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People in Place:

A Configuration of Physical Form and the Dynamic Patterns of Spatial
Occupancy in Urban Open Public Space

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Abstract

This thesis is a critical inquiry about the spatial relationships between occupancy and the physical structure of squares and parks in city centres. It focuses on usability and the spatial capacity of places, from two different angles. Firstly, it discusses the actual uses mapped in places, using repeated observation on different days, times and weather conditions. This results in empirical knowledge about dimensions and spatial requirements, especially for some long-stay active uses, such as ball games in parks and skateboarding in squares, and how long-stay passive uses, such as sitting, might relate to them, as well as how transitory activities relate to both long-stay engagements. In addition, it illustrates how some activities can be contiguous, while some others require ‘buffer’ zones between them for effective use.

Secondly, this thesis addresses uses imagined in parks and squares by urban landscape designers, using two approaches: mapping out likely uses in detailed maps of selected places, and revealing a physical structure of a particular place by knowing its behavioural patterns. On this basis, this thesis examines designers’ tacit knowledge about the usage-spatial relationship and, highlights potential applicability, the role and value of empirically gained knowledge in the design of parks and squares. It shows that designers’ beliefs and awareness about uses in places, in some aspects, differ from actual use. From this point of view, it reveals a need for effective design-research integration and stresses the importance of empirical knowledge and its incorporation in design.

The thesis promotes GIS as a successful practical tool to build, develop and maintain a body of empirical knowledge using interactive GIS maps as its scripts. Concerning the implementation of such knowledge in urban public open space design, operationally, a visualisation of research findings and its related concerns to decision-making, evaluation and management, is of key importance.

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Chapter 1 Introduction

The subject of the thesis arises from a notion about design in urban landscape. It is written with the curiosity and rigour of a designer, having users in mind. It pays attention to public open spaces in city centres such as squares and parks and activities carried out within them.

Public open spaces are one of the formative tissues of towns and cities. Examined either individually or as a network, they often become an area of interest and intersection of three main approaches: social science reasoning, social science research, and the practical field of urban (landscape) design. Despite these three approaches informing rich discussions about public space as a subject of ‘socio-spatial’ processes, a complete practical implementation of such recognition remains challenged and seeks an effective complementary implementation of research and design. However, notions about people and places, relationships between them and, accordingly, references to different details and scales about them, are not new. For example, about 500 years ago, Shakespeare addressed this inseparable duality in one of his dramas, questioning: “What is the Citie, but the People? True, the People are the Citie” (Coriolanus, act 3, scene 1). About roughly the same time, although not referring directly to people and places but seeing people as a key measure in general, and therefore relevant to the discussion in this thesis, Leonardo da Vinci, a multi-talented thinker, artist, scientist and engineer, believed that, “man is the measure of the universe”.

The references to theoretical and practical work are many, reflecting the incessant search for and a debate about the importance of a man as a key measure for design in urban design. They vary in their popularity, initial approaches, findings, and final practical usefulness and implementation. Different authors, such as, Le Corbusier (1951), Hall (1966), Lynch (1981), Alexander *et al.* (1977), Gehl (1987), Whyte (1980), and Thiel (1997) have debated this issue from different angles. Accordingly, there have been discussions about space as a physical phenomenon, a condition of mind, a body of identity and attachment, or a product of social process. Commenting on debates on more pragmatic and practical levels, Madanipour summarises: “For years the public places of city have been the subject of debate, from concerns about privatisation of space, to the contested nature of public space and the various ways in which public space can be designed and developed” (Madanipour, 2003: 139).

All these different views enlarge knowledge about the phenomena of interest. They reflect descriptive and analytical approaches to the city or its parts, and form the basis of the ways of designing urban spaces. Building upon such knowledge and reasoning further, towards more and more practical levels about the actual conduciveness and responsiveness of places to people's use, this thesis concentrates on the relationship between the attributes of the public realm, the physical spatial characteristics of the place itself and the dynamic of use. It examines how different kinds of spatial structure facilitate use by the public in different ways. In searching for an inclusive and sustainable design approach and to understand and elucidate this relationship between the configuration of physical form and dynamic patterns of spatial occupancy, the thesis examines patterns and density of clusters which people create when occupying certain urban open public spaces.

Thus, the thesis is concerned with empirical values rather than with pure theoretical issues in the field of urban landscape planning and design. People are seen as embodying the behavioural phenomena of a variety of users, while place is addressed as their environmental context, constituting the form and articulation of a certain urban open space in a city centre. This grounds the topic in the field of environment-behaviour studies. In this field, Canter's (1977) theory of the psychology of place indicates that, a place is the result of relationships between actions, conceptions and physical attributes. This thesis directly addresses the categories of 'actions' and 'physical attributes'. It recognises users' conceptions about places as equally important but, as this research examines the physical dimensions of usage-spatial relationships as its focus, individual conceptions are not central to the thesis.

Within this framework, this thesis sees aspects of usage-spatial relationships in open public spaces as important layers in the fields of research and design in urban landscape. It examines them in order to bring research closer to design, to let design inform research and, by that, to benefit both design and research, in the field of urban landscape design.

1.1 Problem and issues

The insufficient way in which design disciplines and environment-behaviour studies interact has often been discussed and criticised. This criticism reflects a problem

wherein the role which behavioural studies play in this relationship is often identified more as a critique of design with little useful practical consequence, rather than a precise methodology with a cohesive structure, and resulting in suggestions for the further effective implementation and improvement of a design. Some aspects of the insufficiency lie in an incompatibility with the scale or accuracy with which either spatial or behavioural components are concerned. For example, either users are addressed on a very general level, with no reference to their ways of engagement, while a spatial component is well defined and described, or people's activities, needs or any other engagements are well defined, whereas the reference to a physical structure stays on a general level, at the scale of town planning.

More commonly, in social science, very often an urban space, although analysed from both perspectives, of people and physical structures and objects constituting this space, is understood more from abstract viewpoints, viewed 'top-down'. As opposed to such abstract discussions, Madanipour argues the relevance of urban space to everyday life in the city, specifying that, "it is (at this) level that the diversity and spontaneity of life can be observed" (Madanipour, 1996: 63). Referring to it further, he recognises it also as a level "where the patterns of behaviour in the city can be analysed in relation to the symbolic processes, meaning of the environment, and the relationship of the individuals with others in public spaces and with their environments" (Madanipour, 1996: 63).

This thesis sees a challenge in confronting spatial and human dimensions, and talking about the physicality of spaces using the language of patterns of use(r)s on compatible scales and comparable accuracies. Based on a 'bottom-up' approach, it discovers a usage-spatial relationship in a defined spatial unit, a place like a square or park, and addresses three main issues:

- The lack of knowledge and designers' notions of and perceptions about potential and effective environments for spatial occupancy;
- The lack of appropriate formats of information, research tools and research methods and their appropriate implementation to address the justification and rationale for the integration of research in the design process;
- The validity and insights of an empirical knowledge and its reflection on decision making, evaluation and the design of urban open public spaces.

1.2 Challenge and hypothesis

On the basis of the three main issues of the thesis, a tri-partite hypothesis is presented. The first part addresses the role of empirical knowledge, communicating practice, research and actual use of places, the second part addresses a convenience for and a critical need to research for design, while the third addresses actual (potentials for) occurrences in real places.

The first part assumes that:

- An empirical knowledge about usage-spatial potentials of places is of key importance in urban design professions and has an important role in urban design practice.
- Theoretical issues and challenges concerned with making better places for people have not been adequately resolved through the detailed examination of behavioural patterns within them.

The second part assumes that:

- Exploring the spatiality of usage through mapping and map-making leads directly to the elucidation of spatial relationships between uses and sites.

The third part speculates that:

- Despite individual differences there are common behavioural patterns that appear from one place to another, and that
- Activities form their own spaces and through them shape places;

and assumes that:

- Behavioural patterns address usability and/or the spatial capacity of a place and reflect spatial potentials for occupancy.

1.3 Strategy and methods

The research strategy is based on the original complexity of public space, a constant relationship between peoples' behaviour and the milieu where it occurs. People are always in some space, where they cannot stop enacting some form of behaviour. Thus, this dualism of 'public' (use, behaviour) and 'space' (place, milieu) is very explicit. From this point of view, public space is not just a spatial frame, where an event occurs.

It is more. It is an entity of clear, inseparable, reciprocal dependence and inter-conditioning of both the components, which operate as one. On this basis, the main question that guides the development of the research strategy is: (How) can one component of public space be expressed or represented by the other? Accordingly, the examination of the usage-spatial relationship in urban open public spaces is represented as a process of three main sets of actions.

