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To cite this article: Daria Belkouri, Ditte Bendix Lanng & Richard Laing (2022): Being there: capturing and conveying noisy slices of walking in the city, Mobilities, DOI: [10.1080/17450101.2022.2045871](https://doi.org/10.1080/17450101.2022.2045871)

To link to this article: <https://doi.org/10.1080/17450101.2022.2045871>



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Published online: 16 Mar 2022.



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Being there: capturing and conveying noisy slices of walking in the city

Daria Belkouri^a , Ditte Bendix Lannig^b  and Richard Laing^a

^aCentre for Digital Cities and Society, The Scott Sutherland School of Architecture & Built Environment, Robert Gordon University, Aberdeen, UK; ^bDepartment of Architecture, Design and Media Technology, Centre for Mobilities and Urban Studies, University of Aalborg, Aalborg Øst, Denmark

ABSTRACT

The practice of walking allows us to engage with the city slowly, through kinaesthetic skill and the multisensorial apparatus of the body. Studying the city through this immersed practice-on-the-move facilitates attention to the direct contact with the urban environment, and hence brings forth analytical orientations that highlight ‘being there’ on the move. Indeed, if not including immersed experiences of mobility, fluidity, and contingency in the study of the city, we run a risk of losing sight of the actual complex and multiple cities, we live in. The paper explores how immersed and creative visual methods might be used to capture and convey the city through walking. It reports on two field studies, which sought to provide records of walking, contribute to embrace mundane phenomena that tend to be less considered, and support experientially-informed approaches in urban design, planning and decision making. It offers a discussion on the capture and convey of ‘noise’—the movement and activity that is often omitted from visual digital accounts, the ‘slices’ acknowledging the partial and situated nature of the urban records, and the limits of visual methods in the attempt to not only capture and represent, but also animate the city through these methodological accounts.

ARTICLE HISTORY

Received 31 August 2021
Accepted 13 February 2022

KEYWORDS

walking; experience; mobile methods; architecture/urban design/digital; city; presence; representation



1. Introduction

Surroundings built and natural have an immediate effect on the way we feel and act, and on our health and intelligence

(Hiss 1991, quoted in Tullis 2021, 17)

Walking has progressively become one of the major themes in urban planning and mobilities policies as a way to reinvigorate the notion of resilient cities and the future, sustainable and healthy societies (Middleton 2018; Cervero, Guerra, and Al 2017). Policies which pertain to urban design and urban planning typically do tend to mention walking, but usually within the context of a discussion of active mobility and the associated benefits in terms of physical and mental health, and possibly the implications for improved air quality and a reduction in carbon emissions.

In that context, walking will often be discussed with little mention made of the pedestrian experience as such. For example, studies which explore modal choice (Holgrem and Ivehammar

CONTACT Daria Belkouri  d.belkouri1@rgu.ac.uk  Centre for Digital Cities and Society, The Scott Sutherland School of Architecture & Built Environment, Robert Gordon University, Aberdeen, UK

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2020), health (e.g. Pae and Akar 2020) or where walking is a secondary mode (e.g. Goodman et al. 2013) are common. Indeed, deeper analytical approaches aiming to consider a situated presence on the move in the city, as part of the urbanism, remain under researched. A sedentary emphasis on solid infrastructure rather than on mobility and wider notions of urban quality—and its connections with walking—may appear a subtle distinction (see Cresswell 2006, and Urry 2007 on sedentarist rooted, bounded ways of thinking), but it betrays an emphasis on immovable aspects of architectural and engineering design, that may ‘tie down’ the understanding of walking in the city—as opposed to attempting to grasp a ‘mobilised’ account of walking; what does urban walking—as a particular practice of embodied and sociable ‘dwelling-in-motion’ (Urry 2007) entail? Especially so, in the age of productivity, culture of immediacy, urgency and global pandemic? Is slowing down, living with presence, switching off from distractions, in itself a rebellious act? How does it connect with urbanity and is there, or can, a space for the ‘art of walking’ and, herein perhaps, for hesitation be created in contemporary cities?

These questions seem increasingly relevant nowadays, as noted by Mondschein (2021, 134), who argued that as the twenty-first century progresses, the human experience of travel is becoming less cognitively active’ as new information technologies (GPS) and vehicle automation are likely to ‘passivise future travel, reducing the need for humans to engage in the world around them as they move through cities’. Our relationships with physical environment and socio-cultural sensitivity are moulded by inhabiting and interacting with the spaces the cities afford. Our experiences, and interpretation of our surroundings, requires that ‘learning the city is a necessary part of living it’ (Mondschein 2021, 124).

Taking our cue from these musings on the significance and potential value of walking, in this paper we discuss walking as an embodied, situated practice that allows us to experience and understand aspects of the city. The practice of walking allows us to engage with the city slowly, through kinaesthetic skill and the multisensorial apparatus of the body. Studying the city through this immersed practice-on-the-move facilitates attention to the direct contact with the urban environment, and hence brings forth analytical orientations that highlight ‘being there’ on the move, quite apart from more distant studies of, e.g. solidity of material infrastructures, the practicalities of travel and journey times, or the measurements of health impacts of active mobilities. However, the capturing and conveying of ‘being there’ through walking comes with a range of methodological specificities and challenges. Broadly speaking, these include the question of how to grasp the richness of embodiments, performativities, socialities, pleasures and pains of walking in the city—aspects of physical travel that mobilities studies continue to unfold. And they include attention to the difficulty of ‘trying to move with, and to be moved by, the fleeting, distributed, multiple, non-causal-sensory, emotional, and kinaesthetic’ (Büscher, Urry, and Witchger 2011, 1). We follow Büscher, Urry, and Witchger (2011) who in their editing of the volume ‘Mobile Methods’ have collected a range of accounts on research methods that attempt to do that: respond to the challenges of dealing with the fleeting, the multiple, the sensory and the kinaesthetic, and doing so without holding down the phenomena under study. We consider this a mobile commitment in the study of the city, and through this route of mobile commitment, we seek to address how walking can be regarded as being central to understanding the experience of urban space, in ways that extend beyond the technical and functional.

Our mobile commitment entails understanding the urban material environment through a ‘mobilised’ theoretical lens (Lanng, Wind, and Jensen 2017), which conceptualises urban spaces through their embeddedness in hybrid and dynamic relationships with mobilities, herein, among many other entities, humans who are walking. This relational appreciation of urban space rests on a recognition of the richness of mobilities and the multiplicity and contingency of urban architectural space and objects (Jensen and Lanng 2017), which need another set of ideas and concepts besides sedentarist ones. Human geographer Doreen Massey’s relational thinking about spaces revolves around a search to ‘enable a more lively appreciation of the challenge of space’ (Massey 1991, 15) than a static one. She emphasises relationality, heterogeneity and process to articulate a

radically open, lively and progressive understanding of space. In Massey's conceptualisation, spaces are continuously co-constituted and negotiated through their relations. This underlines that a distinct account of urban space is not universal but always woven into the complexities of other stories. Following Massey, we might imagine space 'as a simultaneity of stories-so-far' (Massey, 1991, 9), and always with connections yet to be made—embedded material practices and relations between entities that may or may not be accomplished.

