Urban Atmospheres –
Multisensory Perception as the Linkage between Urban Environment and Social Interaction in Main Streets

MELANIE HIERL
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Author
Melanie Hierl

Date
June 2019
Abstract

Within the discipline of urban planning and design, this thesis introduces urban atmospheres as a theoretical concept, interlinking the urban dweller’s perception of the urban environment with the disposition of social interaction. The aim is to research how urban environments, such as main streets, are being perceived through different senses and which urban atmospheres are disposing social interaction. Framed by the literature within the discipline, the conducted case study within this thesis is revealing the multisensory perception of streets as well as a vision-dominance. Observations and interviews in Barer Strasse in Munich suggest that the interplay of multiple sensory stimuli as well as small businesses on ground floors are creating a lively atmosphere, thereby enhancing social interaction. Despite the vision dominating the perception, this thesis argues for a multisensorial approach, including smelling, feeling and hearing within the urban planning and design discipline to create lively cities by strengthening the social function of streets through creating atmospheres that enhance social interaction.
Urbana atmosfärer –
Multisensoriska upplevelser som en länk mellan stadsmiljön och sociala interaktioner på huvudgator

Författare
Melanie Hierl

Datum
Juni 2019
Sammanfattning

Detta masterarbete introducerar urbana atmosfärer som ett teoretiskt koncept, inom stadsplanering och design, som kopplar samman människors uppfattning om stadsmiljön och påverkan av den social interaktion. Tidigare forskning och litteraturer, inom det studerade ämnet har kommit fram till, att visuella upplevelsen är dominerande av de olika multifunktionala upplevelserna, av en gata. Observationer och intervjuer, som har genomförts på Barer Strassen i München inom denna studie, visar att samspelet mellan flera sensoriska stimuli och småföretag på bottenvåningen skapar en livlig atmosfär och därigenom förbättrar den sociala interaktionen. Trots att det visuella dominerar upplevelsen, argumenterar detta masterarbete för ett multisensoralt tillvägagångssätt, inklusive lukt, känsla och hörsel inom stadsplanerings- och designdisciplinen. Detta för att skapa livliga städer genom att stärka gatornas sociala funktion genom att skapa atmosfär som förbättrar social interaktion.
Preface

This thesis was conducted as my degree project during the spring term 2019 at KTH – Royal Institute of Technology in Stockholm, Sweden within the masters programme Sustainable Urban Planning and Design.

With finishing my education, I – first of all – want to thank my parents for supporting me all those years. I wouldn’t be who I am if it wasn’t for you and I wouldn’t have been able to manage all the challenges along the way to finishing this education. I am really grateful for having had this opportunity to study this master program in Sweden and for supporting and encouraging me in this decision. This gratefulness includes my sister, extended family and close friends, both from home and here in Stockholm, for being in my life. I am truly grateful for the wonderful time we have spent together so far and for encouraging, inspiring and supporting each other both professionally but also personally. I am really looking forward to wonderful and insightful moments and sharing life experiences with you in the future!

Secondly, and equally important, I want to thank Rosa Danenberg for being a great supervisor and for sharing her rich knowledge with me. Her thoughts and perspectives on my topic have been inspiring and motivating and I really enjoyed the supervision and discussions during the process of finishing this master thesis.

Thirdly, I would like to thank all the (anonymous) participants who participated in the interviews. This thesis would not have been made possible without their contributions, trust and insightful thoughts.

Melanie Hierl
Stockholm, June 2019
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1 Introduction

In recent years, the discourse within the urban planning and design discipline has increasingly focused on how the design of public places affects peoples experience of it (Degen 2012). Originating from a critique on a vision-dominant, zoomed-out urban planning and design tradition (Jacobs 1992, Whyte 1980, Lynch 1960), a perceptual approach regarding the urban environment has been reintroduced within the discipline during recent years (Mehta 2011, Gehl 1987). After the so called ‘sensory turn’, which caused a normative shift in human and social sciences, research on the senses has increased (Zardini 2006, p. 22). For instance, in urban-related disciplines, such as geography and architecture, sensory approaches on the experience of the urban environment can be found (Pallasmaa 2012, Zardini 2006, Diaconu et al. 2011), suggesting that the urban environment is perceived through a multiplicity of senses. The critique within these disciplines, however, is that the vision has been quite dominant, and still is in urban planning and design, neglecting the sensory well-being of individuals.

An experiential approach on the urban environment and its design is often used in connection with the image and atmosphere of a city. Sensory experience currently is used in connection with e.g. ‘branding’ or ‘disneyfication’, where the city is more and more commercialized and “designed in order to be distinctive, vibrant and beautiful” (Degen & Rose 2012, p.3282). Furthermore, atmospheric qualities such as the perceived safety and liveliness of public spaces are connected to this discourse on the experience and design of the urban environment. The built form, especially ‘hard edges’, are found to increase a feeling of unsafety (Gehl 1987). Liveliness of streets is found to be dependent on activities, uses and small businesses that create social encounter between urban dwellers (Mehta 2011, Mehta & Bosson 2018). While the visual perception and functions of streets have been researched thoroughly, “urban planning still struggles with incorporating such elements.” (Schönfeld & Bertilini 2017, p.48). Focusing on main streets and their social function (Mehta 2011) as the study object, in this thesis it is argued that the perception, cognition, feelings and sensory well-being of urban dwellers in regard to the urban environment is rather neglected (Churchman 2002). Even though the design of the urban built environment is central to its sensory experience (Degen 2012) and “conductive to social interaction of all types” (Caramona 2019, p.54), multisensory approaches are underrepresented in urban planning and design (Pallasmaa 2006). This thesis argues that a multisensory approach on the experience of urban environments can contribute to an increased social interaction and liveliness in main streets. The aim is to research how urban environments, such as main streets, are being perceived through different senses and which urban atmospheres are disposing social interaction.

As bridging qualities between the multisensory perception of urban environments and the disposition of social interaction (Hasse 2012), the theoretical concept of urban atmospheres is introduced. The multisensory and bodily perception of atmosphere creators is research in connection to key features that define the case study context of a main street in a residential neighbourhood in Munich. For instance, the atmosphere concept incorporates current approaches of urban planning and design on small businesses (Mehta 2011, Mehta & Bosson 2018) and façade characters (Gehl 2006, Gehl 2010) on ground floors as influencing sociability and liveliness of streets. Furthermore, multisensory stimuli connected to the auditive, visual, bodily and olfactory perception, such as smells, sound and solar altitude are being explored. The theory is grounded on a literature review on (1) how the atmosphere of an urban environment is being perceived by urban dwellers? Through a phenomenological research that spans different qualitative methods, an empirical research investigates (2) to what degree main streets are experienced in a multisensory way and whether there are other factors that dispose the perception and atmosphere of the urban environment? and, considering the multi-sensorial approach, (3) which of these senses are more dominant in experiencing main streets? The thesis concludes with a discussion on (4) How can multisensorial
approaches in urban planning and design contribute to a lively atmosphere and creased social functions in main streets?

This thesis contributes to an emerging theoretical concept on urban atmospheres in urban-related disciplines that interlink the urban environment and social interaction through a multisensorial approach. Furthermore, this research contributes to phenomenological research on the multisensorial experience of streets and their atmosphere in connection to sociability within urban planning and design.

1.1 Aim

Within the discipline of urban planning and design, the aim of this thesis is to explore how urban environments are being perceived through a multiplicity of different senses and how urban atmospheres are disposing social interaction.

1.2 Objectives

Deriving from a multidisciplinary approach, this thesis contributes to the conceptualization of a multisensorial theoretical concept of urban atmospheres, which interrelates the design of the urban environment with human behaviour.

Furthermore, this thesis contributes to phenomenological research on the relation between urban environments and human behaviour by testing qualitative methods within a single-case study on a main street.

1.3 Research Questions

In this thesis, different approaches within urban planning and design are combined with research results on multisensory perception to answer

(1) How the atmosphere of an urban environment is being perceived by urban dwellers with specific focus on public spaces?

In the empirical part of this thesis, a case study is conducted and combined with observations and interviews in order to investigate

(2) To what degree main streets are experienced in a multisensory way and are there other factors that dispose the perception and atmosphere of the urban environment? and

(3) Considering the multi-sensorial approach, which of these senses are more dominant in experiencing main streets?

The discussion and conclusion based on the findings from interviews and observations suggests

(4) How multisensorial approaches within urban planning and design can contribute to a lively atmosphere and creased social function main streets?

1.4 Structure

This thesis on the relation between urban environments and social interaction, encompasses a theoretical section, chapter 2, where a perceptual approach on the street is introduced, based on the iconic work of critical urban thinkers. Streets are defined as socialscapes (chapter 2.1), suggesting that the design and atmosphere of these urban environments are influencing the kind of social interaction taking place within them (chapter 2.2). The connection between multiple sensory stimuli and social interaction is discussed based on research
in other urban-related disciplines (chapter 2.3), before introducing current approaches on the connection between urban environments and liveliness or sociability respectively (chapter 2.4). In the following section, chapter 2.5, a theoretical concept of urban atmospheres is introduced, based on the works of Benjamin, Schmitz, Böhme and Hasse on atmospheres or aura respectively. In chapter 2.6, the creators of atmospheres that can be found in the urban environment are being introduced. Following, the field of perception of these atmospheres is then narrowed down to ground floors, based on a discussion on different sensory and social distances while the atmosphere creators are linked to the sensory systems with which they are being perceived (chapter 2.7). The methodological framework, drawn in chapter 3, outlines the phenomenological research approach (chapter 3.1) and introduces the qualitative research design (chapter 3.2). Within a single-case study (chapter 3.3), the methods observations (chapter 3.4.1) and interviews (chapter 3.4.2) are conducted. A methodological triangulation (chapter 3.5) strengthens the results from these research methods. In chapter 3.6 and 3.7, both limitations and ethical considerations of this thesis are discussed. The empirical findings are presented in chapter 4 distinguished by the method which has been used to collect this data, as well as the atmosphere creators and sensory systems of perception. Through observations (chapter 4.2), the occupancy (chapter 4.1.1) and use (chapter 4.1.2) on ground floors, the façade characters (chapter 4.1.3), soundscape (chapter 4.1.4), solar altitude (chapter 4.1.5) and socialscape (chapter 4.1.6) have been explored with field notes (chapter 4.1.7) complementing the observations, interviews (chapter 4.2) focused on the multisensory experience of hearing (chapter 4.2.1), seeing (chapter 4.2.2), feeling (chapter 4.2.3), smelling (chapter 4.2.4) as well as small businesses (chapter 4.2.5) and the multisensory perception (chapter 4.2.6). This structure is pursued throughout the analysis of the results in chapter 5, where the multisensory perception and atmosphere creators are analyzed in regard to the social interaction in the case setting, as well as the so created lively atmosphere. Here, the analysis focuses on the visual perception (chapter 5.1), auditive perception (chapter 5.2), bodily perception (chapter 5.3), olfactory perception (chapter 5.4), the soundscape (chapter 5.5), small businesses (chapter 5.6) and the lively atmosphere in Barer Strasse (chapter 5.7). In chapter 6, the multisensory perception (chapter 6.1), the evaluation of ground floors (chapter 6.2) and the presence of people (chapter 6.3) are discussed in regard to urban atmospheres, the perception of urban environments and social interaction. This section is followed by concluding remarks (chapter 6.4), suggestions for an implementation of urban atmospheres as a tool for urban planning and design practice (chapter 6.5) and suggestions for further research (chapter 6.6).
2 Theoretical Concepts

The following chapter introduces approaches within the urban planning and design discourse as well as multisensory approaches within other disciplines on the interlinkage between urban environments and social interaction. Further, the concept of urban atmospheres is introduced as this linkage. Atmosphere creators and the field of sensory perception are narrowing the sensorial and social distances within the urban environment. It is explored in this chapter, how the atmosphere of an urban environment is being perceived by urban dwellers with specific focus on main streets (see chapter 2.1).

2.1 The street as a social urban environment

The urban environment can be considered human habitat in co-living with ecological systems. Urban is understood in this thesis as a dense structure of buildings and people within a city, interconnected by different forms of infrastructure and services. In this context, the built form is understood as the context in which the social sphere of a city is situated. According to Cullen (1961), public spaces as part of the urban environment, are perceived as such through their sense of enclose, "where the buildings and landscape, to greater or lesser degrees, first open up to create a space, and second, wrap around and ‘contain’ space in order to hold the eye and create a distinct place (Cullen 1961, p. 29)." Encompassed by the built form, squares and streets have built the context for social, cultural and economic functions within cities. "Universally, streets have been spaces that served the purpose of defining and directing movement" but, as Mehta suggests, also been "places par excellence for communication and social exchange" (Mehta 2013, p.28). As a “substantial part of the public realm” (Mehta 2013, p.33), the labyrinthine street from the medieval city still can be found to a large extent in today’s European inner cities. During the Renaissance and Baroque eras, boulevards and avenues appeared in bigger cities, as “the appearance of buildings and city spaces” – their visual expression – became more and more important (Mehta 2013, p.33). According to Mehta (2013, p.34), at that time, “the dimensions and layout of the street and squares were established not so much by their use as by formal considerations”. As the wheeled traffic in the cities grew, “[t]he layout of streets and squares increasingly became more geometric” (ibid. p.34), and sidewalks were built during the seventeenth century to dedicate street-space to pedestrians, distinguishing it from the traffic (ibid.). During the nineteenth century, boulevards replaced glass-covered arcades that have become distinct for Paris and Italy around the fin de siècle. The boulevards became a stage for “gathering and for people from all classes to mingle as well as a stage for society to present its culture and beauty” (Mehta 2013, p.35). Promenades as social activities and flaneurs became popular at that time, as well as street concerts. This vibrant street-life has been replaced successively as the number of automobiles on the streets increased. During the modernist era, a car-friendly and vision-dominant urban planning and design paradigm influenced the way cities looked and how streets functioned. Le Corbusier’s city radieuse (1962a, 1962b) grounded on the idea of a ‘vertical garden city’ (Jacobs 1992, p.22), suitable for high densities. In between these high-rise apartment blocks, large and wide-open green spaces and express highways, planned for the dimensions of individual car-traffic, have been lied out on the urban surface. Through the strong influence of the modernistic paradigms in urban planning and design, visually zoning spaces, marginalizing or ignoring the everyday life routines of individuals has been standard as urban design rather focused on the “[f]ormal, geometric simplicity and functional separation and efficiency” (Howes 2006, p.325). According to Howes, “the sensory deprivation which seems to curse most modern buildings; the dullness, the monotony, and the tactile sterility which afflicts the urban environment” (Howes 2006, p.325) was the result of simplified, functionalistic-modernistic cadastral maps and large-scale social engineering. As a result, “play activities, contact patterns, and meeting possibilities” (Gehl 1987, p.45) in
public spaces were vanishing, resulting in the decrease of the social function in streets as well as city’s liveliness.

Before this context of a distant, top-down view, the importance of streets for other functions than traffic was emphasized by critical thinkers such as Jacobs J. (1992), Lynch (1960), Whyte (1980), Appleyard (1981), Jacobs A. (1993) during the 1960s and 1970s as a reaction to the modernistic development. Criticizing the automobile- and top-down focus, they emphasized the importance of streets for social life and lively cities from the perspective of urban dwellers. Focus was shifted from buildings as entities, visual structuring and zoning from an aeroplane-perspective to places and streets and their use by urban dwellers as well as their meaning for communities. Streets were no longer only seen as corridors of movements for individual car-traffic but, again, as pedestrian environments in which social life is situated in (von Schönfeld & Bertilini 2017). Due to these critical thinkers, a zoomed-in, perceptional approach from the perspective of urban dwellers and citizens was introduced to urban planning and design, emphasizing the social function of streets.

Looking at neighbourhood streets, Jane Jacobs (1992) laid out claims arguing that planning rather needs to focus on sidewalks and functions on ground floors, as they foster both the perceived safety and social contacts and allocate for liveliness in cities. In her opinion, vision-dominant approaches only lead to dead and unsafe cities, whereas planning for lively and safe cities needs to take place at street-level, considering the individuals that move within them (Jacobs 1992). Jacobs criticized what was conceived ‘good planning’ at that time: a series of static acts, which grounded on the spatial separation of different functions in the urban context, leading to unsocial, dead public spaces (ibid. p.19). Her suggestion in planning for liveliness in cities is to focus on sidewalks, as they foster both safety and social contacts. In her observations, she found that the kinds of tangible enterprises that are located on sidewalks, e.g. stores and public spaces like bars, cafés, libraries, are influencing how people practically use the sidewalks in their everyday lives (Jacobs 1992, p.57). Focusing on the street as “the main river of a city, the place where [people] come together” (1980, p. 9), William H. Whyte suggests that the social life in public spaces is fundamentally contributing to the quality of life of individuals and the quality of the society as a whole (Project for Public Spaces, n.d.). Researching human behaviour and the perception of public places in various urban settings, he claims that physical places need to be created in a way where they facilitate engagement and community interaction (1980). For Appleyard, livable streets can be created by reducing car traffic in combination with an increased green structure. He believes that the ecology of streets influences human behaviour, both street life, neighbouring and home life (Appleyard 1981, p.35). Traffic reduces the livability and safety of streets and people can move less freely. According to Appleyard, a reduction of traffic in combination with an increased green structure can enable to “live amenable in the denser urban fabric of the inner city” (Appleyard 1981, p. 248). Furthermore, reduced traffic can create “conditions for street communities to reappear” (Appleyard 1981, p.248). Also, Allan Jacobs finds that the sociability of a city takes place on the street. Jacobs emphasizes the need to “study the physical, designable, buildable qualities” of great streets in order to plan “good and fulfilling urban places” that function as “community-building places, attractive public places for all people” (Jacobs 1993, p.24). Furthermore, he suggests that urban planning and design needs to serve the community living in the neighborhood rather than the car. Kevin Lynch looked at streets with a visual approach. Based on observations that he made, he provided designers with knowledge about how to create a visual structure and identity of streets. According to Lynch (1960, p.2), citizens of a city hold and use mental pictures, deriving from the visual quality of a city, to orientate and organize themselves within a city space. This quality depends on the legibility of the city space (ibid. p.2ff.), created through the image elements paths, edges, districts, nodes and landmarks. In order to assure the legibility of the urban environment, Lynch suggests to strengthening the public image of a city space.
through a visual plan, providing planners with “a set of recommendations and controls which would be concerned with visual form on the urban scale” (1960, p.116).

Although the introduced approaches have slightly different emphasizes (use- or vision-orientation), the (main) street has been reintroduced as a public space in urban environments in current urban planning and design. Even though the experience of the street from the perspective of urban dwellers is emphasized by critical thinkers, the focus on (main) streets remains use, function and design-orientated.

Similarly, main streets are focused on from a rather use- and function orientated approach. According to Mehta (2011), “[h]istorically, Main Street (or the neighborhood commercial street) has been one of the most significant types of public space in both Western and Eastern cultures.” (p. 272). Such high streets were generated through “nineteenth century industrial society” (Dawson 1988, p.2), and still remain some basic characteristics of that time today. For instance, shopping arcades and a mixture of “department stores and chain stores alongside the entrepreneurship of the independent retailer” (p.2) can still be found in today’s main streets. However, car-dominance, out-of-town development and professional fragmentation of management emphasized the commercial function of main streets, neglecting their function as spaces of social interaction (Jones et al. 2007, pp.2-7). Accordingly, planners neglected the importance of main streets offering “sustainable and inclusive urban forms for the future” (Jones et al. 2007, p.114) in the past, and only recently focused on main streets in connection to social activities again. However, despite changes regarding visual appearance, land use, value of enterprise rentals, social significance, urban structure (Dawson 1988, p.6f.), online shopping and commercial gentrification (Talen & Jeong 2010, p.5), main streets have overcome different challenges and remain an important factor for sustainability in neighbourhoods. Jones et al. (2007) suggest that main streets “encourage sustainable travel and provide local identity and centres of social and economic activity” (p.114). Besides the sheer commercial function, “[s]ociologists and environmental psychologists have identified social affiliation and interaction, sensory stimulation, and other leisurely activities among the important and basic motives” connected to shopping (Mehta 2011, p.272). As main streets are being centres of commercial and social activities, a large array of multisensory stimuli is provoked by a combination of design and place when being in the street. However, currently, focus in main street research lies on a balanced mixed use between chains and local retail (Litvin & Rosene 2017), small businesses (Mehta 2011), also in regard to third spaces (Mehta & Bosson 2010), as well as the design of main streets (Pendola & Gen 2008), regarding their impact on social, environmental and economic sustainability. Further critical research focuses on the ‘malling’ of main streets, referring to “shopping malls and retail centers where a single developer has the control required to dictate merchant mix through tenant recruitment and selection” (Litvin & DiFiorio 2013, p. 489 on Ibrahim & Galven 2007) as well as a focus on tourism instead of the residing community in the planning of main streets by planners and stakeholders (Litvin & Rosene 2017). In literature, suggestions for a mixture of different local retail and entrepreneurial stores with chain stores are given, mostly suggesting the implementation of policies, regarding zoning and programming (Litvin & DiFiorio 2013) in order to create lively atmospheres in main streets. However, despite a multisensorial stimulation of main streets and importance for social interaction, research focus lies foremost on land use, “vitality” (pedestrian activity) and ‘viability’ (the ability to attract investment)” (Ruiz-Apilanez 2015, p.130) instead of phenomenological approaches on the perception of main streets and their atmosphere. Only a small number of ethnographic research is conducted on high streets (Hall 2015) with a focus on “the macro-perspectives of the symbolic city; the street perspectives of the collective city; and the interior perspectives of the intimate city” (p.34) as well as “practices of small-scale entrepreneurial adaptations” (Hall 2011, p.2574) through observations, interviews and surveys.
Other scholars within urban planning and design suggest that in everyday live, humans are perceiving and making sense of their urban environment through a combination of different senses (Daly et al. 2018). As a "vital part of human experience" (Zardini 2006, p. 24), the design of the physical environment creates an atmospheric responsiveness (Russel and Ward in Grossbart & Hampton 1982). Distinct urban environments, such as main streets, that are ‘total’ qualitative phenomenon, can be described through their character and atmosphere (Zardini 2006). Peponis & Wineman even ascribe the built environment to be organizing the way in which behaviors and activities are interlinked or distinguished. They suggest that “[f]rom a social point of view, built space can be defined as a field of structured copresence, coawareness, and encounter” (Peponis & Wineman 2002, p.271). As socialscapes, main streets built the framework for social interaction to take part in (Mehta 2011). According to Damasio (2006), street environments are stimulating diverse emotional states that influence cognitive processes, as well as social behaviour (Rizzolatti & Craighero 2004, pp.169-192).