Firstly, it gathers the information and offers insights about public space through the 'people' component. Secondly, a set of actions undertaken reflects an act of learning about spatiality and the physicality of public open spaces through the 'people' component. Finally, a reflection on this (new) learning and on the existing designers' knowledge, skills and experience, re-addresses the whole entity of public space through its 'place' component by designers' involvement in the processes of actual design. This strategic concept is implemented through a series of methods and techniques, starting with observation and behavioural mapping. It continues with building up an empirical knowledge by a careful organisation of the original data into comprehensive and interactive databases. They are used as the important input information in the next technique, workshops with urban landscape designers.

The overall nature of the research strategy reflects an inductive approach, from specific information towards a more general understanding. The repetitive nature of the conduct of the research reflects also some deductive steps within this overall approach. Accordingly, grounded theory is recognised as the underlying approach, while the case study method is selected as the way it is actually examined.

1.4 Objectives and aims

Looking at the issues and developed hypothesis, and search for the subject of their linkage, the thesis is in practice researching different aspects and roles of empirical knowledge. In other words, it asks:

- Why search for empirical knowledge?
- How to search for that empirical knowledge? and
- What then, when the knowledge has been found?

The 'why-question' reflects the first set of assumptions with the emphasis on the following. The theoretical issues and challenges involved in making better places for people have been too little proven with the examination of places through the distribution and physical dimensions of behavioural patterns within them. According to Carmona *et al.* (2003), who see urban design as a means of manipulating the probabilities of certain actions or behaviours, it should be an activity that provides people with choices, rather than denying them choice. Thus, it reflects the provision of opportunity and managing its use and involves urban designers as professionals who can master increasing space potential to create a meaningful, significant and desirable place. Although not all designers have these explicit aims such as Martha Schwartz or Peter Walker, nonetheless many would be challenged by them, for example Georges Descombes or Lawrence Halprin. By accepting the goal of urban design as providing 'potential places', potential behavioural patterns in urban settings, and moreover, their inner structure and organisation, become a subject of interest and importance. Accordingly, an empirical knowledge about the usage-spatial potentials of places is recognised as a crucial challenge in design research.

The 'how-question' refers to the statement of the second assumption. It calls for a response with responsibility and sensitivity to what kind of researches are needed for talking about the physicality of spaces, using the language of the patterns of use(r)s. There is a demand for developing appropriate research methods to address a justification and rationale for the integration of research in the design process. In other words, it asks, how is it to be researched? Mitchell (1993) and Southwell (2004), for example, point to the 'applicability gap' and incompatibilities between environment-behaviour researches and design. From this point of view, Mitchell (1993) emphasises the conflict between the nature of the research and design tasks themselves. This thesis argues, and will show, that a successful application of the interactive research-design relationship into an integrative framework is reflected in the quality of conversion of research data into design. Moreover, the data's format is crucial and, likewise, the preparation of data for conversion and the understanding of how to move from different sources about spatial reality to visual data and final design images. Consequently, tools, which enable such operations and designers' familiarity with them, are essential.

The 'what then – question' is the most challenging and promising as a direct contribution to design practice itself. It contains a critical dimension when calling for an

application and thus reflects the relevancy of an acquired empirical knowledge. Discussing roles and responsibilities of landscape architects, Krog, for example, stresses that, “the landscape architect is trying primarily to solve other people’s problems” (Krog in Swaffield, 2002: 60). The efficiency of the solutions depends on the degree of ‘wondering about’ these problems or even more fundamentally, the capability of recognising and addressing them inclusively and correctly. It reflects the importance of the knowledge which contains appropriate information about some social aspects, for example, the potential usage of/within a particular designed place. Some speculations about that may result in the conjecture that a common characteristic of the activities is their ability to form their own spaces and through them, shape places. Reasoning about patterns of spatial occupancies, as elements of spatial definitions, arises and calls for a closer examination. On the one hand, it addresses the understanding of how designers respond to such new knowledge, for example, how useful is it and how willingly applied? On the other hand, the existing designers’ knowledge, skills, experiences and preferences when they design, are scrutinised.

With all these different concerns about empirical knowledge, this research aims to benefit the practical fields of landscape architecture, and architecture when addressing design projects about urban open public spaces. The presented aims are clear, but the inductive nature of the thesis cannot guarantee fully their achievement. However, it can try to approach them in the best way possible. There is an overarching general aim, as follows:

- The examination of real and concrete usage-spatial relationships (in scale 1:1) and learning from them to contribute to urban (landscape) design theory and practice.

Accordingly, the specific aims are:

- To provide information and insight into the dynamics of the design and development of urban space,
- To offer coherent perspectives and platforms for debating research and design for urban landscape, and
- To promote a better understanding, planning and design of urban landscape, in order to respond to social inclusion and well-being in urban open public spaces.

1.5 Thesis structure

This first chapter has recognised the nature of research issues and generally suggested how to address them in more detail. On this basis, the following chapters develop the relevant arguments and discussions. Chapter two critically highlights theoretical and practical understandings which are concerned about two topics, public space and relationships between design and research. Based on the findings from Chapter two, Chapter three provides a strategy and selects the appropriate methodology and methods for its application. It results in the multiple case study as the main operative methodology. Observation and behavioural mapping and workshops with urban designers are two mutual methods applied which directly address the main concern of the thesis, “A configuration of physical form and the dynamic patterns of spatial occupancy in urban open public space”. Chapter four discusses the actual implementation of the methods. In order to assure their effective implementation and targeting to the purpose and need of the thesis, this chapter also reviews different stages of preparation, revision and adjustment of techniques and approaches.

Chapter five is the most comprehensive part of the thesis. It discusses the evidence gathered on the bases of both applied methods and gains a body of empirical knowledge about usage-spatial relationships in urban open public spaces. From the contents point of view on the research-design relationship, this chapter stresses the importance of visualisation of any aspects related to spatial relationships between uses and places. From a technical and operative point of view on such visualisation, it recognises the appropriateness and effectiveness of GIS application. Chapter six concludes the thesis, pointing to its contribution and further concerns.

Chapter 2 Framework and boundaries of the thesis

This chapter, firstly, presents the subject of the topic in its conceptual and research context and, secondly, discusses the literature review in two essential fields of interest, public space and the design-research relationship. At a conceptual level, Canter's (1977) understanding of places is central.

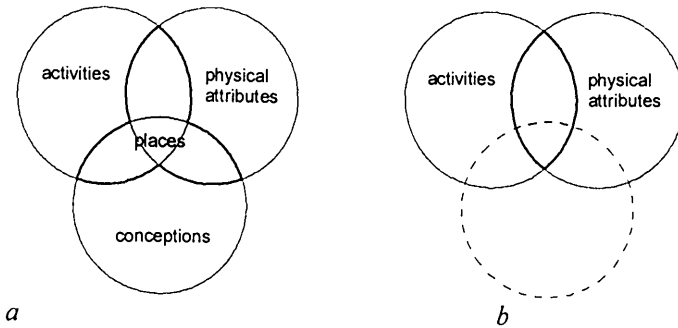


Figure 1: Visual metaphors for a: Nature of place (Canter, 1977: 158), b: The area of interest of this research.

According to Canter, this diagram (Figure 1.a) informs about a place through “what behaviour is associated with, or is anticipated to be housed in it, what the physical parameters of the setting are, and the descriptions, or conceptions, which people hold of that behaviour in that physical environment” (Canter, 1977: 159). He discusses further that, proceeding with the identification of places can start with any of the major constituents, and he identifies different procedural categories, of which each reflects one of the components of the model of places, as exemplified. “Sketches mirror the physical attributes, accounts or descriptions the conceptual, and behavioural recordings the activity component” (Canter, 1977: 161). To point to the applicable character of the model, Canter stresses further: “These procedures for identifying and describing provide a valuable link to design-making. They have the potential for actually being used during the design process, to indicate the nature of the places being produced and their characteristic properties” (Canter, 1977: 161).

Reflecting on Canter's model, this thesis most directly addresses the categories of ‘actions’ and ‘physical attributes’ (Figure 1.b). According to Canter's procedural categories, suggested when mediating between theoretical constituents of places and their operational equivalents, the interest lies between ‘sketching’ and ‘behavioural records’. Referring to sketching, Canter exemplifies: “By asking people to draw as best they can from memory, their own representations of the city, building or room, it is

possible to identify some of the major components of the places of interest” (Canter, 1977: 160). Referring to behaviour, Canter (1977) addresses the identification of places, which is based upon the information concerning what happens there, and he mentions behavioural mapping as a procedure in use.

However, this research is interested in the physical relationships between spatiality of uses and places, and as such, it is not directly concerned with individuals’ representations of places based on memories and reflections on ‘ideal places’. It sees importance and a crucial role in knowing real dimensions of occupancies in real places. The visualisation of spatiality of uses and places is important but sketching, a drawing activity by users as described above, is not relevant. Behavioural mapping and further examination and development of such graphical records seem appropriate.

