aarne Ervi (first from left), Tapiola, Finland, 1959, private collection of V. E. Čekanauskas

The visiting Lithuanian architects brought home markedly emotional impressions. Many of them referred to Finland as a symbol of modern architecture that influenced their later work. Algimantas and Vytautas Nasvytis asserted that they embraced 'a Finnish-Nordic way of thinking, perceived through the works of Ervi, Aalto and others' (Mačiulis 2007, 102). Šeibokas said that 'direct contact with new Finnish architecture was a critical creative breakthrough – we began to design completely differently' (Šeibokas 2010). Vytautas Brėdikis recalled: 'I had my own metaphysical version, but reality proved to be otherwise. Buildings with unique architecture, well-arranged surroundings. Simple people interacting naturally. Good, humane architecture. A masterful harmony of buildings and nature' (Brėdikis 2011). Čekanauskas remembered the trip as having a lasting impression on him. Visiting Aalto's office, getting a close look at Finnish

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architecture, seeing the suburb of Tapiola, and meeting its principle architect Ervi, were, for Čekanauskas, indescribable events. Probably the most precious of all relicts, a sketch with an Alvar Aalto autograph, about which all later generations of Lithuanian architects have heard, is still kept in the very centre of Čekanauskas' work room. Čekanauskas made an attempt to explain his emotions rationally, searching for historical similarities between Finland and Lithuania and referring to their shared history of Imperial Russian oppression in the 19th century, independent nation state construction since 1917 and 1918, agricultural background and feeling for the natural environment (Maciuika 2019). Everybody mentioned the unforgettable architecture of Aalto, the harmony between the buildings and the natural environment, the human scale, the varied typology and excellent design of residential buildings, interesting community centres, and the good combination of modern and natural materials in construction and décor.

Figures 3a, 3b and 3c.
Slides by Algimantas Mačiulis from his trip to Finland, 1960s, private collection of A. Mačiulis

Reflections of Finnish Modernism in Lithuanian Post-War Architecture

It seems that the 1930s generation of young Baltic architects who began their careers in the 1960s were especially attracted to Finnish pre-war and post-war modernism. Similar influences were felt in Estonia, where the connection with Finland was even closer, facilitated by language, geographical proximity, a new ferry line between Tallinn and Helsinki, and Finnish television. In his book on Estonian Architecture of the 20th century, architectural historian Mart Kalm even titled a chapter 'Modelled on post-war Nordic architecture' (Kalm 2001, 325–326). It can be assumed that post-war Finnish architecture offered a modern interpretation of traditional values, and promised to boost national identity as well as the Baltic architects' own desire for distinctiveness within the Soviet Union. In the 1960s Lithuanian architects attributed the following characteristics to modern Finnish design: subtle and simple shapes, harmony between the buildings and the natural environment, human scale, and good combination of modern and natural materials. It is interesting to note (and compare) that, when in 1983 Lithuanian architects decided to define the features of contemporary Lithuanian architecture, they mentioned moderate and simple shapes, human scale, connection with nature, and respect for the environment (Vanagas 1983, 5).

The Decade of the Interior

Changes brought about by modernism appeared first in interior design, the field of architecture that lent itself easily to rapid progress. Here ideas could be implemented much faster, a factor that appealed to a generation of young architects, designers and artists longing to espouse modern national design aspirations. Khrushchev's Thaw led to the removal of the heavy interior curtains and dark massive furniture pieces favoured by Stalinist-era restaurants, replacing them with large, bright spaces, light furniture, modern lighting fixtures, openwork dividers and geometric decor features. The result was the emergence of the local 'Lithuanian Interior Design School', launched by the twin brother architects Algimantas (1928–2018) and Vytautas (1928–2016) Nasvytis. They designed the interior of the modern Neringa Café in Vilnius in 1959, which signaled a turning point in architecture. The interior consisted of four interlinked spaces: the lobby,

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a bar, and large and small halls, all finished in new, modernist forms and different natural materials (wood, metal, ornamental plastering and glass). The creative process combined the Nasvytis brothers' knowledge of folk art (with inspiration from pre-war Kaunas café culture) and an understanding of the spirit of Alvar Aalto (still the pre-war Aalto, Villa Mairea for example, perceived only from architectural journals). The architects succeeded in combining modern aesthetics with a national Lithuanian narrative, embodying a concept that showcased a new elite style.

Figure 4. Justinas Šeibokas, Interior of the Flower Pavilion in Vilnius, 1961, private collection of J. Šeibokas

Neringa Café was followed by the renovation of many other cafes and restaurants and the construction of new ones. All of these minimalist interiors shared certain traits that, together, can be considered characteristic of early Lithuanian post-war modernism: natural materials (wood shelves coated in transparent varnish, red-bricked walls and coarse plaster) and a wealth of artwork (metalwork, stained glass, wall paintings, mosaics, ceramics, and openwork partitions made from various different materials). Artwork was used to impart a national theme to the interior, incorporating folklore motifs from Lithuanian fairy tales, legends and songs. Interestingly, floral shops (and their interiors in particular) also became harbingers of modernism. The interior of a floral store designed by Justinas Šeibokas in 1961, for example, signaled a breakthrough in architecture for his peers. His design was notable for a new concept of space and colour, and the role played by light, elements that the author, according to his memoirs, adapted from Finnish architecture (Šeibokas 2010). A widely acknowledged Soviet material and technological scarcity motivated the creative talents of local architects, while the aesthetics of simplicity were dictated not only by the modern approach of designers but also by limited funds and a constant shortage of materials. For example, architects and designers found an innovative way to adapt the spherical body of the Lithuanian-made 'Saturnas' vacuum cleaner, then produced at the Vilnius Electric Welding Appliances Factory, using the body of the machine to create light fixtures (for the Dainava Restaurant) or globe lights (for the Composers' Concert Hall and the café at the Art Exhibition Hall).
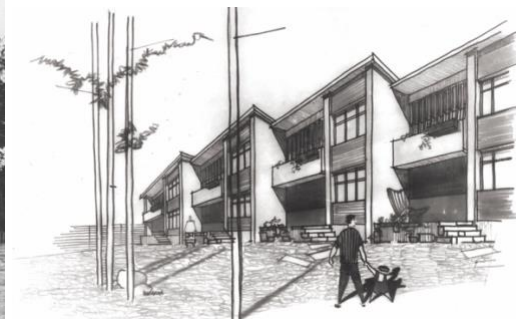
Figures 5a, 5b and 5c. The Composer's Village in Vilnius, designed by Vytautas Edmundas Čekanauskas and Vytautas Brėdikis, 1960-1966, post-construction photos from private collection of V. E. Čekanauskas

The Cosy Village of Composers

One of the most vivid examples of direct Finnish influence was the Composers' Village in Vilnius, built in 1960–1966. It was indeed a unique construction in the history of Soviet housing – through their connections with the Communist Party's Central Committee and the Vilnius Executive Committee (equivalent to municipality), the Composers' Association of the Lithuanian SSR managed to obtain both an empty plot of land by the Neris River in 1958 and approval for a custom design. Once approval was obtained, the Urban Construction Design Institute announced an in-house competition in 1959, which was won by two young architects, Vytautas Čekanauskas and Vytautas Brėdikis, who developed a low-rise group of buildings (sixteen single-unit houses and a concert hall), thus preserving the surrounding historic area from the intrusion of standard five-floor pre-fab houses (Design 1960).

Čekanauskas recalled that his trip to Finland in 1959 helped him to decide both on the use of predominantly traditional, natural and locally available building

materials (red brick, rough plaster and timber) and the incorporation of buildings into the natural landscape, preserving the surrounding pine trees (Čekanauskas 2006). The architecture of the complex had much in common with the Helsinki suburb of Tapiola, for example, with houses on Kontiontie Street designed by Kaija and Heikki Siren in 1955. As in Finland, the composers' flats in the Vilnius suburb of Žvėrynas were simply furnished, yet functional. There were two types of apartments: a three-room unit (in total 55 m^2 in living space) and a four-room unit (66 m^2). Each unit had a kitchen with an adjacent pantry, a living room, one or two bedrooms, a composer's workroom, two bathrooms (one with a bath), and a spacious balcony and terrace. Balconies looked out onto the forested banks of the Neris River. The dividing wall between kitchen and living room was a specially designed partition and shelving unit with a window opening in the middle to allow food to be passed from the kitchen to the living room.

The creative partnership between Čekanauskas and Julius Juzeliūnas, the chairman of the Composers' Association, continued with the former designing a minimalist home office interior for Juzeliūnas, with wooden bookshelves running the entire length of one wall. Local Lithuanian media featured the architecture of the Composers' Village; and the entire complex, including the interior of Juzeliūnas' apartment, was showcased in the prestigious Czech design magazine *Domov* (1968, No. 2). The individual approach used in the design of the Composers' Village, including the incorporation of outside decks beside each house, clearly spoke to the superior quality of the new housing development.
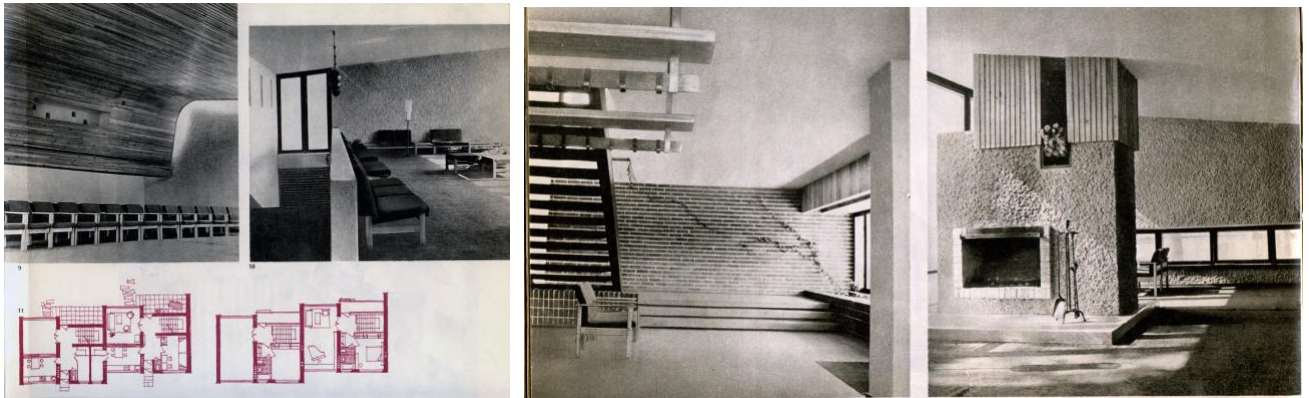
Figures 6a and 6b. Interior of the Composer's Hall of Music was featured in the Czech design magazine Domov, 1968, No. 2, pp. 47-48

The Composers' Concert Hall, completed in 1966 adjacent to the housing, also followed an original design solution, showcasing a special sensitivity for, and thorough presentation of, Čekanauskas' fondness for Finnish architecture, particularly the work of Alvar Aalto. The building's exterior silhouette was shaped by a stylish element of 1940s international modernism: an inward sloping concrete roof (also known as a 'butterfly roof'), with walls finished in an entire array of natural materials, including wood, red brick, and a combination of decorative plaster and glass. The landscaping was laced with terraces created by low-rising stone walls. The interior has a wealth of motifs characteristic of Finnish modernism: narrow, vertical shelving, a wall of unfinished red brick extending into the interior space from the outside, a wide staircase without railings, a monumental stone fireplace, and large windows on both the ground and first floors which joined the interior and exterior spaces. The main hall ceiling, finished with undulating thin strips of wooden panelling is nearly identical to Aalto's Viipuri Library lecture hall (1935), where considerable attention was also focused on the room's acoustic conditions. There were also other details that testified to the architect's focus on the building's interior design: 'I loved the Composers' building very much. I even brought in my wife's cactuses, to suit the style. I also purchased a large plant, brought it over, and hung it [at the Union building]' (Čekanauskas 2006).

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The Composers' Village can be seen as incorporating both emotional and social aspects of modern Nordic architecture, evidenced by the functional planning of interiors and the creation of unique residential spaces. These factors were clearly shaped by a direct exposure to Finnish architecture, but one should also note the importance of informal relationships which helped to ensure the realization of original concepts. The incorporation of such a structure into its natural surroundings and the modernism of local materials came to be considered as an expression of a unique Lithuanian national architecture. The complex became famous throughout the Soviet Union for its unique typology and integrated architectural expression.

Modern Architecture in the Historical Environment: The New Art Exhibition Hall

During their trips abroad, especially to Finland, architects were impressed by the harmony achieved between modernist buildings and their environment, both natural and urban. Since historical urban quarters continued to be important for Lithuanian architects as an inspiring national heritage, new buildings in the historical urban environment required sensitivity. The Art Exhibition Hall (1965–1967) by Čekanauskas became one of the prominent examples of 1960s modernism, designed to blend harmoniously with the architecture of the surrounding Vilnius Old Town. In line with the popular trend of the 1960s to enrich historical urban spaces with modern architectural structures, it was decided to build the Art Exhibition Hall on a site in the middle of the historic centre of Vilnius, cleared of the rubble of World War II. The site stood empty for a considerable time until the approaching anniversary of the October Revolution brought new funds and a directive to urgently construct a new facility for the exhibition of contemporary art. Fascinated by the works of Alvar Aalto, the architect used his Wolfsburg Cultural Centre in Germany (1958–1962) as an inspiration. It seems that Aalto's project with its low rise two-storey building and the cubic volumes of the auditorium, which was carefully integrated into natural mountain scenery, made an impression on Čekanauskas in his search to carefully position a new building in the sensitive old town urban environment. Indeed, the Art Exhibition Hall was recognized as a successful example of new architecture in its historical surroundings – Čekanauskas unveiled views of the bell tower of the All Saints Baroque Church which was visible through the new glass junction. He also masked the standardized prefabricated concrete panels used to construct the building with various decorative solutions (pale rough plaster and local dolomite tiles). 'The Western style' building, as it was perceived by locals, and its café became very popular among artists in 1960s and 1970s Vilnius.

Lazdynai, the Lithuanian Tapiola

Lazdynai, a huge mass housing residential area in Vilnius for forty thousand inhabitants, became a real highlight of the new Baltic housing design. After several unsuccessful mass housing design competitions, new and young architects Brėdikis and Čekanauskas at the Urban Planning Institute were commissioned to design *Lazdynai* in 1962 with an expectation of fresh ideas. Within the context of socialist standardization, the improvement of residential architecture became a central task for many architects. Both Čekanauskas and Brėdikis talked about the strong influence of Finnish (Tapiola), Swedish (Vällingby, Farsta) and modern French (Toulouse-Le Mirail) suburban design (Čekanauskas 2006). The influence of Finnish and Swedish satellite towns is evident here in terms of the neighbourhood unit concept (as a Soviet micro-district analogue) with semi-open courtyards and pedestrian avenues, development of alternative housing types, as well as adaptation to naturally hilly terrain. The pine trees in the entire area were preserved and integrated as part of the landscape design.

Lazdynai was the first part of Vilnius city development, designed as a series of suburbs threaded together on the main transport highway (Avenue of the

Figure 8. The Art Exhibition Hall in the historic centre of Vilnius, designed by Vytautas Edmundas Čekanauskas, constructed in 1965-1967, photo by Romualdas Rakauskas, private collection of V. E. Čekanauskas

Cosmonauts). Following the model of Stockholm's suburban expansion, this artery was isolated from the residential area by a ring road (which was later named Street of the Architects (sic!)) that connected four residential micro-districts. Internal roadways and pedestrian paths ensured safe connection within the residential area and with the central cultural and commercial buildings where all these avenues intersected. There was to have been an ambitious centre of Lazdynai erected on a platform above the highway (as in Vällingby), however it was never executed. According to its architect Česlovas Mazūras, the building was not only difficult to construct technologically, but also financially. It was, therefore, constantly delayed and finally rejected (Mazūras 2011).

Figure 8. Lazdynai, a large mass housing estate in Vilnius, designed by by Vytautas Edmundas Čekanauskas and Vytautas Brėdikis, constructed in 1969-1973, photo by Romualdas Rakauskas, private collection of V. E. Čekanauskas

Another important aspect of *Lazdynai* was the introduction of different volumes of prefabricated houses which, following Nordic practice, was intended to create urban diversity and a distinctive silhouette. The site for Lazdynai was naturally hilly and well forested – features that would be preserved as elements in the final landscape design (as in Tapiola). Lazdynai's architects advocated setting standard five and nine-storey housing blocks among the existing hills (the real challenge was to place houses across the slope) to create a unique silhouette for the community. This proposal, however, required different housing block designs. So architects collaborated closely with the Standard Design Department of the Vilnius Urban Construction Planning Institute and developed fifteen improved versions of the existing standard building series I–464 (Design 1970). The twelve-storey pre-cast panel towers were initially chosen because of their aesthetic contribution to the overall composition. Eventually, however, pre-cast panel construction for towers was declared inefficient by Soviet economic planners. The diverse range of building types in Lazdynai was meant solely to address an architectural issue, unlike in Finland or Sweden, where different types of housing

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architectural issue, unlike in Finland or Sweden, where different types of housing solutions were also aimed at satisfying the needs of different types of families.

Though the production of these new types of buildings posed a challenge to the Vilnius Panel Construction Factory and required additional funding, the architects maintain that a certain amount of interpersonal connections between architects and local communist party and municipal leaders played an important role in supporting the innovations. For example, the planners were committed to build all public buildings (schools, kindergartens, shops and micro-district centres for shopping and communal services) following standardized designs; however, they individually detailed them with original characteristics which featured especially in public art. The same could be said of school design. After two standard schools were built, the young architect Mazūras decided to escape the standard design and introduced original terraced planning (on the slope) and materials (red brick in combination with concrete panels). He also believed that cluster composition (in contrast to the standard corridor system) would 'liberate the souls of the future generation' (Mazūras 2011). Two schools were built in *Lazdynai* in accordance with his unique design, strongly linked to Nordic design in terms of undecorated red brick inner and outer walls, use of wood and bright colours, as well as the inclusion of many open spaces inside the building.

After several visits of leading figures of the State Construction Committee, Lazdynai was nominated and later awarded the Lenin prize for the All-Union Architectural Design in 1974 (it was the first time that a large mass housing estate was awarded the highest prize). Following this award, *Lazdynai* became widely featured at home and abroad with such optimistic headlines as 'Sunny City Blocks', 'A Harmony of Nature and Stone', 'Beauty for Everyone', 'Architects' Street', 'Creativity in Mass Housing', culminating in a front cover-feature for the Eastern Bloc's international survey of modern panel housing construction (Rietdorf 1976). Articles in the Lithuanian and Soviet press pointed to the diversity of buildings constructed in Lazdynai as a sign of its superior quality, emphasizing that *as many as* fifteen different types of houses had been used, a record for industrial construction. Meanwhile, Rietdorf's book about new residential construction in Socialist countries praised the Lazdynai architects and their ability to create compositional diversity using *only* (!) fifteen different types of building designs (Rietdorf 1976).

Why was Lazdynai so successful? Clearly, the district's design was overseen by two very talented architects, Brėdikis and Čekanauskas, with many other architects contributing to details and various designs of individual public buildings. In total, nearly one hundred and fifty specialists from the Urban Construction Planning Institute contributed to the Lazdynai project. Planners had come to value the purposeful shaping of the residential environment, understanding that residents needed more than just an apartment – they also benefited from a well-organized service system and natural parks. However, the ideological part of the story was no less important. It is very likely that local Communist Party leaders viewed the project as a model design. At the time the Soviet mass panel housing system was subject to a wave of criticism for being monotonous, depressing and low quality. In this context Lazdynai demonstrated the possible (bright) future of standardized panel construction, which only needed a touch of 'landscape design' and 'better architecture' with inspiration from Nordic study tours.

Conclusion

Finnish post-war modernism became an acceptable model for Soviet Baltic architects since it combined modernist design with the regional approach and thus matched their aspiration for national idiom. It might explain why Finnish inspired aspects of modernist architecture in Lithuania can be seen not only in

the area of exceptionally designed public buildings that marked the breakthrough of modernism, but also in the field of prefabricated mass housing estates.

The architects admit that study trips changed their designs in terms of materials, planning and location in the natural environment. This was well reflected both in interior design and the new approach to urban heritage. It is interesting to note that, until the Khrushchev Thaw, Lithuanian architects rarely saw Nordic countries as an architectural model, while French, Italian and German architecture attracted greater attention. But, in the post-war period, its close geographical location and reputation for contemporary architecture made Finland one of the most favoured destinations for Lithuanian architects. Because of its good cultural connections with the USSR it became the most visited foreign country.

Lithuanian architects perceived the Nordic architecture of the 1950s as a successful combination of contemporary design and regional distinction. Experiencing Finnish contemporary architecture at first hand, they understood that the national (or regional) idiom might be retained not through the direct application of folk elements, but in the contemporary combination of local natural materials with innovative construction and respect for the natural environment.

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KEYNOTE SPEECH

Shouldn't All Architecture be Designed with Empathy?

A case of affordable-housing design in Zanzibar

Helena Sandman
Aalto University
helenasandman@gmail.com

Abstract

Rapid urbanisation and, as a result, fast growing informal areas, increase the need for affordable housing. This urgent need requires new forms of input from the architects active in the Global South. The profession must adapt and evolve. Based on previous research, I argue that to build sustainable communities, the inhabitants must be heard and be part of the development process. To involve inhabitants, architects can use contextually suitable and effective design methods. The study comprised research through design of an affordable-housing design project in Zanzibar, Tanzania. This paper presents the early stages of this design process. The study revealed the potential of developing collaborative methods borrowed from the design discipline in the context of architectural design. The findings show advantages and disadvantages of the different methods applied. I conclude that these methods deepen and enrich the design process while working in settings with contextual constraints in the pursuit of sustainability.

Keywords: Affordable-housing; inhabitant engagement; collaborative design; design methods; empathy

1 Introduction

Although sustainability is a global goal, its achievement largely relies on understanding local circumstances, including its environmental and sociocultural domains. In the case of architecture, we must consider the influence of local climate conditions and available materials to reach environmental sustainability in a project. Further, albeit occasionally imperceptible, locally and culturally specific ways of living and using space usually express communities' enduring traditions, which cannot be easily changed in the near and long term without being strongly disturbed. Previous research has shown that sociocultural dimensions are often overlooked; however, they are essential for reaching a sustainable outcome (Sandman et al., 2018). One way to understand and address these aspects is to engage inhabitants in the architectural design process to ensure that the design corresponds to their actual needs.