2.2 Social interaction as response to the design of the urban environment

As elaborated in the previous sections, the urban environment provides the frame and context for social interaction to take place in. For Mehta, urban environments such as neighborhood commercial streets are a “behaviour setting that constitutes patterns of behaviour as well as patterns of the physical layout of the environment.” (Mehta 2009, p. 32).

Streets as urban environments can create “affordances for every social contact that are crucial to personal well-being and social cohesion” (Mehta 2018). Besides their economic, cultural, and political functions, streets as public spaces are also socialscapes (Mehta 2018). Crowhurst-Lennard (1987 and 1995) found that in public spaces, social functions such as contained learning, developing social competence, exchanging information, facilitating social dialogues, fostering social awareness, enhancing social integrative functions and encouraging ethical conduct occur (Mehta 2018). Also, besides the commercial function of ground floors on the streets, shopping and purchasing services is bind with social interaction, sensory stimulation as well as leisure (Tauber 1972).

Due to different notions of definitions on social interaction, in this thesis, a rather broad sociological textbook definition of the term is used. Accordingly, social interaction is understood and defined by Max Weber as being related to the behaviour of others: the behaving of the people involved, is constantly being readjusted and oriented on each other’s behaviour (Weber 1921, pp.24-31). Verbal and non-verbal social interaction taking place in the urban environment, such as talking to others, shouting someone’s name across the street, or waving or smiling at someone, amongst others, occur in public spaces. Despite this active notion of social interaction, Mehta suggests that streets also facilitate passive or fleeting sociability (Mehta 2019, p.24). Behaviour such as “public solitude, spectating and display, relaxation, and play” are rather passive forms of social interaction (Mehta 2019, p.24). As results of his study on the social life in cities, Mehta suggests that “people sought out places to be alone in public in the presence of others even if they did not intend to directly interact or participate in any active social behaviour […]. People came to read, work, eat and drink alone and only engaged in minimal and essential conversation, for example, to order food or drink or to ask for a chair.” (ibid. p.24). This “shared human interaction between stranger and ‘familiar strangers’”, is what he defines as passive sociability (Mehta 2019, p.24). Being in the presence of other human beings without interacting with them in a direct manner, is, however, a human need (ibid.) which takes place in public spaces of urban environments, such as main streets.

According to Carmona (2019), all types of social interaction, from rather “largescale events and festivities, to low key humble encounters”, are influenced by the design of public spaces
Carmona suggests that when streets are planned just about right, "public spaces offer huge economic, social and environmental benefits to their localities and communities" (Carmona 2019, p. 47). As "dwelling place of the collective" (Benjamin 1927-29, p.423), the quality of street space "possesses a sense of 'collective-symbolic ownership', while it provides a "sense of ease and safety and 'existential insideness'" as the main experiences (Mehta 2013, p.180). Also, Peponis & Wineman, state that the social dimension inherent in the design disciplines "contribute to sustaining patterns of behavior, understanding, and social relationships, even though they manipulate physical resources." (Peponis & Wineman 2002, p.287). These scholars suggest that the design and physical constitution of the urban environment disposes social interactions through the stimuli that occur within them. According to Hasse (2012, p.15), such socio-spatial situations are influenced and coloured by atmospheres. Thus, “whilst particular social outcomes can never be guaranteed”, it is important to think of the social influence of a physical space and the urban environment as they are able to support the targeted outcomes (Carmona 2019, p.55) through their design and multisensory stimulation.

2.3 Atmospheric quality of urban environments and its impact on social interaction

Despite the attempt to incorporate aspects of peoples’ everyday-life and a perceptional perspective, urban planning practice seems to be limited by the modernistic scales of planning (see chapter 2.1). What seems to be a vestige from the modernist-functionalistic era, today still, a distant perspective is adopted by planners before the zooming-in, perceptual perspective (Churchman 2002, p.195). Following a ‘visual hygiene’, urban planning still favours plans that are rather “highly idealized and schematized visons” from an aeroplane-perspective (Pallasmaa 2006, p.32), then taking on a perceptual approach. However, today, approaches taking into account, “the sensorial dimension beyond the regime of the visual”, the full spectrum of sensory perception, can already be found in other disciplines (Zardini 2006, p.19).

Human and social sciences have, in recent years, undergone a sensory turn, “in which the ‘senses’ constitute not so much a new field of study as a fundamental shift in the mode and media we employ to observe and define [these] fields of study.” (Zardini 2006, p. 22). Not only disciplines like anthropology and geography but also architecture have developed a theoretical discourse on the multisensorial experience of urban environments, as an alternative approach to the purely visual realm (ibid. p.22). In architecture and geography, the sensory turn has led to the rediscovery of the character of place. According to Zardini (2006, p.23), “[a]ssociated with a particular place, the term character indicates its specificity; at the same time it does not refer to an exclusively visual condition, but embraces all the various sensory experiences that one can have in a place.”(p.23). Since the sensory turn, the Finnish architect Juhani Pallasmaa, amongst others, has claimed the need for a sensory approach in planning and creating space. The “historical privileging of sight” and its “negative tendencies” in the modernist era of architecture (Pallasmaa 2006, p. 23) are to be replaced with a focus on the body and multisensory perception in architecture (ibid. pp.43-49). Especially the haptic experience of one’s environment, is what Pallasmaa sees as the underlying sense with which other senses are connected.

"The eyes want to collaborate with the other senses. All senses, including the vision, can be regarded as extensions of the sense of touch – as specialisations of the skin. They define the interface between the skin and the environment – between the opaque interiority of the body and the exteriority of the world.” (Pallasmaa 2006, p.45)
The experience of architecture is constituted through the articulation of its materials, such as “the grain of wood, the veined surface of marble, the cold precision of steel, the textured pattern of brick”, and in the atmosphere it condenses in its substance” (Howes 2006, p.329). According to Pallasmaa, architecture is the “art of reconciliation” (Howes 2006, p.329), the mediation between individuals and their environments, through all senses which are interwoven, not just the vision. Such multisensory experiences of a place can be described through its atmosphere or environmental character (Zardini 2006, p.23). As the environmental qualities of a place (ibid. p.23), atmospheres are overcoming the sheer architectural space as a ‘total’ qualitative phenomenon. For an urban context, this means, as Zardini suggests, that a focus on the character and atmosphere of places, can lead to a “broader understanding of urban settings” (Zardini 2005, p.25).

The physical urban environment and its atmosphere are, in fact, also a vital part of human experience (Zardini 2006, p. 24). Through triggering cognitive processes (Damasio 2006), the multisensory experience of an environment has a further influence on human behaviour (Rizzolatti & Craighero 2004, pp.169-192). For instance, within the environment of a retail store, (Morrison et al. 2011) found that the ambience, created by sound and smell, influences purchasers’ emotions which in turn influences costumers’ shopping behaviour and satisfaction levels. Such sensory stimuli influencing costumers’ consumption behaviour, are a feature purposefully applied in sensory marketing (Zardini 2006, p.25). Disposing participants of a study through scent in a hotel lobby, Zemke and Shoemaker (2007) found that “a pleasant ambient scent, essential oil of geranium in this case, can have a positive effect on increasing social interaction behaviours of participants in an environment where the participants are strangers.” (p. 936). The fact that intentional multisensory stimulation, e.g. sound and smell, influences human behaviour by increasing social interaction in a rather impersonal, semi-public environment, indicates a general disposition of social interaction through multisensory stimuli. Based on the fact that sensorial qualities and atmospheres are becoming “key factors in the definition of a place, even from an economic perspective” (Zardini 2006, p.25), Zardini suggest this to be “[a]ll the more reason for us to demand that this attention be turned to public places, and to urban spaces in general” (Zardini 2006, p.25). Sensory stimuli like smell and sound, amongst others, occur in the urban environment as well, where they are assumed to influence urban dwellers’ cognitive reactions and social behaviour. In the urban context, these stimuli are part of the environment, summing up to its character, it’s atmosphere. This implies that urban atmospheres can dispose human behaviour. Thus, despite the theoretical and empirical research within other disciplines, atmospheric impact in urban environments has not been researched in detail yet (Zardini 2006, p. 19). In his book on the Sense of the City, the architect Zardini proposes to think of cities as “places for our bodies (and our souls)” and to reintroduce the element of character in planning and designing cities, as has been done in architecture and urbanism (Zardini 2006, p.23f.). With his claims of expanding the sensorial dimensions of an environment beyond the regime of the visual, Zardini discusses the need for a sensorial urbanism as an alternative approach to current urbanism approaches (Zardini 2006). His suggestion is that ‘Sensorial Urbanism’ is “capable of offering a broader understanding of urban settings, interested in describing the character and atmosphere of places, and aiming to contribute to a new definition of public space” (Zardini 2006, p.25). Looking at urban environments as being perceived in multiple ways by “sound, smell, touch, vision, and climate”, the quality of urban environments can be improved (Zardini 2006, p.19). To him, it is paradoxical that urban environments remain rather untouched by a sensory experiential approach, as other disciplines are devoting so much attention to it (Zardini 2006). Instead, current theory and practice in urban planning is focusing on the connection between the urban environment and human behavior, regarding the visual perception and pedestrianization, as well as uses on ground floors (Churchman 2002, p.191). However, Zardini suggest that “[i]n establishing a ‘sensorial city planning’ that
is capable of defining the character and atmosphere of places, it is necessary to avoid a practice based, once again, on visions.” (Zardini 2006, p.24))

2.4 The need for a multisensorial approach in urban planning and design

Urban planning and design as a multidisciplinary endeavor integrates different aspects of the urban, such as housing, mobility, services and work. According to Kaufman (1974 in Churchman 2002, p.195), none of these systems “can be planned separately without considering its relationship with the others.” Also, the social sphere of the urban environment is an integrated part of planning, within the mutual dependencies of other urban systems.

Despite the emphasis on the perception of streets (see chapter 2.1) and the multisensorial approaches in urban-related disciplines (see chapter 2.3), urban planning and design is still being criticized for planners’ attitude to think in “aggregation or collectives of people, or systems and institutions beyond the people” (Churchman 2002, p.191), instead of the individual perception. However, there are some scholars that have attempted to reintroduce the neglected human scale as well as a perceptional approach into the current discourse within the discipline, looking at people and their everyday life’s. These approaches ground on the work of the critical thinkers (see chapter 2.1) and refer to their perceptional approach as an alternative to top-down approaches.

For instance, Jan Gehl follows an approach in line with Jane Jacobs’ in which he focuses on public spaces from a user perspective regarding the liveliness of cities. According to him, liveliness is the result of safe and interesting public spaces (Gehl 1987, Gehl 2006, Gehl 2010). Resulting from empirical studies and observations of human behaviour in public spaces, Gehl suggests that liveliness is a mixture of perceived safety, activities and functions that arise when ground floors – their façade design and structure – are oriented on the human scale as well as the speed at which pedestrians move through these spaces (Gehl 2006, Gehl 2010). Human behaviour is disposed by the design of the physical environment, the functions and activities provided on ground floors (Gehl 2006). Open ground floors and functions available at different times of the day (e.g. shops, restaurants and bars) that serve necessary activities e.g. purchasing goods and services or communications create reasons to being in the street (Gehl 2010, p.236). Appealing façade design and interesting shop windows, on the other hand, increase the length of people staying in public spaces (Gehl et al. 2006). They increase the conduction of optional activities such as “taking a leisurely walk or lingering” (Mehta 2019, p.23). Mehta refers to Gehl stating that “[s]ocial activities are a result of a high level of optional activities requiring a high environmental quality”. (2019, p.23). Gehl believes that a combination of façade characters, details, small ground-floor units, seating, store display, communication between indoors and outdoors create visually interesting and stimulating environments for people to be in. In combination with optional activities, they increase the possibility for social contact and interaction in public spaces. Gehl’s planning suggestions derive from the assumption that feeling safe makes people use public spaces while a pleasant atmosphere and functions that foster additional activities even increases the number of people, the length of their stay (Gehl 2010, p.71ff) and the opportunities for social interaction (Gehl 1987, p. 54). Gehl has conducted empirical studies (Gehl & Svarre 2013) and has contributed with elaborated principles on planning for visually attractive and pedestrian-friendly urban environments (Gehl 1987, Gehl 2010). Despite an emphasize on the importance of planning for multiple senses (Gehl 1987), his suggestions regarding planning for more liveliness, however, remain rather vision- and function dominated. Also Lynch focused on the qualities of urban spaces from the perspective of visual perception. According to Zardini, both in architecture and urban planning and design which aimed at “accentuat[ing] contrasts and differences in a picturesque vision of the urban environment, the eye has always been privileged.” (Zardini 2006, p.20). With Gehl’s suggestion on the influence of visual
change in façades character on liveliness, the vision and continues to be the dominant mode of sensory perception (Gehl 2010, pp. 33-46 and pp.236ff.) in his approach.

Another alternative approach in the current urban planning and design discourse on the sociability in relation to the urban environment is introduced by Vikas Mehta who reintroduced the social function of the street. Like Jane Jacobs, Mehta finds liveliness in urban contexts to derive from the ground floors within a street. Instead of the design and visual experience of these, Mehta researches use and small businesses at street-level. In his empirical studies on the social live in streets, he found that the constitution of street environments in combination with uses on ground floors can increase social interaction (Mehta 2011, p.286). Especially main streets – besides their economic, cultural, and political functions – create “affordances for everyday social contacts that are crucial to personal well-being and social cohesion” (Mehta 2019, p.17). Streets are, together with the uses and small businesses on ground floors, creating social and community value, allocating liveliness. Further, Mehta identifies the occupancy and store size of enterprises on ground floors as important factors influencing the space affiliation and identity of place (Mehta 2011). Especially small businesses are indirectly creating more possibilities for social interaction through social interaction with storekeepers, as well as street furniture, artefacts and personalized store fronts which increase the liveliness of the street (Mehta 2011, pp.281-285). Mehta suggests that “small businesses, cafes, coffee shops, bars, pubs, restaurants, community centers [and] general stores” (Mehta 2010, p.281) are functioning as third spaces. Such third spaces are “a place of refuge other than the home or workplace where people can regularly visit and commune with friends, neighbors, coworkers, and even strangers” (Oldenburg in Mehta 2010, p.281), and therefore increasing the social function and liveliness of a street. Due to their importance for both hosting and enabling social interaction, Mehta defines streets as socialscapes. Especially for ‘hanging out’ and passive social interaction, the main street is an urban environment full of sensory stimulation (Mehta 2019, p. 25). All these features are related to small businesses which contribute to a sensory stimulation and social interaction (Mehta 2011, pp.281-285). Metha emphasizes the influence of sensory stimulation of the urban environment on social interaction but ascribes them to the occupancy and use located on main streets’ ground floors. He, as well as Jacobs, are rather taking a use- and occupancy-orientated approach on the relation between urban environment and social interaction then a multisensorial perspective on liveliness.

Von Schönfeld & Bertilini suggest that “while the multiplicity of functions of streets, including a variety of social functions, have been researched thoroughly, urban planning still struggles with incorporating such elements.” (2017, p.48). Furthermore, they claim that “these functions are rarely studied from more than one perspective at once” limiting an integrated approach on the perception of urban environments based on a combination of different stimuli (p. 48). Also, Schreuder et al. conclude that “[e]motional responses to an environment are context dependent and not simply dominated by either one or the other sensory modality” and that a “[c]ongruency between multiple presented sensory stimuli may enhance emotional, cognitive, and behavioral responses in the positive domain.” (2016, p.15). The two approaches introduced in this section, through their emphasize on the perception of public spaces, clearly create an alternative approach in a rather zoomed-out, top-down discourse of urban planning and design. Despite a perceptional approach on the urban environment regarding the liveliness and sociability of publics spaces, social interaction in relation to urban environment, however, is still researched based on the use, functions and visual appearance of public spaces. Such a narrow focus on the connection between the urban environment and human behavior is, however, disregarding the behavioural and emotional disposition and sensory well-being of its users (Churchman 2002, p.191). Despite, in urban planning and design, the design of the urban environment is acknowledged as being “more or less conductive to social interaction of all types” (Carmona 2019, p.54), the discipline remains without a multisensory approach (Pallasmaa 2006, p.32). Zardini states that “[a]bove
all, sounds and odours have been considered disturbing elements, and architecture and city planning have exclusively been concerned with marginalizing them, covering them up, or eliminating them altogether.” (Zardini, p.20). However, the experience of the urban environment encompasses a “very rich range of sensory engagement with those places” (Degen & Rose 2012, p.3283). Degen & Rose found that the encounter with urban environments is multisensory and particularly experienced by sight, touch, sound and smell (Degen & Rose 2012, p.3283), creating a characteristic atmosphere of a place.

In this research, it is argued that applying a multisensory-perceptional approach on urban environments and social interaction by focusing on the atmospheric qualities of streets, can contribute to the discourse of lifelines and sociability (see chapter 2.1, 2.2 and 2.3). It can furthermore interlink existing knowledge from urban-related disciplines on multisensorial perception of environments in relation to social interaction, emphasizing the interdisciplinarity of urban planning and design. A special relevance of multisensory approaches within urban planning and design not only derives from the impact of multisensory perception of urban environments on human behaviour, but also regarding social challenges in relation to urbanism. Phenomena such as perceived loneliness and unsafety have been increasing in the urban contexts (Srivastava 2009, Harris n.d.). It is of great value to urban planners, designers and managers of public spaces to understand how the urban environment disposes emotional responses and can increase social contacts to ensure the citizens personal well-being and social cohesion (Mehta 2019, p.17).

In order to be able to empirically research the atmospheric quality of a street, the character of atmospheres needs to be conceptualized. Therefore, deriving from different disciplines, the theoretical concept of urban atmospheres will be introduced in the following section.

2.5 Introducing urban atmospheres as a multisensorial theoretical concept

As stressed previously, the urban environment is perceived through the multiplicity of sensory experiences and disposing social interaction (see chapter 2.3). The terms ‘atmosphere’, ‘ambience’ or ‘aura’ are often used as synonyms to describe a place’s environmental qualities or situational character (Zardini 2006). According to Hasse (2012, p.15), such socio-spatial situations are influenced and coloured by atmospheres. In connection to the perception of urban environments Zardini suggests that the total qualitative phenomenon of a place has an atmospheric character (see 2.3). Urban planners are aiming to plan for such atmospheric characters when planning safe, lively, creative spaces (Churchman 2002, p.191).

Atmospheres as a phenomenological concept can be found in other disciplines affiliated with space, where they are described as sheath of multisensory stimuli and emotional affection (see Schmitz 2007, Böhme 2006, Hasse 2012). These concepts focus on the aura, atmosphere or ambient that are amounting to a spaces’ character and are emotionally loaded. In the following section, the concept of urban atmospheres will be introduced as a bridging quality between the multisensorial perception of urban environments and their disposition of social interaction. Urban atmospheres are elaborated as a theoretical, phenomenological concept that links together the multisensory perception of the urban environment and its disposition of social interaction in public spaces, such as main streets.

2.5.1 Aura as the medium of sensory perception

"The way in which human sensory perception is organized - the medium in which it takes place” is defined by the philosopher and cultural critic Walter Benjamin as aura (Benjamin 2013, p.18f.). In his book on The Work of Art in the Age of Mechanical Reproduction, he describes aura as "the unique appearance of a distance, as close as it may be", as a sheath which is "not only naturally but also historically conditioned" (Benjamin 1935, p.18f.). By aura, he understands the constitution of the sensual perception of man, which is unique in its
form of appearance and mediated and influenced by a medium. The aura itself thus does not become tangible, but in a certain way remains distant. Benjamin supplements his autobiographical writings of 1930 with notes on the constitution of aura:

“First, the real aura appears in all things. Not only in certain things, how people might imagine. Secondly, the aura changes thoroughly and in its very character with every movement that makes up the thing whose aura it is. Thirdly, […] the distinguishing feature of the real aura is the ornament, an ornamental encirclement in which the thing or being lies firmly sunk as in a case” (Benjamin 1985, p.588).”

According to Benjamin, aura is therefore something attached to all things – beings and objects – which also changes its constitution according to a change of its origin. Benjamin’s definition of ‘aura’ enables a view on urban environments as the medium, of sensory perception of all things that occur and are located within them. Urban environments encompass all objects and subjects that occur in them while their situational character changes according to these things’ constitution.

### 2.5.2 Atmospheres as surface-less emotional spaces of bodily and sensory perception

In a more conceptual and normative way, the philosopher Jürgen Schmitz defines these situational characters as atmospheres. As spaces without surfaces, atmospheres are “a total or partial, but in any case, comprehensive occupation of a surface-less space in the area of what is experienced as being present” (Schmitz 2012, p. 22). Herrmann Schmitz grounds his phenomenological approach on a normative distinction between the spatial space, as a system of places consisting of distances and positions, “which mutually determine each other through the positions and distances of objects located on them”, and spaces without surfaces, such as the space of weather and sound (Schmitz 2012, p.17f.). As atmospheres, he defines spaces without surfaces, which are experienced through an individual’s body and senses in direct relation to its surroundings. For Schmitz, the two most important spaces without surfaces, are the space of the body and the space of feelings, which he both calls atmospheres (ibid.: 18ff.). According to Schmitz, it is possible to perceive things in space only with one’s own body schema, without the help of individual senses and synesthesia. Schmitz calls this ability ‘physical perception’. The space of the body and bodily perception is

> “the epitome of everything that [man] can feel about himself, as belonging to himself, in the area - not always within the limits - of his body, without using the five senses of seeing, hearing, touching, smelling, tasting and the perceptive body schema (the habitual idea of one’s own body) gained from their experiences, especially those of seeing and touching” (ibid.: 19f.).