As opposed to the indirect interest in a single user’s conceptions about places, there is a direct interest in designers’ conceptions about uses and places when they design. They are of great interest, especially when aiming for Canter’s model operational manifestation in the design practice and decision-making processes, which he links to any scale, from regional planning to buildings’ design, and expresses as follows: “The goal of the environmental design is in the creation of places” (Canter, 1977: 157). In relation to this, the relevant literature on topics about public space and research and design is reviewed to elucidate the current position of urban open public space and its use(r)s, between general reasoning and beliefs of the academy (social science reasoning, social science and environment-behaviour research), designers’ convictions and notions, and actual users’ engagements.

In relation to public space, the literature review traces the origins for the discussion about the understanding of the nature of public space as the realm of the physical environment and life in it from the very philosophical to a more practical approach. However difficult, abstract, or descriptive a manner the public realm is addressed in, the thesis searches for its representation in a concrete way, either by applying descriptive demonstrations of different authors such as Heidegger (1993) or Lefebvre (1991), or by its interpretation in the scale of urban landscape as seen, for example, by Madanipour (1996), Carmona *et al.* (2003) and the researcher herself. The thesis comments too, on the relevance of some approaches and beliefs and their applicable values for practical

urban planning and design, discussing two sub-topics, urban open public space and the usage-spatial relationship.

Recognising the demand in research in/for urban design, and the lack of dialogue and mutual understanding between social science reasoning and research and practical fields of design, there is a focus on the relationship between research and the design process itself. Accordingly, the sub-topics about the design research and the usage-spatial relationship research discuss the ways in which researches are undertaken and the design is produced, as well as comment on the further development of some ways of thinking when designing. This latter, especially, opens up a discussion about a format of information and tool-familiarity in this interactive research-design relationship into a third sub-topic about the information and tool.

2.1 Public (and) space

The term public space is variously used and cross-referenced amongst different disciplines, from various social science approaches to planning and design practice. This chapter reviews different understandings, conceptions and definitions of public spaces and comments on their relation to a reflection and applicability potential in urban design, as well as the expressions and definitions from the discussion field of urban design and their link to its practice. This discussion especially focuses on the viewpoint about public space as an entity which is characteristic for a two-way process between people and places.

Holding on to the pure philosophical discussion about a space as something “that has been made room for”, receives its “essential being from locales”, and “contains many places variously near or far from it”, Heidegger (1993), finally approaches a more tangible manner of expression and anchors it in man’s world. “The spaces through which we go daily are provided for by locals; their essence is grounded in things of the type of buildings. If we pay heed to these relations between locales and spaces, between spaces and space, we get a clue to help us in thinking of the relation of man and space” (Heidegger in Krell, 1993: 358). Although Heidegger does not talk explicitly about public space, in his reasoning about a space, he embeds its very essence and meaning by saying: “Yet space is not something that faces man. It is neither an external object nor an inner experience. It is not that there are men, and over and above them space”

(Heidegger in Krell, 1993: 358). By saying what an entity of any kind of environment with its dwellers and/or sojourners is not, however, Heidegger shows precisely, what it actually is.

Unlike Heidegger, Lefebvre (1991) addresses space with a term which, in itself, combines notions of 'man' and 'space'. He refers to social space, which "*per se* is at once work and product – a materialisation of 'social being'" (Lefebvre, 1991: 102). While Heidegger in definitions operates with terms which refer to a domain of physical space, Lefebvre does not. He sees it as a product to be used, to be consumed, as well a means of production, and discusses a form of social space further saying: "It subsumes things produced, and encompasses their relationships in their coexistence and simultaneity" (Lefebvre, 1991: 73). "Social spaces interpenetrate one another and/or superimpose themselves upon one another" (Lefebvre, 1991: 86). Arguing towards its complexity, Lefebvre continues: "It is an outcome of a sequence and set of operations, and thus cannot be reduced to a simple object" (Lefebvre, 1991: 73). A closer imposition of such abstract notions of (social) space onto an actual environment is exemplified by urban space, which gathers crowds, products in the markets, acts and symbols; and as such, clearly reveals many basic aspects of social space (Lefebvre, 1991).

Dear and Wolch (1989), addressing essence, contents and the (re)production of space, talk about the socio-spatial dialectic. They proceed from the starting point, that "social practices are spatial, at every scale and all sites of human behaviour, and that the relationship between space and human activity is very subtle and constantly evolving" (Dear and Wolch, 1989: 9). Although in comparison to Heidegger and Lefebvre, Dear and Wolch use the vocabulary which is closer to disciplines of urban design, referring generally to any scale and every behavioural setting, they still deal with the pairing of 'people' and 'space' on a very general, descriptive and semi-philosophical level and manner.

They reflect the dialectic pairing of 'socio-spatial' in human landscape, defining it as follows: "human landscapes are created by knowledgeable actors operating within a specific social context" (Dear and Wolch, 1989: 6). Defining that, they focus on the way in which social life structures territory and the way territory shapes social life. In abbreviated terms, they recognise three aspects of this socio-spatial dialectic and

exemplify them as follows. Firstly, social relations are constituted through space. The relationship is described by the influence of site characteristics on settlement form, for example. Secondly, they are constrained by space. This is illustrated as the facilitation or obstruction of a physical environment to human activity. Finally, there is an aspect when social relations are mediated by space. This is recognised where the ‘friction of distance’ facilitates or inhibits the development of various social practices (Dear and Wolch, 1989).

These references to ‘social space’ (Lefebvre, 1991) and ‘human landscape’ represented by aspects of socio-spatial dialectic (Dear and Wolch, 1989) are weak in their practical exemplification. They remain quite general and actually do not reflect any particular aspect of either ‘people’ or ‘place’. As such, they can hardly contribute to the detailed field of urban landscape design, which aspires to the notion of “making better places for people” (Carmona *et al.*, 2003).

Carmona *et al.* (2003) collect different understandings of urban design in three main groups: the visual-artistic tradition, the social usage tradition, and the making places tradition. The first is predominantly product-oriented, focused on the visual qualities and aesthetic experience of urban spaces. It relies on authors such as Sitte (1889), Le Corbusier (1971) and Cullen (1971). In the second, the way in which people use and colonise space is emphasised and issues of perception and sense of space are encompassed. The authors, who were/are building and influencing this tradition were/are, for example, Lynch (1960), Jacobs (1961), Whyte (1980), Gehl (1987), and Alexander *et al.* (1977). The third tradition emphasises the characteristics of urban composition, such as its ability to make activities or events possible and pleasing in appearance. This tradition also reflects Lynch’s (1981) and Jacobs’s (1961) work but it is significantly influenced by British authors, such as Bentley *et al.* (1985) and Tibbalds (1992).

‘The social usage tradition’ and ‘the making places tradition’ agree especially with the importance and need for the application of the aspects and paradigms of socio-spatial dualism, discussed and argued by Dear and Wolch (1989), mentioned above. However, in practice, they often resulted in some general recommendations, based on criticism of the present situation, such as making places comfortable, safe and accessible, for example. So, often, they were less helpful for specific situations. Equally, the ideas and

tendencies evident within (contemporary) urban design about convenient, inclusive and sustainable places (Bunschoten, 2002; Nilsson, 2004) concur or follow the general notions of socio-spatial dualism in public space design. Nevertheless, they too, often stay ‘ungrounded’ in real situations and dimensions of everyday life qualities. The challenge then, is to trace and catch these aspects of the socio-spatial dialectic relationship or any other general premise about environment-behaviour dualism in the scale and field of urban landscape design.

2.1.1 Urban open public space

Madanipour, building on a discussion about public and private spheres and discourses about the use of a particular space for functional, symbolic or any other reason, guides a discussion to a definition of urban open public space and summarises as follows: “Public spaces of cities, almost anywhere and at anytime, have been places outside the boundaries of individual or small-group control, mediating between private spaces and used for a variety of often overlapping functional and symbolic purposes. Urban, open public spaces therefore have usually been multipurpose spaces distinguishable from, and mediating between, the demarcated territories of households” (Madanipour, 2003: 141).

Addressing urban space, Colquhoun (1989) recognises two senses in which the phrase is commonly used: social space and built space. The social space is “the spatial implications of social institutions”, while built space is represented as the physical space, “its morphology, the way it affects our perceptions, the way it is used, and the meanings it can elicit” (Colquhoun, 1989: 223). In Colquhoun’s view, urban space is recognised as a subject of two approaches referring to form and function; one approach sees “forms as independent of functions”, the other, “functions as determining forms” (Colquhoun, 1989: 223). He shows that these are two different approaches which deal with the same phenomenon, the first from an architectural point of view, the second from a geographer’s or sociologist’s point of view, rather than recognising urban space as a sphere of their interconnection.