Involving users and inhabitants has been strongly advocated within resource-challenged settings, often typical when designing for the lower income population. However, while participatory processes have a long tradition in the Nordic countries there is considerably less practice, experience and capacity

What is the potential of developing methods from the design discipline in the context of architectural design in culturally and socially complex settings?

regarding such approaches in the Global South[1]. Most of the urban development and housing design will happen in this part of the world over the following decades (Salama and Grierson, 2016). In fast growing cities, where the pace of change is difficult to follow, there are often obstacles from the perspectives of both participants and architects. To engage people in change can be a chaotic process (Light and Akama, 2012). Nevertheless, inhabitant engagement in the architectural design process can act as a means of empowerment for disadvantaged groups (Hollmén et al. 2018), and therefore support sociocultural sustainable development (Sandman et al. 2018).

While professional architects are necessary (and sometimes legally required) within rapid urbanisation processes, there is a general scarcity of the profession in the Global South. Per capita, there are 20 times as many professional architects in the Global North as there are in the Global South (African Union of Architects, 2018; Architects in Europe, 2014). The shortage of professionals engenders situations in which architects might have too many duties, come from another region, or from another social level than the inhabitants (due to a conceivable lack of educational opportunities for the low-income population). Given the challenges facing professional architects in the Global South, the field requires more research and practitioner attention (e.g. Goluchikov and Badyina, 2012; Salama and Grierson, 2016). Perhaps the practice of architecture can evolve and accommodate new flexible methods for inhabitant engagement in the design process. However, these methods need to correspond to local culturally specific customs (Akama et al. 2019) not to reinforce and recreate colonial legacies (Lokko, 2017).

Design offers a wide range of methods, tools and techniques for user engagement. There is an elaborate discourse on collaboration with users in design that indicates that some of these approaches can be suitable also for architecture in low-income and middle-income countries.

This paper presents a case where four different collaborative design methods borrowed from the design discipline were applied. The paper covers the early stages of an affordable-housing design project that I was involved with in Zanzibar town, the capital of Zanzibar, Tanzania. The project in Zanzibar illustrates how certain design approaches can be applied in the architectural design process, how they complement each other, what adaptions and changes were needed, and what benefits and limitations were detected. The findings suggest that the use of collaborative design methods can influence the architectural planning of housing, and support architects to take better into consideration the sociocultural aspects of sustainable and affordable housing. The findings also illustrate that architects can move towards a better understanding of locality, inhabitants, and users in meaningful ways utilising methods that are time-efficient and flexible.

1.1 Research approach and positioning the author
I am a practicing architect, with experience of working and teaching in the Global South for many years. As a doctoral researcher, I conduct 'research through design' (Dye and Samuel, 2015; Koskinen et al., 2011), in which I, as a practitioner, develop and reflect on my own practice as it unfolds and in retrospect. In this case I have undertaken, modified, tested and critically reflected upon particular, methods for user engagement in design, that I argue may contribute to long-term sociocultural sustainability. These methods were utilized

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1   In this paper, I use the term 'the Global South' when comparing with the Global North, 'low-income countries' or 'low-resource settings' when focusing on constraints in these countries.

to involve the community in the design of potential housing solutions for their neighbourhood. They were not conducted merely in research purpose, but mainly for the design of housing. Retrospectively I have analysed the different activities carried out in the community during the design phase in relation to human-centred design approaches according to a model by design researcher Steen (2008). This qualitative approach is interpretative and subjective, rather than objective, and takes advantage of embodied and situated knowledge, while acknowledging limitations. For instance, the number of people I have involved in the study is small, not equally divided between gender and age-groups, and limited to one particular community in one East African country. The results are thus not directly applicable to any architectural project anywhere without being critically analysed in relation to the situation at hand. Additionally, there is a distance between me and the community on many levels: geographic, cultural and social. My knowledge of the Swahili language is limited, and therefore some of the discussions, in cases in which the inhabitants did not speak English, were conducted with the aid of a local research assistant.

2 Background of a collaborative design approach

The large body of literature on inhabitant engagement and participatory practices in architecture relates primarily to projects conducted in the Global North, as this is where the origin of participatory design resides (Kensing and Greenbaum, 2013). Today, in low- middle income settings, the need for participatory design is widely recognised, and such methods are often taken for granted in design processes (Binder et al., 2008). In development work, various participatory methods are established and have been used successfully for decades. Participatory rural appraisal (Chambers, 1994) and participatory action research have been widely utilised in community development. However, participatory design generally requires long-term involvement in a community, which is not always possible with fast urban development in unorganised, low-resource settings. If present at all, the practised form of participation in general in housing projects in fast-growing cities in contexts of the Global South might remain symbolic (Emmet, 2000; Davidson et al., 2007), and if practiced, be closer to 'consultation', already stated in Arnstein's ladder of participation from 1969 (Arnstein, 1969). Nevertheless, architects need to place people at the centre to gain insights on how to meet the challenge of generating healthier and more inclusive cities (Smith, 2011).

In her reflections on an architectural case involving the urban poor in Thailand, Supitcha Tovivich suggested three roles for the humanitarian architect – provider, supporter and catalyst – when aiming for efficiency, capacity and empowerment through a participatory process (Tovivich, 2010). Whereas, Andres Lepik underlined the importance and continuum of social engagement in architecture (Lepik, 2010). There is a growing focus on social awareness regarding architectural projects in the Global South carried out by architects with a background in the Global North (Lokko, 2014). Kate Stohr from Architecture for Humanity asked whether 'the beginning of the twenty-first century will be remembered as the golden era of socially conscious design'. She asserted that 'this depends on the willingness of the architects and designers to reach beyond the design community and humbly offer their services' (Stohr, 2006, p.53). These arguments support the need for the architectural design process to develop in an inclusive direction and also illustrate that there is a willingness among a growing number of architects to respond to this need.

Co-design researchers Hussein, Sanders and Steinert (2012) proposed that designers should take a strong lead in participatory-design activities, which appears to contradict the intent of typical participatory design (which is premised on social democratic principles; Kensing and Greenbaum, 2013) to shift focus

from designer expertise to user expertise. However, in places where citizens are seldom consulted in social matters and may be either unaccustomed or unwilling to reveal their thoughts and opinions. Regarding a product-design project in Cambodia, Hussein, Sanders and Steinert pointed out that hierarchical structures can affect the outcome of participatory exercises. They also noted the potential for a lack of motivation as well as lack of trust in authorities (Hussain et al., 2012). Vulnerable clients might not have the trust or the strength to stand up for their rights or reveal their dreams; in this case, the responsibility to ensure the influence of the users, rests with the designer (Hussain et al., 2012). There might be a need for long-term capacity building, before a proper participatory process can take place (Drain and Sanders, 2019; Hussain et al. 2012). In the context of urban development, changes can be rapid and as an inhabitant it can be challenging, time-consuming and often impossible to actively influence the outcome (Nielsen, 2014). However, in any project there is a need to develop a common understanding grounded in the community's perspective (Nix et al. 2019). Therefore, it can be favourable to find new innovative ways of inclusion that require less but potentially deeper engagement than traditional participatory processes.

Within product and service design discourse, multiple participatory approaches and methods have evolved over recent decades (Sanders and Stappers, 2008, 2014). These approaches can be useful for architects, particularly those more profoundly engaged with socio-cultural aspects, localities, use and users. Elisabeth Sanders mapped out different approaches in relation to users in 2006 (Figure 1). Design researcher Steen (2008) responded by arranging a matrix to paint a picture of some of the main schools of thought under an umbrella that he chooses to call human-centred design in order to capture the main features of some of the approaches (Figure 2).
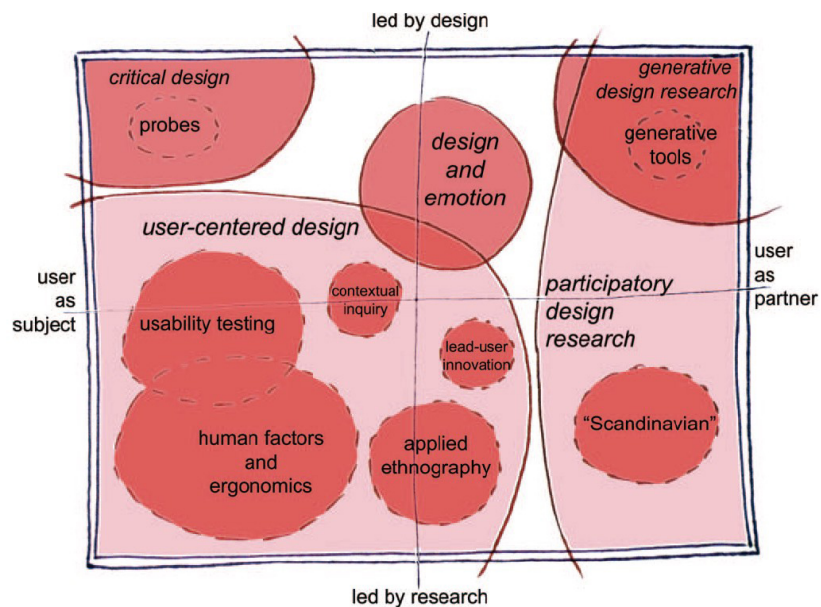

Figure 1. Landscape of design research. Elisabeth Sanders drew out the landscape of design research in 2006 (Sanders and Stappers, 2008).
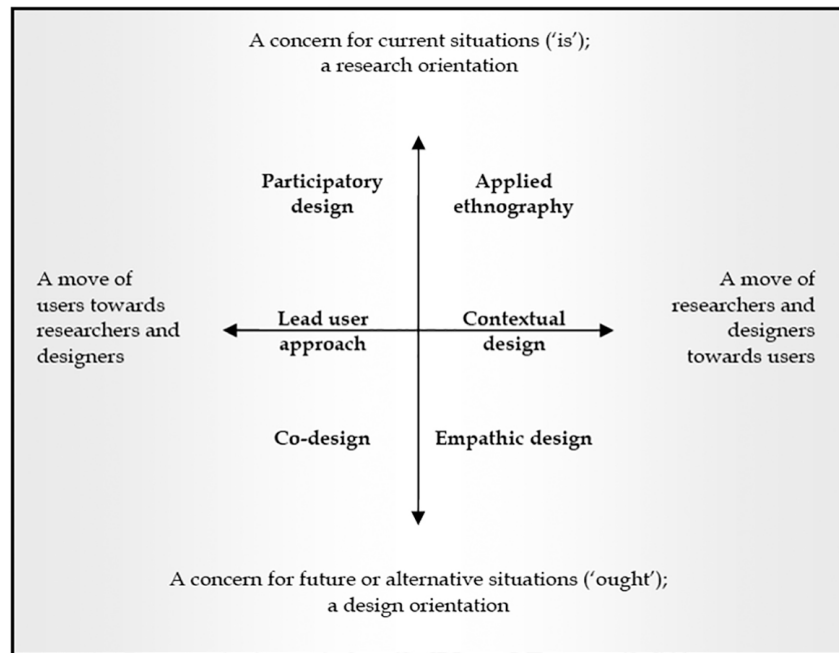
Figure 2. Model for tensions in human-centred design.
Marc Steen's doctoral dissertation (2008).

In this paper the overview of the different approaches and the tendencies underlying them is presented to give a background for the methods applied in the case study. In the following paragraphs, I will briefly elaborate on the user-engaging orientations utilised in this study.

2.1 Ethnographic observations
Ethnography is traditionally practised in anthropology, sociology and ethnomethodology, ethnography as a methodology has also recently become a common approach in design (Steen, 2008). Salvador, Bell and Anderson explained ethnography as a methodology used to represent the perspectives of everyday lives. Design ethnography does the same, while also framing the focus on what is relevant specifically for the development of new products and services (Salvador et al., 1999). Sanders defined applied ethnography as a qualitative description of cultural practices (2006). Steen further elaborated on the method suggested it to be used to understand people's habits only to a certain extent for a particular purpose. This is characterizing, in my understanding, a more superficial and short-term ethnographic activity than traditional ethnography practised in anthropology. In both Sander's map and in Steen's model applied ethnography is placed as a research-led approach, opposed to a designer-led. In an ethnographic study, it is also clear that the designer is the active party, moving towards users while studying their lives, as Steen proposed in his model (Figure 2). An ethnographic approach studies a situation as it is, striving for an authentic portrait of reality. Thus, Steen's reasoning that this orientation focuses on 'what is' *is not* arguable. Sanders (2006) positions applied ethnography in the middle between 'users as subjects' and 'users as partners'. In this case, it is questionable, as the users are mainly observed, and does not have an active role in the design process.

2.2 Design probing
Design probing is an empathic-design method (Mattelmäki, 2006). Whereas the origin of design probing, cultural probing did not have any intention to empathize

with users (Sanders, 2006). The original methods were introduced by Gaver, Dunne and Pacenti (1999). In that method the aim is to ask the users to generate material in order to give inspiration to the designer. Whereas in design probing, the designer is supposed to be affected, with empathy, by the material produced by the participants. The design probing is supposed to provoke the users to observe and think about their environment in new ways, as well as to stimulate and inspire the designer to come up with novel solutions. If the designer remains receptive and lets herself or himself be inspired by the material produced by the participants, the results can have a substantial effect on the design (Gaver et al., 1999; Gaver et al., 2004; Mattelmäki, 2006). For the designer, there is creative freedom in the development of the probes; the tasks presented to the users or inhabitants can vary substantially. Probing allows the designer to obtain a view of the participants' lives without the participants influencing each other (Gaver et al.,1999). Executing design probing exercises does not require physical presence of the designer.

Steen (2008) suggested, empathic design is an orientation whereby the designer has an active role, moving towards the user by focusing on 'what ought to be'. Sanders (2006) also placed probing in the position of being led by the designer, where the users are seen as subjects. This is arguable, as the users have an active role through their contribution.

2.3 Workshops

Workshop activities are used in many participatory design approaches, for instance in participatory design and co-design. Steen saw co-design as a contemporary form of participatory design, where tools and techniques are added from different traditions (Steen, 2008). In her map, Sanders (2006) proposed that the users in participatory design are seen as partners. Sanders and colleagues explained co-design as the combined creativity of designers and people not trained in design (Sanders et al., 2008). In co-design, stakeholders from all levels, regardless of skills, are facilitated to work together on a design task. Users, as well as other participants, can contribute as experts based on their particular experiences (Sleeswijk Visser 2009). In co-design, the users go through all levels of design: doing, adapting, making and creating (Sanders et al., 2010). Steen suggested, regarding participatory design, in his model that the orientation is focused on 'what is', and that the users have an active role: moving towards the designer. In this regard, the focus on 'what is' is not as clear as in, for instance, ethnography. However, when considering work like the case studied in this paper, a situation where users do not long for change could easily lead to a focus on the status quo.

Steen placed co-design in a position where users, as in participatory design, move towards designers, focusing on 'what ought to be'. It is easy to agree that that co-design activities require a lot of input from users; and in this case, their position, opinions, and thoughts are revealed and can have a strong influence on the design. The focus on creativity explains the direction of what 'ought to be' instead of 'what is'.

2.4 Theme discussions

Theme discussions carried out with users as part of the design process can be seen as a form of contextual design or contextual inquiry (Beyer and Holzblatt, 1998). Contextual design is influenced by ethnography and participatory design. This orientation allows to focus on defined smaller parts of the design process. In contextual design, Steen suggested that the designer stay in the active role and move towards the user. This is understandable, as the designer decides both the context and what parts of the projects should be reflected on. The orientation is positioned in the middle, between 'what is' and 'what ought to be'. Likewise, Sanders (2006) positions contextual design in the middle of her map, where being

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both a method for research and for design and seeing the users either as partners or as subjects.

In the case, illustrated in this paper, I used a variation of the design methods appearing in Sanders' map and in Steen's diagram presented in the previous section. The early phase of the design process contained observations in the form of applied ethnography, design probing as a method of empathic design, workshops as used in participatory design and co-design, and theme discussions that are part of contextual design. The methods used were adapted to the project and to local circumstances. The practical use of these methods and learnings from the process will be reflected upon in the following sections.

3 Affordable-housing design in the Ng'ambo neighbourhood

3.1 Context of this research

The focus of this paper as well as the case description is on inhabitant engagement early on in the design process; this is due to the importance of the fundamental direction of the design, which is established in the beginning of a project.

This paper presents a case study of the early phase of an affordable-housing design project in Ng'ambo neighbourhood in central Zanzibar town. Zanzibar town, even if moderate in size, faces the same challenges as big urban centres in the Global South (Figure 3). There is a need to accommodate more inhabitants in the central parts of the city, as urbanisation is accelerating. Urban sprawl is encroaching on valuable agricultural land, which is a threat to the densely populated island (Juma, 2014).

Figure 3. Air view of Zanzibar town. Stone Town peninsula on the left and Ng'ambo on the right.

I became involved in this project through the director of the Department of Urban and Rural Planning (DoURP) of Zanzibar. The DoURP has a shortage of architects. When I proposed, after being informed of local needs, involving a housing design project in my doctoral studies, and thereby providing the DoURP

with architectural plans as a result of my study, my proposal was appreciated. I was asked to design affordable-housing with a higher density than the present building population. I was involved purely through my own interest, while holding a doctoral candidate position within the New Global research group at Aalto University. The architectural plans created as a result of the design process would be useful for fundraising purposes and, in the future, for construction. My intention was to involve the local inhabitants from the beginning of the design process in order to study different methods of inhabitant engagement borrowed from the design paradigm. The motivation was threefold: From the perspective of the inhabitants, they would have the opportunity to participate in the development of their own neighbourhood and to establish contacts with the DoURP; from the perspective of the DoURP, the design process would advance their plans and test the possibilities of developing dense housing in collaboration with inhabitants in the area; and from my perspective, the process would help me explore the potential of methods from the design discipline in the context of architectural design.

3.2 Ng'ambo

In the recently finalised Master Plan of Zanzibar, Ng'ambo has been defined as the new city centre of Zanzibar Town. Ng'ambo has approximately 50,000 inhabitants and 4,700 predominantly one-floor houses, many of which were constructed at the beginning of the 20th century (Juma et al., 2014). The DoURP of Zanzibar is putting particular efforts to the development of the Ng'ambo area because there is a risk that the local cultural heritage may vanish if the real-estate market alone guides the development (Juma, 2014). It is likely that the original population will migrate towards the peripheries of town, as they might not be able to afford apartments in the buildings constructed based on market price. This migration could lead to both additional urban sprawl and the weakening of the cultural, intangible heritage of the area. Consequently, social sustainability will be disturbed. The DoURP strives for sustainability on all levels and is strongly motivated to preserve both the tangible and intangible heritage of the city. Yet, to preserve the intangible heritage, the original inhabitants would preferably need to remain on-site and be involved in the development of the area. For the affordable-housing design, the DoURP suggested an area with 13 houses and approximately 100 inhabitants (Figure 4). Many of the inhabitants have lived in the area for generations.

Figure 4. The site for the project. Thirteen homes and a street view with the Michenzani building in the back.

3.3 Ethnographic observations

Observation as such is not new to architecture and is generally a part of any architectural project, even when only on a superficial level, due to time constraints or lack of resources. In this case, the observations that I practised is of the kind that Steen referred to as applied ethnography.

The ethnographic observations were accomplished in two stages, in periods of one to two weeks each, during which I spent the days in the community. The first stage comprised more general observations of the neighbourhood with the purpose of understanding the essence of the area. In the second observation period, I followed the families who were part of the housing project closely. Combined with observations and note taking, I took photographs to use for analyses. The observations of the families were completed while simultaneously taking measurements of the domestic spaces for later architectural drawings. This activity gave me a clear reason to enter homes and spend time there without having to disrupt the families with my presence. This also avoided awkward communication barriers due to language differences, as the ethnographic observations were done without an interpreter. The measuring had a dual purpose, as it also fulfilled a real need of the project to obtain measurements of the existing buildings.

Through ethnographic observation, I familiarised myself with the area and the use of both public and domestic spaces. During the first period, I got to know the area as a whole, including urban structures, patterns of movement and webs of social activities (Figures 5 and 6). I followed the personal activities of the inhabitants and noticed, for instance, how women and the elderly often gathered on verandas to chat with each other in the afternoons, and how men met in bigger groups a bit further from their homes. During the second period, I entered the homes and gained an understanding of the interior use of space and spatial hierarchies. The backyard, which was used either as a kitchen or an extension of the kitchen, was used more by women than by men. The bedrooms were used for storage, while the living rooms often seemed to be a more public part of the home, and more organised.

Figure 5. The street is a public living-room. It is common for men to gather outside the homes in public spaces in the evening.

Figure 6. Private outdoor spaces are useful in the climate of Zanzibar. The backyard is an important space for kitchen activities.

3.4 Design probing

The purpose of design probing in this architectural project was to initiate contact with the community on a personal level. By 'personal' I refer both to the intention that inhabitants share their individual views without being influenced by their families or neighbours (as there might have been unknown hierarchical levels within or among these groupings) and to the intention to allow for personal meetings between individuals and myself. I asked five of the 13 households to participate in the probing exercise.

The probing-package contained artefacts and exercises designed to enable recipients to illustrate what daily life is like in Ng'ambo. The pursuit was to make the inhabitants reflect on their personal relationships to their home and to encourage them to observe their surroundings. Through our discussions, they would also receive information about the future plans for the area. The package consisted of a set of questions, drawing tasks, a disposable camera, pens and stickers (Figure 7). I strived to make the probing package personal and yet familiar, using locally available material. The exercises were explained thoroughly and designed to be concrete – not abstract. The reason for this choice was that I did not, as a main objective, seek to obtain artistic inspiration, but rather to obtain a view of the lives of the inhabitants in order to better empathise with them.

Figure 7. The probing-package. The last picture shows a completed exercise indicating important spots in the neighbourhood.

Introducing the probing exercise required personal contact to create trust and an appropriate framing of the situation (Figure 8). The distribution of the packages was combined with an introduction. In this introduction, I explained the purpose of the project and went through the exercises in detail. The participants were given two weeks to complete the probes.

Figure 8. Introduction of the probes. Neema is introduced to the exercises, and an example of a red spot showing her dislike for the absence of a proper sink for dishwashing in the kitchen.

The assignments in the probing package included marking things or parts of the home that were either favoured or disfavoured with coloured stickers (Figure 8 and 9), taking pictures with the disposable cameras of places and people the participants visited during the period of the exercise, drawing a map of places visited during the allotted time, drawing a plan of the homes they lived in, drawing the home of their dreams, and replying to a couple of questions in written form.

After the two-week period, I collected the probe packages together with the research assistant. In each household, we had a thorough discussion about the exercises and the replies. In the outcomes, I noticed a wish for modern, new spaces and furniture and a dislike of worn-out parts of the home and broken furniture. The inhabitants also criticised items that consumed a lot of electricity due to the high price of electricity and frequent power cuts. The participants wished for more privacy, particularly concerning the toilet and bathroom spaces. The responses also showed a lack of proper cross ventilation in the houses (Figure 9). Through the photos, I could see how the participants spent their time and what parts of the home drew their attention. I learned whether the participants studied or worked, as well as what parts of the home were significant for them.