There is a strong specificity and situatedness to this viewpoint. Writer in the arts, Lucy Lippard, is attentive to such specificities of local lives lived in particular places, while at the same time recognising the relational, fluid conception of places (Lippard 1997; Cresswell, 2004; see also Massey's call for retaining a 'sense of [the] local place and its particularity' while acknowledging the fleeting, ephemeral, intermittent and recurrent, global character of place (1991)). Places are not just shifting, contingent and multiple; they also possess some senses of place—in their plurality, that is, since they are appreciated through human subjective experiences. Lippard foregrounds an embodied sensorial attention to being present in specific places, engaging in diverse, changing situations, such as the kinaesthetic sensations of hiking in a landscape with the sun on the back of the neck and the rough underfoot textures, and finds that places can have a 'seductive embrace', composed of their layering of culture, narratives and history:

Each time we enter a new place, we become one of the ingredients of an existing hybridity, which is really what all 'local places' consist of. By entering that hybrid, we change it, and in each situation we may play a different role.
(Lippard 1997, 6)

Till (2009, 48) has argued that we seek to overcome the gap between thinkers and practitioners who would have the world be one of reason and order, and the way the world reveals itself 'in all its contingency'. This divide is not confined to architecture or design; rather, it is present in the modern project as such (in all its strived-for order). Yet, indeed, it is observable when architects' drawings present a ruthless editing of dynamics and contingency, trying 'to manipulate that world into (a semblance) of order' (Till 2009, 37). Indeed, by reducing the inclusion of mobility, fluidity and contingency through sedentary thinking, we run a large risk of losing sight of the actual complex and multiple cities we live in (cf. Farías, 2010; Yaneva 2012).

Inherent in this mobile conceptualisation of urban space is the simple realization that urban spaces are used and experienced in many different ways through walking. This means there is no singular or fixed image that can capture and convey the multifarious, variable, and dynamic relationships between humans and the material environment of any city. This is crucial, according to architectural scholar James Corner (1999, 227), who opined that *'the experience of space cannot be separated from the events that happen in it; space is situated, contingent and differentiated. It is remade continuously every time it is encountered by different people, every time it is represented through another medium, every time its surroundings change, every time new affiliations are forged'*.

In the context of urban planning and design policies, place-making, urban transformation, and urban development are the centre of attention, considering, among other goals and measurements of its success, the creation of material conditions for human experience. However, the multiple, mobile character of urban space underlines the challenge of method to capture and convey the richnesses of walking in the city, and hereby to genuinely support policy, planning and design practices that seek to create inclusive, experientially informed urban futures. In other words, there may often be a huge gap between being there—in the city, feeling it, through walking, and the 'data' that policy decisions are made from (see Latour 2005; see Amdur and Epstein-Plouchch 2009 for an account of the discrepancy between users' and designers' conception of a place—a bus station). The present research aims to reflectively contribute to engage with methods that have the capacity to understand better the 'more affective, tactile, sensual

effects' (Kraftl and Adey 2008, 214) of the city, and foreground the 'capacity of architecture to enable bodies to inhabit it' (Kraftl and Adey 2008, 213).

Hence, in this paper we engage in experimentation with and discussion of mobile methods that may aid grasping the experience of walking in the city and conveying that. More specifically, we address visually driven research methods, known to the fields of architecture and urban design, so as to contribute cross-disciplinary analytical deliberation over the possibilities and challenges of capturing and conveying the fleeting and sensory city.

The paper, then, seeks to address the following research question: how can visual research methods be employed to better apprehend and represent the dynamism and fleeting moments of the embedded experience of walking the city?

The paper draws on two field studies in Aberdeen and Aalborg, which explored visual methods designed to capture and convey the human experience of walking in cities, including interactions with architecture and objects, consideration of movement, and encounters and interactions with other people. The two field studies demonstrate the development and application of engaging immersed and creative methodologies to capture and represent the city through the human experience of urban walking.

The research has been distinctive in that it seeks to investigate and visually represent how the practice of walking can in itself facilitate better levels of observation, a deeper appreciation of the environment around us and can help to support a more mindful and sensorial inhabitation of space. This provides a departure point in understanding the transcendence of practical aspects of bipedal mobility, towards a focus on aesthetic, ethical, metaphysical, poetic and cultural transition, requiring new research paradigms as 'mobility practices are inherently also practices of identity and meaning construction' (Ingersoll 2006, 125; see also Jensen 2009).

The physical connection between the pedestrian and the urban environment also means that the complexity chaos and 'noise' of that environment contribute significantly to the experience of walking. Therefore, the methods which were implemented in the research sought to capture something of the urban grain. This connects with the research of Félonneau (2004), wherein the extent to which people may feel attraction to or rejection of an urban setting (urbanophilia vs. urbanophobia) is affected both by the external 'image' of a city and the presence of 'incivilities' which might be encountered in the places or situation of everyday life.

2. 'Dwelling-in-motion' in urban space through the practice of walking

Walking in the city entails engaging with the urban environment at a human scale, and at a level of intimacy not shared by any other forms of mobility. The practice of walking has been shown in previous studies within public health to have the capacity to reduce levels of stress in those who participate (e.g. Jones et al. 2021; Shi et al. 2019; Teut et al. 2012). That is, walking with a focus on slowing down, with collaboration of the mind, body and environment enable direct and immediate interactions in relation to the urban fabric.

Reference can be made to previous work concerning cognition and interpretation of urban environments. In such studies, these issues were regarded as key to the understanding and use of spaces, shaping accessibility, travel experience informing the activities and destinations each person might access (Mondschein and Moga 2018; Hollander and Sussman 2021; Goldhagen 2017). As suggested by Lynch (1960), learning the city is a necessary part of living in it, perhaps proposing that such experience at a human scale can form part of that 'learning' process.

The experience of urban walking is comprised of a series of events, including all sorts of happenings, unfoldings, and occurrences. Like other forms of mobilities, they are embodied and practiced events, actions, and performances that happen as daily life flows and encompasses 'complex habitations, practices of dwelling, embodied relations, material presences, placings and hybrid subjectivities' (Merriman 2004, 154). In this sense, we can appreciate human inhabitation

of space, and how it may be affected through the practice of walking. Furthermore, it suggests that our urban living environment—the city— is something we live in and experience and inhabit while on-the-move. Indeed, Sheller and Urry (2006) discuss how the practices of travel embrace many activities unrelated to movement (e.g. talking, working, information gathering), and the current study posits that walking in itself carries the potential to similarly afford a range of actions (e.g. thinking, exercise, introspection, socialising).

Architect Lars Gemzoe (2001) highlighted that *'one of the key factors in understanding the complexity of [physical] areas for walking is that there is much more to walking than walking ... Numbers alone are not an indication of the quality of a place'* (20) (see also Gehl 2010; Gemzoe and Gehl 2001). More recently, Careri (2017) pointed to walking as a design and cognitive tool—a way of apprehending the architecture and urban context—identifying a *'geography in the chaos of the peripheries'* (31). The instinctive and associative value of walking is readily available in most people's minds—wandering, roaming, rambling, strolling, sauntering, drifting, meandering, slow moving. Thoreau (1862) elevated this notion to the *'art of walking, that is, of taking walks'*. Solnit (2001) brilliantly compared the act of walking to breathing and the rhythm of the beating heart—an ordinary but also requisite and essential life supporting activity.

The aim is to indicate walking as an aesthetic tool capable of describing and modifying those metropolitan spaces that often have a nature still demanding comprehension, to be filled with **meanings** rather than designed and filled with **things**'
Careri (2017, 32, emphasis added).

Careri went on to argue that walking enables the inhabitant of a city to participate in the intrinsically changeable urban environment—the 'mutability' of urban spaces—thus demonstrating the impossible challenge of attempting to use urban design as a form of control.