A discussion towards a more inclusive and complex understanding of (urban) public space is guided by Benn and Gaus (1983) who operate with the “dimensions of publicness and privateness” represented as three main interrelated dimensions of social

organisation: access, agency and interest. They divide the dimension of access into four sub-dimensions: access to spaces, access to activities, access to information and access to resources. Following Benn and Gaus's approach, Madanipour argues that, "public places and spaces are public because anyone is entitled to be physically present in them" (Madanipour, 2003: 141).

'Access' is a dimension which is mentioned often and given slightly varying emphasis. Lynch defines it as a "degree to which users can reach other persons, services, resources, information or places, including the quantity and diversity of elements that can be reached" (Lynch, 1981: 118). Carr *et al.* (1992) recognise three types of access: physical, visual and symbolic. Physical access especially, but also the other aspects of access seen as fundamental attributes that need to be met before diverse use can appear, are usually one of the bases which designers take into account when they design. The other two dimensions of 'publicness' (Benn and Gaus, 1983), interest and agency, refer to other aspects of the public realm. Madanipour points out that "the dimension of interest plays a major role in determining the private-public distinction" (Madanipour, 2003: 141). Taking this into account, it reflects the degree of users' engagement in places while the dimension of agency reflects management and control of places.

According to Carr *et al.* (1992), users, design and management are three interconnected aspects of public open spaces which, to be good, are typified as a meaningful, democratic and responsive. Including each aspect in the definition, they see public spaces as "open, publicly accessible places where people go for group or individual activities" (Carr *et al.*, 1992: 50). Giving a concrete example, they specify: "While public spaces can take many forms and can assume various names such as plazas, malls, and playgrounds, they all share common ingredients. Public spaces generally contain public amenities such as walkways, benches and water, physical and visual elements, such as paving or lawn, and vegetation that support activities. Some are under public ownership and management, whereas others are privately owned but open to the public" (Carr *et al.*, 1992: 50).

This basic literature review shows that urban open public space is a complex phenomenon which is discussed often and usually given slightly different emphasis, depending on the particular discipline dealing with it. Sometimes 'public' predominates, at other times 'open' or simply 'space' and on some occasions, 'urban'. Although there

is an attempt to find as common a definition and understanding as possible, different disciplines still colour the meanings and definitions in terms of the priorities and angles of their own interests. The sociological point of view approaches it from the social angle about the production of space by people's engagement with it. The psychological point of view, from the actions of people, their cognition and preferences, and the architectural point of view mostly emphasises physical structure. Different philosophical or more practice-based discussions prove that this one term is variously understood, therefore it needs to be explained afresh for each research.

In the context of this thesis, it is understood as follows. 'Urban' and 'open' explain 'where' it is and 'what kind of' place it is. Public 'urban open' space is thus located within a town or city and it represents completely-, partly-, or non-green, soft or hard areas between built structures that are accessible to the public in same way. 'Public' and 'space' both determine an environment with an objective physical structure and a set of (possible) events. In terms of access and ownership, it is based on Carr *et al.* (1992) and it is understood as that environment which could be owned and maintained either publicly or privately, but which is publicly accessible.

However, public space is then not just a spatial frame, a 'waiting scene' where an event will occur. It is more. It is *publicspace*. The description of a public space as one word emphasises its very characteristic of being an inseparable entity of a two-way process between both the components: 'people' and 'place'. In the context of this thesis, the final unit constituting the spatial component of an urban open *publicspace* is a place's form and its main articulation. A social component of that *publicspace* is understood as its daily dynamic pattern of uses.

Considering a variety of urban open public spaces, ranged from linear places or corridors such as walkways, canals; river banks, promenades and streets, to places of extended surfaces from natural, such as woodlands, semi-natural, such as parks, gardens, and cemeteries, to hard surfaced spaces such as market places and civic squares, this thesis focuses on central parks and squares. They are places of greatest extend and tradition in Europe, generally the most publicly accessible, and recently one of the most intensive design focus (Topos and other magazines on contemporary urban and landscape design). Their spatial character realised through a presence of surface and

as such a great potential for usage diversity is also of key significance for their selection.

2.1.2 *Usage-spatial relationship*

The previous discussion evidences the references to both the components of space, 'social' and 'spatial', either on a general notion about a space itself, or in a more detailed discussion about urban open public space. Although some of the definitions have mentioned their interconnections, interweaving and reciprocity, they often lack remarks about the ways in which both components interact.

Madanipour states that, "social and physical dimensions of urban form have a dynamic relationship" (Madanipour, 1996: 33). Recognising public space as a *publicspace*, he elucidates the usage-spatial relationship as: "it is possible to envisage urban form as the geometry of a socio-spatial continuum", where "individual elements, with both physical and social dimensions, are combined progressively through their interrelationships shaping complex combinations" (Madanipour, 1996: 33). Madanipour exemplifies it further: "In other words, the city as a whole might be seen as formed by a spectrum of structures at various scales down to the level of a single element. All the levels, physical and social dimensions of the structures are interwoven, though distinguishable and modifiable in the degree and the extent of their linkage. A study of urban form therefore refers to the way physical entities, singly or in a group, are produced and used, their spatial arrangements, and their interrelationships, and also how monetary and symbolic values are attributed to them" (Madanipour, 1996: 33).

Although such reasoning does not give any particular reference to any particular subject, there is a potential in these understandings to be developed and applied in more detail, at the scale of a single urban open public place. This recognition is also evident in one of the final conclusions which Madanipour has drawn about the socio-spatial relationship related to urban space: "Nevertheless, any study of urban form should address these two interrelated dimensions or, if focused on certain aspects of form, be able to locate the focus with due considerations towards these two major dimensions" (Madanipour, 1996: 33).

Lynch and Hack comment: “Some critics assert that our physical settings determine the quality of our lives. That view collapses under careful scrutiny, and then it is a natural reaction to say that the spatial environment has no critical bearing on human satisfaction. Each extreme view rests on the fallacies of the other. Organism and environment interact, and environment is both social and physical. People and their habitat coexist” (Lynch and Hack in Swaffield, 2002: 38).

However, no matter what level of ‘socio-spatial continuum’ is taken into account, either general (city) or specific (place), its nature is always recognised as a two-way process in which people produce and modify spaces, while at the same time, spaces influence them in various ways. In terms of the interaction of both the components of *publicspace*, environmental psychology distinguishes two approaches, environmental possibilism and environmental probabilism.

Environmental possibilism is seen as “the notion that the environmental context makes possible some activities but does not force them to occur” (Bell *et al.*, 2001: 511). It means that there are some equal alternatives offered by a certain physical setting and that people can choose from the range of environmental opportunities available to them. Simplifying this, it is about people. Environmental offerings seem equally potential to a certain range of activities, but people are the actors who choose the way of their engagement with a particular place or its part. Environmental probabilism is defined as “the notion that the environmental context makes some activities more probable than the others but does not absolutely determine which will occur” (Bell *et al.*, 2001: 511). It means that there are some choices more likely than others in a certain physical setting. In this concept, the ‘place’ component of the *publicspace* seems stronger, in examining the usage-spatial relationship, than the ‘people’ component. Simplifying this, it is mainly about a place.

Exploring behaviour in a built environment, seeing people’s activities ranged on the basis of the degree of ‘compulsory’ or ‘voluntary’ outdoor activities, Gehl (1987) argues that in public spaces of a poor quality, only strictly necessary activities occur. Beside necessary activities, Gehl (1987) recognises optional and social activities. Necessary activities are more or less compulsory. As participants have no choice, the incidence is only slightly influenced by the physical setting. Optional activities are undertaken voluntarily, if time and space allow, and weather and setting invite them.

Social activities depend on the presence of others in public space. They are supported and result whenever necessary and optional activities are given better environmental conditions.

In public spaces of a higher quality, necessary activities take place with approximately the same frequency, but they may occur for a longer period; and a wide range of optional and/or social activities tend to occur too. Gehl's (1987) final argument, grounded on the examination of the *publicspace*, is that it is possible to influence some aspects of carrying out outdoor activities, such as how long the individual activities last, which activity types can develop and, finally, how many people use public spaces through the design and spatial arrangement of urban settings. Gehl prioritises the influence on the activity patterns in *publicspace* through the design of the physical environment while taking into account certain limits such as regional, climatic and societal. His understanding and addressing of the usage-spatial relationship reflects a 'probabilistic' approach.