The exercises made it clear that these people took advantage of living in the centre of a Zanzibar town. The exercises also pointed out some spots in the neighbourhood that were of particular importance (Figure 7). The general opinion was that life in Ng'ambo is peaceful and nice, while the infrastructure, like

garbage collection, drainage, electricity and water supply, could function better. Additionally, they revealed a wish for better sanitation and technological advancement.
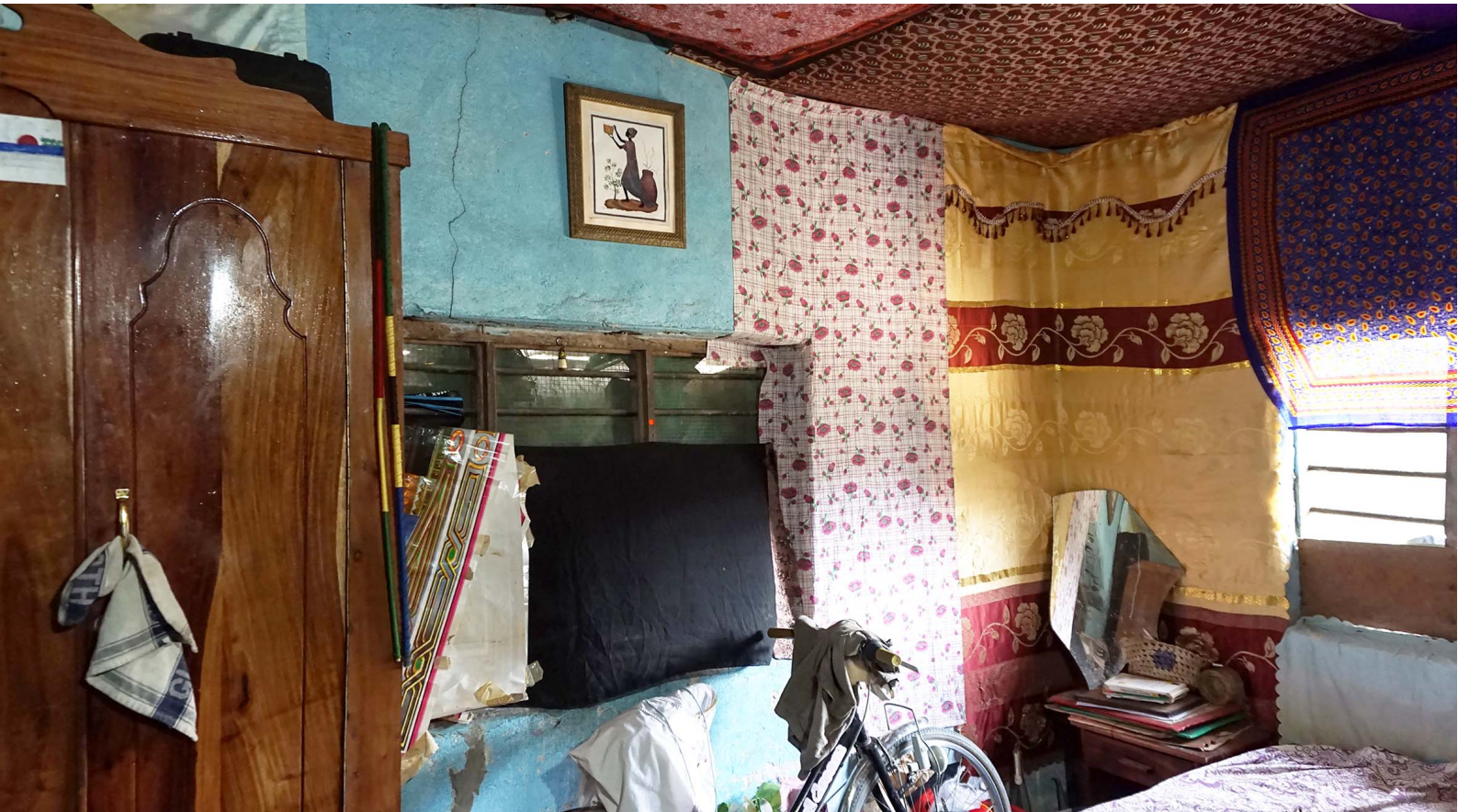

Figure 9. Ali's room. He disliked the fact that one of the windows in his room was closed and prevented cross-ventilation due to an extension of the house.

In each household, according to cultural habit, we approached the eldest person to ask him or her to choose who would take on the probes. They often chose a younger person. The participants who completed the probing were three women and two men, of which only one woman was the head of a household; the other four participants were younger, although still adults. Letting the eldest representative of the family choose the person to carry out the probing exercise led to a natural inclusion of different generations, thereby yielding a variety of views. The probers were in most cases young adults – except one, who was the head of the house and a single mother. The elder generation was included in the introduction in the beginning and in the discussion at the end of the probing. The five different participants all had personal views and illustrations of the exercises.

3.5 Workshops

For several reasons that I will discuss below, I cannot claim that the workshops conducted in Ng'ambo entirely fulfilled the requirements those of co-design, even if this was the original attempt. However, a group of inhabitants were involved in the design process in workshop settings and contributed to the design process.

One representative from each household was invited to take part in the workshops. The DoURP suggested that the workshops should be arranged in a space in the building where the department was functioning, situated in Stone Town, approximately 2 km away from Ng'ambo. I agreed to this arrangement, due to a lack of alternatives, even though I was aware that the space was not ideal, as it was not placed in the middle of the community and it belonged to the

authority, the DoURP. At this point of the project, I could not know whether the inhabitants were in favour of governmental institutions or not.

My plan for the first workshop was to conduct it according to the World Café Method[2], starting with a personal reflection and continuing with teamwork around the question, 'What is "home" to me?'; then, a new team would build on that question, where the reflection of home would be grouped around four different categories: social, physical, emotional and functional. Nevertheless, the plan needed to be adjusted ad hoc, as the participants did not arrive on time but dropped in randomly. In the end, 11 households were represented out of 13. The activities started as planned, with each participant writing a short text around the theme. After this, the discussion continued, and different thoughts were loosely gathered on larger paper according to the different categories.

The plan for the second workshop was to envision the neighbourhood 10 years from now from a sustainability perspective, taking into consideration inevitable changes due to the central position of Ng'ambo. The workshop was to start by looking at an aerial view together and marking out important places in the area to be preserved. After this, the participants would be asked to envision how they would like Ng'ambo and their homes to look in 10 years. This workshop had to be restructured, however, as the representative of the DoURP had forgotten to print out the maps as planned. I had to skip the mapping part of the workshop and only carried out the part dealing with Ng'ambo in 10 years and inhabitants' visions regarding the neighbourhood. In this workshop 9 households out of the 13 were presented.

In the first workshop (Figure 10), where the aim was to broaden understanding of the perception of home, the discussion ended in homogenous, thorough descriptions of physical facts about current homes, e.g., how many rooms, what activities and how many inhabitants. All suggestions and questions concerning shared space with neighbours were neglected. There were also multiple wishes for private bathrooms to be connected to master bedrooms. The envisioning of the future in general seemed to be a difficult task, as participants mainly explained how the situation was right now; or, if one of the participants came up with a new idea, it was copied by the rest. The main outcome was a wish for a street pattern that allowed ambulances and fire engines to pass through. The pictures of dream homes were either suggestions of future homes depicted as luxurious hotels, copied from the city, or copies of their existing homes.

Referring to the wish of even street patterns emphasized that before reaching a basic level of safety, it is difficult to consider issues like sustainable development in a broader sense. The surprisingly luxurious wish for private bathrooms can be interpreted as hygiene, meaning safety. It could also reflect uncertain relations with neighbours, as many of the households also rented out rooms. Other responses regarding the issue of sharing also indicated that trust between neighbours did not seem to be very high.

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[2] The World Café Method can be used for creating dialogue in groups by instructing people to move around and participate in different constellations (The World Café, 2020).

Figure 10. The first workshop.
The neighbours Salama and Sharifa are discussing what 'home' means to them.

3.6 Theme discussions

The intention of the theme discussions was to receive input from the inhabitants concerning their own neighbourhood and other kinds of neighbourhoods in Zanzibar. Further to get their opinions of examples of affordable-housing projects from different parts of the world. In this scope of contextual design, I conducted theme discussions around a map of the neighbourhood (which was not used in the workshop due to printing problems, as mentioned above) and around photos of various low-cost housing projects from other locations. I met the inhabitants together with my research assistant/translator and spoke with inhabitants who had a moment to spare. We sometimes talked on the porch; in some cases, we were invited to the living room or to the backyard. I intentionally tried to engage in a relaxed discussion by being very open with my own personal life and my own views of things in general.

The meetings resulted in interesting discussions around how was to live in Ng'ambo and how the inhabitants perceived their neighbourhood in comparison to other neighbourhoods in Zanzibar town. They all preferred to live where they currently did. The did not like high-rise buildings and preferred to have their own courtyards surrounded by some greenery. Regarding other affordable-housing projects the most popular example out of ten very different ones was a Mexican housing project formed as atrium houses of three floors with a shared courtyard.

4 Discussion

Table 1

INSIGHTS ON THE USE OF DESIGN METHODS			
What was done?	**Inhabitant experience**	**Architect experience**	**Insights**
Ethnographic observation (observations and visits in the 13 homes in two separate periods of two weeks)	• No participation • Not much opportunity to impact or be actively part of the design process • Potentially awkward for the inhabitants to be observed	• A way to get an overview of the area, use of space and observe social activities	• Useful as a first step in in the very early stages of a design process • It was proved useful to engage in something while observing, to be part of the community for that moment, in this case measure the houses
Design probing (with five inhabitants from different households)	• Personal engagement • Individual views are spotlighted and participants were heard in person	• Opportunity to establish a personal contact with inhabitants and also get input even if not possible to be present a lot	• A flexible method • Insight into the lives of the inhabitants in a short period of time • Customize exercises according to local culture, present challenges, and inhabitants' capabilities
Workshops (two separate workshops with 11 and 9 participants from different homes)	• There is a need for trust of authority and lack of friction between hierarchies • The participants were not used to creative exercises • Good for avoiding the feeling of not getting equal information	• Possibility to gather many people to share equal information	• Important to operate on neutral grounds • Mixing groups might hinder creation of trust • Similar ideas by all individuals; descriptive, not creative results • Flexibility and promptness needed
Theme discussions (five theme discussions)	• Possibility to share personal views in a particular area and in a particular field of interest	• Deepen connection to the inhabitants • Focused activity	• Time-consuming • Listening skills and openness of value to create trust • Language barriers, pay attention to translator's capacity

Architects need to understand both the current living conditions and the future aspirations of the people they are designing for. Therefore, both orientations, i.e., focusing on 'what is' and 'what could be', are relevant and methods with both objectives are needed. The ethnographic observations focusing on the existing situation, even if not involved in communication, left a stronger impression than studying a context in literature. My presence might also have made the upcoming exercises more fluent, as the inhabitants became used to me. The key lesson learned on a practical level for practising ethnographic observation was the benefit of being involved in mundane activities while at the same time conducting observations. From a theoretical point of view, in relation to Steen's diagram, the architect has an active role and is moving towards the users. If ethnography is

The design probing exercise generated solutions that neither I nor the participants would have been able to create on our own.

used according to the origins of the methodology in anthropology and the social sciences, then involvement should be long term and thorough. However, this is often not possible due to time constraints or lack of professionals. Nevertheless, ethnographic observation is useful, even in this lighter form of applied ethnography.

The probing exercises, focusing on future changes resulted in heterogeneous informative material that both engaged the users and allowed me an entrance at an early stage to life in the community. The design probing opened doors to the lives of the participants, which otherwise would have been challenging to access, within the constraints of the present project. Having had the honour of being introduced to the personal reflections revealed in the probes, partly illustrated above, made me deeply grateful and touched by the openness and trust the participants showed.

Discussing the exercises together with the participants and their family members, and reflecting together on the concept of home, with its similarities and differences, opened my eyes. Thus, the actual designing of the housing was strongly influenced by the probing exercise. This design probing exercise generated solutions that neither I nor the participants would have been able to create on our own.

Considering the short time frame of a probing exercise and the depth achieved, an empathic approach represents a suitable form of participation in architecture in settings with multiple constraints.

In the context of this case the users did not 'move towards the designer' nor did the users have a role as active partners in the design process, contrary to what Steen (2008) drew out in his model and what Sanders (2006) indicated in her map for participatory design or co-design, in this case the workshops (Figure 1 and 2).

The workshops functioned as a gathering of the households participating in the study. They also ensured that the same information was shared with all households and could therefore side-step rumours. In this case, there were nevertheless many challenges to achieving the level of co-design that I had aimed for. The invisible hierarchical structure between neighbours, as well as between the inhabitants and the authorities, influenced the freedom to act or speak. Also, the absence of experience with similar situations and being asked to be creative and show opinions seemed to be a barrier. It is challenging to make everyone feel equal, understand hierarchies, and political undercurrents – if the designer is not part of the society, it might even be impossible. To meet this challenge, it would have been important to gather in a familiar place, neutral to the participants. In this case, where the workshops were held in a space belonging to a governmental institution, it represented authority for the inhabitants, who were in danger of losing their homes. This may have been a reason for the mostly superficial outcomes. If it is not possible to create a psychologically neutral environment for co-creation, where cultural, educational and income level borders are erased, then this method will be a challenge.

The input generated was greater in the personal meetings of the theme discussions than during the workshops. The participants shared unexpected information, and their personal views came to light. In these moments, true connections between myself and the participants were forged more so than with participants in the probing exercise. The results of the theme discussions were very useful while forming the housing project. This method was time-consuming; however, it was possible when addressing particular parts of the project.

In an ideal situation the collaboration presented in this study could have represented a starting point for a process that potentially could have allowed equal creative activities for participants and architects. However, for that kind of situation to emerge collaborative work over multiple sessions and over a long period of time would be required. Regarding these inhabitants, a fruitful co-design session would still be a challenge to arrange, as they did not have an initial motivation for change. Indeed, they were not the ones who wanted change indicated in the master plan of the city in the first place.

5 Conclusions

This paper was written from the perspective of the practitioner and the case, looking at collaborative orientations in design as well as methods within the orientations that can constitute solutions for bridging the divides between different stakeholders in an architectural project for the lower income populations. Applied ethnography, design probing and theme discussions provided the most rewarding results. However, adaptation to the local environment was necessary. The workshops, representing co-design and participatory design in this case, provided substandard results due to the constraints mentioned in table 1.

Comparing the results of the design methods used shows that a pragmatic near-term development plan would be to continue using these methods with an emphasis on customisation according to local habits and the current situation with empathy. Empathy can be defined as appraising the world from others' points of view. As an architect seldom designs for herself or himself, this ability would be assumed to be a core competence in the profession.

A contribution of this paper is to combine methods in a particularly challenging context, in order to discover and elaborate on benefits as well as difficulties. With this study, my intention was to explore, test and critically reflect on the potential of developing methods from the design discipline in the context of architectural design in culturally and socially complex settings. I conclude that looking into methods from design is valuable for architecture. These methods should be adapted further to match particular cases and local practice.

The example from Zanzibar is likely to represent other, similar cases, and the findings probably have relevance to design processes under similar circumstances. This can be a source of learning for other architects active in similar settings as well as for architecture in general, when seeking new research-based methods and approaches. Through developing the design process, the architect can move towards a better understanding of local circumstances and inhabitants in meaningful ways that are both time-efficient and flexible. Ultimately this contributes to the potential for longer-term sustainability of architecture in the Global South.

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Digital Documentation in Architecture.

Methods of analysis for the preservation and development of the Nordic Built Heritage.

Sara Porzilli
University of Oulu
sara.porzilli@oulu.fi

Abstract

This article presents the potentialities of digital methods and techniques for the documentation of the Nordic cultural heritage applied to two architectural examples, which then are monitored with the goals of the Madrid Document (2011). The verification of authenticity and the understanding of architectural values are beneficiaries from the current technological advancements.

The research question starts from the common consciousness that the processes of knowledge, both theoretical and practical, cannot ignore today the traces of the past, the presence of old buildings and traditional constructions. On the contrary, they serve as a testimony of the past and provide a solid starting point for new, more coherent, sustainable, harmonic and creative urban development. So, which are today the methodological and digital tools that can support a correct documentation? This article tries to answer to this question by presenting the research carried out as two case studies located in Oulu and then examined in the light of the Madrid document. The method and practical procedure used have produced specific outputs and results, which are commented and described also through pictures in order to share the great advantages but also some disadvantages and shortcomings of the latest digital survey technology.

Keywords: Digital Documentation, Cultural Heritage, Digital Survey, The Madrid Document, Value and Authenticity.

Introduction

The work presented in this article is part of the European Research Project *Preserving Wooden Heritage. Methods for monitoring wooden structures: 3D laser scanner survey and application of BIM systems on point cloud model.* Wooden Heritage represents one of the oldest examples of architecture developed by different cultures all over the world, creating specific features with unique compositional solutions (K. Zwerger, 2012). In Northern Europe, wooden buildings existed already during the early 11th century. They were built in tight connection with the surrounding environment creating intimate relationship with the landscape. Materials belonged to the nearest forests, decorative details took inspirations from the Nature and its elements.

The study of the past, of the ancient and historical architecture has always represented both theoretical and practical knowledge for the understanding of architectural and environmental identity. The main reason has often been the need to get information about our ancestors, the specific background of a place, styles, construction solutions and traditions[1]. Today the question about how to link the contemporary architectural practice with the tangible and intangible elements[2] of a site is representing the focus of the debate in design operations.

From a theoretical point of view already at the end of the XIX Century experts in architecture and archaeology such as Giuseppe Fiorelli, Camillo Boito and Gustavo Giovannoni began the production of documents aimed at describing the principles necessary for the conservation and restoration of *monuments*, a term which then replaced with *cultural heritage* (1975 Declaration of Amsterdam). This term represented a more precise way for including also spiritual, cultural, economic and social values, closely related to the architectural object analyzed. (Niglio, 2005, 134). Today the most important guidelines concerning the preservation and protection of our heritage commonly use the term *cultural heritage*[3].

During the past centuries, wooden buildings and timber structures were often considered less important in many European countries, evidently due to the durability of the ancient stone and brick architecture. However, thanks to the specific technological solutions and constructive details, a substantial part of the historic wooden heritage survived until now and it is still present in many northern regions (Hansen, 1969). During the past decades, a reassessment of this material has increased, mainly due to its capacity of improving the quality of life of the inhabitants and because of faster construction time.

The question about how to link the contemporary architectural practice with the tangible and intangible elements of a site is still representing the focus of the debate in our design operations.

Figure 1. Survey activities on field. On the left side, laser scanning survey of Villa Lehmus, inner parts. On the right side, urban survey of Raksila neighbourhood.

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[1] Norberg-Schulz C., *Genius loci : paesaggio, ambiente, architettura*, Milan: Mondadori Electa, 2016.
[2] How to define these two categories, recognise them and work in practice for discovering the constituent elements have been the main questions addressed during two important conferences:
1. International Conference at the University of East London entitled "Tangible – Intangible Heritage(s) – Design, Social and cultural critiques on the past, the present and the future"
2. XI International Conference of representation Disciplines Teachers entitled "Representation / Material / Immaterial. Drawings as (in)tangible representation", held in Milan during 13-14-15 September 2018.
[3] In Finland, the Land Use and Building Act and the Land Use and Building Decree compose the legislation on building and landscape protection, which are aimed at the promotion of the cultural heritage.

Karelian architecture is now an entirely valid question, since its meaning is not confined only to values ethnographic or historical existence. There are values that have a direct connection, even the most useful for modern times.

(Aalto, A., 1941)

Even if the consciousness of the importance of wooden architecture has improved, still fires and abandoning for negligence are the main factors, which are compromising the preservation of wooden architecture. Even if the paper focuses on timber buildings, methods and procedures described can be extended to the general documentation of architecture through digital systems.

The two selected cases have represented the testing ground to examine the latest digital equipment; the outcome is then compared with the recommendations of the Madrid document. The investigation explores environmental, urban and building scales, deepening the applicability of certain procedures on both historic and modern Nordic Heritage. This research has been done respecting the principles described and promoted by the actual legislation on Heritage protection: from the treatment of a heritage, up to the part of dissemination for the activation of policymaking strategies.

Presentation of the case studies, method on different scales

The project has been developed through the selection and analysis of specific case studies. The selection of the cases followed specific criteria:

- Buildings from different historic periods;
- Isolated and grouped buildings;
- Buildings located in non-original environment or in non-authentic environment.

The choice and identification of these criteria has been necessary and very useful in order to obtain a wide range of architecture located in different contexts. The historical period, the framework in which they are located, and the presence or absence of active protection systems have been fixed and taken in consideration for the analysis and documentation of each case.

In order to illustrate the activities and the method used this paper focuses on two of the most significant case studies analysed. They are both situated in the municipality of Oulu. They origin from different historic periods and placed during different urban processes. Even if their characteristic features differ significantly, they are presented together here as a demonstration of the wider applicability of the research method used. The first case is the historic wooden neighbourhood of Raksila and the second one is the modern Villa Lehmus with the interesting riverside wooden sauna, both designed by Alvar Aalto and located in Laanila area (Figure 1).

The historic wooden neighbourhood of Raksila

The wooden railway station along with the new connection was opened in Oulu is dated on the 1888. On the other side of the new railway, a suitable housing area became Raksila district. The wooden neighbourhood of Raksila was planned during the early XX century as a regular district, characterized by wooden buildings aligned along the main streets. The image of this place did not change during the years and today it appears almost in its authentic configuration (Figure 2). Despite this, over decades new buildings and services for public uses (such as supermarkets and sports centres) segregated the area and today the entire neighbourhood does not interact with the rest of the city (Figure 3). Well-preserved wooden family houses characterize the area, surrounded by private gardens with the main accesses located along the main streets. At the time of the investigation, the area had not specific guidelines of interventions and technical recommendations for the preservation of its authenticity[4].

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[4] Özlem Özer-Kemppainen (edited by)"Historiallisen Kaupunkimiljöön Suojeluatlas: Oulun Raksila" Oulun Yliopisto: Oulu. 2017. ISBN 978-952-62-1786-4. ISSN 2342-9062.

Figure 2. The map of Raksila updated on the base of the point cloud from the digital laser scanning survey. The map includes all different levels of information, from the measures to the characteristics of buildings, streets and vegetation.