Contrarily, spaces of feelings are sensed with one’s five senses. According to Schmitz, “Atmospheres of feelings are either merely perceived or they are physically felt; in this case they are felt in affective concern as the feelings one has oneself”, as a bodily concern (ibid.: 22-24). As atmospheres of feelings, Schmitz understands the emotional load that these surface-less spaces have and their power to possibly dispose the individual that is situated within these atmospheres of feelings. The individual either does not get affected and disposed by an atmosphere’s emotional power or she feels involved affectively, where these spatial emotions become intrusive and are experienced as the individuals very own feelings and bodily concerns. Schmitz also suggests that atmospheres can be produced purposefully due to their ability to be integrated into places. By creating an ambience or atmosphere through sensory and bodily stimuli, the space of feelings might dispose one’s own feelings (Schmitz 2012, p.28).

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1 Own translation. All following quotes that are originally German, are translated by the author of this thesis.
With regard to the omnipresence of atmospheres, parallels can be drawn between Schmitz’s definition and Walter Benjamin’s aura concept. Both aura and atmosphere are something specific to things; they adhere to both living beings and objects. As mediums of perception, atmospheres and auras both are changeable - both change accordingly to their creators or carriers – and are either bodily or sensory perceived and disposing. Moreover, both are not real things, but a shell that surrounds subjects like objects; a space that spans around something as the 'around' (Benjamin 2013: 18f., Benjamin 1985, p. 588, Schmitz in Goetz/Graupner 2007, p.21ff.). Schmitz adds an important distinction between bodily and sensory perception of atmospheres, the surrounding of subjects and objects in space.

2.5.3 Atmospheres as quasi-objectives

The atmospheric impact of spaces on emotional conditions is something that the architect Gernot Böhme (2006) describes as an aesthetic concept within architecture theory. In his definition of atmospheres, he follows the conceptual origin of Schmitz concept, the normative distinction between space qua topos and space qua spatium. The space of bodily presence modifies sensitivities by predisposing individuals' feelings through its orientation towards "environments, neighborhoods, situational relationships" - not the distances between things in space (Böhme 2006, p.15f.). Böhme calls such spaces of bodily presence 'atmospheres', which create an affective mood when entering and being exposed to them. Due to 'affective emotional powers', people experiencing such atmospheres are affectively disposed by them. As toned spaces that are "experienced by entering them and experiencing their character in the way they modify our sensitivities", atmospheres are 'quasi objective feelings' (Böhme 2006, p.17). As such quasi-objectives, atmospheres are neither subjective nor objective but something that is evoked by the objective and disposing the subjective (ibid.: 26). Atmospheres are, according to Böhme, a linkage between the surrounding and the human, as which they become mediators between "the objective qualities of an environment and our well-being" (Böhme 2006, p.17).

Like Schmitz, Böhme argues that atmospheres can be created purposefully by professionals, such as architects, landscape architects, artists and designers (Böhme 2006, p.27f.) in an aesthetical approach. He adds to Benjamin’s and Schmitz' understanding of atmosphere as a sheath a quasi-objective character. Böhme describes atmospheres as a quality that spans and encompasses both the urban environment and the subject, the interrelation between the experience and disposition.

2.5.4 Atmospheres as bridging-qualities

This linkage between the urban environment and the individual is what Hasse calls 'bridging quality' as a characteristic of atmospheres. In his understanding, atmospheres are both feelings that are experienced bodily as well as synaesthesias that are perceived sensually, that adheres to things as a surrounding and has an affective/disposing character (Hasse 2012, p.12f. and p.16f.). Atmospheres are not cognitively understood, but sensed through their physical experience: they are "perceptible interfaces at which people experience their surroundings in emotional spatial qualities" (Hasse 2012, p. 12). Schmitz (2007, p. 19-28) and Hasse (2012, p.15f.) both describe atmospheres in an ontological sense as half things. They are neither tangible nor localizable, neither subject nor object. Atmospheres are an ‘in-between’, which attain their joining or linking effect between the environment and the subject through their situational character (Hasse 2012, p. 14). As situational environments, atmospheres are feelings that shape and unfold depending on the situation. Through their intrusiveness, their envelopment and their physical perceptibility, atmospheres can be described as something, at one's own body, but not as something of one's own body (ibid.: 12). Atmospheres, yet something that lies outside the self, can "neither be attributed entirely to the
side of a subject nor entirely to the side of an object” (Hasse 2012, p. 13), whereby they attain the status of 'intermediate phenomena'. This makes spatially localizing atmospheres impossible.

Furthermore, Hasse (2012, p. 13) describes atmospheres as indivisible. They are something present that can only be experienced in the form of its wholeness. It is not possible to reduce atmospheres and only perceive them in parts, because they become intrusive as around, as a whole. If one component of the atmosphere is missing, it changes fundamentally as atmospheres are not merely the sum of their individual elements, but act in their entirety. These elements that form the composition of urban atmospheres are what Hasse calls "atmosphere creators", which will be introduced in the following section. Hasse suggest that urban planners can make use of these atmosphere elements to create collectivized experience and perception of the urban environment. Because of atmospheres’ situational character, atmospheric planning can be used to intentionally create common situations which lead to a predisposition of individual experience (Hasse 2012, p.14).

Figure 1 Urban atmospheres as the linkage between the multisensory perception of urban environments and their disposition of social interaction (based on icon „five senses” by Basti Steinhauer from the Noun Project)

To summarize these comprehensive approaches on atmospheres, urban atmospheres are defined in this thesis as the linkage between the multisensory perception of urban environments and their dispositioning character on social interaction. Urban atmospheres are both, part of the surrounding as its sheath and a person’s subjective, sensory perception of the environment. They dispose only to a certain extent, depending on a person’s emotional predisposition. As these quasi-objectives, urban atmospheres are spanning around both, the environment and the subject and influence them reciprocal while they build the linkage between senses and emotional disposition (Hasse 2012, p.15f; Schmitz 2012, p.19-28 and Böhme 2006, p.26). As such intermediating phenomena, atmospheres as spaces of feelings and bodily perception affectively dispose individuals’ feelings but are not part of the individual itself. Not only the individual but also the collective is disposed by an atmosphere’s situational character and bridging-quality between the urban environment and human behaviour. This is in particular the case in urban planning and design. Urban atmospheres are emotional arounds that are created by their objects, perceived through sensory systems and disposi-
tioning regarding the personal social behaviour. Sensory stimuli that create and dispose social interaction within urban environments are discussed in the following section.

2.6 Creators of atmospheres

In their conceptual work, Schmitz, Böhme und Hasse also name objects that create atmospheres. Atmospheres are synaesthesia, combining different sensory stimuli at the same time which leads to a situational perception of their environments. As Howes states, through a multisensory approach, different perspectives on the same space can be taken through the different senses (Howes 2006, p.323). "[W]hile auditory and olfactory perception are discontinuous and fragmentary in character, tactile perception is aggregative, and visual perception is detached and summative" (ibid. p.323). In order to perceive the environment and situate oneself in it, peoples’ senses work together as a unity (Daly et al. 2018). The concept of atmospheres can combine and interlink these multisensory stimuli.

As creators of atmospheres, different sensory, bodily, and social stimuli can be identified. Schmitz names structural and creative features such as the shape of a building or space, through light, materials, furniture and temperature, the creation of atmospheres as spaces of physical perception can be influenced (Schmitz 2012, p.28). Rather architectural features such as "geometry, shape, proportion, dimensions, [...] light, colour and sound" (ibid.: 18), as well as symbols, signs and materials are identified by Böhme (2006, p.18) to create atmospheres. Not only do they convey certain sensitivities to the individual, but they are also culturally influenced (ibid. p.18). Hasse (2012, pp. 20-28), however, identifies building culture, smells, light and shadows, sounds, air, rhythms of movement, looks and glances, clothing and human habitus, the presence of animals and the presence of object families as the creators and mediators of sensually experienceable atmospheres. Zardini names atmospheric conditions, such as light and darkness, weather and climate, sound and noise, material as well as smell as sensorial stimuli creating atmospheres in urban environments (see chapter 2.3). Some of these atmosphere creators, such as rhythms of movement, glances and glances as bridge qualities, light, sound, smells, as well as architecture in the form of building culture, can be found in all three approaches.

Besides the corresponding discipline-related creators, rather universal physical creators such as: lightning, smell, sound and weather/climate are named by all of these authors. It is these four urban-related, sensory and bodily creators of atmospheres, that are introduced more thoroughly in the following section. Since the focus of thesis is to research the disposition of the urban environment on the social interaction, only environmental but not social factors are included. Therefore, the social stimuli are not considered in this thesis. They might, however, have an important impact and should be research further elsewhere.

2.6.1 Lighting

Light as a creator of atmospheres creates "not only brightness through its 'visual intrusiveness'; but is itself visible and emotionalizes things and places", thus unfolding "a great power over the emotional experience of space" (Hasse 2012, p.21). According to Böhme, lighting represents a basic type of atmosphere in the form of light in space as it adds a certain mood to its surrounding - such as evening twilight. Light charges the things in its surroundings with an 'emotive character', captures and tunes the perceivers in a certain way depending on the respective lighting (Böhme 2006, p.104). It is the colour and distribution of the light, which pervade a space, a scene a certain atmosphere, that is decisive" (Böhme 2006, p.103). Light can also be perceived as a synaesthesia, either visually through the presence of light, or thermally by the warmth which emanates from the source of the light (Hasse).
In the context of cities, light in the form of illumination creates second realities that differ from the atmosphere of the city in natural light (Hasse 2012, p. 121-133). Zardini suggests that the nocturnal city is a “more abstract place in which unexpected vistas of streets, parks, buildings, or details emerge, while familiar ones suddenly vanish.” (Zardini 2006 p.44f.). The lightning situation and especially the contrast between the daytime and the nocturnal city, creates “two parallel urban realities” of the same physical space of the city (Zardini 2006 p.44f.).

However, the absence of light in the darkness enables an amplified multisensory experience of the city by odours, noises and touch as the temporary blindness reduced the vision-dominance. According to Jane Livingston, in a nocturnal environment, “[t]he ears tune in to the particular desultoriness of the half-sleeping world; one’s sense of smell is more keenly aroused in the subtle wariness stimulated by the nocturnal environment.” (Livingston 1987). Through street lightning and illuminated advertising, “a second world of light” appears (Zardini 2006 p. 48).

2.6.2 Smell

For Böhme, smells are "an essential element of the atmosphere of a city [...], because smells are atmospheric like hardly any other sensory phenomenon". (Böhme 2006, p.128). To him, the urban environments possess an olfactory-atmospheric intrusiveness through the attachment of a place-characteristic odor. Smell as a "high affective attachment to a place" attains recognition value which can be carved into a person’s memories in the form a smellscape (Hasse 2012, p. 21). Zardini claims that, in fact, not only every place but every city has its own smellscape (Zardini 2006 p.21). Smellscape can occur as microclimates (Hasse 2012, p.21) or on the scale of the city as its whole. As an “essential component of the character of a place”, smellscape can either be “natural, related to the local flora and fauna, or artificial, in the sense of revealing the presence and activities of man” (Pitte 1998, p.10). These landscapes of smell, both universal and specific smells, are “invisible, but nonetheless present and real”, as Zardini (2006, p. 276) suggests. Ivan Illich describes universal smellscape, where “[...]increasingly the whole world has come to smell alike: gasoline, detergents, plumbing, and junk foods coalesce into the catholic smog of our age.” (Illich 1985).
However, smellscapes have changed over time, where the contemporary city comprises a different smellscape than at medieval times, the Renaissance or during the 18th century (Zardini 2006, p.276). In his novel Perfume – The Story of a Murderer, Patrick Süßkind, very vividly describes the smell of 18th-century Paris:

“In the period of which we speak, there reigned in the cities as stench barely conceivable to us modern men and women. The streets stank of manure, the courtyards of urine, the stairwells stank of moldering wood and rat droppings … The stench of sulfur rose from the chimneys, the stench of caustic lyes from the tanneries, and from the slaughterhouses came the stench of congealed blood. People stank of sweat and unwashed cloths ... The rivers stank, the marketplace stank, it stank beneath the bridges and in the palaces.” (Süßkind 2001).

In contrast, the smellscape of a modern city as described by Jim Drobnick shows the olfactory change that the urban environment underwent. Besides smells occurring due to “particular activities, sources of energy, aromas and spices, plants, flowers, animals, and garbage” (Zardini 2006, p. 276), they are also produced artificially and intentionally in a multisensory economy in order dispose human behaviour:

“KFC (Kentucky Fried Chicken) is but one example of the smell of food being vented into the air, often by specialized diffusing technology, to travel far beyond its source, following people, meeting them unawares, flaring their nostrils even when out of sight of the scent’s origin. Circulating through the streets, occupying a neighborhood, lurking around corners in the mall and other indoor marketplaces, these odours are out for a stroll, trolling for potential customers to entice.” (Drobnick 2004).

Smellscapes emanating from “artificial odours, like the ones to be found in our shopping malls” (Zardini 2006, p.276), retail stores and fast food restaurants are rather purposefully installed in order to influence costumers’ consumption behaviour. In a hotel lobby, the smell of geranium even increased social interaction between strangers (Zemke and Shoemaker 2007). As a sensory phenomenon, scents and odours are not only disposing human behaviour but are influencing physical well-being as well (Zardini 2006, p.277).

### 2.6.3 Sound

Sounds have a characteristic recognition value. Soundscapes (Friedrich 2010, p.231, Zardini 2006, pp.158-207) are created by the "built spaces of the city [...] [generating] their own sound ‘resonances’, which in their indicating and pointing character connect with the identity of a place" (Hasse 2012, p. 22). Researchers as Friedrich (2010, p.225-265), suggest that every city has its unique soundscape, like a landscape but consistent of sound, by which the city can be recog-
nized. For instance, "[t]he various means of transport [...] produce different worlds of sound" (Zardini 2006, p. 168) within each city as the sound of an ambulance or a metro's closing doors are place-distinct. Music as the source of sound, is an "expanded physical space, i.e. the feeling out into space that is formed and articulated by music" (Böhme 2006, p.78). To Böhme, "music [as] the basic atmospheric art" (ibid.: 78). Musicians have been capturing the characteristic sound of the city. For instance, the composition of futurist Luigi Russolo's *Risveglio di una Città* (Awakening of a City) contains eight different kinds of intonarumori (noise-making-instruments), "ululatori (loosely translated as the howlers) on the top line, followed by the rombatoro (roarer), crepitali (cracklers), stropicciatori (rubbers), scoppiatori (bursters), ronzatori (hummers), gorgogliatori (gurglers) and sibilatori (whistlers)" (Walters 2000), imitating the sound of an awakening city.

In the contemporary city, as Zardini suggests, "[n]ew and old noises – or sounds, depending on your point of view – overlap; others have slowly, or suddenly, disappeared, for example with the removal of factories, mills or port facilities form many urban centres." (Zardini 2006, p.168). The sound of the city consists of the materials by which it is built of. Where "these materials produce a repertoire of sounds of specific resonance when touched by active agents, by humans or wind or water" (Schafer 1993).

We also experience the rise of private soundscapes that urban dwellers increasingly are creating. First it was the radio in the car, replaced by the Walkman and now the iPod or iPhone which create personal “bubble” environments (Zardini 2006, p.169). Through the use of e.g. audio players, the noises of the city, described by Hasse (2012, p.22) as unavoidable, are shielded by the use of a private and self-determined auditory territory, a so called head-space (Friedrich 2010, p.68ff). This leads to the "creation of a private, self-determined sound space with which the urban sound-world is faded out and replaced by aestheticized perceptions" (ibid.: 69). Regarding all the sources of sound, in a modern city, however, “silence […] is clearly impossible” (Zardini 2006, p. 168).

Thompson Emily states that in a contemporary city, "[t]he air belongs to the steady burr of the motor, to the regular clank clank of the elevated, and to the chitter of the steel drill. Underneath is the rhythmic roll over clattering ties of the subway; above, the drone of the airplane. The recurrent explosions of the internal combustion engine, and the rhythmic jar of bodies in rapid motion determine the tempo of the sound world in which we have to live." (Thompson 2006, p.190f.).

Despite the noises from the urban environment, the sound of other people present in urban environments does not seem as disruptive or annoying as mechanical or traffic noise. In 1929, "[t]he ten most troubling noises were now all identified as the products of ‘machine age inventions’, and only with number eleven – noisy parties – did the sound of human activity entre the score." (Thompson 2006, p.191).

However, sound is clearly an atmospheric creator, urban planners rather deal with sound in a pollutive manner. In planning, on tries to reduce the negative impact of noise by traffic etc. in order to plan for healthy environments.
2.6.4 Weather

Climate and weather do have a "direct effect on the reality of urban spaces" (Hasse 2012, p.14). Through them, for example, the contours of skyscrapers are perceived as clearly "sharper" in the "bitter cold of winter than in the flickering heat of summer" (ibid.: 14). The softness and hardness of facades and surfaces are thus significantly influenced by weather and its modes of action, and their objective constitution is noticeably altered. Murray Schafer suggests that weather creates an undivided experience of the city as it can be felt, seen and heard.

"A man walks across the snow. You know the temperature from the sound of his footsteps. This is a different way of perceiving the environment; one in which the sensorium is undivided; one which recognizes that all information is interconnected." (Schafer 1993).

Erskine suggests that sensory experiences during other seasons is different. Winter is perceived differently as “summer, the experience of it, the experience of the air and the direct sunlight” (Erskine 1961).

Regarding the multisensory experience of urban environments, Zardini states that there are “sociological and cultural differences of perception and tolerance of temperature, humidity, and other elemental conditions “(Zardini 2006, p. 104), which need to be taken into account in urban planning.

The creators of atmospheres elaborated in this section, are sensory stimuli and as such triggering the sensory and bodily perception of the urban environment. They can be linked to the multisensory perception of the city by smelling, feeling, hearing and seeing one’s environment. Situational conditions, such as the lightning, seasons, weather etc. are having an influence on an urban environment and accordingly, its perception. As atmospheres create a bridging quality between the sensual perception of the urban environment and the disposi-
tion of individuals’ feelings, these atmosphere creators can function as a tool for urban planners to increase social interactions in urban environments.

2.7 Sensory systems and the field of sensory perception

Generally, senses are human beings’ apparatus for feeling and orienting themselves within the surrounding environment. Senses are triggered by environmental stimuli, resulting in cognitive processes (see chapter 2.3). They built the bridge between urban environment and human behaviour, as they enable the perception of the urban environment and are responsible for the disposition of human behaviour (see chapter 2.3).

Gibson categorizes the perception through senses into the five sensory systems of visual system, auditory system, the taste-smell system, the basic-orienting system and the haptic system, which he sees as “aggressively seeking mechanisms rather than mere passive receivers” (Pallasmaa 2012 p.45). Despite Gibson’s categorization, it is argued in this thesis that seeing, hearing smelling and feeling are the senses with which individuals are perceiving their urban environment. Even though Gibson classifies all perception as sensory, other literature indicates a bodily experience in distinction to sensory experience (Schmitz 2012, Böhme 2006, Hasse 2012). For instance, Schmitz argues that ‘light’ can be perceived visually through seeing it as well as felt thermally as the warmth that emanates from the source of light (Hasse 2012). Accordingly, ‘feeling’ is understand as the bodily perception of the environment instead of sensory perception in this thesis. Thus, as the bodily experience is triggered by sensory stimuli located within the urban environment and due to simplifying, ‘feeling’, however, is classified as and included in a multisensory experience. Furthermore, in the context of experience, other researchers argue that not all senses are getting stimulated in the same way, due to different sensory frames (Daly et al. 2018, Gehl 1978). Besides a normative categorization, multisensory perception of the urban environment can be distinguished according to the distances of perception.

Daly et al. (2018), for instance, argue that Gibson’s five sensory systems cover different ranges of perception, where the immediate space around a person’s body is able to receive smell and taste, providing information on the so called ‘near-space’. Even over a greater distance, visual and auditory systems can receive information on the ‘far-space’ (Daly et al. 2018). The argument here is that not all senses are stimulated in the same way or distance. Gehl explains that the perception of the near-space has been neglected in urban planning, as “touch and smell have been considered ‘lower senses’”. Most planners and planning theories foreground seeing and hearing (Gehl 2010, pp. 236ff.) regarding the perception of the urban environment.

According to Gehl, the perception of smell is limited to a range of less than one meter (Gehl 1987, p. 64), whereas sound and noises can be heard at greater distances depending on the type of sound. Hearing and engaging in conversations can span distances of up to seven meters, whereas hearing other people beyond a distance of 35 meters is reduced. It is possible to acknowledge a person is shouting but not the content of her calling. Loud noises, however, can even be heard at distances up to one kilometer (Gehl 1987, p.64).

According to Gehl, “[t]he sense of sight has an even wider functional area” but in connection with experiencing other people there are, like for the other senses, well-defined limitations in seeing them (Gehl 1987, p. 64). In what he calls “the social field of vision”, spanning up to 100m, human individuals can be identified as such. The less the distance, the more individual attributes can be identified. For instance, a person’s sex, approximate age, and what that person is doing can be identified at 70-100m, whereas facial features and hairstyle can be seen and at 30m distance. At 20-25m distance, a person’s mood and feeling can be sensed which makes this span relevant for the social context (Gehl 1987, p. 65). Normal conversa-
tions and meaningful human contact usually take place at distances of one to three meters. In human communication, an interplay between the intensity and distance of sensual impressions is widely used. Surveys in Australia, Canada, and Denmark (Gehl 1987, p.38 and p.191) conducted by Gehl, imply that a certain space (ca. 3,25m) is needed for conversations. In this context, distance is used to regulate intimacy and intensity in various social situations and to control the beginning and end of individual conversations (ibid.).

Hall (in Gehl 1987) distinguishes the social distance according to the context of the social contact with either familiar people or public social interaction. A personal distance of 0,45-1,30m, is considered the conversation distance between people that are familiar with each other, e.g. family members, friends. At a social distance of 1,30-3,75 meters, ordinary conversations between friends, co-workers, neighbours and acquaintances take place. “The sofa group with armchairs and a coffee table is a physical expression of this social distance” (Gehl 1987, p.69). In rather formal situations, a public distance of 3,75-12m defines the situation, mostly characterized by “one-way communication or when someone wants to hear or see an event but does not wish to become involved.” (Gehl 1987, p.69). All three types of social distance can be found in urban environments, depending on the familiarity between the individuals taking part in social interaction.