Gans (1968), when discussing environmental opportunities and peoples' choices, distinguishes potential and the effective environments. He recognises a potential environment, which is proposed by a planner and provides a range of environmental opportunities; and an effective environment, as one 'derived' from the potential environment, created and determined by what people actually do within it. Addressing both terms, Anderson (1986) distinguishes a potential environment as the physical environment: an arena for potential actions and interpretations as it exists at any point in time, which is characterised by limits of activity and significance. An effective environment, named influential, is defined as the realised potential environment, manifested in two options: exploited potential and recognised but unexploited potential. It is that version of the potential environment, which is manifestly or implicitly adopted by users, and thus represents the actually observed pattern of use and meaning. The unrealised potential environment is defined as latent environment, and is recognised as that version of the potential environment which supplements the influential. It consists of the environmental possibilities not currently being exploited.

On these bases, guiding the discussion towards an account of the form, use and significance of the physical environment, Anderson (1986) addresses robustness and resilience as domains of the above defined environments. Robustness is seen as the

extent of the potential in the physical environment, while resilience is seen as the degree of latency together with the recognised but unexploited potential within the influential environment. Developing Anderson's arguments further, Carmona *et al.* (2003) recognise robustness, in general, as a function of the relationship between form and the uses it accommodates. Both use (people) and form (place), as the materialisation of 'public' and 'space', are the essential and interdependent components of any public space.

As Gans (1968) and Anderson (1986) inserted the idea of effective environments between the pure concepts of 'people' and 'place', Thiel (1997) has originally abstracted them, on a much more detailed level, into an 'experiential envirotexture' and the 'behaviour circuits' of 'user participants'. His contribution to the examining and understanding of the *publicspace* is reflected in the definition as follows: "Environment is a path-contingent sequence and can be represented schematically by a number of adjacent and overlapping areas, each donating a specific scene. These scenes, of course, may be various sizes and shapes in three-dimensional array, with various degrees and combinations of discrete and amorphous boundaries, and furnished and occupied in a variety of ways for a multitude of purposes" (Thiel, 1997: 131).

All the aspects of general understanding of the socio-spatial dialectic (Dear and Wolch, 1989), the theory and application of both approaches (environmental possibilism and environmental probabilism) as suggested by environmental psychology (Bell *et al.*, 2001), and general values about potential and effective environment (Gans, 1968), remain the key issues which urban design disciplines address. To emphasise the understanding of the nature of the usage-spatial relationship and to support the search for, and development of, an empirical knowledge about it, Gans states: "This statement of the relationship of physical environment and human behaviour does not deny the assumption that the former influences the latter. It only attempts to insert between these two concepts the idea of the effective environment, so that the futile argument of whether or not there is a causal influence from the former to the latter can be replaced by the more fruitful question of when, how, how much, and with what effects these causal influences occur" (Gans, 1968: 11).

These speculations address a notion about designers' knowledge and perception about potential and effective environments in places, and opens a discussion about design and research in the area of urban (landscape) design.

2.2 Research and design

This discussion is not about the design process itself, for it has been discussed and debated frequently, rather, it is about the definition and application of research for design.

Madanipour points out that “there is a growth of interest in urban design” and that to understand its nature “there is an increasing and urgent demand for more analysis and debate” (Madanipour, 1996: ix-x). Accordingly, “there is a demand in research in urban design (for, as a practical subject matter), when compared with related academic fields, urban design has not been sufficiently supported by research” (Madanipour, 1996: xi). Despite the fact that urban design has been recognised and treated as a ‘socio-spatial process’ and that environment-behaviour studies have been applied, this field lacks an application of mutual understanding between social science reasoning, social science research and actual practical design.

Mitchell argues that: “Social science research is analytical. It generates data pertaining to general cases, whereas the designer, if at all interested in research, needs to create synthesis in a particular case” (Mitchell, 1993: 36). According to the involvement of the social science research in the design process, Mitchell argues further that, “The two approaches, social science and design, are antithetical and many designers who were predisposed to the idea of improving their design through application of research results quickly become disillusioned and returned to their previous, formally based method” (Mitchell, 1993: 36). Although the approaches are ‘antithetical’ in their nature, and therefore, inefficiently supplement, complement and/or contribute to each other, the fact is that designing places is a creative activity concerned with people in mind. It is in a position to respond to societies that demand environmental and social appropriateness; unique and creative solutions; a rationale and justification for designs; and a prescriptive understanding about the implications and functioning of a proposed design.

Milburn and Brown's understanding of the role of a design, reflected in their motivation to study the research-design relationship, is based on the following statements: "The move to post-modernism has placed a greater emphasis on issues such as social responsibility, sustainability, environmental responsiveness, environmental integrity and human health. The complexity of these issues is encouraging urban and regional planners, architects, interior designers and landscape architects to identify research as an essential component of responsible planning and design processes" (Milburn and Brown, 2003: 47). On this basis, they (Milburn and Brown, 2003) recognise the importance of knowing, "how professionals view and use research in their work", and they examine this research-design relationship, studying the literature review models against the proposed models that arise from a comprehensive survey of landscape architecture educators.

Similar to Mitchell's (1993) observations, Milburn and Brown's study, referring to interviews and inquiries with landscape architecture educators, notes that, "...participants largely recognise the inconsistent quality and lack of rigor of landscape architecture research" (Milburn and Brown, 2003: 60). Despite this recognition, concerning a quality of research, their study does not specify, either a research type or a type of information which might be the most searching and demanding. Examining the way in which landscape architects are involved in research for design, Milburn and Brown (2003) recognise indirect and direct research, and on this base, classify types of useful research: case studies, library research, precedent review, intrinsic research, and site inventory and analysis.

Detailed comments on research classes in Milburn and Brown's study (2003) highlight that the contents addressed by the term research are different when one compares the definitions and understandings by researchers or scholars reflected through literature review and those by the designers involved in the survey. This latter practically views research as everything that concerns any collection of information related to an evolving design. The illustrations from the Milburn and Brown study show that a library research, for example, reflects a "review of relevant literature related to current ideas, trends, names, precedents ... to build up information base to respond to design" (Milburn and Brown, 2003: 60). A precedent review, for instance, refers to developing confidence through the study of other examples of design which address similar issues, exemplified by "evaluating built design aesthetically or socially, which have a

satisfactory resolution” (Milburn and Brown, 2003: 60). However, no matter what type or class of search is chosen as appropriate for any information which might help to inform design, according to Milburn and Brown’s survey results, research mostly addresses the study of relevant subjects of other projects which have been designed.

This recognition about the perception and understanding of research and researching when undertaking design, questions whether or not such an approach can bring the appropriate and correct answers to the complex issues about social and environmental responsiveness and thoroughly addresses sustainability, which Milburn and Brown stated as the main reasons when they recognised the importance of the design-research relationship as an integrative process. Despite some interesting and valuable contributions from Milburn and Brown’s study, concerning the innovative typology about design processes themselves and the involvement of research in design during the design process, these questions linked to the original issues remain open. However, no matter from which viewpoint the term research is understood, Milburn and Brown’s study points to research as a controversial issue in general: “While scholars call for more rigorous research in landscape architecture, many educators and practitioners feel that the design is the professions’ key contribution” (Milburn and Brown, 2003: 61).

In relation to this, Mitchell exemplifies: “One of the main problems with environment-behaviour studies has been the conflict between the nature of the research and design tasks themselves” (Mitchell, 1993: 36). According to the behavioural studies research by Madanipour, Herbert’s and Thomas’s findings are noted first and then linked to Hebermas’s response: “Behavioural studies are identified more as a critique rather than a precise methodology with a cohesive structure” (Herbert and Thomas, 1982 in Madanipour, 1996: 65). Such research has been seen as “insufficiently complex” to be used as a method of inquiry into modern societies (Hebermas, 1987 in Madanipour, 1996: 65). When aiming for a responsible design in all respects, from social to environmental concerns, neither criticism of the research itself nor designers’ lack of interest in and respect for novelties arising from such concerns regarding research disciplines, can contribute to a comprehensive role, which the design of public places is expected to fulfil.

However, it is rather important to respect both subjects and mediate towards a successful application of the interactive research-design relationship into an integrative

framework, which this thesis sees as being in the appropriate collection of data and quality of conversion of such research data into design. Accordingly, the challenge then is how to research for design so that designers could be attracted by the results and researchers could feel satisfied with conditions for data collection, and its final reliability and credibility.

2.2.1 Design research

Sasaki understands research as one of three essential steps of critical thinking in design. Research used in this sense is of three types: verbal, visual, and experimental (Sasaki in Swaffield, 2002).