Figure 3. Urban development of Raksila district. First nucleus is in yellow. Residential buildings from '50-'60 are marked in red. Services buildings from '60-'70 are in blue color.

In some parts of Raksila, it is possible to identify inaccurate interventions such as addition of volumes, use of non-original materials and an organization of the private yards not totally coherent with the original urban plan of the place. For all these reasons, the survey of Raksila has involved both the architecture and its environment as two essential parts of the same research topic. The analysis has the role to investigate and define the values and aspects, which need to be considered for the preservation of this heritage.

Alvar Aalto's work of Villa Lehmus and the wooden sauna in Laanila area
Villa Lehmus was designed by Alvar Aalto within the wider project concerning the Typpi Oy factory. In 1950, the Finnish State bought the area starting a new industrial production of formic acid and commissioned Aalto for the master plan of the area. The project had to be composed in two parts: the industrial area and the residences for the workers, located along the riverbank of the Oulu River. The original masterplan designed by Aalto included residences for workers, engineers and managers with additional services. Through the decades, several masterplans were produced after Aalto, the latest from 1999, when the urban plan was modified[5]. The industry was built with a horizontal rhythm referring to the natural image of the Nordic forest. The architect placed the buildings in a freeway effect, following the functions and needs of the work and workers (Figures 4 and 5).

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[5] Jari Jetsonen and Sirkkaliisa Jetsonen, *Alvar Aalto Houses,* NY: Princeton Architectural Press, 2012. pp. 154-156. ISBN: 9781616890810

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Figure 4. The Typpi Oy site area in Laanila area. In the bottom part of the image, close to the riverbank, two circles define the position of Villa Lehmus and the wooden sauna.

Figure 5. External and inner images of Villa Lehmus. Orth images elaborated from the point cloud obtained from the digital survey performed. The point cloud is entirely navigable and measurable. The acquisition of the colours improves the quality of the results and the amount of information.

Standard elements, such as window frames and use of red bricks were adopted as main design solutions for the entire area, and in practice, they play a fundamental role in the harmony of the whole place. The project of the villa was realized with a simple square-shaped system located in a green site close to the riverbank.

Externally the design of the two flaps of the roof gives a particular and unique character to the image of the villa (Figure 5). The flap from the entrance side is wider and linear, while the side of the garden is narrower and follows a concave metal recess profile. The free roof geometry was a typical element for Aalto during the 1950s. The exterior is in red brick walls combined with white painted parts that better define the volume of the house. A continuity of spaces characterises the inner distribution of the house, both in terms of the physical connection and visual continuity. The ground floor is composed of the living area, with a large dining room and a more private sitting room with a fireplace area. On the first floor, there are four bedrooms located around a common living room with a second fireplace. On the first floor, there is also an open terrace, punctuated by an orderly rhythm of white painted pillars. The essence of the Villa was described directly by Aalto while writing to the Lehmus Family:

The aim has been to create a spatial whole of rooms: a hall, a living room, a dining room, to fit the beautiful surroundings. From the hall the circulation diagonally reaches the dining room and divides the living room into two: a sofa group by the window and a more intimate corner by the fireplace that architecturally dominates the room. The main staircase leading upstairs opens to an upper hall in which there is a hobby corner and a fireplace.

(Jetsonen J. and S., 2012).

The closer wooden sauna is an extraordinary example of log architecture typical for the Ostrobothnia and central Finnish wooden structures in which the traditional construction system is blended with a modern design of the spaces. The volume is simple, a unique rectangular floor plan, located close to the riverbank. The entrance is to the opposite side of the shore even if a secondary entrance is located also from the waterside. The inner distribution reminds the typical circular shell shape, in which from the public dimension, room by room, the person is conducted to a more very private and intimate dimension. The fireplace room offers a wonderful view on the landscape through the presence of big frames.

Research approach and criteria

According to the *UNESCO's Convention* concerning the *Protection of the World Cultural and Natural Heritage*, today there is an urgent need to define precise and effective strategies for a better understanding of the environment and of the historical buildings in order to guide the new urban dynamics in a more coherent direction[6]. Conservation and restoration processes, together with the need to create a detailed documentation, cannot be just a passive practice dedicated merely to the application of general standards. They need to be considered again as a *creative act* with the aim to rediscover the ethics in the work of the architect surveyor. The strategy adopted by the Action Plan for the Implementation of the World Heritage Convention 2012-2022 clearly highlights the new values:
Credibility has been determined as the most important value in planning the future and ongoing operations [it] requires relying on the best available professional competence when making any choices. […] The objectives also include the establishment of a world heritage system that will remain transparent, fair, responsible and efficient in an ever changing world[7].

For this reason, experts need to approach the new digital tools available in the field of survey and representation and put the processes of knowledge into a new dynamic practice, essential for the protection of the built heritage and its safeguarding for the next future generations. The analysis of a context and its planning need today to assume again a strong *cultural role[8]*.
The understanding of an architectural object can only take place through a careful analysis of the tangible aspects and the intangible values through the implementation of all the possible instruments, strategies, actions and expertise. Technology is literally revolutionizing the approach of researchers, transforming

Conservation and restoration processes, together with the need to create detailed documentation, cannot be just a passive practice dedicated solely to the application of general standards. They should be considered again as a creative act.

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[6] *The objective of the World Heritage Convention is to recognise and secure the value of key natural and cultural heritage sites and ensure their preservation for future generations though cooperation between the peoples of the world. The Convention sets out the duties of States Parties in identifying, protecting, conserving and presenting cultural and natural heritage within their territories and passing them on to future generations. According to the convention, there is a demand for resourced public or private bodies, research and documentation work, and educational programmes and information dissemination*". Ministry of Education and Culture, "Our Common Heritage. For a National World Heritage Strategy 2015–2025*". p. 6. ISBN 978-952-263-354-5. Finland, 2015.
[7] Ministry of Education and Culture, "Our Common Heritage. For a National World Heritage Strategy 2015–2025*". p. 8. ISBN 978-952-263-354-5. Finland, 2015.
[8] "*The objective of the World Heritage Convention is to recognise and secure the value of key natural and cultural heritage sites and ensure their preservation for future generations though cooperation between the peoples of the world*". p. 6. ISBN 978-952-263-354-5. Finland, 2015. Ministry of Education and Culture, "Our Common Heritage. For a National World Heritage Strategy 2015–2025*". p. 6. ISBN 978-952-263-354-5. Finland, 2015.

theoretical analysis and investigation into something dynamic and more practical. Within digital database, it is possible to link different levels of information putting them in a mutual relation helping the elaboration of new significant considerations. Investigations, inventory catalogues and digital survey support the understanding of the development of architecture, neighbourhood or city, as well as new interpretation of restoration theories[9].

The main scientific question is:

Can technology enhance preservation purposes?

The goal of this comparative study is to find out to which extent the latest laser scanning technology can serve as a tool in smaller and larger historic preservation sites and thus support the aims of the international preservation documents. This study uses the methods of qualitative research in order to the hypothesis that laser technology has drastically improved our possibilities to preserve the fragile wooden architectural heritage. This research proposes an approach in which all the above-mentioned considerations have been put in an interdisciplinary system of documentation. The work approach has highlighted not only the architectural value of the cases, but also it has increased and improved their cultural, symbolic and environmental importance. In both cases in fact, the elaboration of a careful digital survey, navigable and composed by different levels of information and details, has been the first action in order to define a precise 3D model and metrical database able to support different levels of analysis.

Digital survey method for the documentation of the Nordic Heritage

Two main objectives settled the research for defining the structure of the documentation:

- Improvement and development of updated digital survey techniques applied specifically on Nordic Heritage;
- Elaboration of detailed inventories and analysis with the main scope to increase the state of the art concerning the cases analysed.

In both Raksila and Aalto's work cases, the study started with a careful planning of the practical phases involved. Different scales of investigation, which from the general aspects include progressively the details, have produced different levels of analysis and consequently different levels of values. This system of investigation has contributed to the elaboration of a multidisciplinary research that considers the object in its whole material and immaterial configuration.

Three main criterions guided the investigation:

- Preliminary recognition of the area, with archival investigations;
- Definition of objectives, expected results and limits;
- Organization of the practical survey activities.

In Raksila case, the survey has been performed at the urban scale, considering the relationship between historic architecture and new buildings. The strong characterization of the houses has been fully documented by using the laser scanner technology (Figure 6), allowing the creation of a detailed metrical dataset that has produced inventories and typological analysis of the architectural and environmental elements[10]. For the Laanila case, the survey has been performed at the architectural scale considering its surrounding for an accurate description of the landscape as a valuable additional characteristic of the place. The point cloud obtained is composed by all the inner and exterior parts of the buildings

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[9] S. Porzilli, S. Bertocci, *3D Digital Systems for the Documentation and representation of the wooden Heritage between Finland and Russia. Survey methods and procedures for detailed analysis*. In F. Bianconi, M. Filippucci (edited by) "*Digital Wood Design. Innovative Techniques of Representation in Architectural Design*", Lecture Notes in Civil Engineering book series, vol. 24. Springer Nature Switzerland AG 2019 Publisher. pp. 565-593. Print ISBN 978-3-030-03675-1

[10] Compare with S. Porzilli, A-M. Ylimaula, *Theory in Practice. Digital documentation in developing effective methods for preserving cultural heritage. The study case of Raksila wooden neighbourhood in Oulu*, Finland in "Tangible – Intangible Heritage(s) – Design, Social and Cultural Critiques on the past, present and the future" International Conference at the AMPS, Architecture_MPS; University of East London June 2018. Proceedings of the Conference: AMPS Proceedings Series 15. pp. 225-234.

Different scales of investigation, which from the general aspects includes progressively the details, produce different levels of analysis and consequently different levels of values.

with the additional acquisition of the real colors[11] (Figure 7). During the preliminary recognition, it is important to define the activities involved in the process to elaborate operational schemes in order to identify all the different typologies of the data obtained and to understand the achievable results. "Input-Output" schemes, tables and lists have helped the researcher in the organization of the work giving important insights in the elaboration of cross checks and transversal implementations (Figure 8).

Figure 6. The case study of Raksila neighbourhood in Oulu. Overlapping of the point cloud in false colours on a real picture of the place.

Figure 7. The Laanila Wooden Sauna in Oulu. Pictures of the point cloud obtained from the digital survey. The point cloud is entirely navigable and measurable. The acquisition of the colours has improved the quality of the results and the amount of information.

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[11] The laser scanner used, a Z+F Imager 5010X, has an internal camera, that is used for capturing spherical pictures of the surrounding from each scan position. This tool gives the possibility to obtain a photo documentation of the place scanned and it allows the software to re-colour the point cloud with the real colours extracted from the pictures acquired.
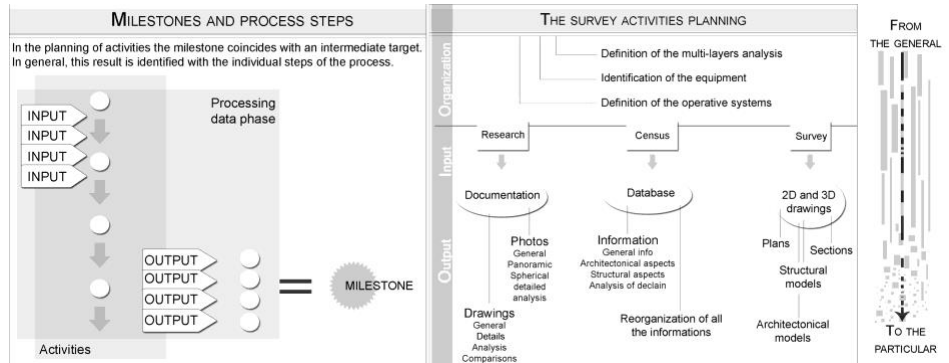
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Figure 8. Schemes and process steps. In the general planning of the activities, it is fundamental to understand the types of "input" and "output", the objectives to pursue and the expected results in order to define procedures and integrate the different relevant methods.

During the second and third steps, the identification of the different objectives and expected results helped the recognition of the scale of investigation and the organization of the practical activities that, in general, go from the general aspects includes progressively the details (Table 1).

From the general	➤	To the particular
Analysis of the existing sources	Goal setting (elaboration of the main purposes of the research)	Structuring of activities with an "input-output" method. Each activity generates results (=output) which should represent the "input" of the next phase
Analysis of the context (territorial scale)	Survey of the architecture (architectural scale)	Analysis of the details (detail scale)
Identification of the of the authenticity of the place	Analysis of the architectural values	Documentation of the particular elements

Table 1. Organization of the activities. The process of recognition and management of the activities follow a method, which from the general goes to the detail deepening each task of the work.

According to the defined objectives, the second part of the work has involved the practical activities on field focused in collecting updated information and metrical data:

- Laser scanner survey, from which obtain a complete point cloud of the architecture and its environment;
- Topographic survey, in order to georeference the point cloud and allocate different parts of point clouds in a mutual geometrically and georeferenced correct position. The topographic survey helps also in the reduction of the error during the registration phase of wide areas;
- Direct survey by using simple tools for measuring details and parts which cannot be surveyed by the laser;
- Photo Documentation for the elaboration of the photo-maps of the facades, sections and floor plans;
- Photo modelling reconstructions, by using the possibility to reproduce from 2D photos 3D models with the so-called *structure-from-motion* process;
- Census activities, for the creation of descriptive inventories and technical atlases of the buildings investigated;
- Additional activities: landscape analysis, studies related to environmental and cultural aspects by using interviews and external supports from other specialized technicians.

For both the cases, survey activities have produced a big amount of data and an updated documentation, characterized by different typologies of information:

metric databases of the point clouds, vector 2D drawings, 3D models and thematic maps produced by the combination of the different levels of information.

Figure 9. The private entrances of the houses in Raksila. Picture from Teuvo Pakkalan Street.

The laser survey of Raksila has been developed by moving the instrument along the streets following an open path with a *zigzag* movement (open polygon). Each block of houses has been surveyed in all its four sides except for the inner areas characterized by private gardens (Figure 9). At the same time, a massive photo documentation produced descriptive photographic archive, divided and organized in specific folders with the use of a codification system. The codification of the folders followed the code system already used by the Municipality of Oulu for the classification of the buildings.

The photo documentation has been performed by making pictures all around the volume of the house and then concentrating the analysis to the details. The inventory for each building has been elaborated on site by using premade tables on sketch notes. All the information has been then put in mutual dialogue through the support of a 3D model. This step produced thematic maps and interesting consideration for the understanding of the place with its intrinsic dynamics (Figure 10).

The case study of Villa Lehmus and the wooden sauna have been developed at the architectural scale. In this case, the instrument has been moved trying to produce closed paths/polygons around the rooms. This procedure allows the reduction of the error during the registration phase[12].

For all the case studies, a precise organisation of the scan positions was defined in advance in order to set the practical activities and quantify the amount of work/hours necessary on field. This procedure is recommended because it gives a real and practical understanding of the work and obligates the surveyor to elaborate in advance all the needed strategies useful to carry out the research and to obtain the expected results.

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[12] The term "registration" represents a technical way to indicate the operation of connections of the singular scanwords made during the re-processing of data after the laser scanning operations on field.
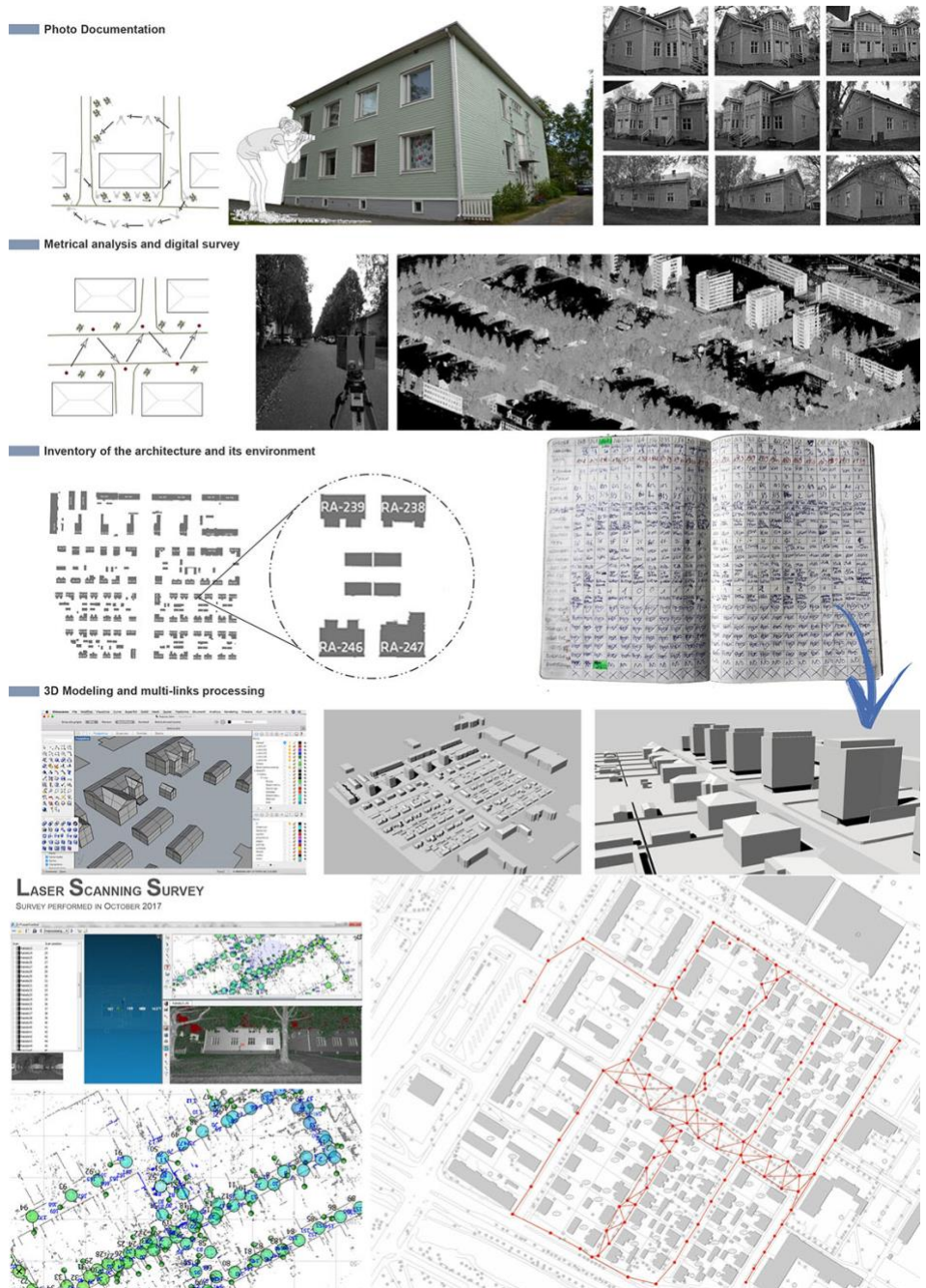
Figure 10. Synthesis of the activities carried out for Raksila case. The analysis started with the laser scanning survey, supported by an intensive photo documentation. The census for the elaboration of the inventory of the architecture uses the same codification system adopted by the municipality of Oulu. A 3D model elaborated during the postproduction has represented the box in which put different information in a mutual dialogue.

Specific factors determinate the organisation of the scan positions, the main are:

- The presence of obstructions, which obligate the surveyor to move the instruments into different positions in order to avoid the possibility of missing data;
- The necessity to create the right connections between external areas and inner parts;
- The necessity to survey the object investigated with the highest resolution, avoiding, when possible, shadows and holes in the point clouds.

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For all the cases, the instrument used is a terrestrial 3D laser scanner Z+F IMAGER® 5010X able to perform works with high resolution both outdoors and indoors. The machine has an incorporate GPS system able to estimate on field the current scan positions along the work. This item support the recognition of the scan positions systematically and track the movements while carrying the device to the next position. It is a sort of "registration" on field that helps the registration algorithm finding the correct solution. In any case, the registration can be verified in post-production phase and can be corrected in order to decrease possible errors (Figure 11).
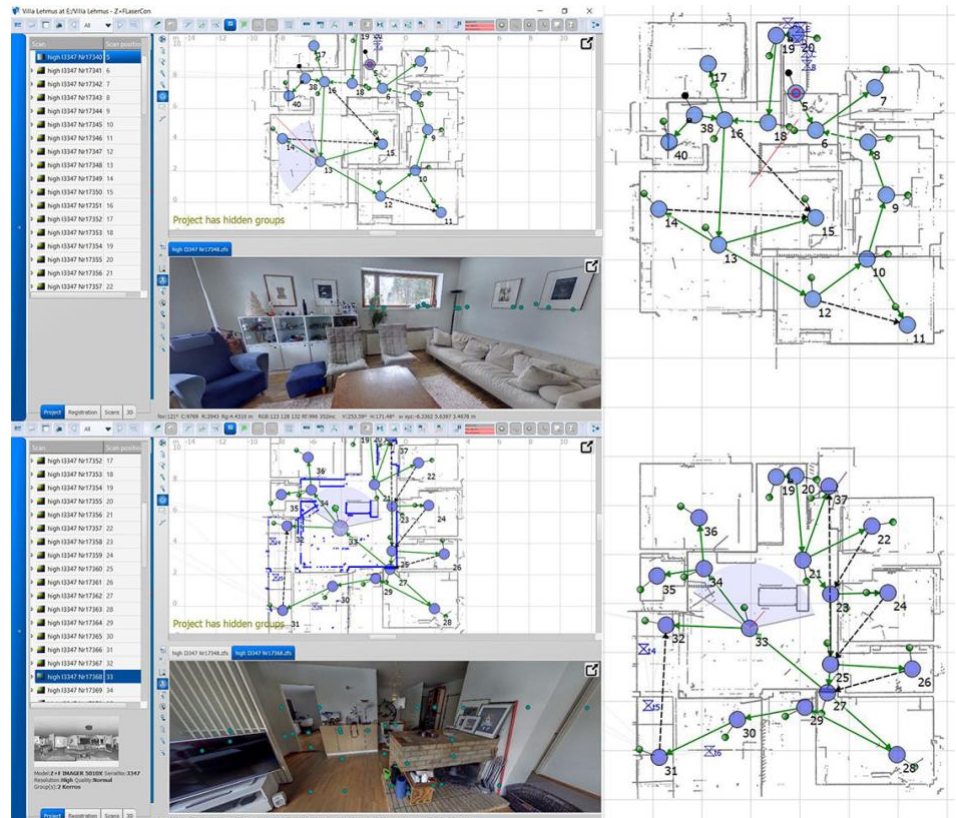

Figure 12. Images from the software ZF Laser Control used for the registration of the point clouds. The window of the programme gives the possibility to visualize altogether the list of the scan words (left side), the top view of the area surveyed with the scan positions with blue balls and a 3D visualization of the singular scan with the application of the true colours. The model is measurable and navigable by double clicking on the blue balls. Each scan has a progressive number and the green links identify the path used by the surveyor during the activity on field.