Similarly, *'to exist is to be somewhere in some kind of place'* (Casey 1998, ix); the air we breathe, the ground we place our steps on and our lived bodies link up with each other as *'nothing we do is unplaced'* (Casey 1998, ix). Hiss (1991) underlines the importance of the everyday environment: *'to learn that our ordinary surroundings, built and natural alike, have an immediate and continuing effect on the way we feel and act, and on our health and intelligence'* (quoted in Hollander and Sussman 2021, 17). Therefore, the design of spaces we inhabit and experience will be likely to have a profound effect on our wellbeing and sense of identity (Goldhagen 2017).

The explorative aspects of urban wandering, therefore, can lead to a better appreciation of the environment. As Edensor (2010) argued, a sense of spatial belonging *'can be produced through longer immersion by the walking body across a more extended space'*. How we value such simple, effortless and mundane experience of (able-bodied) walking, may in itself lend a special meaning and consider its spiritual rewards via utilising the meanderings of the mind triggered by the physical act. To quote Solnit (2001), *'walking ... wanders so readily into religion, philosophy, landscape, urban policy, anatomy, allegory and heartbreak'*. The slow motion, the mindful, existential mode of the urban walker can be activated when we question, think, observe and reach out for experiences and connections that expand our microcosm that is readily entangled with the realm of city streets, public spaces, architecture and other people. The autonomy of the walker to move freely in any direction, discovering new and ever asserting itself urban choreographies as well as endless possibilities of making a sudden detour is alluring and unparalleled with other means of transport available in the urban context.

Within this context, we are able to establish a theoretical lens through which to explore the topic of urban walking. From previous research, one could argue that forming connections between walking and mindfulness requires a degree of intentionality. The use of visual research methods, discussed in the following section, to record the physicality of the urban environment can provide a context through which research enabled to explore these connections. It is vital, though, to ensure that the methods and how they are applied are able to equally represent, or foster discussion of, the noise, experiences and interactions which together define the walking

experience. On this basis the next section of the paper describes the approach taken towards the capturing and subsequent representation of urban walking environments and experiences, within which the actual practice of walking is central to the methods adopted.

3. Recording and capturing the experience of walking in the city

Below, we unfold methodological considerations of two field studies, in Aberdeen and Aalborg. Undertaken independently, by two different research groups, in two countries, the studies both aimed to explore the potential ways in which an apprehension of the experience of walking can be enabled, thus providing a record of walking the city which can contribute to experientially-informed approaches in design, planning and decision making. The studies sought to embrace mundane phenomena that tend to be considered seemingly '*less remarkable, unspectacular, and unreported everyday experiences*' (Middleton 2010), associated with aspects of the actual practice of walking and experiencing urban environments. With this in mind, the studies were designed to explore how visually driven research methods might in turn, and at once, be useful to capture the experience of walking as well as providing the basis for further enlightenment in the minds of the research participants.

Each of the two cases bring forth important discussion points that help us to develop a deeper level of sensitivity in the observation of contemporary cities. By utilising walking as a critical lens through which the research explored the human experience of urban spaces, we begin to address our research question (the practice of walking, and, visual methods to capture and represent the experience).

3.1. Walking Aberdeen: abstraction through digital data capture

Abstract[ed] Aberdeen was a study undertaken in Aberdeen during 2020 as part of the EU H2020 Civitas PORTIS project. It was conceived out of the city explorations where the simultaneous act of walking and mapping the environment transformed the experience of space and relationship with urbanscape. The work undertaken aimed to explore how walking could be supported, encouraged and positively influenced by the urban environment itself by looking at the city from a new—sometimes abstract perspective and through the use of a range of innovative qualitative data collection techniques (PORTIS 2020).

The great majority of research undertaken with regards to digital data capture, and the use of laser scanning in particular, has concentrated on the technical processes and protocols which can be utilised to help collect valid, reliable and geometrically accurate information. Many of the application areas for laser scanning, in the built environment, relate to the accurate recording of existing sites and buildings, or recording information about ongoing projects, such as in road building. In such cases, it is important to ensure that the data which is curated and made available for use by a professional team only contains information which is relevant to the project at hand. Whilst it may be the case that there is some value in collecting information about the colour and surface characteristics of a building, the usefulness of other data pertaining to surrounding objects may be less useful. Therefore, it is possible to identify many papers and examples of previous research which are dedicated to the subject of removing this 'noise'—the extraneous data from a point cloud. For example, Schauer and Nüchter (2018) developed and demonstrated excellent techniques specifically aimed at the removal of non-static objects, including pedestrians, from laser scan data (Figure 1).

In many ways, such an approach is useful to the current research only in the sense that it enables a visually representative model of an area to be collected and represented in a short amount of time. In other respects, however, it is probably true that the current research has more in common with instances of sensory design or participatory design, where the wider emotional and sensory reaction to an environment is vital. Accordingly, the current research, described here, is as interested in the contents of the noise as it is in the surrounding



Figure 1. Still image from a walking route in Aberdeen city centre. (Belkouri, D., 2020. Point cloud map showing Denburn Road viaduct, Aberdeen.).

environment. The outputs of the research suggest an innovative approach to the visualisation of urban space, which utilises digital technology to better represent the immersed urban experience than is perhaps possible using more traditional architectural and engineering drawings.

The experiences that cities afford: architecture, obstructions, boundaries, with non-visual aspects of environment—personal and civic memories, smells, sounds—are all part of *genius loci* and arguably construct or deeply affect our patterns of movement and interaction with space. The study made an attempt to rediscover and expose the ‘art of environment’ (Cullen 1961) and avoid the feeling that when walking through the city it ‘*slips past featureless and inert*’ (p.9). During the study, various journeys through the city were captured by portable laser scanner, resulting in the emergence of an alternative virtual version of Aberdeen—to embody the experience of ‘Aberdeenness’—how it feels to walk through the city’s streets, tunnels and underpasses. As Rendell argued through ‘*the act of walking new connections are made and remade, physically and conceptually over time and through space*’ (2006, 191). The study considered walking experience as important in its own right and would try to establish whether the re-discovery of often familiar context would reinforce the idea that the process of deepening subjective ‘interpretation’ of our cities improves our experience of inhabiting urban spaces (Lynch 1960). The project also aimed to examine whether people’s individual bias of experiencing space and apprehension of the urban context can be challenged and simultaneously improved by exposing them to re-imagined visions of familiar spaces in the city by gaining a clandestine appreciation of the city that was not available to them before.

3.1.1. Methods: digital data capture and the walking experience

To produce datasets, a portable scanner device was used that involved and directly corresponded to the aspects of urban journeys. Walking and thinking in movement ‘proceed hand in hand’

(Sheets-Johnstone 1999) and can be considered especially important because its relatively slow pace allows the sensory intake of (changing) details of the immediate context, the feeling of the sense of scale and experience of spatial urban geometries. Walking therefore can be seen as a research method and a way to study spaces in the city via the original visual perspectives gained by directly experiencing the surroundings (Careri 2017 (2002) on walking as aesthetic tool, Stalker group and situationist derive).

The intention was to look beyond the primary (designed) purpose of 3D laser scanning and to explore how the technology could be used to inform and educate us about the multi dimensions of the city perceived as an *'accumulation of stories and acts, unaccountable and un-measurable'* (Gillespie 2011). The uniqueness of initial data output from the scanner invited reflection on the space from different perspectives. From ordinary and obscure, the city transformed into unusual and quite astonishing spaces as if the technology acted as an enhancer and a filter of the coded information that the city beholds offering peripheral vision of the side-line and overlooked spaces—the edges of the city that cannot normally be seen. Perec (1975) utilised a notion of 'infraordinary' the manifestations of everydayness and experiences composing the essence of our lives but that somewhat persistently escape our attention. Just like some seemingly less-than-noble spaces in our cities often form the quotidian construct through which we dwell every day. Therefore, by exhausting a place, immersing in it, artistically manipulating and 'abstracting' urban settings new environmental meanings could potentially be created. Being ultra-aware and submerging in the city via novel methods of discovery could reveal unique perspectives when looking at cities as '[a]t every instant, there is more than the eye can see, more than the ear can hear, a setting or a view waiting to be explored' (Lynch 1960, 1) (Figure 2).