These thoughts on the different modes of perception (sensory and bodily) as well as the distances of perception of the urban environment and social interaction are informing the field of perception conducted in this thesis. All sensory systems are treated as equally dominant and are adapted to the urban context in focusing on the multisensory experience through seeing, hearing, smelling and feeling. Feeling is understood as the bodily perception of the environment though it is classified as sensory stimuli.

Deriving from Daly et al.’s and Gehl’s distinction between differing distances of perception amongst the senses, the perceptional radius of stimuli occurring in the urban environment and atmospheres’ emotional space, is defined as the field of sensory perception. Together with Hall’s distinction of different social distances, the field of perception applied in this thesis is defined as:

The street, which encompasses the context important when experiencing the urban environment. Sensory stimuli are experienced within the field of perception at interplay and encounter with ground floors; inside the enterprises (through window) and in street space (car lane and sidewalks). Through uses, functions and multisensory stimuli, the ground floors in streets provide different "affordances for every social contact" (Mehta 2019, p.17). The street is the social sphere of a city, the space of the city, people relate to directly emotionally, sensory and socially.
3 Methodological Framework

Urban atmospheres are experienced as a whole through the sensorial modes seeing, hearing, smelling and feeling, which dispose social interaction according to the perception of the urban environment (see chapter 2.3). In the following section, both the urban environment as well as the social interactions that occur within it are researched in regard of the atmosphere. The framework of the empirical research on multisensory experience of a street is limited by a phenomenological research approach and qualitative research design as well as the boundaries of single-case study. Furthermore, it is based on individuals’ auditive, visual, olfactory and tactile experience. The methods described in the following section contribute to a multisensory methodological approach on the relation between urban environments and social interaction. They also combine observations and interviews, within a single-case study on a main street aiming at answering the empirical research questions:

(2) To what degree are main streets experienced in a multisensory way and are there other factors that dispose the perception and atmosphere of the urban environment?

(3) Considering the multi-sensorial approach, which of these senses are more dominant in experiencing main streets?

3.1 Research Approach - Phenomenology

Researching individual experiences of urban environments based on their multisensory perception and disposition of social interaction is possible through applying a phenomenological approach. Focusing on the lived experience of human beings, phenomenology derives from the disciplines philosophy and psychology and has its roots in the works of Edmund Husserl, who was the first to focus on the ‘life-world’ (Denscombe 2010, p. 9). Since then, others have consecutively contributed to the development and shaping of phenomenology, e.g. Schütz, Merleau-Ponty, Berger and Luckmann, Bourdieu, Derrida, Giddens as well as Habermas (Aspers, 2009, p.2). Phenomenology focuses on questions about peoples’ everyday practices, where a phenomenon is something that needs to be explained and becomes tangible through peoples’ senses. Since phenomenology is grounded in social constructivism, explanations of phenomena derive from “the subjective experience of real people” (ibid.). The main focus lies on the how people experience and understand the researched phenomenon. Denscombe (2010) states that sometimes, phenomenology is seen as an alternative to positivism. Instead of focusing on peoples’ perceptions of meanings in an objective, analytical, measuring, structured way, phenomena are researched subjectively, descriptively and interpretatively (Denscombe 2010, p.93f) through the eyes of the participating individuals and their description of reality (Mohajan 2018, p.30). Accordingly, the researcher’s task when using a phenomenological approach, is to present the results of the investigations in an uninterpreted way where the first-person experience is presented. The goal is to present the experience of individuals as if seen through their eyes by describing the situation as it is, without presumptions and validations (Denscombe 2010, p.95). This way, the researcher can also avoid reductionist tendencies.

Phenomenology can be applied as a lens to look at reality or as an empirical research method. In this thesis, phenomenology is applied as a way of seeing through individuals’ eyes and not to take on presumptions (Schmicking 2010, p.37), not a set of doctrines. Through a phenomenological approach on urban atmospheres and a multisensory perception, the individual experience of the urban environment by urban dwellers can be explored.

One aspect of phenomenology is the underlying assumption of the existence of multiple realities, not just one universal reality: “things can be seen in different ways by different people at different times in different circumstances” (Denscombe 2010, p.97). Due to the plural
of realities, phenomenologists need to be aware of the fact that individuals’ descriptions of their experience of a situation can be irrational or even self-contradictory, that they might appear illogical to the researchers’ view of the world. Accordingly, the researcher needs to leave out her own beliefs, presumptions or common-sense. In order to do that, the researcher needs to be self-conscious about them, in order to only contribute with a pure description, not interpretation. Denscombe suggests that one method to reach pure, non-presupposed descriptions is to ‘bracket-off’ things, to take the perspective of a stranger, which enables the researcher to see things with the eyes of the participants, through a lens that does not take things for granted or normal and obvious (Denscombe 2010, p.99).

In Europe and North America, different notions of phenomenology exist. In the former, it is understood as “the essence of human experience”, whereas in a North American context, researchers focus on how people interpret social phenomena (Denscombe 2010, p. 101). In this thesis, the European notion of phenomenology is applied.

Regarding the different notions of phenomenology, in this thesis, a phenomenological research approach is applied to investigate “the kind of human experiences that are pure, basic and raw in the sense that they have not (yet) been subjected to presses of analyzing and theorizing.” (Denscombe 2010, p. 85). Hence, it is the “direct investigation and description of phenomena as consciously experienced, without theories about their causal explanation and as free as possible from unexamined preconceptions and presuppositions” (Spielberg 1975, p.3 in Schmicking 2010, p.37), which are of interest in this thesis.

3.2 Research Design – Qualitative Methods

In order to gain a deepened “understanding of people’s thoughts, attitudes, and behaviors” (Mohajan 2018, p. 38) in urban environments, a qualitative research, rooted in humans’ everyday lives, is taken out. Compared to quantitative research, “qualitative research handles non-numerical information and their phenomenological interpretation, which inextricably tie in with human senses and subjectivity” (Leung 2015, p.324). A qualitative research design plays well together with a phenomenological research approach, as both focus on questions on peoples’ everyday practices and experiences. The phenomena researched are part of the life-world, and as such, a social reality that can be described using qualitative methods such as observations and interviews to access individual experiences.

Qualitative data is accumulated through fieldwork, from documents, observations or interviews (Creswell 2014, p.185) in order to understand the perception of the urban environment and the disposition of social interaction from the perspective of the individuals involved. The researcher herself functions as the key instrument for collecting multiple forms of data, such as interviews or audiovisual information through observations, interviews, documents such as newspapers, journals or diaries (Creswell 2014, p.190). Qualitative methods focus on individual interaction, interpersonal interaction and interaction between humans and their surroundings. In order to gain a deep understanding for the participants’ everyday lives and life-worlds, different methods can be applied. Results of qualitative research tend to be extensively descriptive (Mohajan 2018, p. 38) as they illustrate peoples’ experiences, feelings, thoughts that are repeated not interpreted.

Some characteristics of qualitative research, such as the outstanding role of the researcher, is often criticized as “unscientific”, “poor justification of the methods adopted, lack of transparency in the analytical procedures and the findings being merely a collection of personal opinions subject to researcher bias” (Noble and Smith 2015, p.34) – this critique is often raised especially by researchers following a positivistic tradition. In order to ensure the “trustworthiness” despite the methods’ limitations, validity and reliability ensure the “integrity and application of the methods undertaken in the precision in which the findings accurately reflect the data” as well as the “consistency within the employed analytical procedures” (No-
bel and Smith 2015, p.34). Taking on a “pragmatic approach to assessing generalizability for qualitative studies” by adopting some validity criteria such as systematic sampling, the method of triangulation, comparisons, proper audit and documentation, and obtaining single-dimensional theory by using multi-dimensional theory instead” (Leung 2015, p. 326), biases are reduced as well.

3.3 Methodology – Case Study

Case studies as a methodology, allow for analysing space- or factor-bound phenomena (Flyvbjerg 2006, Mohajan 2018, Denscombe 2010). Real-life situations can be investigated in depth, researching relations and processes within the natural context (Denscombe 2010, p.55). This method is performed on a small scale, encompassing a set of ideas related to the phenomena (ibid.), which makes a case study a mass study’s contrary. In the case study the focus lies at the individual case that has implications on a bigger context and for other phenomena as well. Denscombe (2010, p.53) defines the aim of a case study as “illuminat[ing] the general by looking at the particular”. This type of method allows for researching relationships and processes that occur in social settings in a detailed approach which preserves and serves the complexity of the setting sufficiently (ibid.).

Case studies can either be used for theory building, where one case is investigated during a particular period of time, or for theory-testing which “assess the validity and scope conditions of single or competing theories” (Mohajan 2018, p.34). While the former approach is predominantly used in social research, the latter is less commonly applied (ibid.). Furthermore, conducting a case study can either be done by applying a single- or multiple-case study, depending on the research question (Yin 2009). Multiple-sources as well as a combination of them, such as observations, interviews and questionnaires, audio-visual material or written accounts can be used in assessing the case (Creswell et al. 2003, Flyvbjerg 2006, p.220) or to compare different settings with each other (Denscombe 2010).

According to Yin, a single-case study can be conducted based on the rationale of a critical case, where the aim is to “determine whether a theory’s propositions are correct or whether some alternative set of explanations might be more relevant” (Yin 2009, p.47). The selection of the cases is an important part of the methodology where the motivations and justifications for the specific choice of a case study need to be made explicit in order for the results to be valid. The selection of case studies happens “on the basis of their relevance to the practical problems or theoretical issues being researched” (Denscombe 2010, p.57). Generally, the object or phenomena of investigation needs to have clear boundaries, an end-point or an outside, in order to clearly be distinguished from other social phenomena (Denscombe 2010, p.56). In this thesis, as suggested by Flyvbjerg 2006, Mohajan 2018 and Denscombe 2010, distinct factors and key attributes found in theory and literature, are framing a single-case study.

In this thesis, the experience of the urban environment and its disposition of social interaction is researched within a single-case study on a main street. This due to limitations, regarding the time and depth of the observations and number of interviews. The choice for applying a single-case study instead of a multiple-case study is also made regarding the phenomenological approach aiming at researching the individual and multisensory perception and atmosphere of a main street in depth.

Theory-grounded factors for researching the multisensory perception and disposition of urban atmospheres on which the choice of case-study grounds, are the research taken out by Gehl and Mehta on the liveliness of public spaces. The features encompass the character of the street, design of façades and the uses and occupancy of ground floors which are current approaches regarding the relation between the urban environment and social interaction in urban planning and design.
According to Mehta, main streets can be seen as socialscapes, a place where social interaction takes place (see chapter 2, Mehta 2018). Not only is the street itself a public and social space, but also are uses on ground floors contributing to the liveliness of a street and in doing so, they create affordances for sociability (ibid.). For instance, personal motivations for going shopping were found to be social interaction, amongst others (see chapter 2.2). Third spaces, such as retail, services, cafés and bakeries on the ground floor provide its residents and neighbours with important daily amenities and possibilities for social interaction. In contrast to exclusively residential streets, main streets do provide uses on the ground floors that increase liveliness of the street and in doing so social interaction.

Furthermore, Mehta (2011) identifies the occupancy – and especially small businesses – on ground floors as an important factor influencing the space affiliation and identity of place. He distinguishes between chains and small businesses where the latter are indirectly creating more social interaction due to relations between the store keepers and the people living in the neighborhood. Due to frequent interactions between them, such as purchasing daily amenities or chitchatting when passing by, loose relations between residents and shop keepers or shop assistants occur.

The liveliness and presence of people in urban environments is found, by Gehl, to be influenced by the perceived safety, the character of façades, activities and the presence of other people (see chapter 2.4). The design of façades as well as their character (active/closed) is creating an interesting environment and a reason for people to be in these streets or to move through them. The influence of the façade character on social interaction between people in the street is one key attribute for the choice of the case study.

According to the literature, the following factors are influencing sociability and liveliness on streets. Therefore, the features to base the single-case study selection on are:

- The street is chosen based on its character as a main street and socialscape in a residential neighborhood
- The case study is based on the occurrence of a variety of different functions on the ground floors
- The case study is based on different types of enterprise occupancy on ground floors (small business vs. chains)
- The case study is chosen based on the degree of activeness of the façades and a variety of widths of store fronts (active vs. passive façades)

Even though the case study is researching a specific situation, results can be an example of a wider phenomenon, and therefore be generalized depending on the similarities to other cases of the same type based on significant features (Denscombe 2010, p.60). Such comparisons can be based on similarities regarding the factors of physical location, historical location, social location and institutional location (ibid, p.61f).

3.3.1 Barer Strasse in Maxvorstadt, Munich’s 3rd district

Based on the factors identified in literature, the site chosen for conducting the single-case study is Barer Strasse, located in Maxvorstadt, Munich. Further, the research has been living in the area of Maxvorstadt and was familiar with this particular main street before. Thus, every other main street fulfilling the same criteria could have been chosen instead. Barer Strasse, however, is an illustrative example regarding the features the single-case study boundaries is grounding on.

As one of the longer north-south axes (1.56km) in Maxvorstadt, Barer Strasse, begins at Lenbachplatz and ends in Nordendstrasse. While it changes its character several times along the way (Bayerische Vermessungsverwaltung n.d.). In the beginning, the street is wide and alley-like, with old Wilhelminian buildings enclosing it on both sides. After the Ka-
rolinenplatz, it runs along the art areal with big, empty green spaces. After its intersection with Schellingstrasse, one of the bigger, main, east-west streets, Barer Strasse turns into a main residential street.

The street section chosen of Barer Strasse is approximately 277m long (Bayerische Vermessungsverwaltung n.d.) located between Schellingstrasse and Nordendstrasse, building Barer Strasses most northern section. Some of the houses in this section of Barer Strasse (between Schelingstrasse and Nordendstrasse) are remaining from before WWII (Figure 9) and scattered between the dominating modern houses from the 70s/80s, which have been built as fill-ins, where bombs destroyed the former, mostly Wilhelminian/Neorenaissance buildings. Figure 10 shows buildings, classified as historical monuments, lying in the street or in connection to the section of Barer Strasse that is being researched. The height of buildings is mostly four stories with an attic floor, which has been attached later on. In this part of Barer Street, mostly people with long-term housing contracts have been living here since up to 30 years (see interviews). However, some students were lucky to find housing so close to the university, thus the newer rental contracts are amongst one of the more expensive ones in Munich as the area is quite popular. On the ground floor, enterprises with different retail functions, services as well as daily amenities can be found, that not only the residents of the street but also those of the surrounding streets use to purchase daily goods. Also, several cafés, bars and restaurants are located in this section of Barer Street.

The closest metro station is Universität (ca. 570m) and the Tram station Schellingstrasse (ca. 2m). The tram is also running through Barer Strasse, between Sendlinger Tor and Petuelring. The tram connects Barer Strasse in south-north direction with the city centre and main traffic hotspots as well as all metro lines and suburban trains.

![Figure 6: Buildings listed as historical monuments located within Barer Strasse (based on Landeshauptstadt München, 2019; map based on Bayerische Vermessungsverwaltung, n.d.).](image6)

As Munich’s first systematic urban expansion outside the city walls, the area around Barer Strasse was built at the beginning of the 19th century as a result of the removal of the fortress ring and the Schönfeldvorstadt complex. The two architects commissioned with this task, were Leo von Klenze and Friedrich von Gärtner (Süddeutsche 2011).

![Figure 7: Draft No.4 for Maxvorstadt, 1807/1808, Friedrich Ludwig Sckell Pencil, City Archive Munich (Landeshauptstadt München, Referat für Stadtplanung und Bauordnung 2008).](image7)

With a design competition, the implementation plan was developed by the building commission together with the Court Garden Director Friedrich Ludwig von Sckell (1750-1823) from a total of 17 designs. It was important to emphasize Munich’s new role as an administrative and cultural center. The plan for the new district was drawn up on the drawing board and provided for a wide grid-shaped road network, with today’s Briener Strasse as the main axis,
that clearly stood out from the winding old town and corresponded to the modern principles of rational urban development (LHM .n.d.a).

The development of Maxvorstadt was first dominated by detached residential buildings surrounded by spacious gardens but the originally planned open buildings were soon replaced by closed series of high-yield apartment buildings in light of the growing population pressure. (LHM n.d.a). Art, culture and education already shaped the area at that time. And even today, the district still has an above-average number of cultural and artistic institutions. (Süddeutsche 2011).

Due to the location and high concentration of Nazi party buildings in Maxvorstadt before and during WW II, the third district was particularly targeted in bombings. The degree of destruction of today’s Maxvorstadt was around 70 percent, where a lot of buildings in Barer Strasse were destroyed as well. During the reconstruction, historic green spaces and historic buildings were preserved and affordable apartments were built as in-fills. (LHM n.d. a).

Today, Maxvorstadt is still Munich's art district, with a high density of museums, universities and faculties, university libraries and archives (LHM n.d. a) located here. In addition, many main administrations of banks, insurance companies and corporations have their headquarters here. These institutions not only make Maxvorstadt the art and university district of Munich, but it also has a superior value for the state of Bavaria. Furthermore, Maxvorstadt is a popular residential district in Munich, as many small cafés and pubs attract young people and students in particular. Families are rare here and especially in the small streets towards Schwabing it is a bit louder in the evening. According to Süddeutsche, a german newspaper, “This is where people like to live, in Maxvorstadt” (Süddeutsche 2011). These cultural and university institutions not only make Maxvorstadt interesting for its residents but also for Munich’s and Bavaria’s citizens as well as tourists.
Figure 11 Schellingstrasse 54. Five-storey neo-baroque corner building with richly stuccoed facade and slanted corner surrounded by polygonal oriel tower, by Johann and Lorenz Grübel, 1897-1899 (photo by rufus46, wikimedia-commons)

Figure 12 Barer Strasse 43 (apartment building). Neo-Renaissance, richly structured, around 1880/90; connected to Schellingstraße 54. (Landeshauptstadt München, 1974)

Figure 13 Barer Strasse 45 (apartment building). Neo-Renaissance, with rich structure, end of 19th century. (Landeshauptstadt München, 1974).

Figure 14 Barer Strasse 66 (apartment building). Late Biedermeier, with pilaster strips, around 1860 (Landeshauptstadt München, 1974)
Figure 15 Barer Strasse 67 (apartment building). In late classicist tradition, with pediment and rich stucco decoration, 1860/70 (Landeshauptstadt München, 1974).

Figure 16 Barer Strasse 69 (apartment building). Brick renaissance, with plaster divisions and bay tower, around 1884-1887 by Johann Widmann; building ensemble with Adalbertstraße 70/72/76/78/80 (Landeshauptstadt München, 1988).

Figure 17 Detail plan of the area around Barer Strasse, showing the outline of Maxvorstadt (Landeshauptstadt München, 2019).
3.4 Research Methods

In order to understand and explain the perception and dispositioning of urban atmospheres through the eyes of individuals, qualitative methods are chosen to investigate multisensory stimuli experienced within the single-case setting of Barer Strasse. Observations in the case study context help to analyse the urban environment regarding sensory stimuli and the social interactions that occur within it. Interviews are conducted in place, as go-alongs, to get an insight into the first-person multisensory perception of the urban environment and its atmosphere and to understand the motives and reasons behind social interactions.

It will be explored to what degree main streets are experienced in a multisensory way and if there are other factors that dispose the perception and atmosphere of the urban environment? Furthermore, considering the multi-sensorial approach, it will be examined which of these senses are more dominant in experiencing main streets? (see chapter 1.3).

The collection of data using different comprehensive qualitative methods is a non-linear process, a sort of back and forth between the different methods (Low 2018). As Creswell (2014, p.195) states, the analysis of data gained through qualitative methods will be undertaken simultaneously with other parts of the qualitative research, such as the data collection. For instance, interviews will be transcribed and evaluated right after their conduction in order to memorize as much as possible while it is still fresh to the researcher. Notes and transcripts will be used later in the report, but the actual conduction can go hand-in-hand with the collection of the data. The process of collecting and analyzing qualitative data "is unlike quantitative research in which the investigator collects the data, then analyzes the information, and finally writes the report" (Creswell 2014, p.195). By applying a set of methods, the experience of the urban environment and its disposition of social interaction through the atmospheric character of a place can be researched thoroughly. A triangulation of the methods used, increases the reliability and validity of the research design.

3.4.1 Observations

Observations as a qualitative method, are taking place in the natural setting in which the phenomenon occurs. They are providing the researcher with evidence and information as it occurs in real-life situations, enabling her to investigate a phenomenon or a situation by observing it systematically (Denscombe 2010, p.197). By researching, for instance, social interaction in urban environments, the researcher gets an understanding of the urban environment itself, its appearance and characteristics, as well as of patterns of peoples’ social behaviour (Studer 1969, Craik 1970 and Michelson 1975 in Mehta p.31).

Collecting observational information can be done following a systematic observation or participant observation approach, describing what is happening, what is going on (Denscombe 2010, p.196f). In both cases, the phenomenon is observed in a direct manner by the re-
searcher, and data is empirically collected, witnessed by the observing eye (Denscombe 2010, p. 196f.). However, the research settings might be influenced through the presence of the researcher, as she might be seen as intrusive or perceived as a stranger by individuals in their daily-live settings. Also, other limitations might be connected with a potential bias of the researcher, poor observation skills, selective recall, selective perception and accentuated perception (Creswell 2014, p.191, Denscombe 2010, pp.197f.). Denscombe (2010, p.198) claims that rejection of bad stimuli from past experience (avoidance learning), as well as the current physical and emotional state of the researcher can be affecting the researcher’s perception as well. Researcher-biases can be worked around through objective filed notes that provide other researchers with the same information about the fieldwork, ensuring transparency and a high inter-observer reliability (Aspers 2009, p.7f and Denscombe 2010, p.199). Through such systematic observation schedules, “there will always be a permanent record of the events which should be consistent between any researchers who use the schedule, because what is being observed is dictated by the items contained in the schedule” (Denscombe 2010, p.199). Possible features that should be regarded in the schedule can be identified based on a literature review (ibid). Furthermore, frequency at which events in the field occur, which events happen at a specific point in time, the duration of an event or the sample of people that is researched for a period of time can provide some guidelines for the observation schedule (Denscombe 2010, p.200).