The registration process in post-production phase has been based on three different methods:

- Use of targets: they are specific points, which give the possibility to elaborate geometrical links between different scan words during the registration operations. The target needs to be visible in all the scans involved in the process of registration. With ZF lasers, it is possible to use black and white paper targets, metallic orientable targets on tripods, or sphere targets.

- *Cloud-to-cloud* alignment system: this method can be used only when wide surfaces are acquired by different scan positions. The software used for the registration gives the possibility to make a geometrical pre-alignment of two scans just by moving and overlap a scan to another one. When the pre-alignment is done, the software can proceed with the accurate final alignment recognizing the same surface in both the different scans. This method needs to be done with attention and only in

those situations where the point clouds have enough areas for overlapping each scan to another one;

- Automatic alignment by using Autodesk Recap: This software elaborates geometrical registration by overlapping common surfaces. The software can calculate the precision of the registration giving to the surveyor all the necessary parameters useful for a careful evaluation of the result. For this reason, the operator is the last who can accept and start the process. After accepting, the operation cannot be deleted.

In some cases, the three methods are used concurrently in order to increase the level of accuracy and for reducing the geometrical error (Figure 12).
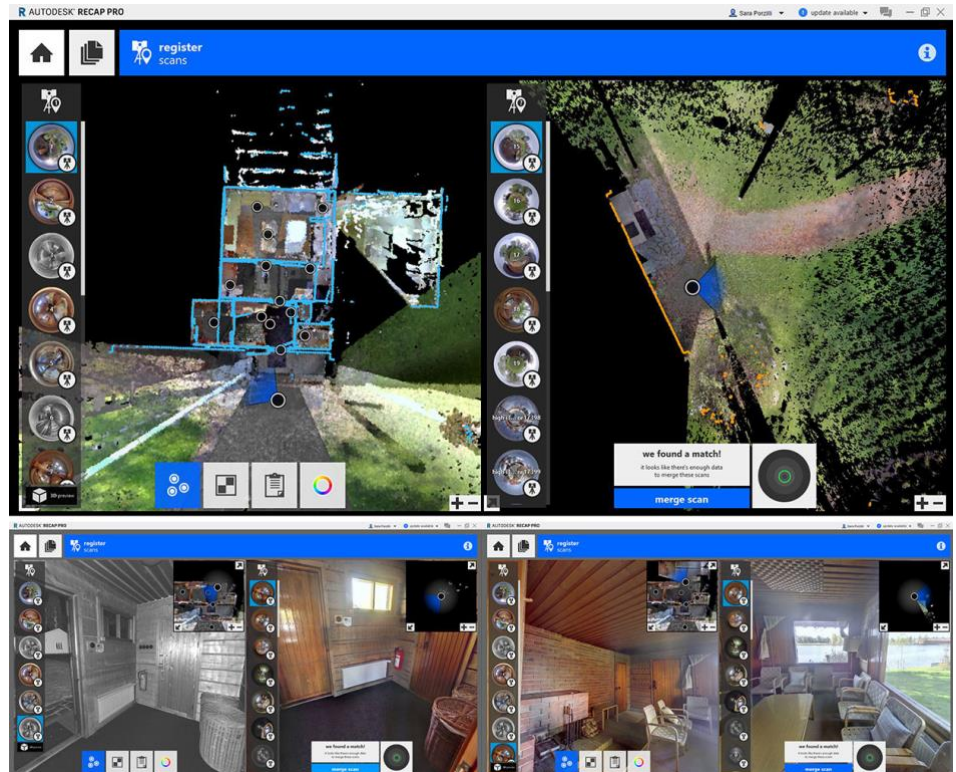

Figure 12. Screen shots of Autodesk Recap software related to the survey of the wooden sauna in Laanila. The programme allows the visualization of the list of scans on the left side, the navigation in 3D through the central window and a general recognition of the whole project through a view map allocated on the top right part of the screen.

Results obtained: How digital documentation can support the identification of values and help the preservation?

The work done on the two cases has produced new insights on digital survey system and an inedited knowledge regarding the place documented. The postproduction phase has produced 2D and 3D drawings, exploring the potentialities of the latest software and their methods of application. Each case has now an updated technical documentation composed by:

- Raksila Project. Documentation and survey of all the street fronts of the neighbourhood. Analysis of the architecture and its environment for the elaboration of updated environmental sections (metric scale 1:50). Census and inventories of the buildings with detection of the characteristics related to the main structures, architectural elements and details, state of conservation with recognition of possible damages. 3D model of the whole area in order to link the information collected in the census analysis with the singular building represented in 3D.

Environmental sections have vector CAD drawings and photomaps of the buildings elaborated thanks to a detailed photo documentation. The resolution of the photomaps is 1:20.

- Aalto's works of Villa Lehmus and the wooden sauna. Documentation and survey of the entire building from both exterior an inner parts (Metric scale 1:10). Analysis of the architecture with detailed drawings, constructive details with direct measurements (metric scale 1:5). Elaboration of a photo documentation for each room and for all the exterior facades. Elaboration of the point cloud with a specific software for allowing an interactive navigation through the rooms and through the external areas (Figure 13).

The application of different analysis to the same object of investigation has created an interdisciplinary work. The elaboration of cross-themes generated the identification of new interesting insights and features.
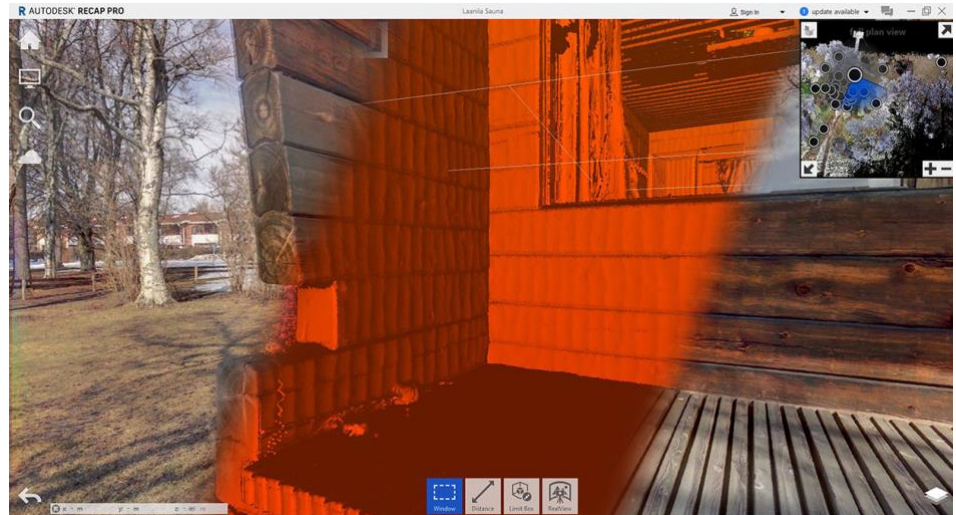

Figure 13. The wooden sauna designed by Alvar Aalto. Different levels of visualization of the point cloud by using Autodesk RecapPRO software. Note the high resolution of the digital survey of the surfaces. In the point cloud it is possible to appreciate the hand craft work which has been done on the logs. Overlap of three different visualization. From the left side: real picture, false colours, real picture applied on the point cloud.

The application of different analysis to the same object of investigation has created an interdisciplinary work. The elaboration of cross-thematises generated the identification of new interesting insights and features of the entire place (in the case of Raksila) as well as of a singular architecture (for Villa Lehmus and the wooden sauna).

For Raksila case the elaboration of all the street sections, combined with the census activity have produced a precious framework of the actual situation of the urban area. 2D drawings and information contained in the inventory have been linked through the elaboration of a 3D model, with the role to be a sort of box containing all the information (Figure 14).

The elaboration of the sections started with the creation of the cut planes on Cyclone software, which is specifically dedicated in the handling of point cloud databases. From the point cloud, orthogonal images (i.e. orthoimages) were produced in order to get a representation of the fronts in real scale and without any distortion produced by perspective visualizations. The vector redrawing has been elaborated through the use of software as AutoCAD and ArchiCAD, on the basis of the ortho images correctly positioned on CAD space. The next part has been devoted at the elaboration of the photomaps of the facades by using the real pictures collecting through the photo documentation on site (Figure 15).
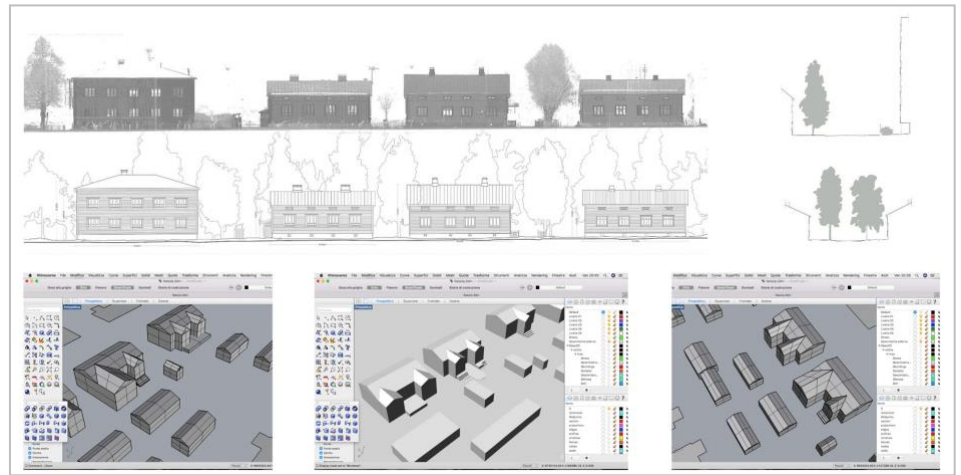
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Figure 14. Work in progress for Raksila case. From the point cloud, it is possible to produce 2D CAD drawings and link them to 3D models by using different software.

Figure 15. Description of one street front of Raksila neighbourhood. CAD drawings allow the check of measurements. Photomaps define the real image of the place and give information on colours. The map redrawn from the point cloud has been enriched with the description of the green system of trees, paths and roads with identification of different materials.

Figure 16. Example of digital inventory for the description of buildings in Raksila. The record card includes all the information collected on field through the survey, CAD drawings, 3D modelling, investigation on site and historical info.

All the information produced created a detailed descriptive card for each building able to give different levels of specifics. Each building is recognized by a specific

code, which has been adopted by the already used codification system used by the municipality of Oulu. For this case, the card has been designed in vertical direction and it is divided into four parts. From the upper part there is a general recognition of the building with its identification on the map, a view, volumetric 3D representation, 2D Cad drawing of the main front and general info. The second part is related to the architectural and structural details, from the typology of the material used, until the description of frames. Third part is composed by images related to details and possible presence of damages. The bottom part is dedicated to the description of the private garden around each building, fixing the number and distribution of the secondary volumes and trees. For Villa Lehmus and the wooden sauna cases, the approach has been similar, considering the different metric scale. The digital survey constitutes the metrical database from which elaborate all the updated documentation. The restoration requires to analyse in detail all the elements, structural details, architectural solutions, electrical and water plants up till the finishing works, i.e. floors and tiles. An inventory and catalogue of all these elements has been defined by using the same method and approach explained in the Raksila case (Figure 16). Each element is identified by a specific code in which it is possible to recognize the specific floor and room. A general map guides always the identification of the specific place inside or outside the house helping the understanding of the catalogue. For this reason, the codification system represents an extremely important element in this process.

Digital documentation and the Madrid Document for an Integrated Conservation

The research activity presented starts from the need to find and refresh a renewed link between the theoretical documents on restoration and the everyday practical activities of architects and experts involved in the processes of protection of heritage. Analysing the current situation of the legislation in the field of restoration and conservation of the heritage, the difference between theoretical statement and detailed explanation of the practical procedures appears evident. The theoretical part is quite comprehensive[13]. However, the application of these Principles is still not easy. Of course, the awareness has grown, but the use of integrated conservation f.ex. has led to different interpretations in many countries.

1883	The Italian Conservation Charter, Camillo Boito
1931	The Athens Charter
1932	The Italian Restoration Charter, Gustavo Giovannoni
1938	Instructions for the Restoration of Monuments
1964	The Venice Charter
1972	The Italian Restoration Charter
1975	European Charter of the Architectural Heritage
1975	Declaration of Amsterdam
1987	The Washington Charter on the Conservation of Historic Towns and Urban Areas
1991	The Florence Charter on European Heritage
1994	The Nara Document on Authenticity
2008	Charter on the safeguarding of Palestinian historic towns and urban landscapes, Bethlehem
2011	The Madrid Document

Figure 17. The main charters and international documents consulted. The refers to the main documents analysed in the ambit of the restoration and protection of heritage.

All of the documents listed in figure 17 put a special emphasis on several different aspects, but they all deal with the issues of recognizing and evaluating the tangible and intangible heritage.

These international charters and documents are published in order to preserve the historical built environment and the landscapes for the future generations. As in preservation and restoration activities, mere inventory of the building heritage nor the technical building surveys can ignore the maybe most important part, the value assessment. And as soon as values are discussed, also disagreements

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[13] In this list, only the main documents are mentioned.

appear. This is not the only field where value paradoxes exist. In the preservation activities there are material values as well as inalienable values. In architecture, the value of art is not just the price, which is paid for it. Otherwise the restoration of the Parthenon f.ex. would not be possible. So, some values transcend above time and place. Moreover, those we cannot catch with the most recent technology, not to speak of laser scanning. Nevertheless, this avant-garde technology is very suitable for enhancing the technical condition assessment and thus opening our eyes also to a wider value assessment. This is one addition to the toolbox of historic preservation and restoration.

The Madrid Document (2011) linked to the research

Eight articles divided in thematic subjects compose the Document. Each one is divided into variable number of subparagraphs. Below are some of the most interesting parts that have been analyzed while performing the practical activities of the research. All this work started by sharing the fundamental ascertainment explained in the foreword of the second edition:

Too many of the heritage structures and buildings of the twentieth century are at risk. They are threatened by a general lack of appreciation and recognition, and all too often they are pressured by redevelopment or unsympathetic change.

- ***Art1.** Identify and assess cultural significance.*
  Identification requires always a type of documentation able to investigate even all the most detailed aspects of the heritage. New technologies, digital software and an interdisciplinary approach to the object investigated can help the elaboration of high quality analysis as shown above, offering accurate and precise description of all the necessary elements that will guide the elaboration of the technical solutions.
  - *1.1: Use accepted heritage identification and assessment criteria.*

Within the process of recognition and analysis, it is necessary to identify all the characteristics of the heritage. Some of the characteristics to be recognized were originality, typology, authenticity, identity, narrativity and reversibility. The research presented tried in fact to build up an inclusive method in which historical documentation is linked with the actual state of the place.
  - *1.2: Identify and assess the significance of interiors, fittings, associated furniture and art works.*

For the analysis of Villa Lehmus the laser scanning survey and the navigability of the point cloud give the opportunity to have a realistic and complete description of the whole building including also its furniture and art works. They are all visible, represented with real colors and measurable with the help of simple toolbars available also in the free versions of the software used.
  - *1.3: Identify and assess the setting and associated landscapes.*

The documentation of a place involves also its surrounding and landscape. Laser scanning survey is able to acquire detailed information of architecture as well as represent vegetation and open areas. In the cases presented, the analysis has always included the presence of the external areas through the elaboration of detailed environmental sections and inventories of the green areas.
  - *1.4: Proactively develop inventories of the architectural heritage of the twentieth century* […] *through systematic surveys and inventories.*

The research has explored the benefits of digital inventories testing specific software. For Raksila case *Filemaker* software has been used that gives the possibility to design detailed card. List of values, organization of the sheet paper and disposition of the information can be all handle and the compilation can be done by using a tablet straight on field.

- ***Art2.** Apply appropriate conservation planning methodology.*
  - *2.1:* […] *Adequate research, documentation and analysis of the historic fabric are needed to guide any change or intervention.*

PEER-REVIEWED ARTICLE

The importance of research and documentation is expressed earlier in this article Even if there are many business companies capable of performing digital survey and documentation, still a theoretical investigation of the sources is essential in order to create an updated and careful analysis of our Heritage.

> ▪ *2.2: Use a methodology that assesses cultural significance and provides policies to retain and respect it, prior to commencing work.*

The *cultural significance* of a heritage passes only through the identification of its tangible and intangible elements. Starting from careful analysis of the historical and archival material, the analysis of the cases presented have deepen the actual situation, investigating wide scenarios of different level of information.

> ▪ *2.3: Establish limits of acceptable change. For every conservation action, clear policies and guidelines should be established before starting any architectural intervention.*

The analysis presented addresses the elaboration of planned activities of investigation and documentation in order to elaborate guidelines and consolidated methods for the elaboration of successful conservation actions and policies. The limits of acceptable change differ from city to city, but co-operation with the city has been part of this research.

> ▪ *2.4: Use interdisciplinary expertise.*
> ▪ *2.7: Archive records and documentation.*

Nowadays a restoration project requires the synergy of different experts. For this reason, the research has been able to produce and organize the documentation, which gives the possibility to be consulted and explored by all the experts involved in the same process. The order of the information acquired, the type of files and ways of storage, the elaboration of a codification system for the identification of the elements, they all contribute to the search for information by a large scale of users.

- • *Art3. Research the technical aspects of twentieth-century architectural heritage.*
  - ▪ *3.1: There is a need to research and develop specific repair methods [...] Original/significant materials or details should be recorded if they have to be removed, and representative samples should be stored.*

Through survey investigation and re elaboration of the data acquired it is possible to fix precious aspects of a heritage especially in case of removal or modification. A metrical database such as a point cloud constitute a real situation existed keeping a tridimensional, measurable and reliable recognition.

- • *Art9. Promote and celebrate twentieth-century architectural heritage with the wider community.*

For the cases illustrated, dissemination of the research material has represented an important task of the process. For the Raksila case a public meeting with the inhabitants helped the dialogue between the municipality and people from Raksila. All the entire research was presented through videos, posters, people had the chance to understand the value of the place in which they are living, and at the same time, they became active partners in the process of protection this heritage.

Concerning the case of Villa Lehmus, the owners, interested in a restoration project on their villa, got a full description of their house, supported by updated archival information and technical drawings available for the technicians and the architects who will develop the project.

Conclusion

This conducted project has confirmed that today technicians and experts involved in the protection of the built heritage have a strong and powerful new set of equipment ready to support and improve their operations. The study of the

architecture and its environment, the need to acquire the knowledge of a place through archival studies and historical analysis increase and put additional essential demands to the digital survey operations. According to the advancement on digital technology, also guidelines and methods for preservation need to be updated and implemented by explaining in a more effective way the contribution that digital methods can offer to documentation.

There is an important challenge to the research in operating within these principles, which are listed in the international documents mentioned above, this challenge concerns also the supporting technicians and operators involved in different restoration and preservation activities. We need to remember, that the mere technology does not rescue our built heritage. It also needs international principles, restoration philosophy and common sense.

Today the main damages to our heritage are created by the lack of education in understanding the cultural context[14].

Historical memory and preservation of a heritage passes also through a collective validation of the cultural significance that a heritage brings with itself. For this reason, the three strategic pillars adopted in Finland through the *National World Heritage Strategy 2015–2025* for the heritage protection are so fundamental in our everyday work:

- The value of the world heritage sites;
- Networks of stakeholders;
- Activities creating new outcomes

With the consciousness that today *"the current and future world heritage sites and their universal value form a sustainable and fundamental pillar for the strategy. It is also supported by the ever-expanding, responsibly operating network of stakeholders and the increasingly diverse activities that create new outcomes[15].*

This research intends to promote the importance of the triangle theory-practice-action trying to benefit as much as possible from our digital era. Spreading a documentation such as those produced with the two cases presented, will hopefully contribute to the common awareness of our cultural values, of our heritage and thus also of the importance of its protection.

Acknowledgements

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[14] As declared in the foreword of the Madrid Document (2011). Web reference: http://www.icomos-isc20c.org/madrid-document-archives/

[15] Ministry of Education and Culture, "Our Common Heritage. For a National World Heritage Strategy 2015–2025*". p. 18. ISBN 978-952-263-354-5. Finland, 2015.

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Enabling Settings for Learning:
Observations Related to Design Communication

Mikko Vesisenaho
University of Jyväskylä
mikko.vesisenaho@jyu.fi

Mirja Lievonen[1]

Abstract

The paper addresses (re)design of educational premises. As *learning situations* diversify along with advancing ICT practices, an ever more challenging question for spatial design is: *what* provides *enabling settings* for learning? Apart from understanding the user requirements, the question is also about how well the settings are embedded into the local practices, and how various constraints, trends and potential opportunities are taken into account. In a (re)design process, multiple stakeholder perspectives are involved, each constrained in their expertise, way of articulating the topic area, and terminology used. That poses a challenge to design communication. Dialogue is a key for different stakeholders to learn from others' points of view, and to establish a common ground. Yet, if participants of the process do not properly understand other stakeholders' contributions, communication remains inefficient. The authors of this paper focus on a methodological question: how could different stakeholder perspectives be brought together to best capture information relevant to the spatial design of the educational settings? Could an articulation tool help to focus attention on relevant issues in terms of spatial design and thereby, to map contributions within a bigger picture of the project? The authors of the paper take *learning situation* as a core concept as they seek to compose a simple articulation tool to aid dialogue in a (re)design process between key stakeholder perspectives.

Keywords: learning situation, education, learning setting, design process, stakeholder perspective, dialogue, learning environment, learning space

Diversifying learning landscapes

Over the past few decades, learning environments have diversified along with the influx of educational technology[2] and digitalisation. In formal education, curricula have been updated to meet emerging requirements. The 21st century skills, which has been partly criticized, include a) ways of thinking[3], b) ways of working[4], c) tools for working[5], and d) living in the world[6]; these have been regarded as part of the change (Binkley et al., 2012; Griffin et al., 2012). Digital skills are seen as a prerequisite to survive in the midst of an accelerating technological change. As a result, new content such as programming has been included into school curricula (Finnish National Board of Education, 2014; Voogt et al., 2015). Furthermore, there seems to be a growing digital influence within test sessions

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[1] Both authors have equal contribution to the article. The contact information refers to Dr Vesisenaho, who is active in the academic field whereas Dr Lievonen is retired.