The instantaneous nature of a portable scan peculiarly allowed at the same time for capturing frozen images of the urban context. Images generated from scanners exposed spatial



Figure 2. Still image from a walking route in Aberdeen city centre. (Belkouri, D., 2020. Point cloud map showing Guild Street, Aberdeen.).

relationships better with higher level of information than a two-dimensional map which does not always convey the richness of the complex urban context. Topography of Aberdeen and specific environment of its location was captured by the 3D laser scanner with the data output translated into subjective mapping that exposed the distinctive atmosphere of the place.

'A map is a construction that is simultaneously a translation of real phenomena and an abstraction of that translation. A map always exists in an uncanny relationship with the real, as it is simultaneously an abstraction, a condition of opening up, of pointing towards new conditions, new spaces and new projects' (Amoroso 2010, 85)

Urban scanning is based on retrieving the surface information of the built environment. Specific urban context act as series of rooms where the information of outer surfaces/boundaries of architecture and built fabric is collected from a shifting centre of gravity created by a person scanning and wandering through the city. The output from laser scanners depicts real world scenes that change into abstract urbanscapes offering different possibilities of what we are actually looking at.

It is in the constant quest or creative process to deliver new visual means of expressing data that new discoveries are made about the urban spaces and places around us. (Amoroso 2010, 157)

The workings of 3D laser scanners are fascinating to observe. The juxtaposition of thousands of laser beams forming a representation of an actual context by connecting millions of surface points—an abstract act requiring human direction and perspective, especially concerned with the placement and operation of the equipment. The interlinkages between motion and (visual) perception of the environment as an aesthetic experience—potentially create a notion of visually biased urbanism, yet, also pose a plea to exercise new alertness, [re]focused way of looking and exhausting the surrounding [urban] environment.

Conceived by intermeshing the experience of contemporary urban walking and interaction with the physical and then abstracted context through interweaving an exercise of wandering through the city and simultaneously interpreting it, walking was regarded as being similar to looking at an artwork or reading a poem. The feelings of what this experience evokes in an individual—the subjective experience of communing with urbanity and/or art, bringing personal associations could be related to space and its abstract versions—images from 3d laser scanners, photographs of a detail—a piece of space extracted from a larger picture—skilfully cropped, or an architectural vision for the area. The spatial images generated from the scans—exposing 'alternative depictions of the city as hybrids of poetically striking maps and images' (Amoroso 2010, xi)—uncovered the interplay of urban voids and volumes, open spaces, enclosed passages, tunnels and niches in the underground network of urban corridors depicting the experience and enhanced understanding of urban walking practices.

3.2. Walking Aalborg: capturing embodied and situated mobile experiences

In the period 2019–2020, Aalborg University's Centre for Mobilities & Urban Studies and the City of Aalborg collaborated on an integrated process of building a reflective knowledge bank on professional and academic practice in the intersectional field of pedestrian mobility and urban quality. With the city centre of Aalborg, Denmark, as a case and with the urban and traffic planning trajectories of the city authority as a pivotal point, the living lab project[1] aimed to identify, debate, and experiment with the conceptualization of walking & the city, with urban design strategies and principles, the specificity of routes and spaces, and with methods that could capture and convey human situational practices and experiences of walking in the city.

The project engaged activities and conversations around the intersection between walking and urban quality, posing questions as diverse as: Can the urban fabric invite healthy and active mobilities by foot? Do the mobility spaces on the routes work as social and cultural places? Can pedestrian mobilities play a significant role in more sustainable, fine-meshed urban mobility systems? How can we appreciate urban walking beyond its utilitarian objective (transport or recreation); is it an aesthetic, cultural activity of dwelling-in-motion? How can we understand the transverse character and potential of walking in the city across the technical, the social and the aesthetic?

One of the activities of the living lab was a study of three routes in the inner city of Aalborg. The study demonstrated some of the variation and experiential richness of the city; at the same time slow and quick, hectic and quiet. Its urban fabric offers spaces, directions, change and history, interactions and exposure to the pedestrian. Here, we will explicate some of the methods used in this study, as an example to facilitate the discussion of capturing and conveying walking in the city.

3.2.1. *Methods: flimsy slices of walking the city*

The study experimented with customizing a methodology that could engage with an embodied, situated and multisensorial mobile experience of the city, its spaces and materiality. As such, it employed a method compound, combining methods from the urban design toolbox of analogue site analysis with inspiration from 'mobile methods' (Büscher and Urry 2009; Fincham, McGuinness, and Murray 2010). The research aimed to transgress an application of these methods as automated routes of data collection at 'sites' slated for planning or design intervention (Burns and Kahn 2005), and instead apply them in an open and explorative tracing of the city aspiring to a more lively and irreductivist capture than conventional mapping techniques may often aspire to do (see Yaneva 2012).

The method compound was made by combining visual captures through urban walks, with slow ethnographies, observations and interviews with pedestrians. In addition, we experimented with urban walkshops, in which conversations among the research team members deliberated specific embodied multi-sensory kinetic experiences of urban atmospheres (Böhme 1993; Thibaud 2011; Wind, Lanng, and Jensen 2017; Lanng 2014), the tactility and texture of the lively urban fabric, and our own embeddedness in the 'socio-spatial compression' of urban spaces (Nielsen 2019). Here, we will foreground the visual research methods of the study: 'Serial Vision' (Cullen 1961)[3] and 'Urban Tomography' (Krieger 2011).

Serial vision is a technique for visual analysis of the spatial sequence of the route. With serial vision the researcher seeks to capture the urban experience as 'a sequence of revelations' (Cullen 1961, 17) provided by the continuity, changes, variations and contrasts of the built environment—e.g. wide and narrow spaces, twists and turns of the route. Through capturing a series of photos along the Aalborg routes, we sought to engage the tension between 'hereness' and 'thereness' in the movement through the city, and foreground the moving, situated viewpoint of the pedestrian as a tool for apprehending the city (Figure 3).

Urban Tomography, on the other hand, records views of the city as slices of urban phenomena, multiplied so as to produce a large number of specific images (Krieger 2011). Through capturing hundreds of photographs of people walking in the city at three different times of day at the three routes, we sought to unfold our curiosity towards the urban processes in these spaces and produce 'tomograms'. That is, 'slices in space and in time and in typology' (ibid., 2) that—from an immersed view point—call attention to walking people and activities that may tend to be rendered less visible by commonality. Through the repetition—the extent and diversity of the documentation—the intention was to learn about these routes as a 'ubiquitous and meaningful' series of lived and 'walked' spaces, that are relational, networked, and collective, enacted and co-produced by lived mobilities, rather than 'idiosyncratic or without significance' (ibid., 3; see also Lanng, Wind, and Jensen 2017; Silva et al. 2019) (Figure 4).