Visual research consists of activities of a passive nature such as looking at photographs, sketches, and work executed in the field. Verbal research means a survey of the topics and knowledge of landscape architecture, as well as reading and discussing books on art and architecture. It also includes written materials on social and philosophical matters, which, according to Sasaki, “help in understanding basic problems of environmental planning” (Sasaki in Swaffield, 2002: 35). Although the term the ‘experimental research’ sounds ‘all-inclusive’ and ‘hopeful’, in terms of addressing design as a comprehensive and responsive activity to social, ecological and artistic aspects, in this context, it actually refers to experiments with forms and their spatial and textural relations. Sasaki notes: “A basic understanding of pure design of form, colour, and texture, and of space relationships, is a necessity before designs of high quality can be produced” (Sasaki in Swaffield, 2002: 35). He believes further: “And these qualities of proportion, balance, contrast, etc., of pure design are essential in the environment to satisfy the affective nature of human beings” (Sasaki in Swaffield, 2002: 36).

Interestingly, Sasaki points to the association between sources on social and philosophical matters and planning, but does not link them to design, although philosophy, especially, has often been used as a driving force for design projects themselves, particularly in any modern movement (Corner, 1991; Frampton, 1980), as well as in contemporary design projects (Eaton, 1997; Baudrillard, 2000; Frampton, 2000; Jencks and Kropf, 1999). Concerning ‘social matters’ and ‘a provision of designed forms’, Milburn and Brown’s (2003) observations, based on the literature review about design processes, are similar. They elaborate: “The analysis-synthesis and

complex intellectual activity models are planning-oriented, as they are dominated by the analysis of physical and social factors, and the concept-test, experiential and associationist models are design oriented, as they are dominated by the provision of form” (Milburn and Brown, 2003: 49).

An aspect of design itself is that a search and/or research for forms is the most intriguing and desired by designers. It is seen, for example, in designers’ monographs and in numerous other collections reviewing architecture, landscape architecture and urban design, which represent the ways designers describe their own work (Nicolin and Repishti, 2003; Bunschoten, 2002; Lawson, 2004 and many others). Thus, spatial form and its properties, such as configuration and articulation, from structural composition of patterns, to their detailed textures and colours, is usually a basic subject with which designers are concerned the most. Various discussions about spatial forms and their compositions in architecture and urban design (Sitte, 1889; Zucker, 1959; Krier, 1979; Broadbent, 1990; Ching, 1996; von Meis, 1990; etc.), and landscape architecture (Booth, 1983; Ogrin, 1988b; Bell, 2004) have resulted in a spectrum of profound vocabularies¹.

Discussing spatial form as a final elaborated place, Olin states: “Landscape architecture, addressed here as a subfield of art, proceeds by using a known body of forms, a vocabulary of shapes, and by applying ideas concerning their use and manipulation” (Olin in Swaffield, 2002: 77). Ogrin, discussing a generation of landscape form, and arguing both the impossibility of literal imitation of nature and an originality in landscape design, among other arguments, stresses: “Designed landscapes are spatial structures organised after certain syntactic rules and with a clearly articulated vocabulary of basic elements that can be – through recombination – adapted to a multitude of different constellations” (Ogrin, 1988b: 39). Bell sees a crucial role in patterns. Referring to the three-tier structure, (design of) landscape, he addresses this as “the combination of these three components, the element, its variation and organisation, which describes the patterns to be found in the existing landscape or produces new visual designs or new patterns” (Bell, 2004: 14).

¹ See categories resulted from a careful selection, rearrangement and unification of these understandings and definitions in Appendix A.

Nevertheless, designers develop different preferences for ways of structuring their process of design and hold strong attitudes about appropriate procedures. From this point of view, Lynch and Hack stress that, “These personal styles help shield them from the anxieties of the open search” (Lynch and Hack in Swaffield, 2002: 58). They critically reason further that, “since the design process should fit the problem as well as the designer, a personal style is also a limitation of possibilities, a latent distortion of the problem” (Lynch and Hack in Swaffield, 2002: 58). In this respect, Krog’s critical opinion is as follows: “Landscape architects’ continuing tendency towards geometric exercises in molding, compressing, and diluting familiar things to make them fit immediate projects is inadequate” (Krog in Swaffield, 2002: 63). Corner (1991) notes similar attitudes when discussing design paradigms and other approaches such as ‘positivism’ and the ‘avant-garde’ in contemporary landscape and architecture design. Problems of inadequate handling with approaching design forms are present also in design conceptions which require more loose forms, for example, in the design concepts based on spontaneous vegetation growth (Goličnik, 1999).

So far, the discussion has reached the point where the notion of form is of high importance in urban landscape design, but such a view is not sufficient. Discussing design theory and concepts of space, Southwell stresses that, “in addition to any form, landscape architects must also design for function” and finally argues that “convictions designers have in mind are predominantly about the nature of form, whilst function in design is all too often misunderstood” (Southwell, 2004: 39). Similarly, Bell calls for justification in design in which “function and aesthetic are fused instead of one being subservient to the other or considered mere decoration. The method should also allow for a critical assessment of the design where aesthetic criteria can be used alongside checklists of function or costs” (Bell, 2004: 13). Such a view, to a certain extent, reflects and up-grades Lynch’s theory of imageability (Lynch, 1960), where perceptual attributes serve as the main justification for both formalistic and aesthetic criteria in environmental design.

Legibility, as a means of describing organised and coherent patterns and as an element of sense when aiming for a good form (Lynch, 1960), is recognised as one of the crucial justifications for preferred landscapes and acknowledged as such also in the Kaplans’ studies (Kaplan and Kaplan, 1989). According to Southwell, the Kaplans’ preference matrix, consisting of four environmental information factors, referring to understanding

and exploring an environment: coherence, complexity, legibility and mystery, dynamic rather than static, legibility is “the key design consideration and criteria for quality in landscape which affords with the ability to explore” (Southwell, 2004: 143). As exploration without an ‘explorer’ is meaningless, these approaches show that some characteristics given to places of their constituents in the search for a form, rely on the explorer, user.

In Appleton’s (1996) view on the relationship between environment and its user, exploring is the master activity which lies behind the successful accomplishment of the other basic/primitive behaviours such as hunting, escaping and shelter seeking. Discussing environments in such descriptive ways, exclusively with people acting and reacting in places, brings the whole discussion about environment-behaviour studies to its ‘behavioural’ end. This is as opposed to the discussion of the form itself, which is strongly linked to the ‘environmental’ end, and elucidates that designers should be seeking some criteria for justification of design in such areas, too.

Looking beyond the form itself, Treib asks: “Of what value is a landscape design; what is its content?” (Treib, 2001: 119). Reasoning about that, he ascertains: “Never is the question of formal and informal one of simple opposition, nor a simple choice of one over the other. Most importantly, we need to question to what extent the forms, the space and the manners of realising landscape design truly embody its content” (Treib, 2001: 121). Of course, one of the contents is also a form itself, its configuration and articulation, but there is (must be) more. Treib discusses further: “Thus we might gauge the content of landscape design along three axes: *the formal* (which includes space, form and materials); *the cultural* (which includes history, social mores and behaviour); and *the environmental* (among them ecology, topography, hydrology, horticulture and natural process)” (Treib, 2001: 121).

Concerning the value of a designed landscape, Treib (2001) critically continues the discussion, linked to the necessity of such an understanding of design and of the recognition of the nature of (non)relationships between these axes, emphasising that all three sets of concerns: cultural, environmental and formal, warrant consideration. He illustrates further: “Social accommodation without a consideration of a place may lead to uncomfortable landscapes. Surrender to the restrictions of climate may produce landscapes devoid of beauty or human appeal. Visual beauty alone risks the danger of

being sterile and removed from life. Engaging the full trio of concerns both to create and evaluate landscape architecture offers far greater potential” (Treib, 2001: 122). These concerns show an attempt as to how the general ideas about social science, natural science and artistic aspects of design could be grounded in real places.

Gazvoda (2002) and Milburn and Brown (2003), all stress that the dualism of scientific aspects and artistic creativity represents a basic and widely recognised aspect of landscape architecture. When one compares the knowledge available, from the provision of natural science references to ecology, geology, and climatology, for example, and social science, with reference to preferences and perception of places, for instance, the richness of sources of information for design seems equivalent. However, when examining the actual implementation of the ‘scientific’ aspect in design, the notions of social science are clearly in the minority in comparison to other aspects such as creativity itself, reflected for example, in decision-making about spatial compositions, environmental concerns, and the technical appropriateness of a proposal.

2.2.2 Usage-spatial relationship research

People-environmental studies applied in urban design address it mostly from two major viewpoints, perceptions about places and functioning in places. The first is based on cognition and usually addresses people’s perception and experience in places and through them preferences about them and attachments to places. It often emphasises people’s ideas about places. The second focuses on behaviour and by this elucidates the physical reality of places.