[2] Educational technology has been defined as 'the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources' (Januszewski & Molenda, 2008)

[3] Creativity and innovation; Critical thinking, Problem solving, Decision making; Learning to learn, Metacognition

[4] Communication; Collaboration

[5] Information literacy; ICT literacy

[6] Citizenship; Life and career; Personal & social responsibility

and examinations; to mention the Finnish digital matriculation examination fully implemented in 2019 as an example.

Focusing on the settings associated with these changes, a traditional classroom has been replaced in many places with more open learning spaces (Osborne, 2013). The methods of instruction have developed accordingly; the role of a teacher has been shifting towards a facilitator of learning, and the phenomenon-based curriculum has been promoted (e.g. Finnish National Board of Education, 2014; Lonka et al., 2018). The student population again has become more multicultural. In addition, multiple digital learning resources have emerged worldwide (e.g. MERLOT https://www.merlot.org/, MITX https://www.edx.org/school/mitx, and a new Finnish Library of Open Educational Resources (OER) https://aoe.fi/), and mobile devices are used in many learning sessions. During breaks again, students may focus on their smart phones rather than real-life person-to-person communication. All in all, a rapid change is taking place in the daily practices at school – and who knows what practices may be lurking just around the corner. Concurrently in business life, the role of innovation and competitive advantage is pointed out. Technological tool developers and service providers promote their products and services emphasizing their benefits also to the educational sector.

Educational researchers have been investigating, among other things, the usage and impacts of novel tools. Topics have included effectiveness in attaining learning goals as well as tools and techniques for assessment (Bull et al., 2016). The researchers also discuss the roles of pedagogy, technology and content knowledge, and how these are linked to each other (e.g. Kohler & Mistra, 2008; Kontkanen et al., 2016; Kyllönen, 2020). There have been also critical tones concerning the rapidly changing practices and the intensifying information flow (e.g. Moisala et al., 2016). In addition, there have been worried comments by teachers about the attention span among learners: students of today appear to have more of a challenge focusing e.g. on longer texts than those observed a decade or two ago.

The question of what provides enabling settings and functional affordances[7] for learning in the 21st century, is ever more complicated for the designers of the settings for learning.

In education, students and teachers traditionally represent the two key perspectives in their complementary roles. They are the ones these settings are designed for. Even though design is focused on the future, the transition always starts from the 'here and now' of a specific case: people whose work patterns and settings are concerned/affected, a local community and its spatial conditions and needs, as well as its social and cultural features. Due to a rapid contextual change, effectively matching student with complementary settings is an increasingly difficult issue to address in 21st century spatial designs (Lievonen & al., 2016; see Lievonen & Vesisenaho, 2013).

Many stakeholder perspectives are involved in and contribute to a (re)design process. Each of them has a different focus of interests and field of expertise, experience and knowledge background. Furthermore, each of them has their particular way of articulating and conceptualizing the topic area. People who have different expertise may actually have no proper common language to communicate their positions successfully. A problem is therefore, how such information that is relevant to spatial design could be captured from different actors' and experts' perspectives, pooling it best into the process. Attention should be given to the methods:

1. How could different stakeholder perspectives be coordinated in a way that supports spatial design in an optimal way?

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[7] We refer by functional affordances here mainly to what becomes possible to do in a learning situation through the use of ICT tools and systems.

2. What is the best approach in order for the outcome of design to meet user requirements, satisfy multiple constraints[8] & potentials and adhere to local practices?

We have participated in several redesign processes[9] where educational premises were updated to meet the 21st century educational practices. Reflecting on our observations and learning from those cases, we seek to find out how communication between different stakeholder perspectives could be aided to benefit spatial design. As an outcome of reflection, we compose a simple articulation tool to support dialogue between stakeholder perspectives in the course of a (re)design process. A bigger picture on learning, in a generations' perspective, provides underpinnings for our construction. In the instrumental consideration, human beings of today are equipped by evolution with sensory faculties and motor capacities similar to those past generations had. Yet, present and future generations use such natural apparatus for navigation in a hybrid environment that is filled with a plethora of technological systems and tools.

Theoretical background

When seeking to grasp learning situation from a spatial design perspective, we employed multidisciplinary theoretical sources, described in the next paragraphs.

In regards to formal education, learning goals are defined in the curriculum which shifts accordingly with cultural and societal development (e.g. National board of education, 2014). There has been a lot of discussion concerning the construction of the so called 21st century skills (Binkley et al., 2012; Griffin et al., 2012).

Dewey's 'learning by doing' (1938) already pointed out the role of interaction and communication with our surrounding world: with its material, social, and informational aspects. We consider Dewey's view on learning to be still valid in the 21st century. The approach is well linked to e.g. collaborative learning and personalized and collaborative problem-based learning (e.g. Dillenbourg, 1999; Koschman, 1994).

Drawing from Goffman's views on *situation* (1964), we focused on a *learning situation* as a unit of analysis to get of an overall picture of its features of relevance[10]: A learning situation implies availability of particular material and informational resources to the learner. Whatever the cultural context, it is always the person's life situation where learning takes place, that is, *in the interface of the learner and his/her setting:* through observation, tool use and object manipulation, interpersonal communication and reflection.

Furthermore, we drew from Tversky's (2008) investigations into spatial cognition and navigation. In an instrumental sense, *human body* is the origo of the egocentric perspective: it is a sensor/motor unit capable of executing intentional actions through spatial behaviour, such as turning to look at something interesting. A person's spatial position also coordinates with temporal aspects of his/her situational knowledge – including backgrounds, views, aspirations, emotions and affect state[11]. In spatial terms, formal learning could be considered a goal-oriented situational activity that employs spatial, social and instrumental (natural and human-made) resources in proceeding towards defined goals.

Clark's investigations pointed out the role of contributions in conversations (Clark & Brennan, 1991). In Clark's approach, a conversation is a joint effort of party members on a joint topic: they coordinate their perspectives and contributions in an orderly manner by taking turns as the speaker / the addressee, when

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[8] Including unforeseen risks and vulnerabilities.
[9] More about the cases in e.g. Lievonen & Vesisenaho, 2013; Lievonen, 2015; Lievonen, Vesisenaho & Lundström, 2016
[10] Goffman's view has a lot in common with the views of situated learning (Brown, Collins & Duguid, 1989; Lave & Wenger, 1990).
[11] Compare also with von Wright's views in v Wright, 1998.

requesting and providing information. That is the way to establish and maintain a shared understanding – a common ground – in the course of communication.

Diessel's (2003) investigations helped to recognize e.g. the role of demonstratives in their orientational role in language use. Other helpful sources were Tomasello's (2009) profound views concerning human communication and collaboration, Turner's contribution to affordance discourse (2005), and Burke's (1945) dramatistic pentad.

Some observations and reflections

When composing an articulation tool for a (re)design process, we also draw from our observations made in the context of redesign processes, mainly in the 2010's. In the following, we describe some observations concerning particularly the two key stakeholder perspectives, the teacher and the student perspective.

For instance, in a day-long workshop for vocational teaching staff, we asked the participants to illustrate their current teaching practices on a structured A3-size form in which they described spaces used, tools applied, modes of teaching (e.g. individual, pair, group), and pedagogical goals. On the other side of the form, we asked them to illustrate, in similar terms, their assumed/wished teaching practices in the years to come. Once they had completed their descriptions, they had to communicate the outcomes amongst themselves discussing them around a round table. Thereafter, they had to move on to work on their shared views: how the settings ought to be converted to meet their future requirements. At the end of the workshop, the discussions were summarized into statements and illustrations. The information collected in the workshop (and with other methods), was later summarized into a draft report and brought back to them for feedback and confirmation. The outcome, in the form of a work report, then provided specific background information from the teacher perspective for the architect of the project.

Another way to map teachers' views was to pose them two simple questions concerning sufficiency and limitations:

> What there has to be enough?
> What there must not be in excess?

As to the teachers' workshop, we found that it was particularly helpful to start from the participants' individual teaching practices before addressing future trends in their field. The teachers have a deep knowledge of their work, and the researchers' task was to help them to communicate what was relevant in their practices from the spatial design point of view. Once the data from the workshop was analysed, it was important to communicate the outcome to the informants for two reasons. First, the outcome provided them with an overview of the situation – especially in regards to the design process. Second, it was important for the researchers to get their interpretations confirmed by the informants.

Making any changes to the settings not only means a spatial change but also practical changes. When people are asked to alter their familiar means of carrying out daily tasks, resistance tends to occur (Dillon et al., 2013; Vesisenaho et al., 2017). It is therefore important to carefully map local practices and try to obtain related information that only the users can provide. Without such data, it may be difficult to embed new solutions into the local practices successfully: concerned people may find the proposed changes unnecessarily stressful. If they have a say early on in the process, a gradual reorientation process takes place.

It is not always easy for different professionals/users to express their standpoints, practices, and requirements in terms of spatial design. Therefore, a person who understands a spatial designer's mindset can help them to spell out their views in the way that best informs spatial design. However, such mapping method has

to be constructed in close collaboration with those who are proficient in teaching practices.

To map the students' perspective, we used multiple ways to probe issues of relevance. One way was to map learning activities on a typical school day, asking individual students to describe learning situations in terms of venue, time, study-related content, and tools and resources used. This was also a way to map a diversity of individual learning practices among a group of a student cohort. Another way to map the students' perspective was to ask *what* in the learning settings supports their learning and what makes it difficult. Thereby, we could find out also individual preferences. Later on, we compiled a list of criteria for investigating the students' perspective on learning settings. It contained four different types of criteria:

1. concept & dimensions (10 criteria),
2. aspects of aesthetical[12] surrounding (8 criteria),
3. social setting (11 criteria), and
4. tools available & methods used (7 criteria).

Another redesign process took place in the context of higher education[13]. In it, a traditional lecture theatre was converted for video-mediated lecturing: part of the audience was due to attend lectures in the lecture theatre, and the rest was attending remotely over a video link. The question was, how to orchestrate the hybrid settings properly, not only from the teacher's and the local audience's but also from the remote audience's points of view. Before starting to figure out the arrangements for a hybrid setting, lecturing patterns were observed in the traditional lecture theatre to gain a better understanding of what was important from the lecturer's and from the audience's point of view. Attention was paid to the following aspects in the lecturer's performance:

1. How was the space used?
2. How was the content communicated? (What kind of information packages were there?)
3. What kind of resources were used?
4. How and when did the lecturer interact with the students?

The notes of the observations were summarised, and their interpretations were refined by discussing the summary with the observed lecturer, making clarifications where needed.

One approach to understand the students' perspectives was to attend lectures, alongside the students in the lecture theatre, and communicate with them afterwards[14]:

1. What could/could not be seen; what could/could not be heard?
2. How was the presentation organised? (Presentation / interaction phase etc.)
3. What was important in the lecturer's performance from the audience's point of view?

The findings from the teacher/student observations later influenced the conversion process. It became apparent early on that communication between teaching staff and technical staff had also a crucial role in order to avoid basic mismatches in the spatial arrangements. Therefore, a kind of role-play scenario was arranged. In it, the head of technical staff (audio-visual expert) played a teacher's role in the lecture theatre in various lecturing scenarios. The researcher

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[12] both sensory and other qualitative aspects of their experience
[13] for more information see Lievonen, 2015
[14] In a later phase, a survey for a showcase audience was conducted addressing both the technical and the communicative aspects of the hybrid settings.

again was playing the role of the student posing the audio-visual expert questions such as:

1. How would you arrange the cameras if you were a teacher delivering a lecture and trying to monitor whether or not your audience (local and remote) follows what you explain?
2. How would you position the camera(s) focused on you in order for the remote audience to feel you are talking to them (and not to people somewhere else)?

The aim was to make it easier for a technical expert to take into account communicative requirements from the teacher's and from the local/remote student's point of view. Based on such understanding, it would be easier for him/her to seek the best possible functional solutions within the technical constraints of that particular case.

When designing hybrid learning settings, both communicative and functional aspects of human communication have to be carefully taken into account. The designers have to consider complementary role perspectives (speaker / addressee), modes of human communication (such as ways of providing social cues and indicating in a nonverbal way), and ways of coordinating perspectives and contributions. Understanding these issues is paramount in the orchestration of the hybrid settings.

To give some examples, the lecturer's attention has also a motivational role from a student's point of view: a sleepy student may get a bit more attentive if the lecturer casts a glance in his/her direction. If the remote student sees the lecturer speaking to them, not sideways to some unseen audience, s/he may feel like being properly taken into consideration. Furthermore, it is important both to the local and the remote student to see the object of presentation clearly, and to properly hear what the lecturer is explaining. The lecturer's gestures provide beneficial cues and guide the audience's attention to particular points, supporting in 'getting the point'.

An articulation tool

Articulating *issues of relevance* in terms of what contributes to enabling settings and at the bottom, functional affordances for learning, is one way to aid discussion between relevant stakeholder perspectives. Thereby, people can develop a shared view of the goals and what may be feasible to attain through a redesign process. Our assumption is that keeping the learner, learning process, and learning outcome in the focus, enhances

1. opening up views from different angles in the negotiation workshops, and
2. bringing different stakeholder perspectives together.

It bridges different approaches, helping clarify the user requirements on one hand and various constraints that have to be taken into account on the other hand. Furthermore, in order for the negotiations to be smooth and effective, it is important to identify what is relevant to focus on for the given level of analysis and communication, whether individual, group or population level is addressed.

The scope of the participants' observations tends to shrink to aspects that are specific in relevance to them. As the scope and the focus of one perspective is always limited, it is important to relate each perspective to other ones and to locate their roles within the big picture. What can each of them contribute, and what are their constraints? Also, the considered time span tends to shrink: instead of considering an over-generations view, people tend to stick to their own time. Even so, each stakeholder should keep in mind the bigger picture of the world: when developing solutions for the future, sustainability and flexibility are criteria to be taken into account.

Spatial design involves a diversity of learning situations – a whole learning landscape. In the ecological approach (Vesisenaho & Dillon, 2013), learning takes shape in the learner's interaction with the material and social environments. Spatial features include concepts such as layout, connection, and spatial dimension. The features of spatial setting and situational resources – along with the learners' skills and capacities, background knowledge, motivation and emotional tuning, school atmosphere, educational culture, and interpersonal interaction of students and staff members – provide the platform for learning.

Based on the available research literature and our observations, we classified four different sets of criteria for describing these settings: physical, aesthetical, social, and instrumental. We then determined focal issues between stakeholder perspectives by converting three approaches to (formal) learning and its outcomes. They were formulated into four basic questions:

1. <u>Who</u> is acting with whom?
2. <u>Where</u> do these activities take place?
3. <u>How</u> do these activities unfold? (What methods/tools are used?)
4. > > > <u>What</u> / What for is the outcome?

The bottom of the tetrahedron links

1. user perspective (who),
2. facilities provider's perspective (where), and
3. instrumental perspective (how).

The top of the tetrahedron represents learning outcomes (what).
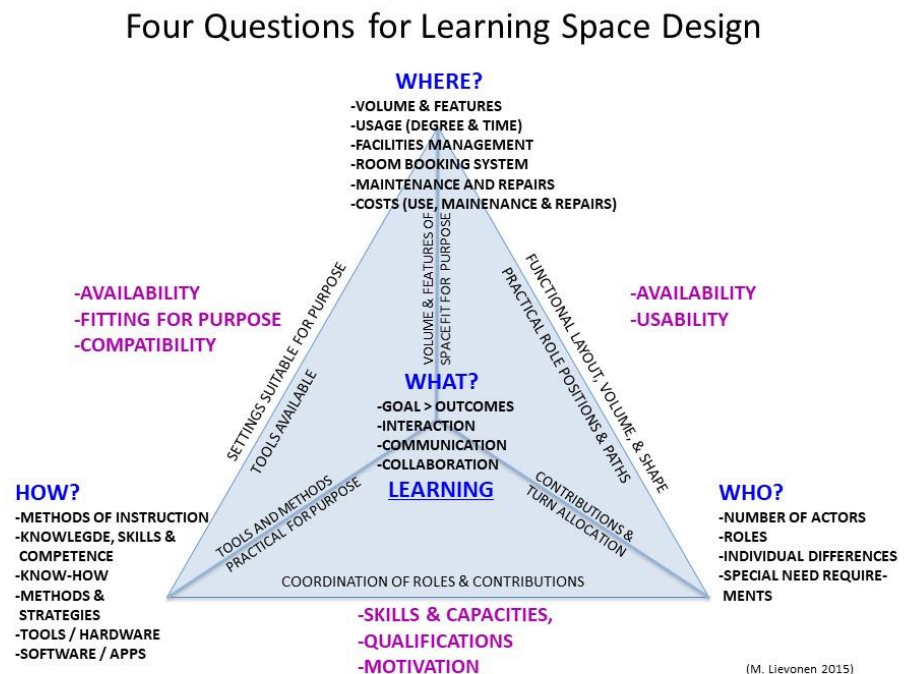

Four Questions for Learning Space Design

Figure 1. A simple framework for articulating issues of relevance between different stakeholder perspectives in a redesign process.
The bottom of the tetrahedron links
1. user perspective (who),
2. facilities provider's perspective (where), and
3. instrumental perspective (how).
The top of the tetrahedron re-presents learning outcomes (what).

In other words:
The figure illustrates learning process and its outcomes based on three perspectives:
<u>Who</u> is acting? Activity takes shape through coordinated contributions by interacting participants. Each participant brings along his/her history of experiences, background know-ledge, skills, qualifications, and emotional tuning.
<u>Where</u> does activity take place? Learning takes place in the learner's life situation; in its local and cultural setting.

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How does learning occur? The ways and means of learning rely on material and immaterial re-sources: tools, methods, pat-terns, preferences, strategies, human communication and reflections.
What is the outcome?
In formal learning, the goals and outcomes are defined in a curriculum. The outcomes also depend on one's motivation: any joint activity is based on the participants' shared 'mission' – whether it is playing football or having a conversation**.**

We composed the illustration (Figure 1) to aid dialogue between stakeholder perspectives. It is based on four cognitive categories and their interrelations. The illustration helps determine relevant questions between different perspectives. For instance, when discussing interrelation between the setting and the user (where – who), usability and availability are among key concerns from the user point of view: whether the layout, volume and shape of the setting meet the criteria (e.g. group of students and their teacher(s) working there). From the settings (and facilities management's) point of view again, the number and diversity of the users, their role positions and paths of their practical performance are among important questions. Through such questions, the participants of communication bring forward issues of relevance from the spatial designer's point of view. At the same, the participants establish a common ground, by pooling shared background knowledge and understanding in the course of the project.

Learning situation implies the goal and the modes of learning, instructional methods applied, and the task at hand. The learning situation is illustrated above as a tetrahedron (Figure 1).

Learning outcomes appear as completed assignments, registered deliverables, passed exams, and degrees, but above all, they appear in the new skills and capacities attained for life: in the personal development and maturation of the learner.

In the following, we describe the articulation tool in more detail:

Who? represents the user. (In design discourse, actors are often referred to by the term 'user'). Users are fundamentally spatial: they occupy a specific space at each point in their lifetime. Therefore, layout and dimensions are among basic design questions regarding functionality. In spatial design, users can also be considered, in a technical consideration, specific spatial perspectives and interlinked fields of activity. Each user perspective implies a particular situational knowledge background (world view), set of skills, capacities and aspirations (motivation). In their joint efforts, users coordinate their mutual perspectives and collaborate by bringing in their contributions[15] Human interactions and communications include a wealth of cultural patterns and regularities (e.g. hand shaking); these patterns help moderate communications between people by making it (conventional and) more predictable.

Where? represents in this framework the venues and their features (arenas for learning) – the perspective of the facilities provider and management, as well as maintenance and renovation/updating. Educational providers are in charge of these premises in terms of volume and features. Also, the location of the premises within a community is in their interests.

How? represents the instruments within this framework: the tools and methods applied in the learning situation. Methods of instruction, pedagogy, strategies, and procedures belong to this category. Even teachers play an instrumental role from the student's point of view. Any archaic tools are classified in the same category with modern human-made systems: thereby, it is easy to grasp the very basic human questions that apply to any cultural or temporal setting. Digitalisation

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[15] The Finnish expression 'kantaa kortensa kekoon' referring to behaviour in the ant colony (collecting needles to an ant hill) would illustrate it in an excellent way.

also belongs to this category: without hardware, servers, and networks there would be no digital communication. A relevant question related to this category is whether there are suitable tools/equipment available to students to attain particular learning goals.

What? represents both the learning process and its outcome. The learning process is articulated in the curriculum into different levels and subject matters. The learning goals have been defined accordingly. Recently, there has been a shift towards an integrated, cross-disciplinary approach (phenomenon-based teaching / learning). Traditionally, tests are used in the assessment of learning. Learning methods utilizing a host of educational technologies require novel toolkits in order to conduct assessments.

In the following, we give examples of the questions that may help participants of a (re)design process to articulate their views concerning spatial design, to feed them into the design process, and to relate them to other stakeholder points of view within the whole of the project.

The connection between venue and tools/methods (Where? — How?) implies suitability and availability. What kind of tools are needed? If there is a required tool, is it available where and when it is needed? If not, is it possible to acquire it without extra effort? Which methods best match a particular given setting? For instance, is it possible to do group work in a lecture hall? As to the facilities provider's point of view, questions concern the volume and features of buildings/tools that are required. Additional questions concern their maintenance, repairs, renovations and updates.

The connection between venue and user (Where? — Who?) implies availability and usability / usefulness. Does the user find the place usable for his/her task? And is the place available when needed? Are its size, furniture, and spatial arrangement user-friendly and ergonomic? What kind of booking system there is? User perspective also implies values and individual preferences: what kind of setting do people prefer if they have a choice? In what type of setting does a student, teacher, or staff member perform at their best? An unavoidable budget-related question is whether the usage of particular space justifies the related expenses.

The connection between venue and activity (Where? — What?) implies above all availability and suitability: does the venue/setting/equipment fit well with the spatial and functional requirements of the activity in question? Is it available when needed? Is the building/room designed for some specific use, or is it flexible enough to modify and accommodate other purposes? If multi-site communication and collaboration is in question, is there a platform, hardware, and protocols that enable a smooth interaction between the local and the remote sites? Only then can a joint effort be carried out over distance.

The connection between user and activity (Who? — What?) implies the role allocation and coordination of communication. In addition, it implies the participants' skills, qualifications, motivations and preferences. The traditional roles at school are the student and the teacher, with their specific responsibilities and tasks. The teacher role traditionally entails the preparation of lessons, delivering lectures, tutorials, and assessment. When learning is active and collaborative, there is a lot of student-student interaction and communication. The motivation and attitude again vary from person to person and from situation to situation.

The connection between user and tools (Who? — How?) implies roles, procedures, and processes. What kind of / how many tools are required? Do different roles require role-specific tools, and are they available when needed? Has every user a toolkit required in his/her role? Is there a match between the tools and their users? Do the users adopt the required tools or do they avoid using them? Is there any authorisation procedure / licence to use specific tools?