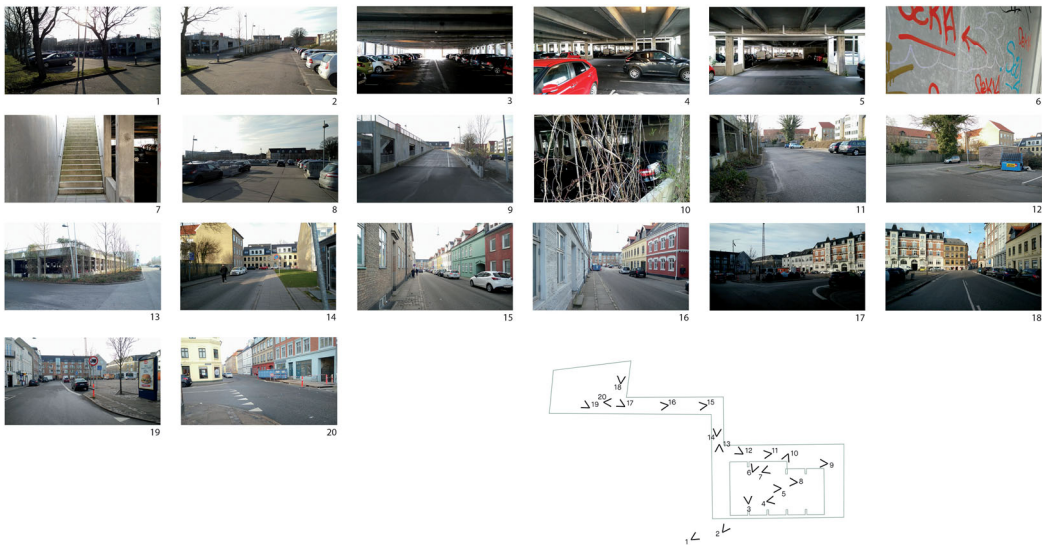


Figure 3. Serial Vision, Sauers Plads-Frederikstov, Aalborg. (Photos: Søren Risdal Borg, 18/2-2019).

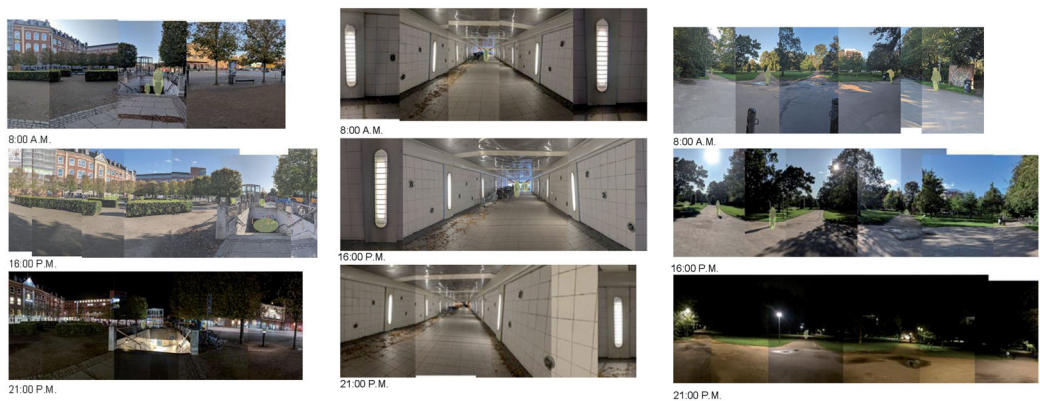


Figure 4. Tomograms, John F. Kennedy's Plads-Kildeparken, Aalborg. (Photos: Harshita Vishway & Venkata Lalita Apoorva Jayanti, 18/9-2019).

4. Discussion

The two studies, each exploring different visual methods from the analogue and digital toolbox of the disciplines of architecture and urban design. The application of these methods with the purpose to capture and convey the city through walking it, brings forth issues of methodological importance, herein the impossibility of accuracy and exhaustive accounts in the study of the city and the complications brought about by the capture and representation of the city through visual means. Here, we will discuss these issues through three points: 'noise' of the city, slices of the city, and the visual hegemony in the capture and representation of the city.

4.1. 'Noise' of the city

In the case of digital data capture the technology had more usually been employed to record static objects and to avoid the noise which may emerge through movement and activity, we

would argue that little search in actual fact was designed to focus on such noise, regarding it not as a distraction or imperfection within the data but rather as a vital component of the urban experience.

The intention behind using applied methods was to appreciate and apprehend the experience of walking, as opposed to using the tools to simply produce an accurate geometrical record. The technology was used to extend human capacity to form impressions and perceive beyond the visible city—discovering it anew, recomposing and reconfiguring the experience of being in the city, potentially triggering co-creation element when thinking about spatial design. Capturing instantaneous constructs of urban scenes—depicting millions of dots—each carrying information on the exact position of elements in space—that include features of surrounding static physical world as well as fleeting elements of weather, trees, movement of people and objects—somewhat resonating urban ‘noise’, provides multiple focuses of attention and extends the realm of experience.

The application of laser scanning within urban areas comes with an additional challenge, in that there is usually a large amount of movement and moving objects in the vicinity of any buildings or streets. This means in turn that data sets are often dominated by the inclusion of what might be regarded in many studies as noise. For example, the abstract appearance of people as they pass by the equipment (as described in Nagy 2016), any vehicles which may be passing by, wildlife (especially birds) and in some cases weather conditions. Turning this on its head, though—an approach which intentionally seeks to ‘*scan the seagulls*’ could arguably provide a far richer record of the experience. The data capture methods which were applied—scanning, serial vision, tomography—support the subsequent representation of movement and urban ‘noise’, including the opportunity to show concentrations of activity (tomography), and the relationships between walking, navigation and the built environment (serial vision and scanning).

4.2. *Slices of the city*

The Aalborg case actions might be taken as an attempt at ‘*making the city*’, through slowing down judgement and reasoning, and allow more complex, and more careful accounts of the city to emerge (see also Doucet 2012, in *SI Traceable Cities*). The two visual captures of Serial Vision and Urban Tomography entered a wider assemblage of registrations and descriptions of the Aalborg study, providing the opportunity to delve in a collection of particular, flimsy ‘slices’ of walking the city. These captures may convey some of the aspects that comprise the city of Aalborg, but here we will resist the temptation to make these descriptions into correspondences of walking Aalborg ‘as a whole’. This is a temptation and instrumental imperative that tends to lie in planning and design—set for driving the understanding of the city towards policy and design intervention. Yet, this goal-orientation tends to ‘reduce the complex multi-sensuous experience to visually encoded features and then organise and synthesise these into a meaningful whole’ (Urry 2000, 88). Instead, we here turn to the call for an ‘*oligopticon*’ way of tracing the city (after Latour 2005), leaving behind the idea of any dominant ocular gaze that can neutrally grasp and represent the city as a whole, fixed and stable entity.

The visual methods of the Aalborg study allowed the exploration of a partial, situated knowledge of the city. Both methods conduct a clear slicing, or sequencing of the phenomenon of walking the city. And they therefore carry a deselection of, even inherent blindness to, multiple other aspects that are part of the experience. However, they differ from and complement each other in how they slice up the experience. Whereas the serial vision captures the embeddedness of every single picture frame in spatial sequences, the tomograms foreground the embeddedness of every single moment in the variety of momentary, dynamic urban situations. As such,

together these two types of visual capture, convey not only the instantaneous images that they readily represent, but also aid us in imagining the fuller processes of these spaces.