With reference to physical form, Lynch’s research results show, that an image of the city can be classified into paths, edges, districts, nodes and landmarks (Lynch, 1960). Although this approach was criticised because of the limitation of the understanding and signification in urban environment to a perceptual knowledge about it, these elements have been widely used in urban design to construct more ‘legible’ environments, as exemplified by a variety of design handbooks and projects actually implemented, but also often addressed as key elements in site designs. Qualities of places are often evaluated and examined on the basis of different techniques related to Kelly’s theory of Personal Construct Psychology (Kelly, 1955; Adams Weber and Mancuso, 1983; Ward Thompson, 1998). An approach which is perception- and experiences-based but

considers a notion of a physical space more ‘tangibly’ and directly, is ‘way-finding’, a method which focuses on the functional operation of environments, according to people’s perception, focusing on movement and situating decisions about it in space. Regarding design, it was introduced originally by Passini (1996), and has become widely used as an analytical as well as post occupancy evaluation tool (Bell *et al.*, 2001; Ward Thompson *et al.*, 2005).

Although many of these perception-based approaches are related to movement through a place, they do not concentrate on movement as a behavioural action in itself. In relation to the exploration of activity patterns in urban areas, Nielsen (2004) discusses GPS (Global Positioning System) as a tool for studying and analysing itineraries and spatial-temporal dimensions of such patterns. Such behavioural records refer to a person equipped with a GPS device. Behavioural records are central data about the usage-spatial relationship collected by observation and behavioural mapping, often used in post occupancy evaluations (Cooper Marcus and Francis, 1998). Halprin (1969) examined the usage-spatial relationship linked to places, actions and records from a designer’s perspective, and on this base, he grounds his RSVP Cycles approach. He sees a potential for the application of this in planning and design through it being “a method for energising processes and people and the natural environment in a constantly evolving and mutually involving procedure over time” (Halprin in Swaffield, 2002: 44). Despite this potential, the approach has not been fully considered and/or frequently implemented in design, perhaps due to its mutual complexity and abstraction.

Gehl’s studies (1987) move from direct perceptual and behavioural concerns about places to people’s needs. Although limited in the diversity of urban landscapes examined and consideration of activities studied, however, Gehl’s contribution to the shift in thinking about design is enormous. While drawing some parallels between human behaviour and physical characteristics of places, Gehl (1987) addresses individual elements of spatial definitions such as walls and edges, rather than places as (designed) spatial entities. Similarly, Whyte (1980), Cooper Marcus and Francis (1998), Zacharias *et al.* (2004) address the usage-spatial relationship with reference to actual spatial forms and their occupancies, such as sitting, for example. Driven by the (re)search for form or its composition but having people in mind, designers-researchers developed a tool which speculates about use in places using spatial characteristics about the places in question. Hillier and co-workers (Hillier and Hansen, 1984) promoted a

CAD-supported tool and method, space syntax, based on mathematical predictions resulting from analysis of axial lines, lines of accessibility and visibility that can be drawn in a spatial system.

Space syntax's speculation about the likelihood of people's participation (transition) in places is based on the physical and visual connectivity of places. It is a tool for the representation, quantification and interpretation of spatial configurations, which can justify the likely behavioural effects of designs on users. Although it has always been meant as a technique used in combination with some other relevant surveys, such as interviews and questionnaires, it is, however, regardless of its 'spatial concerns', by its definition and origin, exclusive to some types of environments. When aiming for a complete informative survey or judgement of places, other techniques are needed. Accordingly, Teklenburg *et al.* (1996) suggest an extension of syntactical models with perceptual and functional aspects of human behaviour in places. Such basic ideas, to some degree, although not 'high-tech'-based and linked, lie actually in a combination of all Lynch's reasoning of urban form: from the large scale of a good city form, imagery theory, to behavioural settings and circuits as aspects of site design.

When Lynch and Hack (1984) talk about site design, they see it as an interplay of three kinds of patterns: the pattern of activity, of circulation and of sensible form that supports them. Although written as such, they could be understood as descriptions for *what*, *how*, and *where* people do things in a place, the authors explain and understand them as follows: "The first symbolised in the activity diagram, is the arrangement of the behaviour settings, their character, linkage, density and grain, following the requirements of the program. The second is the layout of the movement channels and their relation to the activity locations. The third centres on the human experiences of places: what we see, hear, smell, and feel, and what that means to us" (Lynch and Hack in Swaffield, 2002: 57).

When claiming a 'better' design also from a 'compositional' and 'functional' point of view, the challenge is to 'substitute' activity diagrams with actual 'spatiality of usage'. Carr *et al.* (1992), responding to legibility (Lynch, 1960), for example, and going beyond the emphasis on the physical attributes of the places, aim to promote the human dimensions of public space. They suggest the place cues that designers use to try and provide legibility should be considered in terms of what they mean to a user in practical

utilitarian terms, as well as in an emotional sense. A place legibility that is of practical use to humans is that which enables the user to understand what a place is. By this definition: “Legibility is the ability of a place to communicate first that it is open to the user and then what is possible there, once the user is inside” (Carr *et al.* 1992: 188).

Urban landscape design is in a position to move towards these shifts in thinking about places, not only how physical structures make places but also how spatiality of usage creates them and how conducive physical structures are to it. Although there have been steps towards it evidenced for a couple of decades, unless and until such ideas are exhaustively implemented and result in helpful information more directly applicable in design, the integrative research-design framework remains unfinished or misaddressed. This is partly the case, in fact, in both the traditions of ‘social usage’ and ‘making places’² which have been recognised since the Sixties in the field of urban (landscape) design. They have resulted in criticism of the present situation, for which lists of general recommendations, suggestions and requirements for making better places for people have been compiled. These follow a somewhat deterministic manner that turns many of them into formulas that relate to general principles but are less helpful for specific solutions.

From this point of view, Carr *et al.* (1992) emphasise a need for a theoretical frame of reference and a way of working that helps designers (and managers) to see the dynamic relations between people and public space clearly, so as to manage change effectively. To suggest the way of looking at this relationship, they stress further: “The human dimensions of public space are intended to provide such a framework. They focus on the relationship between people and places, rather than on abstract human needs or place qualities” (Carr *et al.*, 1992: 248). So, there is a challenge to provide instrumentality for making these dimensions specific to particular users and to each spatial context. Seeing both the behavioural phenomena of users and the environmental context at one time is then of fundamental significance in studying their relationship. The objectification as an appropriate visualisation of that relationship is necessary.

² They have been explained earlier in Chapter 2. See page 13.

2.2.3 *Information and tools*

While Milburn and Brown (2003) define research typology on the basis of what kind of information is searched for in design, Sasaki (1950) distinguishes research typology on the basis of how the information is searched for, where in visual and experimental research for design, imaging and visualisation become distinctive. Zeisel (1984) sees an image as key information in design, while Corner (1999) refers to it by its fundamental characteristic as being inseparable from landscape. “Without image there is no such thing as landscape, only unmediated environment”, and he develops this base towards design in landscapes: “... the ability to intentionally construe and construct designed landscapes is enabled through various forms and activities of imaging” (Corner, 1999: 153). Accordingly, designers are seen as professionals who “focus on the actual activities of creativity”, and these ‘doings’ in the designers’ world are finally questioned as “what kinds of imaging activities should be developed and advanced” (Corner, 1999: 160).

Corner (1999) argues that visual and formal qualities alone significantly limit the full eidetic scope, and calls for a broader understanding of landscapes as eidetic images. They are images which “contain a broad range of ideas that lie at the core of human creativity”; therefore, “how one images the world literally conditions how reality is both conceptualised and shaped” (Corner, 1999: 153). This suggestion of an eidetic image seems appropriate, especially, when following the understanding of urban design as suggested by Carmona *et al.* (2003), as a means of manipulating the probabilities of certain actions or behaviours, urban design should be an activity that provides people with choices rather than denying them choice.

Drawing is certainly an imaging activity, deeply embedded in design, no matter the tool, traditional drawing pencil or computer. Gazvoda (2002) and Corner (1992) refer to drawing as a fundamental basic mode in landscape architecture. The latter considers it to represent a natural way to communicate spatial issues and the values related to them. Similarly, Lawson (2004), discussing drawing as an ‘external memory’ sees it as “the designer’s way of making, recording and testing hypothesis” which becomes a “sort of graphical ‘what if’ tool” (Lawson, 2004: 53). Usually, diagrams are used as tools of initial searches for locating and sizing ‘programmes’ in places as well as, often at the

same time, tools for evolving and generating forms themselves. Whatever application, they always reflect certain messages of spatial relationships.

As the usage-spatial relationship in urban open public spaces is a main concern of the thesis, the focus is further on the 'production of space' and space itself. It concentrates on the intentions of visualisation of the aspects of human activities and their relationship with landscapes within the landscape. In this respect, when (re)searching for and producing design, what is essential is, the understanding of a multi-layered content of landscape form (Treib, 2001) and an eidetic image (Corner, 1999). In relation to this, Gazvoda's observation about the process of surveying and designing landscape is relevant. "The landscape is taken apart, landscape elements are classified into thematic layers, and a transparent drawing is introduced" (Gazvoda, 2002: 119). When undertaking such a survey, landscape architects usually rely on maps. The imaging activity they are involved in when (re)searching forms to identify particular landscape elements, structures, patterns and processes is mapping. The activity of map-making has a long tradition considering spatial issues and is actually drawing.