What kinds of skills / qualifications are required in order to use them? Is training necessary before being able to use these tools? Are the tools usable for a disabled person? Are the users equal in terms of acquiring / using particular tools?

The connection between activity (learning) and method (What? - How?) implies a (good enough) match between tasks and the corresponding toolkits. Furthermore, it implies spatial arrangement and temporal availability of the toolkits. For instance, are the tools easy-to-use and easy-to-learn? Are they reliable in use, do they last long, and are they affordable and easy to maintain? In particular, are they available for the task at hand? What is the way around if there is a glitch or a signal failure? Do their instructional materials match the learning goals and the learners' preferences?

Discussion

In this article, we emphasized the participatory approach and an over-generation view, which we found important for a sustainable and meaningful learning space design. While it is important to approach the redesign project from many different angles, it is equally important to bring the contributions together to focus on *learning situation*. We build on four basic categories when articulating the topic area: Who?, Where?, How?, and What/What for?

Writing this paper was motivated by a need for a practical tool to support design communication between different stakeholders in redesign processes of educational premises. Responding to such need, we contribute by presenting a basic tool described in Figure 1. Yet, it would require validation in further (re)design cases.

The 21st century learning landscape challenges spatial design in many ways: in terms of learning situations, learner population, tools, methods, and contents of learning. We are daily surrounded by commercials and consumeristic effects, and reminded of competitive advantage and views of economic growth. At the same, there is a risk for people to be marginalized if they do not follow the digital development. Furthermore, climate change and any new type of risks and vulnerabilities call us to rethink choices carefully, pondering their long-term consequences as well. A sound approach would be to focus on reliable cornerstones for new developments, keeping in mind sustainability, flexibility, and profound human relatedness.

As the whole learning landscape is changing fast, it is difficult to figure out which trends in education are for the better or worse in the long run. There is therefore a need to focus research on impacts that new types of setting have on the learners' development. It may be that those who have been teaching for over a decade (or several) have the best hands-on experience in regards to ongoing trends. Regardless of the events to follow, it is obvious that spatial settings will play an important role and will need to be addressed with care.

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Can transit enable better and more equitable urbanity?

Ilari Karppi
Tampere University
ilari.karppi@tuni.fi

Iina Sankala
Tampere University
iina.sankala@tuni.fi

Abstract

Nordic welfare states once sought to provide their citizens with affordable and healthy urban environments by planning compact residential areas. For a variety of reasons, this model is now in a major rupture. Strong domestic and international migration to 4-6 urban regions transforms Finland's spatial setup. The entire process entails major challenges for urban design. Expanding urban structures constitute a massive source of greenhouse gases and are often deemed dysfunctional for reaching goals such as social sustainability, better public health or even individually perceived quality of life. Transit-oriented development (TOD) is one of the attempts to tackle these challenges. Now it holds a major promise for better and more equitable urbanity, but this assumes that the entire dynamics of urban development and how transit and better accessibility are related to it will be re-thought. This paper is based on case-study data from Tampere city region and its on-going light rail transit (LRT) construction process as an example of the current TOD thinking. It also makes references to comparable or otherwise interesting international LRT processes as discussed in planning journals or based on the authors' own observations and fieldwork.

Keywords: transit-oriented development (TOD), urban design, urban development, light rail transit (LRT)

Introduction

Nordic welfare states once sought to provide their citizens with sustainable, affordable and healthy housing conditions by planning compact residential areas detached from the functions deemed as harmful for healthy living conditions. This can be understood foundational to the buildup of a Nordic variant of a just city (Harvey 1976). Accessibility or the linking of working-class residential areas to workplaces via transit has had a key role here early on. Large old industrial cities, particularly Tampere, were in the vanguard of modern transit planning already in the 1930s. This was long before a city transit authority started its work in 1948 and became a core local urban transportation actor – or a local transit-planning touchstone (cf. Peltola 1998, 50-51). Whilst the natural imperatives of a transit authority may legitimately be based on a belief that a better-connected city equals with a more accessible city equals with a *better city* (cf. Chase & Rivenburgh 2019), the complexities of urban governance challenge this thinking (Karppi &

Vakkuri 2019). Given the multiplicity of the quest for a better urbanity, we ask if a city can be better if it is not more sustainable, and if it can be more sustainable if it is not more just.

Separating and then re-connecting the functions of a city was not a mere Nordic – and even less so Finnish – whim of social engineering. Already in 1933, the Mandarins of modern architecture had programmed the preferred urban design for the coming decades. The new design paradigm was promoted with the Athens Charter of the International Congress of Modern Architecture, or CIAM (Graham 2017), and its timing coincides nearly perfectly with the early dawn of the rationally planned Nordic welfare state (Ohlin 1936; cf. Nelson et al. 1953, 38-39). That the Charter got such leverage throughout the industrial world and in single, often high-profile planning cases in developing economies, is a magnificent show of strength of international soft regulation within planning and design (cf. Karppi & Rantalahti 2009).

Soft regulation, or any ideas, need hard measures or instruments to yield real of tangible results – "tangible" understood here as "material". In Finland, the hard measures to put ideas into practice were not only (1) instrumental laws that helped and still help turn CIAM's ideas into preferred planning practices: planning by them was getting it right. Then there were, and still are, (2) municipalities, democratically steered political communities where acts like zoning, planning and construction take place. In institutional settings such as those of the Nordic Countries where municipalities have constitutionally secured financial, taxation-based capacities of own policymaking and goal-attainment, their role cannot be overemphasized. Finally, (3) mortgage banks and (4) the entire construction industry were involved in the (Nordic) machinery of planning healthy, inclusive and generally equitable society, irrespective of its members' differing strengths and limitations in pursuing goals that are thought to make life good.

This machinery was not able to turn out urbanity that would have been equally good for every single individual as the member of the society at each separate moment, but we can start from an assumption that it attempted to create equitable urbanity that – the modernists assured – was good and equitable, or socially just. However, the growth of cities, the restructuring of work and production, the diversification of lifestyles and consumption, and the world being now all and all technologically more complicated has turned the designing of a preferred form of urbanity more and more complex – if a "preferred" form or even principles for reaching one ever can be agreed upon (Cohen 2018). Yet, new tools and instruments have been both needed and taken into use in order to respond to these transformations, while struggling to keep the original promise of aiming towards the good in urban planning.

Among these instruments, large-scale transit systems have been given a prominent position in the struggle for enabling and supporting better and more sustainable urban design in fast-transforming cities. They are linked to a broader urban planning field with the principles or an entire planning ideology of transit-oriented development, or TOD (cf. Calthorpe 1993). Large-scale systemic transformations require heavy investments, which easily highlight major financial risks that cities are required to take in the face of necessarily uncertain prospects for future returns. This makes decision-making processes on transit systems such as new light rail transit (LRT) schemes complex political battlegrounds (cf. Olesen & Lassen 2016). Yet, hundreds of recent urban LRT systems have been planned, constructed and opened to use in medium to mega-size cities all over the world since the mid-1980s, an era known in the literature and among practitioners as urban/light rail renaissance or *tram revival* (cf. Lane 2008; Olesen 2014). Moreover, the last two decades have endowed them with a particular role as instruments of urban and metropolitan-scale climate policy (Renne 2009, 255).

This article deals with these global urban development trends (TOD, LRT renaissance) turned into material facts in cities that choose to integrate their land-use planning and urban development with visions and rationalities required by the actual construction of an urban rail system (Olesen & Lassen 2016, 373-374). Cohen (2018, 36) notes that integrating planning of transport, residential and job locations as a means for directing urban development is a sign of a city that takes sustainability seriously. As "urban things" (cf. Lieto 2017), LRTs are growingly portrayed as material instruments for advancing urban development and more equitable urbanity. In the following chapters, we discuss the urban development potentials and eventual backlashes that major changes in transit and mobility can unleash.

The text is structured as follows. First, we describe both the data the article is based on and some key features of the process of how the data were compiled and put together. After that, in the next two chapters, we discuss the transformational pressures faced by the Nordic "planning machinery", and how cities have emerged as the frontline in the global pursuit for sustainability with transit as one of the key instruments in this process. After that in the next three chapters, we connect our empirical findings as regards the urban development impacts of modern transit systems with the on-going debate on urban transformations and the pressures mounted on equitable urbanity. We start with a broad perspective, looking at the urban space as the subject of transformation to define, granted, as set of prescriptive features that should be required of equitably sustainable urbanism. We then scale down, first to the level of urban districts where the transformations induced by transit are encountered and after that to urban places and sites where tangible design features are in a decisive role for mixing uses or linking modalities for mobility in the urban space. In the conclusions, we highlight the importance of linking LRT development firmly with strategic land-use planning and housing policy.

Methods and data

We resort to a mixed methods research strategy (Castro et al. 2010) and rich case-study data from Tampere city region to portray its LRT construction process as an example of the current Nordic TOD thinking. Data gathering started in the winter of 2015 with the authors' participation in a workshop that prepared an exceptionally broad impact assessment process for the then eventual inception of the Tampere LRT construction. The ultimate deadline for the final assessment outcomes was in November 2016 when the City Council was to vote on the construction. The authors were assigned to assess the expected impacts of the LRT on the city's vitality, attractiveness and image, all of them important elements of urban development. The data used for this article comprise four sub-sets that have been compiled between 2015 and 2019, as the authors have continued to study the further planning and construction stages.

The first data set is based on literature analysis of related LRT or urban rail cases, mostly in Europe and North America, complemented with three thematic interviews. These findings were discussed in-depth in three focus groups, forming the second set of data. The focus groups comprised of stakeholders representing both public and private actors and they were organised according to the themes of the vitality, attractiveness and image impacts of the LRT. The goal of these discussions was to give a situational interpretation to the literature analysis' findings: which of them would be relevant to the particular circumstances of Tampere, projected for two target years, 2025 and 2040. The process and its outcomes is documented and reported as part of the Tampere LRT impact assessment documents (Karppi & Sankala 2016), available from the City of Tampere website (City of Tampere 2016). The material also includes field notes,

jointly processed material and other documentation from several workshops and hearings from the first half of 2016, organised for both the public and the special interest groups (e.g. entrepreneurs and event organisers).

At the end of 2016 the LRT case was included in an Academy of Finland Strategic Research Council funded research that focused on complex urban development processes and the role and use of particular urban artefacts as instruments or boundary objects for integrating different, typically siloed aspects of urban planning. The third set of data from this stage comprised planning document analyses and thematic interviews that focused on the LRT impacts on the governance of land-use and urban development in Tampere (cf. Sankala 2017; Karppi & Vakkuri 2019, forthcoming; Sankala et al. 2019).

Span between November of 2017 and May of 2019, a fourth data set was collected to capture the immediate shopfront-level impacts at the construction sites. Producing this data set has in effect involved an entire mixed methods process of its own starting with questionnaire and interview data collected from the entrepreneurs, and two focus group sessions. The first, organised with public and private stakeholders, centred on the most acute entrepreneurial experiences on the construction process, and second with representatives of entrepreneurial associations dealt with eventual coping strategies from the entrepreneurs' side. Thematic interviews of the LRT construction leadership and one of the author's participation in a Mayoral working group for alleviating the negative construction-related business effects completed the fourth set of data.

To highlight the varied character of urban rail processes carried out or promoted in different cities around the world, we have chosen to add still one more source of qualitative data to the paper. With visually surveyed and photographed developments in and around urban transit corridors we show how LRT starts to have an impact on urban landscape at an early stage of its planning (cf. Boarnet & Compin 1999, 82). The images also show how much transit-oriented urban environments can differ. Of the diverse light rail-related campaigns worldwide, one of the authors has particularly followed the Brooklyn-Queens Connector (BQX) process in the context of urban development and design in New York City. The relevance of BQX as a reference case for this particular paper is highlighted by Mayor of New York City, Bill de Blasio. In a report launching the project (BQX Report 2018) he speaks of its promise as of helping NYC to become North America's fairest big city[1], giving with these words credit to equity as a vital TOD aspect. However, as the BQX is still at the stage of political debating, it does not constitute a comparative case to the Tampere LRT already in construction but rather a sounding board for the arguments set forth to support or oppose it.

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[1] However, as reported by Peter Moskowitz (2018), some other land use related policies promoted by Mayor de Blasio have, to a great extent, contributed to NYC drifting further away from any hypothetical "equity mark".

Migration flows to a handful of growth centres put urban planning and design in strain, but continuous urban sprawl may also impose rising financial burdens on individual households.

A changed scenario: the "planning machinery" in distress

For several reasons the Nordic model faces now a major rupture. "Big" welfare states have been largely scaled down as the Nordic Countries have joined the international tax competition. This has remarkably weakened the public housing agencies that used to be one of the model's touchstones (Robbins, Cordua & Ascher, 2012). Simultaneously, the conditions and hence requirements set for planning living environments, now considered as good, have dramatically changed. Finland is a good example of global demographic processes at work. The strong international and particularly domestic migration to merely 4 to 6 urban regions inevitably transforms the country's spatial setup. While the rapidly ageing native Finnish population is already on the brink of an unavoidable shrinkage, much of the nation seems to be relocating itself to new territorial sites. A crucial question in many respects is, whether or not, and through which dynamics, they will become either new urban or new suburban dwellers.

The question is even more acute due to the required speed of constructing new housing, workplaces, services and infrastructure to enable this relocation. Finland's urbanization started late in comparison with most highly developed (OECD) economies, and the process is still to some extent underway. Getting to the OECD average urbanization rate would mean that nearly ten percent of the population, or half a million people, would still be expected to move from the rural municipalities and small towns to cities or their surrounding areas. Putting the scope of this relocation in a proper context of spatial clustering, it now appears obvious that the future number of the strongest growth regions will be 4 rather than 6[2]. Thus, how and with which instruments these locations get prepared for that clustering is of utmost importance.

Such circumstances would put urban planning and design in strain. Expanding urban structures constitute a massive source of greenhouse gases. Moreover, international assessments often deem them as dysfunctional for reaching goals such as social sustainability, better public health or even individually perceived quality of life. As it frequently is pointed out, especially in the American post-2008 discussion on the interconnections between urbanism and sustainability, failures in keeping urban structures dense through good planning easily leads to results that are inferior to humans and nature alike. Finland and Europe in general have not seen sprawl in its North American scale. "Drive-'til-you-qualify" logic-based subdivisions, made of single-family housing, jutted further away to the outer fringes of their respective central cities combine long commuting distances with higher financial burden (Chakrabarti 2013). Prospects of rising fuel costs and bigger per capita investments on roads, water pipes, sewers, energy grid and communications infrastructure give it an appropriate scope.

A persistent Finnish challenge, now more manifest than ever before, has been to prevent all this from happening as a worst possible unintended consequence of the attempts to manage strong growth of a few city regions within the "CIAMese" tradition of spatially separating urban functions. Furthermore, the Finnish Environment Institute reports in its most recent Residents' Barometer (Strandell 2017, 86-87) that even if their housing preferences have been generally urbanized, a majority of Finns still prefer one-family house or some form of a townhouse over apartment blocks. Moreover, the fiercest proponents of their housing type are found from among the one-family house occupants. Thus, providing the new dwellers of growing city regions with housing solutions that

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[2] A population projection for ten Finnish city regions up to the year 2040, published in February 2019, concluded that the future number of growing city regions would be merely 3, all in the South Finnish growth triangle of Helsinki, Tampere and Turku (MDI 2019).

meet their preferences in a way that is sustainable not only in the socio-ecological sense but also financially is nothing short of an act of organizing complexity (cf. Vakkuri et al. 2016; Karppi & Vakkuri 2019). This calls for robust and proactive measures such as the Finnish *MAL agreements* on integrating traffic, housing and land use planning (cf. Kanninen 2017, 65) to avoid extreme moves such as the 2018 Minneapolis ban on zoning one-family neighbourhoods for the support of smart growth (Grabar 2018).

Identifying the directions for sustainable future growth, defining the spatial scale for providing most of the new housing, and giving a clearly communicated or even charismatic material form to the "model" thus created can be motivated with returns on investment it may yield to humans and nature alike. Of the instruments of this formgiving, transit-oriented development (TOD) is one of the internationally most widely applied (cf. Calthorpe 1993). It may suit particularly well on the metropolitan or city-regional scale with broad spatial coverage and a need to bring together different modes and speeds of mobility in a continuum of different urban spaces, or a "transect" (Duany 2013). Since the mid-1980s the TOD processes of choice in many mid-sized to large cities have been LRT systems. They require heavy investments (cf. Flyvbjerg et al. 2003; Flyvbjerg 2014), but hold a major promise for a combination of wealthier yet simultaneously better and more equitable urbanity. However, this requires the entire dynamics of urban development and how transit and better accessibility are related to it being not only re-thought but also extended beyond the boundaries separating suburbia from the central cities.

The question of a more sustainable urbanity: global discourses with local conclusions

Urbanisation is a global fact. The entire future population growth is expected to take place in cities and urban environments, existing and new ones (Harbers 2014, 61). New modes for coping in denser urban environments need to be designed if the humankind is to endure the coming demographic transition. As Harbers (op. cit.) maintains, all of the current urban infrastructure for housing, transit and energy will no longer be sufficient. Infrastructure in existing cities must be both added, relocated and reconsidered. As an example, extensive schemes are already underway to assess the dual effect of expected urban population growth and rising sea levels (cf. Keenan 2014; Keenan & Chakrabarti 2013).

Major technological potentials exist to enable urban transformations, but they are only part of the solution. Entire new concepts are required to label and give meanings to processes where technologies, material artefacts for planning and governance (GIS or CAD tools, traffic sensors etc.), transform the lives of individuals and their communities (cf. Beauregard 2012; 2015a; 2015b). Technologies need to become significant in order to make a difference in the experiential and often highly intuitive lives of individuals who have, over time, developed subtle yet globally recognisable social codes of making it as members of the urban communities (Karp et al. 2015, 87-118; cf. Lévi-Strauss 1978, 15).

Place-based, mixed use and transit-oriented development strategies constitute a nexus where global challenges and local aspirations for smart growth meet.

Both place-based and transit-oriented (urban) development are prominently present in debate on possibilities to meet global challenges with local solutions (Kenworthy 2006; Wilbanks 2003; cf. Kunstler 1993). They both stem from the ideals of smart growth (Vanolo 2014), and highlight the importance of recognisable geographical units as basic components of growing urban areas. In practical terms this means combining (1) efficient transit systems as the backbone of urban mobility on the metropolitan level and (2) walkability as a main yardstick in organising dense, mixed-use micro environments (Speck 2012, 145). Most importantly, they bring the scale of an individual as a social and community-oriented being to the palette of efforts for overcoming challenges that involve the entire humanity.

This also makes place-based and transit-oriented development more than "mere" concepts. As planning principles they are in the forefront for putting forward sustainable solutions. That imprudent urban planning squanders resources and causes excessive amounts of greenhouse gases is already well understood (Holway et al. 2014; Chakrabarti 2013, 80-83). Thus, housing the next generations' new urbanites to wastefully designed and sprawling cities and trying to meet the demands of global population growth in them is beyond the humanity's means (cf. Angel et al. 2011). Risks that such developments entail are obvious, and ambitious attempts are underway to enhance the sustainability of places in generally sprawling and unsustainable urban structures (e.g. Talen 2011).

Repairing or retrofitting existing urban spaces put typically transit systems in a central role. LRT renaissance resonates with a broader phenomenon where various rail schemes have been introduced, not only to move people from place to place, but to serve as Leitmotifs for urban renewal and infill (Priemus & Konings 2001; Mackett & Babalik Sutcliffe 2003; Ehrenhalt 2013; Olesen 2014). New LRTs take many forms. They include light metros, elevated tracks, systems using prioritised lanes in the street network, and their numerous combinations as magnificent shows of pragmatism, when, for instance, sections of old commuter train tracks are integrated in new LRT networks. The geographical coverage of the LRT renaissance has turned the per se local/regional solutions into a global movement of transforming urban mobility. As imprints of certain societal progress they have become a developmental goal on their own right (Knowles & Ferbrache 2015, 431).

The pressure for enhancing urban sustainability is currently most acute in the megalopolises of South and East Asia. However, the recent waves of migration that have shaken the foundations of international institutions such as the EU show that Europe and European city regions are anything but sealed from the global population pressures (cf. Crisp et al. 2012; Saunders 2011). Metropolitan areas world-wide need to be ready to cope with remarkably larger populations that they have today, so the pressure to manage the growth by creating more compact and resource efficient urban structures is generic, it constitutes an intrinsic feature of sustainable urban transformation and better urbanity.

Finnish city regions are not the foremost arenas for the humanity to solve global urbanisation challenges. However, they are part of the global search for workable solutions, as emphasized by Nicholas Stern (2010), a leading figure in the global climate debate. Moreover, they have some worthwhile assets that underscore their role in this wayfinding. They have well-performing existing infrastructures, urban planning systems, and relatively compact and moderately segregated community patterns to begin with – in addition to the tradition for having the promotion of social justice as a policy goal. Importantly, as technically sophisticated systems, they can also provide an excellent access to a wide and still widening range of urban data, both officially produced and emergent (cf.

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Townsend 2014). Thus, they constitute excellent contexts for carefully selected topics in the pursuit of global applicability. One of them is the use of transit systems – LRTs as their current and probably most robust incarnations – as far-reaching backbones for sustainable future urban growth.

Transforming urban space with transit

Contemporary LRT systems should be, at least heuristically, excellent tools for simultaneously promoting sustainability and equitable urban development. They are regularly portrayed as strategic instruments that help to prevent urban sprawl and keep urban tissues compact. They are typically favoured in economically successful post-industrial cities with population above 300 000 (Knowles & Ferbrache 2015), and almost without exception charged with expectations such as catalysing inward investments, improving employment or generally enhancing the quality of urban life. That this tends to be the case is not, however, without consequences. Property values generally hike due to location close to LRT stops or stations, and entire neighbourhoods may gentrify due to LRT construction (Grube-Cavers & Patterson 2015; Moskowitz 2018, 144). Combatting urban sprawl, in turn, leads typically to both infill of existing neighbourhoods and developing new ones attached to the LRT lines, turning LRT corridors and generally transit-related infrastructures into (property) development platforms.

This setting is visible in urban environments so profoundly different as Tampere, Finland and New York City. They both are preparing their entries to the light rail renaissance and show some common features that – through the differences of these cities – may reveal the developmental dynamism that the LRT may unleash in the urban development. Besides being urban entities, Tampere and NYC differ dramatically among many other things as regards real estate business and its capability to boost up property values and, hence, have an impact on how the urban land becomes actually used. As Figures 1 and 2 show, construction of high-end residential buildings has started in both cities at properties with a close proximity to the LRT route, the one under construction in Tampere and the one planned on the eastern shoreline of East River in NYC. In either case, rising property values have already ignited gentrification in mixed-use environments with premises for diverse workplaces – with obvious consequences to equity.