4.3. Limits of the visual in animating the lived city

The use of visual methods presented in both studies rendered *'pedestrian movement as ways of reading/known urban space'* (Middleton 2010) and probed selective yet full attention and (re)engagement with surrounding urban context, emphasising the interrelation of sensory experiences and bipedal mobility. Pedestrians, as opposed to people using cars for instance, whilst journeying through the city can engage full sensorial spectrum, and perceive the *'city beyond visual regime'* (Zardini 2005). Yet, the somewhat *'visual bias'* of proposed methodological approach is inviting the perception of the extracted elements (see Corner 1999 on mapping extraction) of city phenomena to become *'visible in a deeper sense'* (Cullen 1961, 9). For it is through the faculty of vision coalescing with *'human imagination [that] can mould the city into coherent drama'* (Cullen 1961)—setting scene inhabited by our bodies (and our souls) (Zardini 2012). Applied methods allowed for a free interpretation of actual surroundings affording an ephemeral view of the city where spaces transformed into unexpected visual phenomena. Mundane routes through the city like passing urban car park structure depicted unusual perspectives as if derived from a science fiction movie set. Drifting through the streets and thinking about own city with the creative mindset, freely reading the real and then abstracted realms can trigger new insights into seemingly familiar spaces translating unexpected discoveries into unhindered possibilities of encountered spaces in the city.

Often the obscure, marginal and unobvious places can be construed as impactful nodal points on the map when we open up to new experiences, reflections acquire a new type of urban sensitivity. Looking around and being mindful of surroundings requires an effort especially in the light of progressive automation or potential further passivisation of our lives and cities. Deeper meaning can be assigned to places we saunter through as *'[w]alking settings [...], are more than functional, they are emotional: they provide us with places to grow and to remember, places to sit back and relax and enjoy life, places to meet people that we care about, places to fall in love with'* (Lavadinho and Winkin 2016, 165). Through the methods adopted, by rendering noise the richness of the walking experience becomes visible.

Sensory response, awareness of multidimensionality of the city and familiar spaces was discovered as well as an alternative way of grasping the urban surroundings afforded. The accuracy of the scanner created seemingly counterintuitive surplus of information, yet it allowed a free interpretation of the vast urban context—an alluring vision showing new abstracted city forms yielding inspiring new perspectives and imaginative design initiatives. Unexpected discoveries can be translated into unhindered urban possibilities as *'wanderings are also wonderings which seek out the interweaving storylines binding self, others, places, and times'* (Vannini 2015, 222).

The methodology emphasised the situational response while wandering in an urban context through cognition and deepening spatial knowledge—the *'interpretability'* of urban surroundings to make use of space, be ultra-aware and engage with the complexity of people's experiences of the urban environment while walking.

The methods of the study foregrounded that the routes are subject to multiple, *'lived'* conditions and relationships beyond the stability of the built environment (see Lanng 2018) that encompass immensely rich and diverse relationships between movement, humans, and urban space. Pedestrians engage these spaces and routes in all kinds of relationships with their practices of walking: *'[t]he physicality of the city constantly interacts, supports and collides with our bodies'* (Degen et al. 2010). Therefore, this is not the mimetic practice of representation of that which is stable (the built environment), but an attempt to capture that which is less representational; to convey and reverberate and even animate the interrelationship between the built

environment and the practice of walking (see Vannini 2015; Lorimer 2005 for accounts and discussions of more-than-representational/non-representational research).

4.4. Potential implications for urban planning

This paper argues that there is value to be drawn from capturing a multiplicity of viewpoints and in 'abstracting' journeys to retrieve aesthetic, poetic qualities which hold the potential to suggest unimagined urban alternatives. The significance for urban planning is clear, where utilisation of the methods presented in the paper could have positive implications for the effective promotion and co-design of city walkability. Middleton (2010) argued for more creative methods within planning interventions and practice of exploring surroundings, inspiring, and supporting pedestrian activity that could have pragmatic relevance. Arguably, the findings from our studies accord with various initiatives encouraging walking through artistic performances (see Urban Earth 2007; Wrights & Sites 2006; Islington Council 2007) calling for '(re-) engagement' with places which posit different perspectives on how people could move in the city. Paying more attention to the urban environments and places which city residents frequent in creative, sensory ways (Hein et al. 2008) provides 'a manifesto for the active and creative pedestrian' (Wrights & Sites 2006, 121) to whom new ideas would be born out of immersive exploration and free interpretation of familiar spaces. The potential value to be drawn from the methods in terms of engaging with—and understanding—different users and perspectives is important both for practice and further study. For example, the methods and overall approaches could be applied to study and work with specific groups, such as residents (Moura, Cambra, and Gonçalves 2017; COST 358 2010), visitors (Zamparini and Vergori 2021) or migrants (D'Ignotti 2019; Lórinç et al. 2021), whose experiences of walking in the city are likely to be unique, and driven by particular needs.

5. Conclusion and further perspectives

The research reported in this paper sought to explore how visual research methods can be employed to better apprehend and represent the dynamism and fleeting moments of the embedded experience of walking the city. The paper argued that walking as an immersed practice-on-the-move provides a point from which to study the city, bringing forth analytical orientations towards 'being there'. Such analytical orientations, we argue, are important to our appreciation of the city, with implications for urban planning, and for the management of our urban spaces. Indeed, if not including immersed experiences of mobility, fluidity, and contingency in the study of the city, we run a risk of losing sight of the actual complex and multiple cities, we live in.

The two field studies, reported in the paper, each sought to appreciate the experience of walking, applying the methods of digital data scan, serial vision, and urban tomography. Through these methods, the studies aimed to provide records of walking the city which can include a mobile commitment in the study of the city, contribute to embrace mundane phenomena that tend to be less considered, and support experientially-informed approaches in urban design, planning and decision making.

These ideas, methods and presented points of view could be more potentially be incorporated into urban planning as it has been argued that the enhanced and nuanced understanding is needed to promote city walking more effectively (Middleton 2009). This research and adopted methodology aimed to explore whether more diversified mode of enquiry mixed with performative and creative aspects to studying multifaced pedestrian behaviour mixed with influencing perceptions of spaces could give constructive results, consequently causing more meaningful engagement and attachment to spaces.

On this basis the paper has offered a discussion on the capture and convey of ‘noise’ of the city, i.e. the movement and activity that is often omitted from visual digital accounts, the ‘slices’ of the city, acknowledging the partial and situated nature of the urban records, and the limits of visual methods in the attempt to not only capture and represent, but also animate the city through these methodological accounts.

With regards to further research suggested by the study, a route is to engage further with the new mobilities paradigm, and to explore how technologies developed to assist urban walking with regards to wayfinding and active lifestyles can be employed to study deeper emotional and psychological effects. We argue that what is being captured or ‘mapped’ are the influences, intentions, experiences and impressions of those involved, perhaps extending the plea from Yaneva and Mommersteeg (2019) to regard buildings and the built environment as representing and embodying values, cultures and subjects (as opposed to simply mapping the city as a collection of static objects, drained of life—as criticized by Latour 2004). That is, as environments which are complex, situated and richly diverse. That is, we can aspire to capture and document the processes, experiences and effects of walking, and in so doing make a significant contribution to not only walking-centred mobilities but also—in a broader sense—a mobile commitment in the study and appreciation of the city among observers and professionals.

Acknowledgements

The authors wish to acknowledge all the research participants on the Aalborg C-MUS PRAKSIS Living Lab study, ‘Pedestrian Mobility & Urban Quality: Mobilities Design in the city centre of Aalborg’: Anne Juel Andersen, Maria Quvang Harck Vestergaard, Rie Malling, Jeppe Astrup Andersen, and Line Bøg Risager from the City of Aalborg, and Søren Risdal Borg, Harshita Vishway, Apoorva Lalita Jayanti Venkata and students at MSc02 Urban Design 2019, Aalborg University.

Funding

Initial digital data capture for the Aberdeen case study was undertaken as part of Civitas PORTIS [EU H2020 grant agreement number 690713]. Writing and elaboration of the main text was undertaken through Interreg North Sea Region projects PAV (Planning for Autonomous Vehicles) and Art-FORUM.