In order to explore how urban environments are being perceived through different senses and which atmospheres are disposing social interaction, several features that have been identified as disposing sociability as well as creating urban atmospheres, will be observed in Barer Strasse. These features encompass the use and occupancy on ground floors, façade categories which contribute to the socialscape (see chapter 2.4), as well as weather and sound as additional multisensorial atmosphere creators within urban environments (see chapter 2.6). However, not all the information collected in a qualitative research can be used due to its dense and rich character. ‘Winnowing’, which is focusing on some of the data, relevant to the research while disregarding other data, helps to limit the amount of data to the relevant one. In order to process and analyze the collected data, it is aggregated into five to seven smaller themes, according to Creswell (2014, p.195). Collected data in researching the multisensory perception of urban environments and their disposition of social interactions through urban atmospheres is ‘winnowed’ by aggregating around the following themes:

- Use on ground floors
- Occupancy on ground floors
- Façade characters
- Socialscape
- Soundscapes
- Smellscape
- Weather and lighting conditions

These features can be structured by the sensory system they are perceived with e.g. visual system, auditive system, olfactory system, haptic (bodily) system (see chapter 2.7). As specified in the theory section, the different stimuli are experienced in a radius of perception, limited to the ground floor of Barer Strasse (see chapter 2.7).

Observations of these features were conducted within the timeframe of three weeks in March 2019, on both weekdays and Saturdays (see Figure 18). Features were observed by either slowly walking through the street and taking notes (socialscape, weather, solar altitude) or photos (use, occupancy, façades), as well as recording soundscapes on four different stationary spots throughout the street (see Figure 27). Due to the cold temperatures and breeze, observing the smellscape of the case setting turned out to be difficult. In the end, the researcher decided to describe them in the field notes instead of visualizing them, this goes
for the weather conditions as well. Statements on the absent of smell and sunlight from the interviews also supports this decision. Generally, the specific features were observed separately. However, some of them were researched on the same day as interviews were conducted, where observing and interviewing happened alternately. Additionally, field notes were taken in order to separate the researcher’s personal condition and disposition at the time of research form the research itself. These notes helped as a reflective tool to identify personal biases and influences.

Following, these features are observed systematically:

- use and occupancy on ground floors
- façade characters
- sound records/soundscape
- socialscape
- field notes: smell, temperature/lighting (sun/shadow)

### 3.4.1.1 Use and occupancy on ground floors

The use and occupancy on the ground floors of Barer Strasse were classified by taking photos of the ground floors on 13.03.2019 between 14.00-17.30 o’clock, with a short interruption due to rain between 14.07 and 17.16 o’clock. After an actual total time of 23 minutes photographing every ground floor, they were mapped and further analysed retroactively through evaluating the photo material on the uses and occupancies, façades and storefronts. This way of retroactive categorization was chosen as it was difficult in some cases to distinguish between small business and small chains regarding the occupancy. In such cases of uncertainty, a web search on the venue provided further details about the occupancy.

As a chain, businesses that had more than five branch stores in Munich or further store branches located elsewhere then in Munich, were classified. Since this information was easy to access, no further follow up questions with the shop owners were necessary. Besides chains and small businesses, housing and vacant stores were identified as categories of occupancy.

The use of each enterprise was noted, such as e.g. bakery, dry cleaner, driving school, café, library, housing. Subsequently, these occupancies have been summarized and categorized to retail, service, housing, gastronomy, vacant and third spaces based on the researchers own categorization. The latter category, third space, was allocated to enterprises with a social function besides consumption or retail, e.g. cafés, book stores and galleries (see chapter 2.4).
3.4.1.2 Façade characters

As well as in the observation of functions and occupancy on ground floors, photos of façades have been taken on 13.03.2019 between 14.00-17.30 o’clock, during an actual time of 23 minutes, interrupted by rain between 14.07 and 17.16 o’clock. After photographing the ground floors, the façades’ characters have been identified and categorized retroactively according to Gehl (2010, p.241). He classifies façades according to the width and frequency at which doors occur per 100 meters, the character of the façade as either active/passive and open/blind, façade articulation (horizontal/vertical), the variety of functions on ground floors, façade relief and details. Accordingly, Gehl distinguishes façades into the categories: active, friendly, mixture, boring and inactive (ibid. p. 241). These façade categories are captured in a base-map (see Figure 26) of the case setting and will be linked to the visual perception of the urban environment that is explained in the interviews later on.

A) _Active façades_ comprehend small units with many doors at a frequency of 15-20 doors per 100 meters. They contain a large variation of functions on the ground floor, no blind and only a few passive units, lots of character and façade relief with a primarily vertical façade articulation. Active façades are rich in good details and materials.

B) _Friendly façades_ persist of relatively small units with doors occurring at a frequency of 10-14 per 100 meters. The ground floors do show some variation in their functions as well as a few blind and passive units. Friendly façades comprehend a façade relief and many details.

C) _Mixture façades_ consist of a mixture of large and small units with 6-10 doors per 100 meters. Such façades do have some blind and passive units and a modest façade relief. Mixture façades only have a few details.

D) _Boring façades_ encompass large units with a few doors, approximately 2-5 doors per 100 meters, and almost no variation of functions on ground floors. Boring façades persist of uninteresting units with few of no details regarding the façade design.

E) _Inactive façades_ comprise large units with few to no doors, meaning 0-2 doors per 100 meters. This type of façade character has no visible variation in its function, with blind or passive units. Inactive façades are uniform, with no details and nothing to look at. (Gehl 2010, p.241, see Figure 20)
Façade Categories

A – active
Small units, many doors
(15-20 doors per 100 m²/328 feet)
Large variation in function
No blind and few passive units
Lots of character in façade relief
Primarily vertical façade articulation
Good details and materials

B – friendly
Relatively small units
(10-14 doors per 100 m²/328 feet)
Some variation in function
Few blind and passive units
Façade relief
Many details

C – mixture
Large and small units
(6-10 doors per 100 m²/328 feet)
Some blind and passive units
Modest façade relief
Few details

D – boring
Large units, few doors
(2-5 doors per 100 m²/328 feet)
Almost no variation, uninteresting units
Few or no details

E – inactive
Large units, few or no doors
(0-3 doors per 100 m²/328 feet)
No visible variation in function
Blind or passive units
Uniform façades, no details, nothing to look at

Figure 4 Façade categories (Gehl 2013, p. 105)

Figure 20 Façade categories (Gehl 2010, p. 241)
3.4.1.3 Socialscape

The socialscape was conducted based on a definition of social interaction as human behaviour that is oriented towards the acting of other persons' behaviour. The behaving of the people involved, is constantly being readjusted and oriented on each other's behaviour as a form of reaction (Max Weber, see 2.2). This rather unspecific, open definition was purposefully chosen in order to not limit the observations to pre-defined categories of social interaction aforehand.

By slowly walking through Barer Strasse from southern to northern direction, the location of each of the observed social interactions on the weekend and during the week was noted and mapped in base-map of the street (see Figure 39 and Figure 40). Both, the location, kind of interaction as well as direction were noted. Accordingly, interactions in the street as well as between the street and the inside of the enterprises on the ground floors, e.g. talking through an open door, were considered.

The socialscapes were conducted on:

- two Saturdays (March 16: 9:00-17:00 o'clock, March 30: 7:00 o'clock)
- four weekdays (March 19: 13:00, 15:00 and 17:00 o'clock, March 21: 9:00 o'clock, March 22: 7:00 o'clock, March 26: 11: o'clock) (Figure 21).

The times of observation where at:

- every other hour between 7:00-17:00 o'clock (7:00, 9:00, 11:00, 13:00, 15:00 and 17:00 o'clock), for around ten minutes.
- Due to the sunset between 18:00-19:00 o'clock during the period of fieldwork, no further observations were conducted at 19:00 o'clock.

This due to suggestions of a change in the atmospheric character and perception of the urban environment at dawn or in the dark respectively, in comparison to experiences in daylight (see chapter 2.6).

Based on the social interactions observed, which had been summarized and categorized retroactively, the following types of social interaction were observed:

- Walking and chatting
- Standing and chatting
- Sitting and chatting
- Biking and chatting
- Working and chatting
- Other (looking at someone else, talking on phone)

Conversations were the only form of social interaction that could be explored during observations on the socialscape in Barer Strasse. However, this type of social interaction was observed in combination with different activities.
3.4.1.4 Soundscape

The noise and sound situation in the research setting, was observed at four different spots located throughout the street. The four spots were chosen so that the recordings could cover a wider range of the street and add up to the whole street. Also, they were conducted in spots where the author could be staying for a longer time, as the recordings were 10 minutes long.

Recordings were conducted both during the weekend and during the week, in 4 different time-frames:
- Morning: between 7-12 o’clock
- Noon: between 12.30 – 13.30 o’clock
- Afternoon: between 14.30-16.00 o’clock
- Evening: 16.30-18.00 o’clock

The Soundscape have all been recorded in sequences of ten minutes, and analysed regarding differences in the characteristic soundscape on weekdays/weekends and time of day.

The volume and different sound sources are identified and compared by spot and time in the morning, at noon, afternoon and evening. These sound recordings are ‘translated’ visually by using computer-based programmes, showing the volume in dB and scatter. The different sound sources are categorized and added afterwards (see Figure 28- Figure 35).

3.4.1.5 Comprehensive field notes, solar altitude and smell

Besides the structured observations, field notes were taken as a tool for the researcher to reflect on her own impressions as well as to note down phenomena such as scent and lighting. These reflective field notes were taken while the researcher was in the field and afterwards, to be aware of the personal condition at that moment, e.g. being tiered, stressed, happy (see Figure 41 and Figure 42). Additionally, the post-fieldwork notes helped to reflect on the day and to note an overall impression of the results as well as outer conditions, e.g. sunny weather, cold, unusual load of traffic.

More structured, the solar altitude within the street was observed on March 16 between 9-17 o’clock (at 9.00, 11.00, 13.00, 15.00 and 17.00 o’clock) and on March 22 at 7 o’clock. Three
distinct lighting or thermal situations, respectively, could be observed where sunlight was shining on the western side of the street until 13.00 o’clock, the sunlight highlighting the whole of Barer Strasse between 13.00 and 15.00 o’clock and the eastern side being lighted up by sunlight after 15.00 o’clock.

Due to the cold weather as well as a slight but constant breeze, smells were hard to grasp during the time in the field. Scents could only be perceived in combination with functions on ground floors and only in a few exceptional cases. Originally, these features should be part of the observations but due seasonal and weather conditions, observing the smellscape of the case setting turned out to be difficult and lean due to cold temperatures and windy conditions. Also, lighting conditions such as the solar altitude are included in the field notes (see Figure 36 – Figure 38). However, due to their atmospheric impact on the multisensory experience of the street, these features need to be included in the research anyway. This decision is supported by findings made in interviews about these features.

3.4.2 Interviews

To be able to understand individuals’ experience and disposition of urban environments from a perceptual perspective, observations need to be comprehended with interviews. Interviews are a useful tool to directly address the participants and gain knowledge about their perception of the urban environment, as well as individual behaviour and interaction within them. A method frequently used in phenomenology to get insight into how people make sense of their everyday experiences, are in-depth interviews that enable to understand and describe individual experiences from the interviewee’s point of view. According to Creswell (2014, p.191), information gained through interviews provides the researcher with indirect information that has been filtered through the individual views and perceptions of the interviewee. Such data can contain normative weighing as well as personal opinions. A form of interviews used first in (sensory) ethnology that combines “experiences and interpretations at the same time” (Kusenbach 2011), is go-alongs or walking-whilst-talking. Such research approaches consider a sensibility for “constitutive co-ingredience’ of people and place” (Anderson 2004, p. 254), by combine rather long, story-telling like, and open interviews, with the presence in the actual research setting. Using talking-whilst-walking as an interview method in urban environments, the researcher can reveal and decode “socio-spatial relations” (Anderson 2004, p.254) which encompass “atmospheres, emotions, reflections and beliefs, [...] as well as intellects, rationales and ideologies” (p.260). This because walking as an active mode of experiencing the urban environment, involves all senses in perceiving urban spaces when walking through them (Wunderlich 2008, p.125). According to Wunderlich, walking in urban environments is a way of “sensorially and reflectively interact[ing] with the urban environment. [...] Walking practices and ‘senses of (or for) place’ are fundamentally related, the former affecting the latter and vice versa” (ibid. p.125).

During go-alongs, the researcher listens to participants opinions, while actively exploring their “stream of experience and practices as they move through, and interact with their physical and social environment” (Kusenbach 2011). By this, streams of perceptions, emotions and interpretations can be captured that might be hard to access otherwise as individuals usually tend to keep them to them themselves (Kusenbach 2011). “[N]on-structured interviews aim at exploring the meaning structure of the interviewee” (Aspers 2009, p.8), providing rationale or justifications of their point of view. Accordingly, these unstructured, in-situ interviews are led by the interviewee, who is emphasizing and stressing things that are of matter to him/her. In cases of uncleanness, the interviewer can pull follow-up questions to fully understand the interviewees perception correctly.

Interviewees are chosen based on specific characteristics that derive from the research questions and research design. Denscombe admits that there is no strict rule for choosing informants, but that they “tend to be chosen deliberately because they have some special
contribution to make, because they have some unique insight or because of the position they hold.” (Denscombe 2010, p.181). Furthermore, the sampling of interviewees depends on the aim of the research, whether the results should be generalizable or a particular situation or phenomenon should be researched in depth (Denscombe 2010, p.181). Initially, recruiting participants was done by setting up flyers in Barer Strasse and at the intersections with crossing streets. Also, the flyer was published online on social media (facebook). Probably due to the type of media and a snowball-system of sharing the flyer, foremost young adults connected to the researcher’s contacts were replying with a high response via social media. As there was no response from the call for participation through physical flyers within and nearby the research setting, the researcher changed the strategy to directly addressing people at the entrances of Barer Strasse instead. Consciously and purposefully, mainly middle-aged and older people were asked in order to compensate the young participants that replied to the online flyer. These two demographic groups represent the urban dwellers usually being in the chosen case setting, as well as a general ageing population in Munich and a high student population.

To reduce possible influence on the perception of a place due to place affiliation and identity of place, the interviewees are divided into two groups of people. In group A, interviewees had an affiliation with the street section as they either live in the neighborhood or as they have been visiting the street frequently. Interviewees of group B have never been to Barer Strasse before or not in a long time (more than a year).

In total, 20 interviewees participated in the go-alongs, whereof 11 could be assigned to group A (participations with affiliation of space) and 9 to group B (no affiliation with the street). This uneven number between the two groups results from difficulties recruiting people outside the research setting and therefore recruiting participants in close proximity to the research setting, which made it difficult to find participants with no affiliation of place.

In both groups, participants were between 20 and 65 years old. In group A, the age is distributed quite even between 23-30 years old (5 participants), and 50-65 years old (5 participants). One outstanding participant was a mother, ca. 35 years old, that was about to push her stroller along the street. In group B, four participants were between 23-30 years old, three persons were between 30-40 years old and two between 50 and 60 years old. Most of the younger participants (23-25) were students, were participants aged 30-50 were employed. The participants being 60+ were mostly retired. In group A, seven out of 11 participants were male, whereas 4 were female. In group B, 6 participants were male whereas 3 were female.

Conducted at different days and different times, the interviews were between 7-22 minutes long, depended on the interviewee’s openness and talkativeness. In group A the following interviewees participated in the go-alongs: A1 (17:42 min), A2 (13:43 min), A3 (16:14 min), A4 (14:14 min), A5 (7:14 min), A6 (16:09 min), A7 (8:16 min), A8 (21:36 min), A9 (15:30 min), A10 (13:38 min), A11 (11:28 min) whereas in group B, interviewees B1 (14:18 min), B2 (20:57 min), B3 (19:29 min), B4 (13:13 min), B5 (15:41 min), B6 (13:45 min), B7 (8:44 min), B8 (15:34 min), B9 (7:12 min).
Interviews were held in German, the native language of the participants. Not only does the researcher speak the official language, German, but she also speaks Bavarian, a dialect that is connected to the cultural heritage within the research setting as well as to an identity of place for the locals. As the researcher has been socialized in this socio-cultural context, non-verbal language and behaviour that might occur in the interviews and during the observations can be interpreted and understood by the researcher as well. The interview participants might even feel more comfortable with a researcher that is part of their socio-cultural heritage. Instead of seeing the interviewer as a stranger or intruder to their daily lives, they might be able to connect better with her.

After a short introduction of the researcher herself and the empirical study, participants received the following instruction directly before the interview:

**English:** We perceive our surroundings with all our senses, including hearing, seeing, smelling, feeling. Please pay attention to what you hear, see, smell and feel as you walk along the street. You can talk freely; it is your subjective opinion that counts.

**German:** Wir nehmen unsere Umgebung mit allen Sinnen wahr, dazu gehören das Hören, Sehen, Riechen, Fühlen. Achte bitte beim Durchlaufen der Straße darauf, was du hörst, siehst, riechst und fühlst. Du kannst frei erzählen, deine subjektive Meinung zählt.

In cases where some senses have not been addressed at all by the interviewee, the researcher was inquiring more specifically in order to find out what degree the atmospheric character of the street was experienced multisensorial. At the end of each interview, the interviewees were asked whether there was one sense with which they perceived their environment much stronger than with others or if their experience was rather multisensorial/synaesthetical in order to research a possible dominance of one or multiple senses regarding the atmospheric character.

In order to respect participants integrity, the examples used to illustrate the findings are anonymized using A or B for ground affiliation and a number according to the order of interviews within each group.
3.5 Methodological Triangulation – Increasing Validity and Reliability

Triangulation is as a strategy in which different methods are combined to look at the object of investigation from different perspectives, strengthen the results of qualitative research by increasing the validity of the findings. The aim of triangulation is to use the comparison of data that have been collected by using different methods and the “validity threats” that are inherent in every technique.” (Flick 2007, p. 3). Triangulation can be applied on data-sources or the techniques and methods used. According to Hammersley and Atkinson, “to the extent that these techniques involve differed kinds of validity threat, they provide a basis for triangulation (Hammersley and Atkinson 1983, p. 199 in Flick 2007, p. 3).

In this thesis, the three methods, case study, observations and interviews, are combined within a qualitative research design and a phenomenological research approach, in order to increase the validity of the overall findings of researching the experience of the urban environment and the disposition of social interaction through urban atmospheres. These methods are complementing each other by providing data on a generalizable case study, while at the same time, reducing the validity threats of each of these methods by combining them. Accordingly, the multisensory experience of the urban environment in connection to the disposition of social interaction is being researched in the setting of a factor-bound case study. This enables an application of the research in a similar context, based on these factors and with the same boundaries. Observations provide intersubjective data on what phenomena occur where, when and how frequent in the setting of the case study. The systematic observation schedules on the functions, occupancy and façade characters in connection to social interaction increase the validity of observations as a method. Participatory, open-ended interviews in the case study setting are providing subjective data on peoples’ experience of the urban environment of the case study setting. Furthermore, they help to understand the reasons behind and patterns of social interactions in the research setting.

3.6 Limitations

Limitations of this research are deriving from the phenomena researched. By already defining research questions and narrowing the research context down, general limitations derive from the theoretical frame of every research. In this specific thesis, a focus on the field of urban planning and design as well as on urban environments, social interaction and multisensory experience are narrowing the research to a specific niche within urban planning and design as well as it opens up to interrelated disciplines and limitations occurring there regarding the research phenomena.

As a qualitative phenomenon of individual and collective behaviour taking place in and being disposed by the urban environment, a qualitative research design is applied. Limitations of this thesis that arise accordingly are those deriving from the research approach and methods, such as the researcher’s role and possible biases. Accordingly, limitations of the results deriving from the methods used, mostly encompass issues of objectivity, the influencing role of the researcher and possible personal biases.

For instance, the research design applied in this thesis is producing ‘soft’ data as it focuses on processes and phenomena rather than quantitative results. Some researchers therefore consider qualitative data not to be real data (Denscombe 2010, p.63).

As one of the methods used is a case study, possible limitations are deriving from the need to define clear boundaries for the case setting. This might lead to the fact that findings are difficult to generalize (Denscombe 2010, p.63). Despite the possible limitations of the case study method, it is exactly this type of ‘soft data’ and the focus on processes and experiences rather than results which are of interest when investigating a multisensory experience of the urban environment. A case study allows for taking into consideration key attributes and distinct factors based on literature and current paradigms when choosing the research set-
ting. For instance, the research taken out by Gehl and Mehta that concluded with the influence of the design of façades and the functions and occupancy of ground floors, can be implemented into the choice of the case study based on these key attributes.

Limitations induced by the observation method is its focus on behaviour not on intentions or opinions and its rather intersubjective results. As the observations are the researcher’s experiences of the phenomena researched, the results also contain a personal bias introduced by the researcher herself. Therefore, observations are limited regarding the objectivity and generalizations of their results. However, applying systematical observation schedules allows a direct collection of data as it is observed, without the disposition by the researcher’s individuals’ opinions, interpretations or thoughts. Observation schedules make observations more objective as they are systematic and rigorous. They also obviate biases induced by the researcher and her presence in the field. Furthermore, extensive amounts of information can be collected in a short period of time which makes observations an efficient method. Following the framework and outline of an observation schedule also bears the advantage of providing pre-coded data which already is ready for further analysis. As such a systematical approach allows for revision by other researchers resulting in very similar results, observations have a high reliability (Denscombe 2010, p.204). Accordingly, if the researcher follows specific structured outlines, inter-researcher validity can be established (Denscombe 2010, p.204f).

In order to compensate the one-sided perspective from the researcher’s point of view on the research phenomenon, observations can be complemented with interviews. Despite the advantage of acquiring first-person, subjective data, interview results can be limited and influenced by the researcher. Since the researcher always is present in the natural setting, she is a distorting factor to the results as she changes the ‘natural’ setting (Denscombe 2010, p.63).

