

Can transit enable better and more equitable urbanity?

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*Approved for a due publication in **Architectural Research in Finland**, 2021*

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 (NN & NN 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 city¹, 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.

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.

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.

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 6². 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, jugged 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

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”.

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).

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 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).

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

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

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. 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). 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.

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.

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.

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:

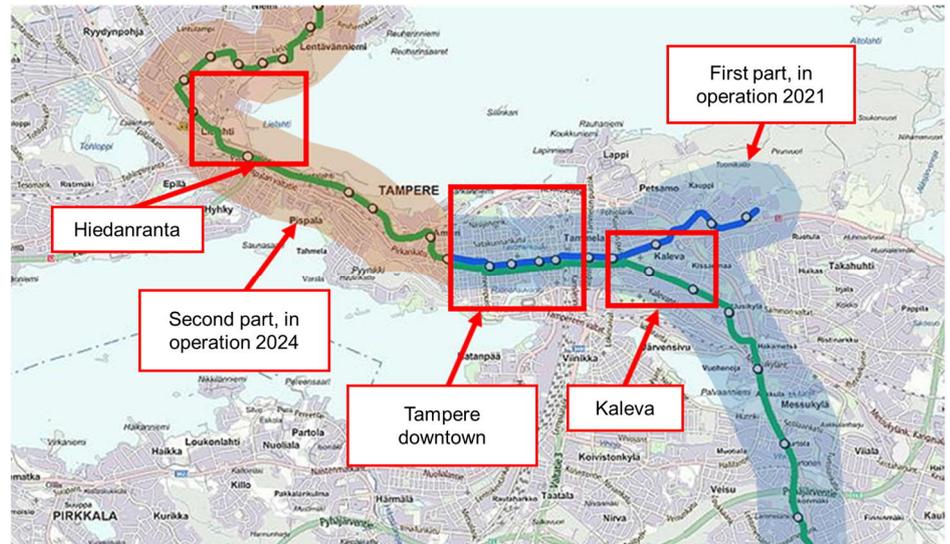
- 1) the production of more energy efficient urban structures through infill;
- 2) more mixed-use community/business structures on the route; and, finally,
- 3) the making of viable places with identity and character.

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 m² 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 Ilari Karppi.



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 storefronts 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 Lielähti retail area.

Lielähti 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 Lielähti 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 Lielähti 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 and 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)



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:

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.

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.

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

The decision-makers and professionals working for the City of Tampere, the LRT development program and entrepreneurial organizations, together with various stakeholders, all you who have shared your knowledge, insights and ruminations on the first Finnish 21st century LRT process; you are all too numerous to be given the kudos you would deserve one by one. Please accept our collective expression of gratitude for your time and patience during the years 2015-2019. We also wish to thank the two anonymous referees whose comments on an earlier draft greatly helped us to improve the final text. Lastly, the Finnish Strategic Research Council funding (Decision number 303551) is gratefully acknowledged.

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