ORCID

Daria Belkouri  <http://orcid.org/0000-0003-0712-2062>

Ditte Bendix Lanng  <http://orcid.org/0000-0002-7869-9590>

References

- Amoroso, N. 2010. *The Exposed City. Mapping the Urban Invisibles*. New York: Routledge.
- Böhme, G. 1993. “Atmosphere as the Fundamental Concept of a New Aesthetics.” *Thesis Eleven* 36 (1): 113–126. doi: [10.1177/072551369303600107](https://doi.org/10.1177/072551369303600107).
- Burns, C., and A. Kahn (eds). 2005. *Site Matters Design Concepts, Histories and Strategies*. New York: Routledge.
- Büscher, M., and J. Urry. 2009. “Mobile Methods and the Empirical.” *European Journal of Social Theory* 12 (1): 99–116.
- Büscher, M., J. Urry, and K. Witchger. 2011. *Mobile Methods*. New York: Routledge.
- Carer, F. 2017 (2002). *Walkscapes: Walking as an Aesthetic Practice*. Ames, IA: Culicidae Press.
- Casey, E. 1998. *The Fate of Place, a Philosophical History*. Berkeley, CA: University of California Press.
- Cervero, R., E. Guerra, and S. Al. 2017. *Beyond Mobility: Planning Cities for People and Places*. Washington, DC: Island Press.
- Corner, J. 1999. “The Agency of Mapping: Speculation, Critique and Invention.” In *Mappings*, edited by D. Cosgrove, 201–252. London: Reaktion Books Ltd.

- COST 358. 2010. Pedestrians' Quality Needs Final Report part B1 – Functional needs. COST 358 PQN Final report, Hector Monterde i Bort (coord.)
- Cresswell, T. 2004. *Place a Short Introduction*. Malden, MA: Blackwell Publishing.
- Cresswell, T. 2006. *On the Move: Mobility in the Modern Western World*. New York: Routledge.
- Cullen, G. 1961. *The Concise Townscape*. New York: Routledge.
- D'Ignoti, S. 2019. 'We Are Human Beings Too': Migrant-Led Walking Tours Tackle Hate in Italian cities. *Guardian*. [online] <https://www.theguardian.com/cities/2019/aug/08/we-are-human-beings-too-migrant-led-walking-tours-tackle-hate-in-italian-cities>.
- Degen, M., G. Rose, and B. Begum. 2010. "Bodies and Everyday Practices in Designed Urban Environments." *Science Studies (Tampere)* 23 (2): 60–76. doi:10.23987/sts.55253.
- Doucet, I. 2012. "Making a City with Words: Understanding Brussels through Its Urban Heroes and Villains." *City, Culture and Society* 3 (2): 105–116. doi:10.1016/j.ccs.2011.11.004.
- Edensor, T. 2010. "Walking in Rhythms: Place, Regulation, Style and the Flow of Experience." *Visual Studies* 25 (1): 69–79.
- Fariás, I. 2010. "Introduction: Decentering the Object of Urban Studies." In *Urban Assemblages: How Actor-Network Theory Changes Urban Studies*, edited by I. Fariás and T. Bender, 1–24. London; New York: Routledge.
- Félonneau, M. -L. 2004. "Love and Loathing of the City: Urbanophilia and Urbanophobia, Topological Identity and Perceived Incivilities." *Journal of Environmental Psychology* 24 (1): 43–52.
- Fincham, B., McGuinness, M., and L. Murray, eds. 2010. *Mobile Methodologies*. Basingstoke, UK: Palgrave Macmillan.
- Gehl, J. 2010. *Cities for People*. Washington, DC: Island Press.
- Gemzoe, L. 2001. "Copenhagen on Foot: Thirty Years of Planning and Development." *World Transport Policy and Practice* 7 (4) : 19–27.
- Gemzoe, L., and J. Gehl. 2001. *New City Spaces*. Copenhagen: The Danish Architectural Press.
- Gillespie, N. 2011. "Architecture of Doubt." Architectural Foundation. [online]. <https://www.scribd.com/document/340718784/The-Architecture-of-Doubt-NG>
- Goldhagen, S. W. 2017. *Welcome to Your World, How the Built Environment Shapes Our Lives*. New York: HarperCollins.
- Goodman, A., J. Panter, S. J. Sharp, and D. Ogilvie. 2013. "Effectiveness and Equity Impacts of Town-Wide Cycling Initiatives in England: A Longitudinal, Controlled Natural Experimental Study." *Social Science & Medicine (1982)* 97: 228–237.
- Holgrem, J., and P. Ivehammar. 2020. "Mode Choice in Home-to-Work Travel in Mid-Size Towns: The Competitiveness of Public Transport When Bicycling and Walking Are Viable Options." *Transportation Research Procedia* 48: 1635–1643.
- Hollander, J. B., and A. Sussman, eds. 2021. *Urban Experience and Design. Contemporary Perspectives on Improving Public Realm*. New York: Routledge.
- Ingersoll, R. 2006. *Sprawltown. Looking for the City on Its Edge*. New York: Princeton Architectural Press.
- Islington Council. 2007. *Walking Islington: Explore the Unexpected*. London: Islington Council.
- Jensen, O. B. 2009. "Flows of Meaning, Cultures of Movements – Urban Mobility as Meaningful Everyday Life Practice." *Mobilities* 4 (1): 139–158.
- Jensen, O. B., and D. B. Lanng. 2017. *Mobilities Design: Urban Designs for Mobile Situations*. Abingdon: Routledge.
- Jones, K. O., Snehal S. Lopes, C. Kelly, R. S. Welsh, C. Liwei, M. Wilson, J. Meenu, H. Zinzow, L. Zhang, and L. Shi. 2021. "A Qualitative Study on Participants' Experiences With a Community-Based Mindful Walking Intervention and Mobile Device Activity Measurement." *Complementary Therapies in Medicine* 57: 102640.
- Kraftl, P., and P. Adey. 2008. "Architecture/Affect/Inhabitation: Geographies of Being-In Buildings." *Annals of the Association of American Geographers* 98 (1): 213–231. doi:10.1080/00045600701734687.
- Krieger, M. H. 2011. *Urban Tomographies*. Philadelphia: University of Pennsylvania Press.
- Lanng, D. B. 2014. "How Does It Feel to Travel through a Tunnel? Designing a Mundane Transit Space in Denmark." *Ambiances*. <https://journals.openedition.org/ambiances/454>. doi:10.4000/ambiances.454.
- Lanng, D. B., S. Wind, and O. B. Jensen. 2017. "Mobilities Design: On the Way Through Unheeded Mobilities Spaces." In *Proceeding Series 2017-1, Urban Mobility – Architectures, Geographies and Social Space*, edited by A. E. Toft and M. Rönn, 69–84. Malmö, Sweden: Nordic Association of Architectural Research.
- Lanng, D. B. 2018. "A 'More-than-Representational' Mapping Study: Lived Mobilities + Mundane Architectures." *Nordic Journal of Architectural Research* 30 (1): 153–174.
- Latour, B. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. New York: Oxford University Press.
- Latour, B. 2004. "Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern." *Critical Inquiry* 30 (2): 225–248.
- Lavadinho, S., and Y. Winkin. 2016. "Enchantment Engineering and Pedestrian Empowerment: The Geneva Case." In *Ways of Walking, Ethnography and Practice on Foot*, T. Ingold and J. L. Vergunst, 155–168. London: Routledge.
- Lippard, L. 1997. *The Lure of the Local: Senses of Place in a Multicentered Society*. New York: The New Press.
- Lorimer, H. 2005. "Cultural Geography: The Busyness of Being 'More-than-Representational.'" In: *Progress in Human Geography* 29 (1): 83–94.