The researcher’s role in these go-alongs is active and disposing when capturing the participants’ behaviour and interpretations. Both are an influencing asset while researchers need to be very reflective and skillful at the same time (Kusenbach 2011). Despite the in-situ research, this hybrid-method between observation and interview is not free from limitations that are caused by the presence of the researcher who does disturb the unfolding of ordinary events as they influence social situations. According to Kusenbach (2011), with the researcher present, go-alongs can “never be ‘natural’ social situations” as she is always impacting the experiences that the participants have without the researcher’s presence. Another limitation of the thesis can be induced by possible predisposed decisions or conclusions taken on by the researcher which could influence the outcome of the data collection. Since the research is applied in the field context, and therefore context-bound, the researcher needs to possess sensitivity for the research context. Also, the researcher needs to be aware of her being a determining factor of the perception and experience of participants’ environment and therefore a part of the research process herself (Mohajan 2018, p. 38). However, there is risk for the researcher only hearing what she ‘wants to hear’ due to preassumptions (Denscombe 2010, p.99f). Also, the material gathered through such methods might be difficult to interpret or be disruptive and influencing responses through the sheer presence of the researcher (Creswell 2014, p.191), which also induces limitations of the results.

Generally, when applying qualitative research and methods, access to data can be difficult and contain ethical problems as well as confidentiality issues regarding the participants involved.

However, despite the limitations induced by each of the applied methods, such as validity, generalization a triangulation of these methods can reduce and countervail some of these. Through a triangulated perspective on the methods and results, “validity threats’ that are inherent in every technique” (Flick 2007, p. 3) can be minimized. For instance, limitations of
boundary setting in case study methods can be limited by applying features deriving from literature. The subjective perspective of the researcher can be decreased by applying observations schedules to increase the inter-researcher validity.

Furthermore, the research is limited by theory as well. Specifically, even though lighting (darkness/sunset) is suggested as a distinct atmosphere creator in the sensory experience of cities (Böhme, Hasse, Zardini), the case setting is only researched during the day, not at night. As literature suggests that the city at night contains a different atmosphere (see theory section, 6.5.1 Creators of atmospheres), the results are limited to the experience of the urban environment and its disposition of social interaction during the daytime.

3.7 Ethical considerations

As this thesis is aiming at researching social interaction disposed by the experience of urban environments in a phenomenological research, ethical considerations need to be made regarding the researcher’s role as well as regarding interview participants.

Participants were interviewed in the research setting of the street and recruited through social media and by directly addressing them spontaneously. The interviewees did not only devote about 10-20 minutes of their time to the go-alongs, but they also trusted the researcher with their subjective thoughts, feelings and patterns regarding the street and themselves being present in it. Some of the participants did also share very personal, even childhood memories in connection to the street with the researcher. In order to assure the integrity of their persona and personal thoughts, all the contributions are held anonymous. Despite participants being key figures in this research, their names are anonymized, given a letter for the kind of place affiliation (A: affiliation with place, B: no affiliation with place) together with a number to enable a distinction between participants contributions (A1-11, B1-9). However, using their real names would not contribute anything particular to the research results.

Given the short amount of time of conducting go-along interviews and the recruiting process, the researcher had to deal with interview-situations where participants were either unfamiliar urban dwellers or friends respectively friends of friends. These two respondent-researcher-relations bear their own ethical considerations each. In cases where participants were friends/friends of friends, the researcher adopted an attitude of consciously reflecting on possible assumptions and tried to see the interviewee with unfamiliar eyes.

In situations where participants expressed worries, dissatisfaction or critique on how the street appears, its planning and management and gentrification, the researcher adopted an understanding attitude and ‘open ear’ for these feelings but at the same time stayed distant and switch the focus back to the interview questions. Especially in situations where participants made suggestions for improvements in the street, the researcher tried to welcome and appreciate them while at the same time indicate the limitations of this research as not being able to introduce any change to the urban environment of the street.

Regarding the observations, the research is following the research principals of objectivity and self-reflection (von Unger, 2014). Through field notes and observations schedules, the researcher takes on an intersubjective perspective as she reflects on possible personal biases and follows a structured scheme of observing the research phenomenon.
4 Empirical Findings

Based on the theoretical assumptions and atmosphere concept elaborated in the theory section (see chapter 2), an empirical research in the case study setting of a street has been conducted.

The aim was to research how urban environments are being perceived through different senses and which atmospheres are disposing social interaction. Therefore, several features that have been identified as disposing sociability as well as creating urban atmospheres, are observed in a particular street setting. These features encompass the use and occupancy on ground floors, façade categories which contribute to the socialscape (see chapter 2.4), as well as weather and sound as additional multisensorial atmosphere creates within urban environments (see chapter 2.6). Different sensory systems – visual system, auditive system, olfactory system, haptical (bodily) system (see chapter 2.7) – are involved in the multisensorial perception of urban environments and their disposition of social interaction. The radius of perception of these stimuli have been limited to the ground floor in the street setting chosen, based on a discussion earlier in this thesis (see chapter 2.7)

4.1 Observation

The findings through the observations, identify different sensorial stimuli (sound, smell, solar altitude and façades character) of atmospheres and creators of sociability (occupancy and functions on ground floors as well as façades character) within Barer Strasse, while interviews are complementing these results with subjective information on the perception of these atmospheres. In a comprehensive way, all results together create a picture of the reality based on the observations and the participants subjective perspective on the atmosphere of Barer Strasse. Observations on the socialscape of Barer Strasse show social interaction in regard to these stimuli and features.

4.1.1 Occupancy on ground floors

The occupancy of ground floors, as an influencing factor on sociability in Barer Strasse (see chapter 2.4), can be categorized into the four categories: small chain, small business, housing and vacant (see Figure 24). Most of the ground floors are occupied by small, independent businesses that have been marked in green. Small, mostly regional, chains that have more than five branch stores in Munich or other store branches than in Munich, have been highlighted in beige. There are no international chains located on the street. Housing on ground floor, coloured in blue, was found only in closer proximity to Nordendstrasse on the western side of Barer Strasse (section 4 and 5) and interspersed (scattered) between small businesses on the eastern side of Barer Strasse (sections 6 and 8). On this side, housing was found in rather large buildings that take up a large proportion of the street sections of the ground floor. In the researched section of Barer Strasse, only two vacant enterprises on ground floor level highlighted in grey (section 3 and 7) were found.

Figure 24 Occupancy on Ground Floors (map based on Bayerische Vermessungsverwaltung, n.d.)
4.1.2 Uses on ground floors

The uses on ground floors of Barer Strasse, observed as stimuli of sociability and lifelines (see chapter 2.4), can be categorized into the six categories retail, service, housing, third space, gastronomy and vacant based on the observations and occupancy categorization (see chapter 3.4.1.1 and Figure 25). Most of the ground floors are occupied with enterprises related to retailing function (beige) and services (dark blue). Third spaces (green) such as cafés, galleries and book stores allocate the third biggest category. Housing (light blue), gastronomy (pink) and vacant (grey) enterprises are the smallest occupancy in Barer Strasse. In the different sections of the street, the functions are quite mixed. Between Zieblandstrasse and Schnorrstrasse (between sections 1 and 2) retail and service are predominating. In the section between Adalbertstrasse and Neureutherstrasse (section 4), housing and service are the only two uses on ground floors (see Figure 25).

![Figure 25](image)

4.1.3 Façade Character on ground floors

Façade characters on ground floors of Barer Strasse that influence the liveliness of the street (see chapter 2.4) can be categorized into the five categories active, friendly, mixture, boring and inactive according to Gehl’s classification (see chapter 3.4.1.2). These designs and appearances of façades also stimulate the visual perception and atmospheric character of Barer Strasse.

![Figure 26](image)

In total, three façades have been categorized as inactive, highlighted in grey (sections 3, 4 and 5) and only one façade was classified as active, highlighted in green (section 1). In the beginning of the street, at the intersection to Schellingstrasse, more friendly and mixture façades can be found (sections 1, 2 and 6), scattered with a few boring façades. Also, the only active façade can be found between Schellingstrasse and Zieblandstrasse (section 1). With closer proximity to Nordendstrasse, façades are categorized as boring and inactive after the intersections with Blütenstrasse and Schnorrstrasse in northern direction (section 3, 4, 5, 7 and 8). Only a few façades categorized as ‘mixture’ can be found between Schnorrstrasse and Adalbertstrasse on the western side (section 3) as well as between Blütenstrasse and Adalbertstrasse on the eastern side of Barer Strasse (section 7) (see Figure 26).
Barer Strasse, friendly and mixture façades are dominating in the southern part (section 1, 2 and 6) while mixture façades can be found in the middle of the street section (section 3 and 7). Boring façades (beige) are dominating the scenery in the northern part (sections 4, 5 and 8). These differences in the character of façades throughout the street indicate a change in the visual perception and atmosphere accordingly. A friendly, visually interesting atmosphere is created by the design of the façades in the section 1, 2 and 6, whereas the atmosphere in the sections 4, 5 and 8 is visually less appealing. Sections 3 and 7 are rather a transit zone where the visual atmosphere changes.

4.1.4 Soundscape

The soundscape in the street, as auditory atmospheric stimuli, was found to be changing throughout the day with noise peaks in the early morning and later afternoon which are typical rush hours. The soundscapes seem to have a higher variation throughout the day than throughout the course of a week. Generally, there is a constant whirring and sweeping background noise. Several sources of sound, such as the sound of a passing car, people talking as well as the frequent and periodic sound of the approaching tram can be heard repeatedly both during the week and on weekend. However, a few differences such as specific sounds like bumping from good deliveries, are not occurring as frequently during the weekend.

Differences in the soundscapes were found regarding the different spots. In spot 1 and 2, more traffic noise at a higher volume occurred. In spot 3 and 4, the volume of these traffic noises was lower. Here, conversations could be held without increasing the voice depending on the load of traffic as people needed to do around spot 1, in closer proximity to Schellingstrasse (section 1). The soundscape of the street is changing throughout Barer Street with louder, mechanical noises from cars in the southern part and lower noises in the northern part.

4.1.4.1 During the week

During the week, occasional or exceptional sounds, like such from a sweeping machine in spot 3 during the morning, that only occur seasonally, can be heard. However, in the morning (around 9.00 o'clock), the soundscape in spot 1 (Figure 28) seems to be much quieter and calmer than in spot 3 (Figure 30). During noon, spot 4 (Figure 31) seems much calmer regarding the noise than spot 2 (Figure 29). In closer proximity to spot 1, however, more traffic and sound from passing cars could be heard in the soundscapes. Also, at noon, there is a higher number of people talking in spot 2 and 4 than in the spots 1 and 3, which indicates that the liveliness increases throughout the day. Bumping sounds, e.g. thunks, can be heard more frequently in spot 1 than in the other spots, as well as more often during the week then on the weekend. A possible explanation is that these sounds are deriving from delivery traffic where goods are unloaded and waste is loaded, which happens rather during the week then the weekend.

Generally, spot 2 and 3 show more scattered sound and higher peaks than spot 1 and 4. This could be due to a dense building structure, reflection and burst of the sound on the façades in the middle of the section, as there are less intersections where the sound could vanish. At both ends of the street, sounds and noises have more room and less surfaces to burst on which could reduce the scattered noise.

4.1.4.2 During the weekend

During the weekend, spot 1 (Figure 32) seems to be much louder than spot 3 (Figure 34) with most of the sound being caused by cars and the strong wind which was blowing through the street at the time of the recording (during noon). In spot 3, however, much more people
can be heard during noon than in spot 1. During the evening, spot 2 (Figure 33) is louder than spot 4 (Figure 35), both regarding its background noise and scattered peaks. For instance, cars are much louder in spot 2 than in spot 4.

During the weekend, spot 1 and 2 are louder, and scattered than spot 3 and 4. This might be because of the socialscape and functions on ground floors, such as cafés, and restaurants which are more frequented during the weekend.

Figure 27 Recording Spots Soundscape (map based on Bayerische Vermessungsverwaltung, n.d.)
During the week

1. Person talking
2. Drilling from construction work
3. Car/truck/motor bike passing; honking
4. Tram passing
5. Wind
6. Bike (unhearing, passing)
7. Footsteps
8. Ambulance
9. Bumping (thunk)
10. Dog barking
11. Music playing
12. Sound of an electric shaver at hairdresser
13. Sweeping machine cleaning the streets
14. Skateboarder
w. White noise

**Figure 28** Soundscape in the morning, Spot 1

**Figure 29** Soundscape at noon, spot 2

**Figure 30** Soundscape in the morning, Spot 3

**Figure 31** Soundscape at noon, spot 4
During the weekend

Figure 32 Soundscape in the noon, Spot 1

Figure 33 Soundscape in the evening, Spot 2

Figure 34 Soundscape in the noon, Spot 3

Figure 35 Soundscape in the evening, Spot 4

1. Person talking
2. Drilling from construction work
3. Car/Truck/motor bike passing: honking
4. Tram passing
5. Wind
6. Bike (unchain, passing)
7. Footsteps
8. Ambulance
9. Bumping (thunk)
10. Dog barking
11. Music playing
12. Sound of an electric shaver at hair dresser
13. Sweeping machine cleaning the streets
14. Skateboarder
w. White noise
4.1.5 Solar Altitude

In the field notes, the sensory stimuli deriving from weather conditions were captured. As the weather conditions were changing between the observations on the weekend and during the week, solar altitude was quite periodic and can be distinguished into three different sections of 'until 13.00 o’clock', ‘between 13.00 and 15.00 o’clock’ and after 15.00 o’clock, where the sun was wandering from the western side (sections 1-5) (see Figure 36), to illuminating the whole street section from south to north (see Figure 37), to the eastern side (section 6-8) (see Figure 38) before sunset. The solar altitude not only shows the lighting situation in Barer Strasse throughout the day but also where the thermal character of light, its warmth, can be felt bodily.

**Figure 36** Simplified solar altitude until 13.00 o’clock (map based on Bayerische Vermessungsverwaltung, n.d.)

**Figure 37** Simplified solar altitude between 13.00 and 15.00 o’clock (map based on Bayerische Vermessungsverwaltung, n.d.)

**Figure 38** Simplified solar altitude after 15.00 o’clock (map based on Bayerische Vermessungsverwaltung, n.d.)

4.1.6 Socialscape

The social interactions which occurred in Barer Strasse are mostly chatting while walking, sitting while talking (especially on sunny days), standing while talking. The social interactions did mostly occur in groups of two people where the people seemed to know each other from before. Spontaneous interactions between strangers appeared to be seldom and, if occurring, between customer and shop keeper/shop assistant. While people are walking through the street as they communicate with each other generates a feeling of safety through their presence, standing and sitting generate a lively street as people feel safe enough to stay...
longer than just move through the street. There is a distinction between the socialscape in Barer Strasse during the weekend and weekdays as well as between different times of the day and locations within the street. These week- and day-course changes indicate that the atmosphere might be changing accordingly.

4.1.6.1 During the weekend

During the weekend, the highest accumulations of people interacting socially was found in front of the enterprises of Barer Strasse number 55 and 57 (section 2), as well as 61 and 63 and Adalbertstrasse 54 (section 3). Also, at the entrance of the street, on the corner to Schellingstrasse, a lot of social interactions occurred along Schellingstrasse 54 until Barer Strasse 47 (section 1), as well as at the intersection on the other side of the street and along the supermarket. However, in the afternoon (at 15.00h), social interaction has moved from the entrances to the street section (both north and south) towards the middle of the street section: between Schnorrstrasse and the area around the crossing at Adalbertstrasse in Barer Strasse (section 3 and 7). Regarding the time in connection to the socialscape, peaks of social interaction occurred at 11.00h and 17.00h on Saturday, with 30 interactions each. Both, time of the peaks as well as a shift of the socialscape towards the sections 3 and 7 in the afternoon, in which the Cafés Barer 61 and Waldmeister are located, indicate a relation to typical brunch and coffee times, which are a common social activity, especially on the weekends.

At 9.00h, the interaction occurring the most was standing while chatting, followed by walking whilst chatting and one interaction where people were sitting in front of Cafe Barer 61 to chat. At 11.00h, only three interactions encompassed standing whilst chatting (between the sections 7 and 8 as well as between section 3 and 4; both times at the intersection). The interaction counted the most, was walking (28 times) whilst chatting, especially in the sections 2, 3, 4 and 7. Noteworthy is also, that four bigger groups, containing of four or more people, where walking along the street, interacting in chatting in sections 1, 2, 3 and 7. This change indicates that standing while interacting is influenced by the crowding of the sidewalk. The more people were walking on the sidewalk as they were interacting with their companion, the less people stopped and stayed for an interaction. Movement induced by pedestrians seems to create a collective flow at both of the socialscape peaks during the weekend (11.00 and 17.00 o’clock), which makes it inconvenient to stop and stay on the sidewalk. One rather gets dragged along. Sitting whilst chatting took place where outdoor seating was provided, e.g. in front of the Café Barer 61 and the Café Lax Eatery (section 3). However, the former location was more often the setting for this type of social interaction.

Interestingly, people did stop and stand for a chat in the section of Barer Strasse between Schellingstrasse and Adalbertstrasse (sections 1, 2, 3, 6 and 7). After the intersection between Barer Strasse and Adalbertstrasse, people did mostly walk past the buildings while chatting with their companion(s). This could be due to uses on ground floors and the lack of small businesses.

Figure 39 Socialscape during the weekend (map based on Bayerische Vermessungsverwaltung, n.d.)
4.1.6.2 During the week

During the week, a differentiated pattern occurred. The highest accumulations of people interacting socially, was found in front of the enterprises of Schellingstrasse 52 at the crossover, in front of Barer Strasse number 57 as well as 61 and 63 (sections 1, 2 and 3). Most of the social interaction occurred on both sides around the entrance of the street (section 1 and 6). Interestingly, comparatively little interaction happened on the eastern side of Barer Strasse between Blütenstrasse and Adalbertstrasse (section 7) and along the small park at Nordendstrasse.

Throughout the day, the social interactions increased until noon and then decreased successively again. In the morning, between 7.00 and 9.00 o’clock, social interactions were mostly taking place in the beginning of Barer Street, especially around the tram station (section 1). These interactions included standing and chatting (3) at the tram station and walking and chatting at the crossway of Zieblandstrasse and Schnorrstrasse (2), in connection to modes of mobility. Successively, more and more interactions were counted throughout the mornings with a peak at 13.00 o’clock which included 14 interactions, mostly taking place on the western side of Barer Strasse (sections 1-5), which is the sunny side of the street until early afternoon. In the afternoon, social interactions were decreasing successively again.

The most common form of social interaction, however, was to chat while walking which can be found along the whole Barer Strasse, but mostly in the areas around street-crossings. Chatting while sitting appeared at the outdoor seating of the café in Barer Strasse 61 (section 3), at the outdoor seating of the bakery Ratschiller’s (section 6) and the Kebab restaurant (section 3). Standing and chatting is mostly found on both sides of Barer Strasse between Schellingstrasse and at height with Blütenstrasse. Also, in front of the Café Barer 61, urban dwellers would stop to chat with people they know, sitting at the café’s outdoor area. Remarkably, a lot of interaction occurred around the cafés and intersections, where other streets would intersect with Barer Strasse. This could be due to people slowing down to orienting themselves, discussing about which way to take when leaving Barer Strasse as well as due to residents knowing each other by sight an engaging in loose, spontaneous conversations as they pass the cafés.

![Figure 40 Socialscape during the week (map based on Bayerische Vermessungsverwaltung, n.d.)](image)

Interestingly, the sections that had the highest distinction between weekend and weekday regarding the social interaction were section 2 and 7. During the weekend, these spots seem to be quite crowded both by people walking and staying as they engage socially. During the week however, almost no social interaction is occurring here. This might be due to the façade character which are classified as mixture and boring in these particular sections, as well as to their uses which are service and retail. However, they are mostly small businesses, they do not offer daily amenities.
4.1.7 Field Notes

Furthermore, the field notes not only indicated weather and solar conditions but also the researcher's moods, thoughts and assumptions. Reflecting on the personal situation while in the field, helped the researcher afterwards to detect biases and work against them, by being aware of how the results could possibly be influenced by these personal biases.

Figure 41 Field Notes March 16th

Figure 42 Field Notes March 22nd
4.2 Interviews

Interviews are giving a detailed and personal perspective on how Barer Strasse is perceived by participants. Interviews in connection with the observations can reveal how the atmosphere of a street is experienced, which stimuli are contributing to this atmosphere and which stimuli interviewees experience as dominant in their perception. In a comprehensive way, all results together create a picture of the reality from the participants subjective perspective. As the observations indicated, the façades character, the visual appearance, seems to dispose social interaction during the weeks the most. However, the uses on ground floors seem to have an influencing part. Accordingly, a more detailed and subjective perspective is given on the atmosphere of Barer Strasse by summarizing the findings of the of the interviews. The findings are distinguished by affiliation with the street, highlighting differences in the sensory perception between the two groups. Quotes from the interviews are used in an anonymized form, where letters A and B are referring to the groups of affiliation with place and no affiliation; the number is given to the participants of the interviews in the order of the interviews taking place, to illustrate the findings.

4.2.1 Hearing

Regarding the auditive atmosphere, both groups mention the noise of traffic as loud, especially cars. Interviewees from group A (space affiliation) relativize that they have accepted this noise as a part of their everyday sound experience. Some do even appreciate this urban sound: "I like it when there's something going on in Munich, when people are outside, when a car passes you, when the tram passes you." (A6). Interviewees of group A also mentioned to enjoy hearing other people and that this makes the street lively. But also, that this sound and the liveliness differ during the seasons. According to the auditive experience of interviewee A11, "The road is very busy and relatively noisy. You can hear the tram the loudest. There is always a lot of life in the street, but at the moment it is comparatively quiet. Especially when it's getting warmer, there's a lot going on outside in the pubs, cafés and bakeries." (A11). In group B (no affiliation with space), interviewees noticed that traffic noise is louder in closer proximity to Schellingstrasse (section 1 and 6) and decreasing when approximating Nordendstrasse (section 5 and 8). "The noise level at the corner of Schellingstrasse is significantly higher than in the rest of the street." (B1). The noise level in connection to traffic was also found disturbing when talking to other people. "The noise is dominant, it sometimes disturbs conversations because you have to speak louder to be understood. Sometimes more sometimes less. The noise is rather unpleasant." (B5).