Figure 1 (Left). Long Island City, Queens, NYC. New high-end residential high-rises adjacent to a proposed LRT route. (Photo Ilari KArppi)

Figure 2 (Right). Tammela, Tampere. New high-end residential high-rise (right) adjacent to a LRT line under construction. (Photo Ilari Karppi)
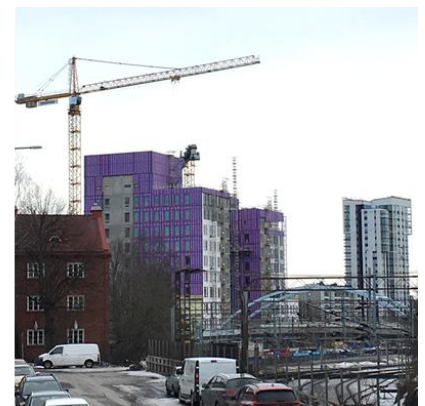
Despite the common features and shared dynamisms associated with constructing LRT systems, the process of creating urban spaces with them – not to mention conditioning better or more equitable urbanity while doing so – is far from deterministic. LRT construction changes the established urban topomorphology, the linking, time-geography and, hence, order of places (cf. Ylä-Anttila 2010). Thus it inevitably changes the social ecology of communities (Alihan 1938), which for various reasons makes them more appealing to some occupants and less so to others. As communities become so reassembled, the

places themselves cannot remain unchanged. Making the best of the building of LRTs and transit corridors – not to mention the new urban dynamics they may release – requires information about their expected impact on the neighbourhoods, districts and people that will be captured by new transit service.

Seeking to "know in advance" is a Geddesian basic – and probably the most durable – tenet of urban planning (Batty & Marshall 2009). However, it is no secret that information concerning property owners' and residents' anticipations about the (forthcoming) LRT services tends to be missed all the way from the planning stages to the construction and the later attempts to assess their more fundamental consequences (Papon et al. 2015, 46). Several studies have contemplated their impact on real estate prices (cf. Hess & Almeida 2007, 1044-1046). Conversely, the interplay between wider city planning and the whole range of factors that could be named as urban culture in the making (cf. Lehmann 1995, 38-39) attached to the attempts to create sustainable transit-oriented places is all too weakly understood. This helps us to identify a major gap in the existing knowledge of urban dynamics: we don't know when and how a neighbourhood and its social ecology starts to adjust, anticipating major foreseeable structural transformation represented here by the introduction of a new transit system – a disruption in the urban space.

Filling this gap is an endeavor that all LRT locations for their part can contribute to. The second-largest Finnish urban region is now in the midst of this process, adding the global knowledge and experience base of what a LRT does to a city and how it does it. A few fragments of information suffice to show the varying scales and situational characteristics of the locations where LRT construction takes place. Odense, Denmark with less than 200 000 inhabitants, immersed in the bicycle-friendly mobility culture in the European North can hardly be compared with an entirely automobile-dependent Oklahoma City, OK with a population of some 600 000 in the US Great Plains – with the exception that they both *are* LRT cities. Furthermore, a thing in common to many LRT schemes, the Odense *Letbane*, the OKC Streetcar, the BQX and the *Ratikka* of Tampere included, is that they are transit systems – and, as it now is realized more and more widely, *urban development instruments* – never before seen in these cities. They all are local interpretations within a worldwide movement to solve the global task of breeding sustainable or "smart" urbanism.

Understanding light rail systems as components of better and more just urban development requires the widening of leading urban development paradigms, such as the smart city.

But how to understand an LRT in connection to other on-going processes that seek to promote better and more just urban development? Such a linking may require widening of the contemporary smart city paradigm as a means of presumably promoting smart and sustainable urbanism. Until now, particularly smart traffic and Mobility as a Service (MaaS, cf. Hietanen. 2014) concepts have been accentuated in the Finnish and Nordic smart city thinking, together with renewable energy and circular economy. However, in terms of urban development and planning, this imprint of a smart city has largely limited itself to the creation of a consumer interface between urban dwellers and the big data produced through the traffic management systems, layered on the publicly managed street networks and traffic-flow management technology. This has overrun a great deal of the experiential dimension of identifying urban transformation and understanding its meanings to different communities of urban dwellers and, hence, the primary sources of knowledge as concerns equitable urbanism.

For the future research this narrowing of the technological scope of urban transformations is only one – even if strong – indication of the problems urban social studies face with the changing material basis of urban space. While sidestepping much of the experiential data created by local civic groups such as *Urbaani Tampere* ("Urban Tampere") or the Helsinki inspired social media forum

Lisää kaupunkia Tampereelle ("More urbanity to Tampere"), much of the understanding of how the urban dwellers see the changing urbanity is missed. Even the readily existing data on urban communities could be made remarkably richer, more versatile and visual by replenishing it with experiential, qualitative information that addresses the more phenomenological aspects on being and living in the urban (Heidegger 1990, 95). This aspect can be generalised, admittedly very broadly but for the sake of practicality, as "lifestyle" or "urban culture".

Several situational features can be discerned of how planning and building a light rail system might contribute to better and more equitable urbanism. They also help to establish a link between opening a new transit corridor in the urban tissue and the pursuit of sustainable urbanism. These features include:
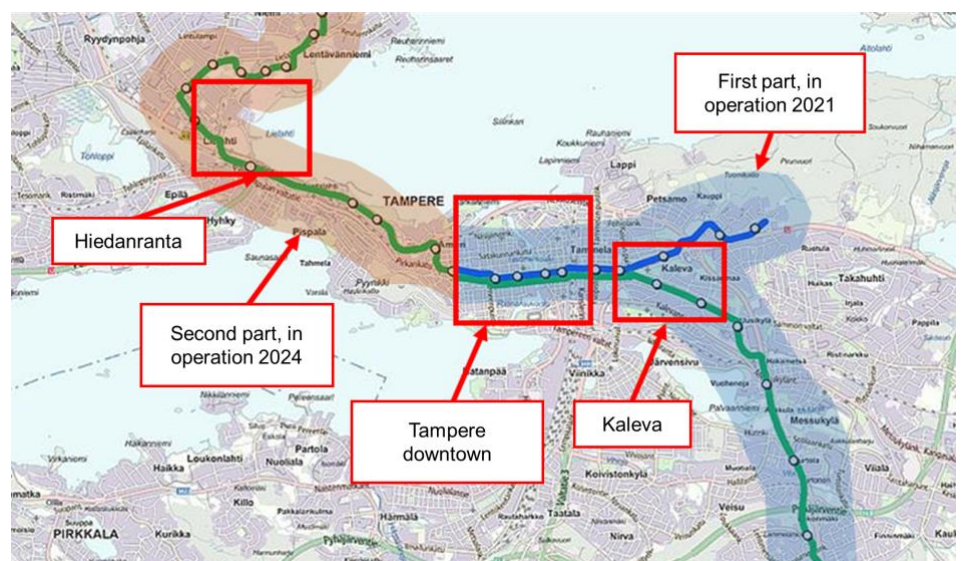
1) the production of more energy efficient urban structures through infill;
2) more mixed-use community/business structures on the route; and, finally,
3) the making of viable places with identity and character.

Situational encounters in LRT construction

Three different areas of urban transformation in Tampere are of particular interest (cf. Map 1). Of them, the downtown has been in the midst of a virtual "infrastructural rupture". The entire 1 km length of the Hämeenkatu main street, the unquestioned heart of the city, is under construction and closed from the private automobile traffic, including the Hämeensilta Bridge, dismantled, reinforced for the LRT needs and then rebuilt to its original form. Finally, a new Ratina downtown shopping center with 53 000 m^2 of rented commercial space opened in the spring of 2018 and now competes with Hämeenkatu business premises. The Ratina comprises a three-story new main building with two parking decks underneath. It integrates two completely restored Functionalist blocks from the 1930s and adjoins a long-distance bus station from the same era as well as the impressive Brutalist Tampere stadium from the 1960s, forming thus a massive shopping and leisure entity. Moreover, it is on the route of a sketched future LRT extension. Local entrepreneurial associations and entrepreneurs in varying combinations have been particularly concerned on transformations taking place in the main street in particular, which has forced the city of Tampere leadership to run two processes led by Vice-Mayors to find ways of alleviating if not preventing the LRT construction-related detriments to businesses within the immediacy of construction sites.

Map 1. Locations of the three areas of Tampere urban transformation discussed in the text relative to the first LRT routes. A great deal of the city's projected population growth of ca. 30 000 between 2015 and 2030 is to be met with infill construction with access to the LRT. Only parts of the now planned lines are shown on the map.

Original map source: http://www.railjournal.com/index.php/light-rail/tampere-light-rail-funding-agreed.html, modified by Iina Sankala.

Whereas the downtown developmental dynamics reflect the transformational impacts that the LRT construction phase posits on business relocation and the urban topomorphology as witnessed by all those visiting the downtown, the second area of particular interest shows direct LRT generated equity impacts. The Kaleva district is on the first two planned legs of the Tampere LRT, to be completed and opened to service by 2021. Kaleva is a first-generation planned housing district from the nascent welfare state era. It has been mostly built between the late 1940s and early 1970s. It extends the inner city urban tissue towards the east of the downtown. It features a semi-open block structure with continuous strorefronts and its original residential units are mostly 4-8 storeys high, housing a great deal of student and retired dwellers. Consequently, income levels in Kaleva are below the city averages.

Based on what is known about related cases referred to above, the neighborhood is on the verge of gentrification due to the LRT entering the district (e.g. Grube-Cavers & Patterson 2015; Rice 2009). Where this process is likely to lead is already well visible. The City of Tampere owns most of the land in Kaleva, an imprint of the original welfare/social justice thinking in housing policy, and leases the land to housing corporations with typically 50-year contracts. A great number of the district's housing companies founded in the 1960s, many of the contracts have been renewed at the time of planning and constructing the LRT. Thus, the future service is already imposing rises in land rents and residents' housing costs. This has evoked major concern among the dwellers who question the fairness of these hikes, sudden even if slowly cooked over the 50-year maturation times.

The third particular scene of urban transformations, Hiedanranta, is a historical forest-industry brownfield area some five kilometers west of the downtown. Hiedanranta will be the first neighborhood in Tampere whose planning will take place simultaneously with the LRT. Thus, it is desired, any structural advantage the LRT is to provide for an urban district can be integrated to its planning. An international ideas competition shed light on the eventual Hiedanranta futures during the winter of 2016/17, but an exceptional rush of civic activity and attention has embraced the area from the moment on that the gates of the formerly closed factory area opened to the public in 2015. A new urban dynamism may be on the verge of being unleashed in the area as it will be linked to the urban tissue with an efficient transit system (e.g. Knowles & Ferbrache 2015). Urbanists and city planners, eager to conceive an entire concept for a new, smart and sustainable city, have been particularly enthusiastic as regards the simultaneity of introducing an entire urban district with a novel transit system as one of the artefacts influencing its planning. Yet, there is still one further element to make Hiedanranta an interesting scene of urban revitalization and transit-oriented development: its neighboring Lielahti retail area.

Lielahti is a true greyfield space with hypermarkets, big box stores and, generally, service structure that likens it with a downtown area, but with a peripheral location and extensive surface parking spaces. This all makes it a prime Finnish example of what sometimes is referred to with a less flattering name of *trashurbia* (Bormann, Koch & Schumacher 2015, 121). The area received its current form through a combination of exogenous events, bad timing and spontaneous evolution. The original plans for Lielahti never took hold, as the 1973 oil crisis threw western economies to industrial restructuring (cf. Vakkuri, Karppi & Sankala 2016). Retail took over a district that never found its envisioned industrial users. The gradual replacement investments for the area's retail spaces have now started, as the Hiedanranta plans generate visions for the entire district. Moreover, as plans for alternative LRT routes in the district have emerged and become detailed the Lielahti entrepreneurs have taken an active role in shaping

the future of their area, a process with the alternative plans for the LRT as their apex.

What is truly fascinating with the LRT process and what can be read from these examples is a two-way relationship between the urban environment and a piece of technology that is to be part of its infrastructure. Constructing a light rail transit system will change the city, not only its neighbourhoods and its meaningful places, but also the way how different communities of actors perceive the transformation, connect with it and find ways of taking stances, cooperating, networking and influencing, either to protect themselves or to take the most of the opportunities the new system stands for. A major task for the subsequent research will be to identify and analyse how the LRT starts to change the system of places at extremely early stages of planning, and what are the ways of getting sustainable urbanism unfold from the transformations that follow.

Advancing sustainable mixed-use urbanity with constructed transit environments

Much of how processes related to LRT development turn out, in Tampere, in New York City, and worldwide, leads to the construction and developer ambitions. This shows clearly how real estate, with the myriad interests attached to it, is the elementary component that connects architecture to urban design (Martin, Schindler & Moore 2015). By doubling as profitable real estate projects, even celebrated achievements that define novel concepts for affordable housing, such as the Via Verde in the Bronx, NYC, highlight the unescapable profit-seeking and materiality of everything that takes place in the city.

In the same vein, planning and constructing a LRT system is in an inevitable interplay with the other forms of urban materiality. So deep is this interplay that it can be referred to a symmetric relationship between two groups of actors, humans (planners, councilors, transit advocates) and matter (various instalments the LRT system requires): they both appear to have an agency in urban transformation (cf. Beauregard 2015). As aptly expressed by a Tampere LRT development executive: "We all have been constantly caught by surprise with things that unfold while the system has been constructed." The combination of real estate interests and LRT construction – the willingness of the construction companies to favour investments that are the quickest to reap the advantages brought by the accessibility and connectivity a LRT can offer – easily tilts all new developments on the LRT corridor towards residential units. Not infrequently they replace existing uses and occupants of existing premises from their way. Figures 3 and 4 show actually or potentially receding urban industrial landscapes from the planned LRT corridors, one in Tampere (*Ratikka*), another in Brooklyn (BQX).

Figure 3 (Left). Santalahti, Tampere. Changing industrial/mixed use landscape adjacent to the planned LRT route. (Photo Ilari Karppi)

Figure 4 (Right). Brooklyn, NYC. Changing industrial/mixed use landscape adjacent to the proposed BQX route. (Photo Ilari Karppi)

This is not to say that all properties, whether industrial, commercial, office or residential that becomes replaced are victims or a LRT or that all transformations would be detrimental. There are many reasons to approve the growth of residential units in key transit corridors. Yet, the real estate interests that not only frame it as an urban development mission but actively boost this growth may turn the increase of the housing stock a problem rather than a solution. Lack of affordable housing is a persistent issue of social justice and equitable urbanism (Martin et al. 2015).

As cities keep growing and as construction becomes more complicated due to the need to curb the spread of urban areas and turn city growth inwards, the easy solutions for making spaces to better, sustainable and equitable, not to mention more affordable urbanism are few. Affordability and connectivity may find themselves seriously at odds, as better connectivity of a given location goes to rents and asking prices. Much of the new housing production may add higher end housing stock, imposing thus a hike to the average housing costs with reflections to the regulated, administratively set or subsidized rents. Planning and constructing a LRT should thus be accompanied by measures within land-use, housing and business development policies, as well as in the alternative modes of providing and distributing services (Karppi & Vakkuri 2019; Vakkuri et al. 2016). Only part of the process can stay confined in the "pure" traffic and transit planning.

The making of mixed-use urban spaces requires purposive action as well. Walkable environments (Speck 2012) connected with efficient solutions of urban mobility have been a nearly universal goal in sustainable, transit-oriented 21st century urbanism, and an unrelenting conviction goes that the combination of connective transit nodes and prioritised walkable spaces are the natural loci for a vibrant urbanity. Transit systems are key factors to make urban space(s) usable to large population groups: the general coverage and connectivity of transit routes help urban dwellers to reach different locations with reasonable costs or travel time. They no less than pair the transit users' purchasing power with businesses located at close proximities to the transit stops and stations. However, making a linkage between transit routes and modes on the one hand with walkable spaces on the other cannot be detached from the requirements set to urban design in general (cf. Chase & Rivenburgh 2019).

Figures 5 and 6 show two dramatically differing solutions as regards a walkability/transit nexus. One of them depicts a desolate underpass that links the stops of two parallel bus corridors within 100-200 meters from the new urban core of Tampere, marked by the downtown campus of Tampere University, several knowledge-intensive business locations and the Daniel Libeskind-designed Tampere Deck and Arena entity now under construction. The other shows the urban potential of combining a metro station and a pedestrian-dominated street in Vienna. Integrating all aspects of urban planning and design bears fruit.

Figure 5 (Left). Underpass, Tampere. Even if they meet, "transit" and "walkability" as modalities of urban mobility do not automatically produce a sense of "urbanity" (Photo Ilari Karppi)

Figure 6 (Right). Mariahilferstrasse, Vienna. Former thoroughfare transformed to transit-oriented walkable urban space. (Photo Ilari Karppi)

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Irrespective of the merits that ideas of smart urbanity have helped to introduce, functionalist pressure still works against mixing uses. Moreover, siloed planning practices make it difficult to design environments that favor transit as a means of effortlessly covering the often great distances in a broader urban space and, simultaneously, walkability as an organising principle and a yardstick for the making of urban places. In any attempts to such cross-scalar integration, few elements can be revealed as tangible as light rail stops and stations as urban things (Lieto 2017) that join the regional and the place-based in a common frame. Yet, Gössling (2016) claims that planners still feel obliged to give priorities to automobile traffic, based on the investments drivers have made to their rapid personal mobility in the street network. This too is an equity issue – one that shows how complicated the concept and the promotion of just urbanity is.

But what are the limits of design in the process of turning out good sustainable and equitable urbanity? Let us look at one of the urban transformation areas discussed in this paper, the Hiedanranta. It can be planned, and it can be infested with material objects turned into urban things, such as the LRT – not only a driver but a *Leitmotif* or even anchor for development. City hall and real estate interests can program its transformation, naming it as a spearhead project for turning a brownfield into new urban splendor. It can even be declared as a secondary downtown based on all the notice and excitement it has attracted and spawned. But does all or any of this guarantee that it shall it be a) urban, dense and mixed-use, and b) equitable, affordable and accessible enough to really qualify as enhanced or even truly better kind of urbanity, as better urbanity and a better city was defined in the opening chapter of this text?

Or: can better urbanity "through design only" even (or ever) been promised?

Concluding remarks

Equity is a slippery concept. It is about value of property, but it is also about justice and fairness in relationships between different strata of a society. As a planning issue, it is essentially about the creation and distribution of wealth (Martin et al. 2015; Moskowitz 2018; cf. Rice 2009). This paper has discussed it as a feature and concern present in the amassing, distribution and reproduction of the material resource bases for designing a city, and an aspect of sustainable urbanity. Instead of one transit-related issue of equitable urbanity, it is possible to distinguish between two vectors of transit equity visible in the urban space, or, rather, that the urban space surrounding transit infrastructures makes visible:

1) Vertical transit equity vector, where different modes of mobility become integrated in a shared transit frame, instead of favoring some of them (typically automobile) over some others (cf. Gössling 2016). Vertical transit equity vector corresponds with multimodality, and focuses on stations, stops and interchanges as points where transit as an amalgamation of urban objects – infrastructure, artefacts, mobility – melts in other objects of urban space. It is essentially about equity between modes of mobility and individuals who favor them.

2) Horizontal transit equity vector, where different urban districts and/or centers of a city region are connected in and with a shared transit frame. It corresponds with an idea of multinodality, not as a traditional modernist endeavor to separate functions from each other or decide, top-down, what urban functions ought to be seen detrimental to each other (cf. Kunstler 1993), but as an attempt to create complete mixed-use urban places with character and genuine identity. Here transit could serve as a means for making them effortless and worthwhile for the city or city region dwellers to reach. It is thus essentially about equity among urban places and the roles they play at the lives of urban dwellers.

Light rail systems are game changers in urban development and design. They can be used as governance artefacts and sources of organized rupture, that forces established actors to reconsider their roles in urban development scene.

Preventing major urban objects such as the LRT from being part of developers' and construction industry's playbook for getting cities having it their way is an issue that requires focused action. It fits in the age-old urbanist agenda most prominently represented by no lesser a figure than Jane Jacobs (1961). Policy-makers should instead utilize large systemic transformations as their governance artefacts, sources of organized disruption of sorts. It forces established actors with their customary ways to reconsider what they do in the urban development scene – and why they do it the way they do. It allows them to tune themselves to a learner's mode (Karppi & Vakkuri 2019) in the face of a transformation that many of them perceive as a systemic ambiguity, not risking their professional esteem, image or identity while doing so.

These features make an LRT a true game changer. Moreover, this in-built complexity of its potential and eventual impacts is why it is a great deal more than a mere transit or transit planning issue. Being a nexus of potentialities and eventualities of urban transformations also makes it a genuine developmental force and, if understood and mastered correctly, an auspicious vehicle for promoting goals whose scale and importance might comprise entire humankind (cf. Batty & Marshall 2009). This is exactly why questions of urban justice and equity need to be debated with it – and this is exactly the niche that the Nordic countries with their distinctive traditions of linking urban planning with progressive societal goals may and, we argue, should capture in order to have a meaningful role and position in the global LRT renaissance.

Nothing listed above happens automatically. Real estate-driven gentrification, reported extensively by Moskowitz (2018) or Martin et al. (2015), shows that little can be expected from the guidance provided by the invisible hand of the market in this respect. Suzuki, Cervero and Iuchi (2013, 188) are among the most authoritative sources to emphasize how going beyond the market and resorting to the supportive institutional and regulatory environments is of critical importance if successful transit and land use (and housing, *the authors*) integration is to be achieved. This also shows the limits of smart technologies, sometimes suggested to serve as a source of sound solutions for facing the pressures of 21st century urban transformations. Organizations and governance adequately aware of the technologies' potentials and their limits are required as well (Karppi & Vakkuri 2019). Green (2019) adds to this the need to identify and promote technologies compatible with the kind of society – or city – we want to build.

Finally: can transit be an enabler for a better and more just urbanity? Based on our findings and how they relate with what is known of major transit development processes worldwide, it can be regarded at least an element of one. However, as a game changer or a piece of disruptive technology and an urban thing, it is part of the socio-material complex that must be handled with extreme care while used as a transformative force. Evidence shows that if left unchecked with strategic land-use tools and insightful housing policy, major transit investments in general and light rail systems in particular are prone to open the gates for unbridled gentrification rather than urban development worth being called equitable.

Acknowledgements

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