- Lőrinc, M., M. Kilkey, L. Ryan, and O. Tawodzera. 2021. "‘You Still Want to Go Lots of Places’: Exploring Walking Interviews in Research with Older Migrants." *Gerontologist*. doi: [10.1093/geront/gnab152](https://doi.org/10.1093/geront/gnab152).
- Lynch, K. 1960. *The Image of the City*. Cambridge, MA: Massachusetts Institute of Technology.
- Massey, D. 1991. "A Global Sense of Place." *Marxism Today* 38: 24–29.
- Merriman, P. 2004. "Driving Places: Marc Augé, Non-Places and the Geographies of England's M1 Motorway." *Theory, Culture & Society* 21 (4–5): 145–167. doi:[10.1177/0263276404046065](https://doi.org/10.1177/0263276404046065).
- Middleton, J. 2009. "Stepping in Time: Walking, Time and Space in the City." *Environment and Planning A: Economy and Space* 41 (8): 1943–1961. doi:[10.1068/a41170](https://doi.org/10.1068/a41170).
- Middleton, J. 2010. "Sense and the City: Exploring the Embodied Geographies of Urban Walking." *Social & Cultural Geography* 11 (6): 575–596.
- Middleton, J. 2018. "The Socialities of Everyday Urban Walking and the ‘Right to the City’." *Urban Studies* 55 (2): 296–315.
- Mondschein, A. 2021. "Cognitive Mapping, Mobility Technologies and the Decoupling of Imageability and Accessibility." In *Urban Experience and Design. Contemporary Perspectives on Improving Public Realm*, edited by J. B. Hollander and A. Sussman, 123–139. New York: Routledge.
- Mondschein, A., and S. T. Moga. 2018. "New Directions in Cognitive-Environmental Research." *Journal of the American Planning Association* 84 (3–4): 263–275.
- Moura, F., P. Cambra, and A. B. Gonçalves. 2017. "Measuring Walkability for Distinct Pedestrian Groups with a Participatory Assessment Method: A Case Study in Lisbon." *Landscape and Urban Planning* (157): 282–296.
- Nagy, A. 2016. "Look at the Refugee Crisis Frozen in Intricate 3D Detail." *Gizmodo*. <https://www.gizmodo.com.au/2016/03/look-at-the-refugee-crisis-frozen-in-intricate-3d-detail/>
- Nielsen, M. 2017. "Urban Times: Temporal Topographies and Non-Scalable Cities." *Ethnos* 82 (3): 393–405. doi:[10.1080/00141844.2016.1206602](https://doi.org/10.1080/00141844.2016.1206602).
- Pae, G., and G. Akar. 2020. "Effects of Walking on Self-Assessed Health Status: Links Between Walking, Trip Purposes and Health." *Journal of Transport & Health* 18 (September): 100901.
- Perec, G. 1975. 2010. *An Attempt at Exhausting a Place in Paris*. Cambridge, MA: Wakefield Press.
- Hein, Jane Ricketts, James Evans, and Phil Jones. 2008. "Mobile Methodologies: Theory, Technology and Practice." *Geography Compass* 2 (5): 1266–1285.
- Schauer, J., and A. Nüchter. 2018. "Removing Non-static Objects from 3D Laser Scan Data." *ISPRS Journal of Photogrammetry and Remote Sensing* 143: 15–38.
- Seets-Johnstone, M. 1999. "Emotion and Movement. A Beginning Empirical-Phenomenological Analysis of Their Relationship." *Journal of Consciousness Studies* 6 (11–12): 259–277.
- Sheller, M., and J. Urry. 2006. "The New Mobilities Paradigm." *Environment and Planning A: Economy and Space* 38 (2): 207–226. doi:[10.1068/a37268](https://doi.org/10.1068/a37268).
- Shi, L., R. S. Welsh, S. Lopes, L. Rennert, L. Chen, K. Jones, L. Zhang, B. Crenshaw, M. Wilson, and H. Zinzow. 2019. "A Pilot Study of Mindful Walking Training on Physical Activity and Health Outcomes among Adults with Inadequate Activity." *Complementary Therapies in Medicine* 44: 116–122.
- Silva, E. D., D. Lanng, and S. Wind. 2019. "Mapping Unknown Knowns of Transit Infrastructures." In *Material Mobilities*, edited by O. B. Jensen, 118–136. London: Routledge.
- Solnit, R. 2001. *Wanderlust. History of Walking*. London: Verso.
- Teut, M., J. Rösner, M. Ortiz, S. Binting, S. Roll, F. N. Fischer, S. Willich, and B. Brinkhaus. 2012. "Effectiveness of a Mindfulness-Based Walking Programme in Reducing Symptoms of Stress—a Randomised Controlled Trial." *European Journal of Integrative Medicine* 4 (Supplement 1): 78.
- Thibaud, Jean-Paul. 2011. "The Sensory Fabric of Urban Ambiances." *The Senses and Society* 6 (2): 203–215.
- Thoreau, H. D. 1862. "Walking." *The Atlantic Monthly* 9 (56): 657–674. Available from Project Gutenberg <http://onlinebooks.library.upenn.edu/webbin/gutbook/lookup?num=1022>
- Till, J. 2009. *Architecture Depends*. Cambridge, MA: MIT Press.
- Tullis, R. S. 2021. "Sense of Place. Looking Backward to Go Forward?" In *Urban Experience and Design. Contemporary Perspectives on Improving Public Realm*, edited by J. B. Hollander and A. Sussman, 11–27. New York: Routledge.
- Urban Earth 2007. "(Re)presenting Our Habitat." [Online]. <http://www.urbanearth.co.uk/>
- Urry, J. 2000. *Sociology Beyond Societies: Mobilities for the Twenty-First Century*. New York: Routledge.
- Urry, J. 2007. *Mobilities*. Cambridge: Polity Press.
- Vannini, P. 2015. "Non-Representational Ethnography: New Ways of Animating Lifeworlds." *Cultural Geographies* 22 (2): 317–327.
- Wind, S., D. B. Lanng, and O. B. Jensen. 2017. "Ding-Ding-Dong: Shifting Atmospheres in Mobilities Design." In *Experiencing Networked Urban Mobilities: Practices, Flows, Methods*, edited by M. Freudendal-Pedersen, K. Hartmann-Petersen and E. Laura Perez Fjalland, 13–18. London: Routledge. (Networked Urban Mobilities Series).
- Wrights & Sites. 2006. "A Manifesto for a New Walking Culture: ‘Dealing with the City’." *Performance Research* 11 (2): 115–122.
- Yaneva, A. 2012. *Mapping Controversies in Architecture*. Aldershot: Ashgate.

- Yaneva, A., and B. Mommersteeg. 2019. "The Unbearable Lightness of Architectural Aesthetic Discourse." In *Aesthetics Equals Politics: new Discourses across Art, Architecture, and Philosophy*, edited by M. F. Gage and M. Shaw, 213–233. Cambridge, MA: MIT Press.
- Zamparini, Z., and A. S. Vergori. 2021. "Sustainable Mobility at Tourist Destinations: The Relevance of Habits and the Role of Policies." *Journal of Transport Geography* 93: 103088.
- Zardini, M. 2012. "Toward a Sensorial Urbanism." In *Ambiances in action/Ambiances en acte(s) - International Congress on Ambiances*, Sep 2012, Montreal, Canada, 19–26.
- Zardini, M., ed. 2005. *Sense of the City. An Alternate Approach to Urbanism*. Montreal, Canada: Lars Muller Publishers.