Figure 43 Different sources of sound and noise at the intersection of Barer Strasse and Schellingstrasse
4.2.2 Seeing

In both groups, participants were talking about buildings and their façades when asked about what they see. Generally, the façades in Barer Strasse have been found to be uniform, monotonous and boring with a few exceptions like the ‘yellow house with oriel from Wilhelminian time’ and the Thai restaurant with a painted-on façade. In group B, interviewees also mentioned that they liked the outlay of stores. One interviewee from group B found that "The different paintings of the houses are beautiful. Even if they are probably all new buildings, probably from the 1960s/1970s, the colours make it more pleasant". Still, I like the older houses with their relief and details better, simply because you have something to look at." (B5)

Another interviewee in group A acknowledged: "Facade s are important for me and can influence my perception both positively and negatively." (A10) In both groups, participants acknowledged that they liked the old façades, structure and details better (small turrets were mentioned), as "the Wilhelminian façades interrupt the monotony of the other houses in the street." (A11). In group B, one participant explained that "the facades are beautiful when they're old, or when something jumps towards you, like the turret for example, that's just different because it's not so characteristic for the houses that stand here." (B6)

For participants of group B, the parking cars appeared as a visual barrier (see Figure 45). One participant suggested that "the character of the street would change more positively if the cars disappeared: much more open, less grey." (B2). Furthermore, the visual orientation was found to be unclear, with almost no visual landmarks (see chapter 2.1 and Figure 46 and Figure 47). "You have to look at every intersection to see if you are already where you want to be, because there are relatively few optical signal corners or striking corners that help you find your way when you look down the street." (B4). One participant of group A, when asked what he sees in the street, responded: "I see everything! And that is also the charming thing. You walk along the street and then you see a famous actor, or shops, very many interesting things, shops, people. The street is very young, because it is located in the university quarter. That goes against the general trend [of aging]." (A10) Repeating his appreciation of the small shops and people, he describes the visual atmosphere of the place as charming due to the character of the small shops add to it as well as the people that dwell here.
Both groups were influenced by weather, temperature and seasons in their experience of the street but also in how they moved through the street. Participants described that the atmosphere of the street as changing according to weather phenomena. "In winter, when it has snowed, the street is very beautiful, because then everything is white, and then the shops turn out more beautiful. It's just quiet and somehow magical." (A2). Another interviewee admits that the general experience of the street is dependent on sunshine: "With sunshine everything turns out more beautiful." (B5).

The solar altitude was something that participants with affiliation of the street were aware of. "Normally, when the sun shines in, it's pretty warm in the street. In the early afternoon you have sun all over the street." (A5). Sun was also influencing the behavior and cognitive decisions of interviewees in their choice of street side or café. Some did even know which café's outdoor seating had sunlight at what time of the day and did base their choice of café on
where they could sit in the warm sunshine accordingly: "In the Café Waldmeister there is sun in the afternoon, so I usually go there in the afternoon." (A1). The time spent outside was also influenced by weather and seasons where better weather conditions increased the time spent outside and staying in the street. Some people also seemed to subconsciously be influenced by sun regarding their mood. The atmosphere of the street was described to be more alive and cheerful when the sun is shining: "When the sun comes out, the street seems more alive because so many people stream onto the street to enjoy the sun. The street and the people are more cheerful when the weather is good". (A3). Also, variations of material and haptic of the sidewalks was mentioned to be felt by participants. An interviewee in group B described that “One feels the change of paving due to a driveway; from wide paving stones to cobblestones and back.” (B6)

4.2.4 Smelling

Interviewees of both groups agree that the street does not have its own characteristic smell. Smell is only experienced in combination with a function on ground floor level, such as a café, bakery or restaurant which is a specific source of smell (see Figure 50, Figure 51 and Figure 52). "The sense of smell is something punctual, related to a source of smell." (A6). Also, the outdoor display of some stores was leading to a punctual smell experience due to, e.g. flowers and fruits. Both groups said that Barer Strasse is a smell neutral street where smell only occurs in connection with an enterprise. Participants in group A mentioned that the seasons and weather are also influencing smell. At the time of the interview conduction, participants with place affiliation acknowledged that it is too cold for smells to be experienced. "There’s no countryside scent here in Barer Strasse, but there's no emissions either, it just smells like fresh air, but that's probably just because it's winter." (A7). They also said that the breeze which is typical for Barer Strasse and can be felt constantly, leads to the immediate deportation of smells. Describing the olfactory atmosphere of the street, one participant admitted, however, that "there is more olfactory variation than optical variation" (B4).

4.2.5 Small businesses

Both groups valued the cafés in the street. The small, independent stores were also named as being nice and giving character to the street. One interviewee from group B appreciated that "in Barer Strasse, there are shops that can be found in every good village: butcher, fruit shop, baker. These shops have much more character than the shops on the other side of the street (east side), which you don't necessarily need" (B3). Especially participants in group A emphasized the value of the small stores for them and their everyday life. One interviewee from group A explained that "it's the residents here, the street is a small commercial and shopping street. Quite different from Schraudolfstrasse or the other parallel streets to Barer
Strasse. The nice thing here is that the Barer Streasse does not only consist of houses, but there are also small shops on the ground floor. This makes it very lively and very important for the structure that there is business here and that's why the inhabitants of the quarter are here, the surrounding streets, all are here to do their shopping". (A8). Not only do residents purchase daily amenities there but also do residents have loose social contacts with the shop owners/keepers. They know each other by sight and recognize each other as the residents tend to patronize a shop. "There are many very nice shops in the street, e.g. a small wine shop, the Hofpfister (bakery), where I always get my bread. In front, at the Nordendstrasse, my favourite butcher is located. There are a lot of good restaurants, which is why this area is so great. There is also a good little Chinese restaurant and the Gegenüber (pizzeria)." (A7), as one resident explains.

4.2.6 The multisensorial urban atmosphere of Barer Strasse

Regarding the overall atmosphere in Barer Strasse, participants in the two groups had a different opinion. Group A described the atmosphere of Barer Strasse as lively, even at different times of the day. One participant summarized her perception of the street as an experience through all the senses but that some are perceived more consciously while others are perceived subconsciously: "On the whole, all the senses together result in something like a sense of well-being and accordingly I would say that the senses that one uses rather unconsciously or that things that one perceives rather unconsciously, such as smells, also have an impact on the overall situation." (A6). This indicates a stronger awareness for the visual experience and visual stimuli before other sensory stimuli, which are rather unconsciously perceived.

The perception was mostly limited to the ground floors when walking through the street. One interviewee stated that "the field of perception is mainly limited to the ground floor. One does not look up at all." (B8). Regarding the character of the street, interviewees with no affiliation to Barer Strasse characterized the street as "a normal street, nothing special" (B7). In contrast, interviewees of group A which had an affiliation with Barer Strasse as they live in the street or close by, seemed to discover and appreciate smaller details and in a finer and more distinct way.

Both groups criticized that little green (trees, flowers etc.) can be found in the street, emphasizing the sensorial and emotional well-being in connection to green. One resident suggested that: "People are more enthusiastic about life when it's colourful or when there are more plants. When it's green, you feel different." (A9). Another one suggests that "if trees were present in the street, it would have a positive influence on the perception: streets that still have trees are much nicer and it is easy to realize. You create a little shade, it's green, it rustles, then a bird comes and sits down and that upgrades the road. In Munich there are generally few trees in the street area. The sealing in Munich is also very high, there is a lot of asphalt." (A7). Another Interviewee in group B stated that more trees and green make an area more attractive for her: "In the quarter where I live, in the Westend, it is much greener, which I find very beautiful and attractive." (B2).

Also, throughout the whole day, sun is shining into the street, lighting up different parts of it at different times, the different street sides have sunlight at different times of the day. The sunlight influences the appearance of the street and its liveliness. People are subconsciously or even actively influenced by the sun, depending on their familiarity with the street.

In contrast to other surrounding streets, Barer Strasse has different functions on ground floor level whereas in the parallel and crossing streets, the housing function is most dominant on ground floors, which creates a different, livelier atmosphere. "It's the residents here, the street is a small commercial and shopping street. Quite different from Schraudolfstrasse or the other parallel streets to Barer Strasse. The nice thing here is that the Barer Strasse does
not only consist of residential houses, but also small shops on the ground floor. This makes it very lively and very important for the structure that there is business here and that’s why the inhabitants of the quarter and the surrounding streets are here, all are here to do their shopping”. (A8). However, in comparison to other main streets in Maxvorstadt, Schellingstrasse and Türkenstrasse have been described as more pleasant and interesting than Barer Strasse.

Interviewees of group B described Barer Strasse as nothing special, “it's a regular street.” (B7). They noticed the different kinds of people being in the street and moving through it as “a good mix of pedestrians; different age groups, parents with children.” (B1) For most of the participants of group B, Barer Strasse was more appealing and looking nicer coming from Nordendstrasse (north-south-direction) than the other way around. In this context, the turrets were mentioned as the most visible and structuring ornaments. The street’s atmosphere was described as appearing more friendly on sunny days but generally, the street was described as anonymous and without distinct features.
5 Analysis

The atmosphere of Barer Strasse has been studied based on sensory stimuli (see chapter 2.6) whereas features such as use and occupancy of ground floors (see chapter 2.4), have been considered regarding the socialscape (social interaction).

Based on the findings, the experience of Barer Strasse is found to be dependent on multiple sensory stimuli, uses, the presence of small business and other people which, together, create a lively atmosphere. Even though participants were specifically asked about their sensory perception of the street, almost all of them named the uses and the presence of other people in the street as distinctive for its liveliness.

5.1 Visual Perception

Through the interviews and observations, the visual appearance of Barer Strasse was identified as the dominant sense of perception. The visual experience of the street was linked to the design and appearance of the façades on ground floors. Especially older, historical façades were said to be more interesting and appealing, creating a nice atmosphere than the newer ones from the 1970s and 1980s. Generally, buildings with oriels, structure, relief and stucco, such as the Schellingsalon (section 1, Figure 53) and Barer Strasse 69 (section 5 and Figure 54) were found to be more appealing by the participants, as well as colourful, painted-on, newer façades that would appear as a change to uniform, monotonous and boring façades (see Figure 55). Interestingly, not all the historical façades (see chapter 3.1) were found to be visually appealing or nice-looking but only those with a structured, detailed façade.

Figure 53 Schellingstrasse 54 – Barer Strasse 47 (Section 1), Drawing of attractive façades

Figure 54 Barer Strasse 69, Drawing of yellow house with turret from the Brick Renaissance

Figure 55 Barer Strasse 55, Drawing of a colourful, newer façade from the 1960s

Regarding the façade character, there was found to be a connection between the socially interaction and façades classified as friendly, active or mixture (section 1, 2 and 6) (see Fig-
Instead of passing by, people would spend more time in front of these façades as they stayed for the social interaction. In other sections with mostly boring and inactive façades as well as a few scattered mixture façades (section 6), fewer social interaction occurred. The interactions occurring here were classified as talking in connection with movement (walking or biking), but not staying. The character of the façades changed throughout the street from active, interesting and friendly to rather boring and inactive in south-north direction. This created either interesting or boring visual atmospheres which can be linked to the liveliness based on the location of social interactions that changed accordingly. However, interviewees also indicated that the function could upgrade the façade. For instance, the façade of Café Barer 61 (section 3) is classified as boring, however, people were sitting and socially engaging here. Even pedestrians walking by would stop and stand to talk to costumers sitting in the outdoor seating. Here, it is the use and social function of this third space rather than the façade character on ground floor that influences the social interaction.

Furthermore, the visual perception of Barer Strasse was found by participants in group B to be negatively dominated by parking cars. Blocking the view onto the opposite side of the street and the façades, ground floors and sidewalks, parking cars and especially delivery cars, became a visual barrier. Also, due to the lack of outstanding visual landmarks, orienting and navigating in the street was difficult for interviewees without a previous affiliation with Barer Strasse, as there was no visual structure.

### 5.2 Auditive Perception

Besides the vision, the auditive stimuli were found to be second dominant regarding the sensory atmosphere of the street. Sounds and noises are perceived differently according to the
affiliation of participants with Barer Strasse. Interviewees in group A find the traffic noises rather suppressing, as they are familiar with them. A certain noise level, which can be defined as urban, is appreciated by these participants. Interviewees in group B, contrarily, mostly mention the traffic noises as sources of disturbing and annoying sound. Interestingly, interviewees in both groups are enjoying the sounds deriving from the presence of other people which makes the city lively for them. Hearing other people communicate with each other as they socially interacted, had a positive connotation, and created a lively, urban atmosphere.

The soundscape of Barer Strasse is changing throughout the day with typical noise peaks during rush hours in the early morning and late afternoon. There is a greater auditive variation throughout the course of the day then throughout the course of the week, as specific sounds occurring during the day and on the weekend are rather similar. However, a bumping sound related to the delivery of goods, mostly can be heard on weekdays. Though the noises in Barer Strasse were found to be much louder in the southern part of the street (spot 1 and 2) in comparison to the northern part of the street (spot 3 and 4) by the interviewees, the noise is much more scattered in spot 2 and 3 than in spot 1 and 4 according to the soundscape recordings. Regarding the soundscape, sound seems to be more scattered during the weekend than during the week. This applies to almost all places except spot 4, which might be due to the higher number of people during the weekend then the week, being the source of sound. The auditive atmosphere of Barer Strasse changes throughout the day as throughout the course of the week. Where noise from traffic creates either an urban or unpleasant atmosphere, the sound of other people creates a lively atmosphere within the street.

5.3 Bodily Perception (feeling)

Feeling as the bodily perception of the urban environment was named in connection with temperature, weather and seasons as well as the material of the sidewalks. Seasons and weather phenomena such as winter and snow, are changing the atmosphere within the street throughout the year.

Depending on the sensory stimulus induced by the solar altitude, the atmosphere of Barer Strasse becomes livelier when the sun is shining, both, throughout the day and throughout the year. As both, the hours of light and the warmth of the sun increase during spring and summer, more people are streaming out onto the sidewalks and are sitting in the outdoor seating areas of the cafés in Barer Strasse. The location of social interaction in Barer Strasse can be linked with the position of the sun, where more people are taking part social interaction involving sitting or standing on the sunny side of the sidewalks. Especially residents and other participants that have an affiliation with the street, stated that their choice of café is depending on the solar altitude.

Even though participants did not describe feeling as a dominant mode of perceiving the street, bodily perceptions such as weather, temperature and seasons, especially sunshine, were influencing interviewees behaviour and the atmosphere of the street quite strongly, however subconsciously.

5.4 Olfactory perception

Even though no distinct smellscape or olfactory atmosphere could be identified throughout the researched section of Barer Strasse, participants found that the street encompassed a greater olfactory variation than visual variation. Besides a rather smell-neutral atmosphere, the olfactory character of the street was punctually influenced by the uses on the ground floors, e.g. bakery, fruit store, restaurant, café and sources of smell, such as flowers or fruits.
in the display of grocery stores. However, due to a constant, slight breeze, most of the smells were carried away immediately. Neither pleasant nor unpleasant smells, such as car’s exhaust gas, were remaining particularly long or distinct within the street. Smell was the most absent stimuli in the street, which makes a valuation of how much this particular sense is disposing the experience otherwise difficult. However, participants indicated that during the summer, smells in the street will get more distinct as the temperatures are higher. Due to the frequent small breeze, it is however questionable if Barer Strasse has its characteristic smellscape. The olfactory atmosphere of Barer Strasse is rather being distinguished for its general absence of smell and punctual olfactory stimulation.

5.5 The socialscape

The findings from the observations of the social interactions taking place in Barer Strasse indicate that the street is livelier during the weekend than during the week.

During the weekend, the number of social interactions, especially walking whilst talking is higher. Walking through the street indicates a destination-oriented use of Barer Strasse as a corridor of movement. The atmosphere of the street, however lively, is rather influenced by the stream of pedestrians during the weekend. Hence Barer Strasse is not as crowded during the week, proportionally more interactions in which people stopped and stayed while they were talking did occur during the week than the weekend. Here, rather a slowed-down, relaxing atmosphere can be experienced in Barer Strasse.

Besides a difference throughout the week, there are also differences in the liveliness of Barer Strasse throughout the day. On weekends, there are certain peaks around 11.00 and 17.00 o’clock, which correspond to the usual brunch and coffee times, where the street is more crowded. Social interactions, even in bigger groups, are taking place on the sidewalks of Barer Strasse. During the week, the liveliness in the street and the social interactions increase successively during the morning until noon, with a peak at 13.00 o’clock. This is a typical lunch peak, where employees either go to a restaurant or café or order take-away to eat in the park or office. From there on, the liveliness decreases successively again until 17.00 o’clock. These findings indicate that a lively atmosphere is created by the presence of urban dwellers in the street which create these types of atmospheres themselves through their presence. These lively atmospheres change throughout the day, dependent on certain work-rhythms and social activities, such as brunch and coffee time. Social interactions were linked to the character of façades, where people would stop and stand in front of active and friendly façades as they were taking part in a conversation.

5.6 Small businesses

Not only are multisensory stimuli influencing the liveliness of the street but so are uses and small business. Both the sociability as well as a ‘small village’ atmosphere, were found to be created through the small businesses in Barer Strasse.

In comparison to surrounding streets, Barer Strasse was found by the residents to be livelier than those that had only housing as the function on the ground floor, but less lively than other main streets in the area of Maxvorstadt. Especially small businesses where found to influence the atmosphere of Barer Strasse. Participants in both groups state that they appreciate the small and rather individual, characteristic, specialized shops that can be found here. One participant in group B also compared the shops that can be found in Barer Strasse as those mostly situated in small villages. For him, these small businesses create a small village atmosphere, where people know each other as well as the shop owners/shop keepers. This is also confirmed by residents that state that they know the shop owners/keepers by sight, as most of the residents are patronizing the shops in the street when purchasing their daily
amenities. Accordingly, small businesses create not only the atmosphere of ‘small villages’ but also loose social contacts between residents and the owners and shop keepers of these enterprises.

Especially in front of third spaces such as cafés and restaurants, as well as retail stores, people stopped when engaging in social interactions (see Figure 58 and Figure 59). Standing or sitting and chatting happened especially in front of Café Barer 61 and their large outdoor seating, as well as in front of the bakery in section 6. In front of ground floors with housing as the function, people were just passing by, socially interacting in chatting as they were walking by. This indicates that the atmosphere in or in front of small businesses that provide social encounter, either through shopping or their social function, is leading to an increase in social interaction.

5.7 The lively atmosphere in Barer Strasse

Besides multisensory stimuli influencing the perception of the street as pleasant, the lively atmosphere of Barer Strasse is also created through small businesses on ground floors and the presence of other people. Though vision together with sound was named the dominant sensory stimuli, the behaviour influence of weather was very strong. However, the bodily perception was not as consciously perceived as the other senses. Hence the vision dominance, participants acknowledged that they perceive Barer Strasse as a whole, through the interplay between multiple sensory stimuli. Small businesses and third spaces did enhance the social function within the street, as they provided opportunities for people to engage socially. The presence of other people in itself seemed to make the street livelier and should therefore be discussed as its own creator of lively atmospheres.
6 Conclusion and Discussion

Connecting the findings from the observations and interviews with the research questions on how the urban environment of the street is experienced and how social interaction is influenced accordingly, the following conclusions can be drawn.

6.1 Multisensorial perception

The analysis shows that the atmosphere of an urban environment is being perceived through the interplay between multiple senses. However, there is a distinction between the dominance of experience between the different senses.

The vision was found to be the most dominant sense of perception besides the auditive experience. Especially the character of façades was found to be the most dominant factor in the perception of the observations, followed by functions on ground floors. Through the observations, social interaction such as staying or sitting whilst talking could be linked to the visual experience of the character and design of façades. This correlation between façade character and sociability and liveliness of a place is strengthened by the findings of Heffernan et al. (2014) which suggest that with an increasing quality of active frontage, the perception of a place as safe, “comfortable, lively, sociable, pleasant, convivial, active and interesting” (p.101) increased accordingly. For instance, staying whilst interacting socially occurred in front of façades classified as friendly, active or mixture (section 1, 2 and 6). In other sections with mostly boring and inactive façades as well as a few scattered mixture façades (section 6), as Mehta & Bosson (2018) and Mehta (2011) have found earlier, indeed fewer social interaction occurred and people were mostly passing by instead of staying. Gehl et al. (2006) suggest that attractive façades create visual changes and interesting atmospheres when walking through a street. Passive façades, such as the boring and inactive façades in Barer Strasse, are not providing any visual stimulation for people to stay, but rather seem to encourage movement which is similar to the findings of Gehl et al. (2006) and Gehl & Svarre (2012). The façade characters create different atmospheres throughout Barer Strasse, where the southern part (sections 1, 2 and 6) encompass a lively atmosphere with a lot of interactions, whereas an atmosphere of movement dominates the northern parts (sections 4, 5 and 8). In some cases, unappealing façades could be upgraded by the function on the ground floor, which increased the liveliness of the atmosphere in these spots of the street. For instance, interviewee A6 indicated that the façades of Barer Strasse 61-63 (Café Barer 61) which have been identified as boring or mixture (observations), and described as “ugly” or “aesthetically not appealing”, can be upvalued through the function the café provides. Here, it might be the use and social function of this third space, which also Mehta (2010) identifies as creators of lively streets, rather than the façade character on ground floor that influence the social interaction. Howes (2011) finds in his archaeology of the sense(s) of the City of Vienna that these rather ‘slowed-down’, café atmospheres, are providing a social function as they are creating a sociability and ‘fellow-feeling’, even if one is not even actively socializing (p.69).

However, the vision-dominance regarding the perception of urban environments might originate from a long history of visual planning in urban planning and design. Both planners and urban dwellers are used to an urban atmosphere that is aiming at stimulating and pleasing the eye (Zardini 2006). Both actors might be conditioned towards a visual perception and a visual structure that was implemented in a visual-hierarchy within streets in urban planning and design. Lynch (1960), amongst others, were suggesting this sort of visual structure to create an image of the city. Additionally, the technological age might have even increased the vision dominance. Pallasmaa suggests that “the technological extensions of the sense have until now reinforced the primacy of vision” (Pallasmaa 2012, p.40). He, however, relativizes that new technologies might also be able to “re-balance the realms of the senses”
through a ‘secondary orality’ in which auditive experiences are increasing again (Pallasmaa 2012, p.41).

The auditive perception of the street was named to be the second dominant experience besides the visual experience of Barer Street. The soundscape of Barer Strasse shows some interesting and distinct patterns. During the week, there seems to be more of an ‘everyday-life’ soundscape with distinct sounds, such as bumping noises originating from goods deliveries. Also, the sound of people talking increases throughout the day and is louder around noon than in the morning, indicating a lunch peak were people are on their way to a restaurant or to purchase food. During the weekend, sound seems to be more scattered than during the week, which might be due to the higher number of people moving through the street during the weekend. Georgiadou et al. (2004) found similar patterns on the noise pollution in main streets in Thessaloniki, Greece, where the noise levels differed between working days and weekend as well as during the day.

Generally, the street is found by interviewees to be louder in the southern part than in the northern, which might be due to the changing of the lively atmosphere throughout the street from south to north. This also goes along with the type of uses and façade characters found on ground floors, as well as the socialscape. Participants in both groups are enjoying hearing other people. People that communicate with each other as they socially interacted, created a lively, urban atmosphere (Gehl 2010). Interestingly, the tolerance for noise was higher amongst people that had an affiliation with Barer Street as they were living in the street or close by, which indicates a certain familiarity. Similar results with a low percentage of noise annoyance were found by Skånberg and Öhrström (2002), who researched residents’ annoyance of road traffic on main streets. Interviewees in group B, contrarily, mostly mention the traffic noises as sources of disturbing and annoying sound.

However, the natural soundscape of the street might be changing due to changing conditions. Hence noise and sound are found second strongest sensory stimuli, they might be losing their atmospheric influence as more and more urban dwellers are using headphones, creating their own soundscapes. The increased use of headphones to shielded environmental noises, creates private and self-determined auditory territory, so-called ‘head spaces’ (Friedrich 2014, p.68ff) within the urban environment. This leads to the “creation of a private, self-determined sound space with which the urban sound world is faded out and replaced by aestheticized perceptions”, as Friedrich critically reflects (ibid.: 69).

Zardini summarizes that “the city has long been dominated by the eye. Our urban experience, even our memories, are rooted above all in images. The predominance of vision has been accompanied by the systematic banishing of odours and sounds, so that we rarely associate our urban experiences with the scent of a plant, the smell of food, the noise of a harbour, or the sound of a language. On the contrary, the harder we work to create a visually varied and interesting urban environment, the more we imagine it as silent and devoid of smells.” (Zardini, 2006 p.44). Both the vision and sound dominance regarding the perception opens up the discussion on different distances of perception as well as a sensory hierarchy (see chapter 2.7). According to Gehl, most planners and planning theory are foregrounding seeing and hearing, whereas “touch and smell have been considered ‘lower senses’” (Gehl 2010, p.236). Accordingly, as the visual and auditive perception have been prioritized in urban planning and design, the results of this thesis need to be interpreted in light of this predisposition. Therefore, the vision and sound-dominance might need to be relativized accordingly.

Supposedly, through the strong, visual dominance, the bodily perception happens unconsciously but nevertheless strongly, regarding the behaviour and decision-making of urban dwellers. According to findings, feeling the atmosphere of a main street has rather been neglected in the experience of urban environments. Even though participants did not describe feeling as a dominant mode of perceiving Barer Strasse, bodily perceptions such as
weather, temperature and seasons, especially sunshine, were influencing interviewees behaviour and the atmosphere of the street quite strongly. Regarding the social interactions, especially the solar altitude was found an influencing factor on the liveliness of Barer Strasse during the week. However, rather subconsciously, urban dwellers were choosing the side of the sidewalk where the sun was shining before the shadow-side. Some participants also stated that their choice of café in the street depends on the time and solar situation at the outdoor seating of the specific café. For instance, Café Barer 61 was the choice until afternoon whereas café Waldmeister on the other side of the street would be preferred in the later afternoon as the sun would shine on either the western or eastern side. The outdoor seating of cafés located on the eastern side might not be as crowded as on the western side, as the sun loses its intensity and warmth later in the afternoon compared to noon and early afternoon. The microclimatic comfort of urban dwellers, especially sun and shadow conditions in streets is also discussed by Mehta (2014) and Bosselmann et al. (1984). Arens & Bosselmann (1989) are especially stressing the impact of thermal comfort of people in outdoor public spaces. The microclimatic conditions and sensory atmosphere of Barer Strasse could be improved by planting trees to make the atmosphere of the street more appealing as well as increasing sensory well-being, as some of the interview participants suggested. Furthermore, interviewees suggested that trees are not only providing shadow and green structure, they also create comfort for the eye and ears as birds might twitter in the branches and wind might make the leaves rustling. The liveliness of Barer Strasse which is found by the interviewees to be higher during the summer, could benefit from planning for different seasons as the results indicate. Concepts for winterizing, could create comfortable winter atmospheres, while providing protection from wind might increase the liveliness (Hass-Klau et al. 1999, Zardini 2006). However, Pressman (2006, p. 129) indicates that designers and planners ‘were not educated in a tradition that emphasized ‘seasonal thinking’, which stresses the need to focus on seasonal planning within urban planning and design.

Regarding the olfactory perception in the street, smell was found to be rather a neutral smell of the street as well as the cold weather and constant slight breeze carried away smell in the street. Quercia et al (2015) also suggest that “smell detection is highly temporal, dependent on weather conditions, wind patterns, and seasonal waves of activity, with air temperature directly influencing odor strength and volatility” (p.9) Despite the cold air temperature, olfactory stimulation in Barer Strasse, however, was sensed in combination with different uses on ground floors, e.g. bakery, café, restaurant, flower display, fruits.

6.2 Evaluation of ground floors in relation to atmosphere

The atmosphere of a street is being created through the multisensory experience as well as uses on the ground floor. As a main street, specific patterns regarding the socialscape in connection with the uses on ground floors, have been found to influence the experience of Barer Strasse. Similar to Mehta’s (2011) results, especially small businesses where found to influence the atmosphere of Barer Strasse, making it lively. Generally, social interaction did only occur between people that seemed to already know each other as well as between shopkeepers and purchasers. People living and working in the street know each other by sight but there is this a sort of “non-committal social interaction”, acknowledged by interviewee A8, where people are friendly and greeting each other but leave each other alone for the most. However, the combination of shops, cafes, outdoor seating and other functions on ground floors makes the city lively and creates room for both fleeting and passive social interaction (Mehta 2010, Mehta 2014, Mehta 2019). Most of the enterprises were occupied by small businesses which have been highly appreciated by the interviewees. Participants in both groups value the small, independent shops due to their character, e.g. the small fruit and vegetable store, which correlates with findings from Mehta (2011) and Litvin & Rosene (2017). Repeatedly, participants were talking about the atmosphere and how special these stores are. Also, interviewees stated that they liked the absence of chains in the street. A-
According to a research on The ‘Malling of Main Street’: The Threat of Chain Stores to the Character of a Historic City’s Downtown on taken out by Litvin & DiFiorio (2014) “locals and visitors both say they would like more local merchants” (p. 497), but seem to enjoy the presence of national chain stores, privileging purchasing there. However, Litvin & DiFiorio (2014) suggest that a mix of merchants is necessary for planning attractive cities.

According to the interviews, functions such as the cafés or shops selling daily amenities are important for social interactions. Mehta (2010), as well, suggests that such third spaces provide a social function. However, streets with housing functions on ground floors are not perceived as social and lively by most of the participants.

6.3 The presence of people creates an atmosphere

Not only are multisensory stimuli and small businesses on ground floors creating the lively atmosphere of a street, but so is the presence of other people (Gehl 2010). According to Hasse, both actors and patheurs (passive urban dwellers) shape the environment, perception and experience of a place through their presence (Hasse 2012). Through observations, social interaction in Barer Strasse was found to differ between the socialscape during the week and on the weekend, which creates its two dominant atmospheres: the everyday-life setting in Barer Strasse and its function as a corridor of movement through Maxvorstadt.

During the weekend, different and more visitors are using the street than during the week, mostly as a corridor of movement. Carmona (2019) suggests that “movement in public space predominantly flows along dominant movement corridors or ‘desire lines’ passing right through spaces, and from movement corridors to the active uses on a space and vice versa.” (p.55) Barer Strasse might turn into such a desired line for pedestrians on their way to either the museums located in close proximity to Barer Strasse (see chapter 2.1) or cafés within or nearby Barer Strasse. The difference between weekday and weekend is mostly visible in section 2 and 7, which indicates that social interaction is more influenced by uses during the week. During the weekend, these spots are quite crowded where people rather get dragged along by the movement of others. It is not as comfortable as during the week to stop and stand on the sidewalks. The difference between weekday and weekend might originate from a change in the character of a main street. During the week its mostly residents but during the weekend, the street takes over the function of a main axis of movement through Maxvorstadt that connects the centre of Munich with cultural institutes such as museums and universities. Due to Maxvorstadt’s character as Munich’s cultural and art district, it is suggested, in light with Carmona (2019), that the character of the whole atmosphere and character of the district might change around the locations of cultural institutions and university institutions depending on day- and week- as well as holiday-rhythms.

6.4 Concluding remarks on atmosphere

The atmosphere of a street is experienced through multiple senses. Both the observations and interviews revealed a dominance in the visual and auditive perception, in line with the assumptions of Zardini (2006) and Pallasmaa (2012). Also, the importance of small businesses, which Mehta (2011) claims regarding a lively atmosphere of Barer Strasse, as well as increased social interaction could be stressed through the empirical findings. However, other findings from the interviews indicate that hearing and feeling are important as well for people to be in the street and to feel comfortable (sun, birds, trees). Tactically, temperature and sun were felt strongly and consciously by people. Changing the side of the street, finding it windy around crossings as well as choosing which café to go to due to the sun/shadow situation, is something that influenced the atmosphere of Barer Strasse and peoples’ behavior strongly accordingly. Thus, people changed their behaviour according to the solar altitude in the street, interviewees paradoxically did not consider feeling as a strong sensory experi-
ence. Rather, the bodily perception was experienced unconsciously. The vision dominance might possibly derive from the urban planning tradition as well as visual conditioning through education and the dominance of sight in the technological age and advertisement. Besides multisensory stimuli which create the atmosphere of an urban environment, it is therefore suggested to include small businesses (Mehta 2011) as well as patheurs (Hasse 2012) into a multisensory atmosphere concept, as they influence the perception of the street as well as they increase the liveliness and social interaction within it.

Regarding the research question on how multisensorial approaches within urban planning and design can contribute to a lively atmosphere and increased social function main streets?, the following is suggested:

A multisensorial approach on the atmosphere of streets can comprehend current research on small businesses, activities and the façade character in streets, while at the same time, contribute with a whole new perspective on the perception every-day live patterns. Instead of seeing these approaches as competing, the empirical findings show that a combination with and implementation of small businesses (Mehta 2011) and façade characters (Gehl 2010) into a multisensory approach is enables a perccptional exploration of the urban atmosphere of a main street from the perspective of urban dwellers.

Through multisensorial approaches, like the concept of urban atmospheres, the character of a place can be made more distinct in a way where it contributes and increases the sensory well-being of urban dwellers as well as it increases the overall-wellbeing through social interaction and cohesion (Mehta 2011). Social interaction, furthermore, could provide the opportunity for community creation and social capital. According to Carmona (2019), the sociability of a street is one of its most crucial functions which needs to be strengthened and preserved in a development where the publicness of the urban environment, such as public places and streets, are rather threatened by privatization.

6.5 Suggestions for an implementation of urban atmospheres as a tool for urban planning and design practice

Atmospheres are perceived as a whole through a multiplicity of senses but can be applied as a tool in urban planning and design to create lively cities and social interaction by focusing on the atmosphere creators. Böhme (2006) suggests that "through the analysis of the creation of atmospheres from the object's side, i.e. through urban planning, the conditions [are] created on the basis of which atmospheres of a certain character can unfold" (p. 38ff.). In urban planning, such an atmospheric surrounding is generated in particular by the use of creative means (ibid., p.139). With atmospheres being an aesthetical, sensory concept, it is within space- and aesthetics-affiliated disciplines such as (interior) design, (landscape) architecture, sound design, gardening, photography and theatre design (Kulissendesign) that atmospheres are created purposefully (Schmitz 2007, p.29; Böhme 2006, p. 27f.; Hasse 2012, p.18). According to Hasse, professionals of these disciplines are educated to “create pathic worlds that are subjected to specific goals depending on their interests” by using “purposful arrangements of immersive islands of emotion” to “dispose suggestive milieus for the purposes of radical seduction” (2012, p.18) through atmospheres.

Such purposefully designed atmospheres create feelings that can be captured and formed in such a way that the human being can tune in harmoniously with his physical condition (Schmitz 2007, p.28). Atmospheres that urban planners and designers are aiming to achieve through the constitution of the built environment, are e.g. liveliness or safety. This "subjective experience of the city reality that the people in the city share with each other [and] experience [...] as something objective, as a quality of the city", is what Böhme (2006, p.139) describes as the atmosphere of a city. He further on suggests that the quality of the city, in-
deed, can be significantly influenced by urban planning and design through the analysis and use of atmosphere creators.

However, urban planning can only use atmospheres as a targeted tool if it is able to analyse the effects and interplay of atmosphere creators. Thus, urban planning has the power to intentionally and subliminally influence people and their actions. Bautz (2007) suggests that atmospheric "[a]rrangements staged in this way are distinguished by the fact that they mix functional, commercial and aesthetic aspects" (p.116). Therefore, a differentiated awareness of the change of character of urban planning is necessary. Urban planners must develop an awareness that they can enable or even prevent certain forms of life through urban planning (Böhme 2006, p.138). Through the effect of the surrounding of the built city, i.e. its atmosphere, intentionally created environments unfold their power by influencing the people exposed to them in their purposefulness. With regard to urban planning, multisensory planning offers the possibility of creating atmospheres in a targeted manner through their creators and to dispose of their effects on the perceivers to a certain degree. The task of "architects and urban planners [thus lies in the question] of which measures on the object they can use to change or develop cities in such a way that [...] life in the cities becomes livable or even attractive at all" (ibid.: p. 138f). Different disciplines that are more specialized in these objects that, at the same time, are atmosphere creators can shed light on their implementation in urban planning and design.

The empirical findings of this thesis show that the atmosphere of a street is perceived through the interplay of a multiplicity of sensory stimuli. Atmosphere creators, that have been identified to contribute to liveliness and increased social interaction in a main street environment are the visual perception of façades, the auditive perception of sounds and noises, the bodily perception of the sun, as well as small businesses on ground floors. In order to implement the multisensory concept of urban atmospheres into urban planning and design practice, following suggestions are made:

The distribution of small businesses can be influenced through urban governance and zoning tools, where the use and occupancy of enterprises is regulated. Munich already applies such a strategic planning tool within the Zentren Konzept (centre concept), where the size and kind of enterprise is aimed at ensuring a sustainable development regarding daily amenities (Landeshauptstadt München 2010, p.22). To ensure a balanced mix of small businesses and national chains, which creates attractive cities (Litvin & DiForio 2014), Munich’s centre concept can be an example of strategic tools to guide the forces of the market and ensure a good mixture.

Further, it is suggested to incorporate physical features that influence the microclimate and the activities on ground floors of main streets. During the interviews, the meaning of public and commercial seating in the street was identified as important for the type of social interaction taking place. Trees and other greenery are accounting for both sensory wellbeing but also for physical comfort by regulating the microclimate and providing shadow during warm summer days. Both, seating and greenery are also suggested by Mehta (2013) to increase the liveliness and social interaction in main streets. Ensuring liveliness throughout the year, it is suggested to plan for outdoor activities and comfort during different seasons. Besides trees and awnings during the summer, the physical environment can be designed in a way where it protects urban dwellers from harsh winds and cold temperatures, increasing the amount of time spent outside. The City of Edmonton, Canada, provides guidelines for winter design, including the interface of the built environment and public realm on street and neighbourhood level (Edmonton 2016). The suggestions include the physical design of the urban environment to ensure a comfortable and attractive microclimate that increases the liveliness on streets during winter (Edmonton 2016, pp.18-81).

Further, planning for physical comfort also includes the haptic experience of the urban environment. Benches, sidewalks and façades should be designed not only for the eye but also
in a way were the used material, form, and shape increase the physical comfort of urban dwellers in order to encourage and facilitate social interaction by a longer duration of stay. Also, as Mehta (2009) suggests, anthropometric and ergonomic needs should be considered, regarding the design of street furniture, “bearing in mind that furniture on the street is used in multiple ways as discovered by observations in this study” (p.61).

As noise pollution through traffic has been named as annoying and unpleasant by some of the interviewees and a rather scattered soundscape in the middle of Barer Strasse, it is suggested to adapt the design of buildings in a way were noise scattering can be reduced in order to create pleasant soundscapes. Echevarría Sánchez et al (2015) suggest that changes in both building geometry, façade design and material are directly influencing the scattering of noise in urban canyon shaped streets, where sound absorbing materials could minimize the scatter. Furthermore, the authors suggest that different forms of vegetation, such as trees, bushes, wall vegetation systems and green roofs “provide[ ] both effective absorption and scattering of sound, and in addition, a pleasant urban space.” (Echevarría Sánchez et al 2015, p.4). Also, the planting of trees is one of the suggestions plead by interviewees regarding the providing of shadow, create comfort for the eye and ears as birds and insects might inhabit the trees. The twittering and bumbling sound of animals and the sound of wind rustling the leaves increases the sensory stimulation.

Through atmosphere creators and implementing the knowledge from other, related professions and disciplines, urban atmospheres can be applied as a tool in urban planning and design to create lively cities and social interaction. The need for a shift of approach in urban planning and design practice from top-down, vision oriented to bottom-up, perceptional approaches is also indicated by the increase of DIY/ tactical urbanism. As suggested by von Schönfeld & Bertolini (2017) referring to Lydon & García (2015), “the pressure from bottom-up initiatives, small-scale entrepreneurs and citizen movements is increasing around the world and begins to force a different approach to planning streets” (p. 49). Such perceptional approaches are also conditioned by social interaction and might possibly create results that speak to multiple senses. Therefore, implementing urban atmospheres as a tool for a multisensory, perception-oriented planning and design of streets into the discipline can, as argued in this research, increase the social interaction in and liveliness of main streets. However, the implementation of urban atmospheres as a tool in urban planning and design practice is dependent on governance and political decisions where “different political, economic and individual roles can affect such processes.” (Avelino and Wittmayer 2015 in von Schönfeld & Bertolini 2017, p.54). It is therefore questionable, to which extend a multisensorial approach will find its way into the practice of urban planning and design.

6.6 Suggestions for future research

As argued for in this thesis, the concept of urban atmospheres can contribute to a multisensory approach regarding the perception of and social interaction in urban environments. The findings of this research can contribute to further research that strengthens a multisensory perception rather than a mono-sensory or vision-dominant design of urban environments respectively. Through a focus on the interplay of the atmosphere creators, it is suggested that urban atmospheres can be implemented as a tool in urban planning and design practice to increase social interaction and liveliness in main streets. Following, suggestions for further empirical research and conceptual work are given.

Regarding the vision-dominance due to traditions within the urban planning and design discipline, it is suggested to aspire multisensory approaches in further research instead, in order to reduce the vision-dominance and enhance research regarding the auditive, olfactory and bodily perception of urban environment. Future research could focus on works similar to Devlieger’s (2011) research where the sensory perception of urban environments by blind
persons was researched through a phenomenological approach in order to plan for sensory stimulation other than vision.

Based on the findings, the seasonal influence on bodily and olfactory perception should be researched at a different time again in order to be able to make clearer statements. Due to the time period, when the research was conducted, the intensity of the heat of the sun was less than during summer, where mornings and evenings still can be quite chilly. Interviewees indicated that the liveliness in the street increases during spring and summer, when the temperature and sun hours increase. Therefore, the solar altitude and social interactions, especially sitting in a Café, need to be researched during a different season or throughout the year to include a season- and microclimate adaptation. The influence on physical and microclimate conditions on social interaction, regarding the individual comfort when being outdoors throughout different seasons, should be researched more in order to create lively and social atmospheres throughout the year.

Furthermore, the smellscape is also dependent on temperatures and microclimate. Smell has rather been absent due to the cold weather, as some of the participants stated. Therefore, the olfactory experience should be researched further during summer in order to create a more comprehensive understanding of the interplay between the different sensory stimuli.

As discussed, this thesis did not include the perception of the street in regard of the lighting situation at different times of the day. Especially the change of lighting, such as twilight, does have a strong influence on the atmosphere of an urban environment (see chapter 2.6). It is therefore suggested, that further research should focus on the perception of urban environments at night. Both single case and comparative studies on the phenomena are of interest.

Furthermore, it is suggested to focus on the elaboration of urban atmospheres as a multisensory theoretical concept within the urban planning and design discipline. This thesis was only covering a few aspects and characteristics of urban atmospheres, but further research should focus on a more distinct and comprehensive conceptualization of urban atmospheres. As findings of this thesis suggest, small businesses and uses on ground floors contribute to the creation of a main streets’ atmosphere. Therefore, these features should be included as atmosphere creators in a comprehensive, multidisciplinary and multisensory theoretical concept.

It is further suggested to find a vocabulary to communicate atmospheres, as they are lacking comprehensibility through (everyday) language. When speaking about atmospheres, the listener may be familiar with various descriptions from situations she has experienced herself and may thereby become comprehensible in the manner of the acquaintance. At the same time, however, this means that it is not even possible to reproduce atmospheres in exactly the same way in verbal communication (Hasse 2012, p.13). Therefore, in order to further research urban atmospheres, a common vocabulary needs to be established.
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