Cognitive maps (Lynch, 1976, 1981), for example, are very well known and widely used. They are drawings which reflect understanding about how we come to know our environment resulting from the way we remember it. This technique uncovers the cognitive image of the environment which individuals develop and use in their behaviour in an environment such as the city. Madanipour argues that cognitive mapping is limited in scope: "It stresses urbanites' perception of their environment, whereas people's conception of urban environment is formed of a functionalist element, on the basis of what they do there, and a symbolic element" (Madanipour, 1996: 68). Related to cognitive maps are action plans. They reflect what eventually may be a person's actual behaviour in moving through the place, and are seen as "links between stored environmental information and way-finding behaviour" (Bell *et al.*, 2001: 89).

In researching humans and landscapes, Soini (2001) refers to mind maps. In fact, they are logical diagrams that connect facts about places and people, but do not deal with spatial representation. Another, quite abstract approach, but related to the real physicality of places, is urban semiotics. This concerns the meaning of the environment and concentrates on the role of objects, events and appearances, which send messages to us to convey meaning. Similarly, seeing landscape as representation, Corner wonders

about landscape as a “productive and participatory phenomena of the every day, a working landscape”, and characterises it as a landscape, where “performance and event assumes conceptual precedence over appearance and sign” (Corner, 1999: 159). From this point of view, Madanipour (1996) discusses socio-semiotics, as an analysis of urban signage focused on the substance and the form of the expression, as well as on cultural research which documents the form and substance of the content.

Hence, both socio-semiotics analysis and cognitive mapping analysis show how symbolic processes affect people’s behaviour in urban spaces. Soini (2001) goes back into the relation between humans and landscape and argues that, although culturally oriented landscape research adds essential value to landscape research, it would, however, be important to preserve the connection to the material landscape. She argues further, referring to Lilley (Lilley 2000 in Soini, 2001: 235), that “maps provide a way of making sense of landscape”. In this respect, behavioural maps are a known tool, which integrates ‘humans’ and ‘landscape’, they record people’s behaviours in spatial settings. They offer great potential to represent behavioural patterns as visual data. This technique was mainly used in the field of environmental psychology, where the act of drawing maps was usually replaced by filling up complex tables and matrixes (Bell *et al.*, 2001; Bechtel *et al.*, 1987). The technique itself was also more often used for mapping indoor than outdoor settings.

The meaning of maps arises from map-making and the interpretation process (Corner, 1992). Behaviour mapping and real/literal map-making seem to be techniques whose values and potentials for discovering landscapes have been underestimated so far. Accordingly, drawing a parallel to these comments on analytical extraction of landscape into thematic layers, bearing in mind the rich potential of an image as an eidetic one, and the issues discussed in the previous sub-chapters, a classification of landscape by users seems relevant. Equally, from this point of view, the pairing of ‘people’ and ‘place’ (*publicspace*) in the field of urban landscape design, allows a recognition of use(r)s as elements of (urban) landscapes. Thus, ‘elements of landscape’ can be characterised, for example, by the clusters that people create when occupying places, noting their distribution, dimensions and intensity. Equally, they build particular structures within places and give specific characteristics to them.

Moreover, through the acceptance of social science as an equal part of urban landscape design, patterns of uses can be seen as one of the thematic layers. They can become small-scale analytical levels that contribute to the design. At this point, reference to Carr *et al.* is relevant again: “The manager needs to read and understand how people are actually using a space and why. For the designer and the manager, knowledge of other spaces, past and present, provides information about the possibilities for shaping and managing new spaces. The information is even more useful when the relationship between the design of the space and the public life of the time in which it was created is understood. More important than examples from the past, however, is direct observation of people using the space in question, or using similar spaces, if it does not yet exist. Human dimensions of public space can also provide a structure for observation” (Carr *et al.*, 1992: 248). It highlights and indicates a research point of view about the dualism of ‘people’ and ‘place’.

The emphasised importance of direct observation and a designer’s familiarity with a map, the medium which conveys the basic and exhaustive information about an environment and which enables a designer to record changes, suggestions, decisions or any other movement in/about a place, reflects on its potential in tool development. Accordingly, mapping physical dimensions of uses could become a way to negotiate (urban) landscape (design) forms. It also captures and translates primarily ‘non-spatial data’ into visual data and preserves its connection to the material landscape.

A successful application of the interactive research-design relationship into an integrative framework is in the quality of the conversion of research data into design. Mitchell argues that, “Design today is no more responsive to users than it was when environment-behaviour studies were founded. Perhaps the most damning criticism of environment-behaviour researches is simply to note that, despite all of their rhetoric and voluminous publications, the design process has been completely unaffected by their efforts” (Mitchell, 1993: 37). It is important to recognise what relevant information is needed to collect and prepare data for conversion, and to understand how to move from different original sources, for example, numeric and semantic data, to visual data and finally, design images. Therefore, the format of information is crucial. It is equally important to introduce and use (research) tools with which designers are comfortable.

If the goal of urban design is to provide potential places (Carmona *et al.*, 2003) then there is a real challenge to know potential behavioural patterns in urban settings (inner structure of effective environments). All these aspects call for an understanding of the usage-spatial relationship and its application.

Addressing both aspects, a format of information and tool-familiarity, and bearing in mind that the basic mode of urban design expression is graphic, exploring the spatiality of usage through mapping and map-making leads directly towards elucidation of the spatial relationship between use(r)s and sites. Mapping transmits numeric or semantic data into visual data. A map is a product of that process and is a source of visual data. Seeing both, the behavioural phenomena of users and the environmental context, at one time is of fundamental significance in studying their relationship. Mapping and map-making is actually a qualitative bridge between research and design. It talks the language of research in a design manner and uses (or simply is) a basic designer's tool.

2.3 Key conclusions

A recognition of urban open public space as a green and/or non-green publicly accessible place in town or city which is, by a two-ways process between both its ultimate constituents, people and place itself, defines a general understanding of the material subject of the interest in this thesis. Within this framework, the processes beyond such a subject, the design-research relationships, were examined. The thesis, then concurs with Bell that, "Designers have been more concerned with creating attractive settings for people to live, work and play. Their work has been practical, pragmatic and not always as deeply rooted as it might be in the theoretical and the empirical work of academic researchers in philosophy or psychology, although this is now changing" (Bell, 2004: 3). In this respect, the researcher would comment that this change is affecting the design processes rather slowly.

In the UK, for example, a consultancy with experts, as a dimension of integration of a research into design, is becoming popular. It is represented, for example, with the project of "Public Space and Public Life Study" (Gehl architects, 2004), or with various Space Syntax studies (Space Syntax Urban Projects, 2004). However, in general, the link between social science research and design is mostly based on subjects and matters of visual perception. In these different approaches, the physical relationships between

spatial forms and their usage are addressed rather indirectly, either through cognition, people's needs and their voluntary/compulsory participation, or through physical form itself and places' integration within it. A more direct concern about spatiality of uses in the environments where they occur, was brought up by Gans' (1968) idea about the effective environment. He saw its importance especially in its provision of a substitute for the concerns about a "causal influence between physical environment and human behaviour in it", with a question of "when, how, how much, and with what effects this causal influence does occur" (Gans, 1968: 11).

This question of Gans implies a search of empirical knowledge about the subjects. Its importance lies in the thoughts which Gans has expressed further: "Until data to answer my question³ are available, the planner is likely to continue to believe or hope that the effective environment will be exactly like the potential environment" (Gans, 1968: 11). Developing and following the series of abstract concepts of people's everyday patterns of perception, use, activity and experience in an environment, Thiel's conclusion calls for the relevance and importance of an empirical knowledge, too: "By means of this reification of these abstract concepts we now can begin to develop empirical theories of environmental planning, design and management" (Thiel, 1997: 372).

To enhance and encourage the involvement of research in design, this thesis suggests the examination and expression of virtual usage-spatial relationships in places by mapping and map-making. Because mapping and map-making are related to physical aspects of places and imaging, two subjects with which designers are usually quite familiar, this thesis speculates that a body of knowledge represented in such way may help designers and decision-makers effectively when, for example, addressing design, evaluation and the re-design of parks or squares. From this point of view, such knowledge about the usage-spatial relationships in places, when/if accepted and used by urban landscape designers, is seen as one of their conceptions about designed places. On this basis, the author herself borrows Canter's model to represent the 'nature of designed places' (for the original model, see Figure 1.a).

³ It refers to the question which is stated in the previous paragraph.

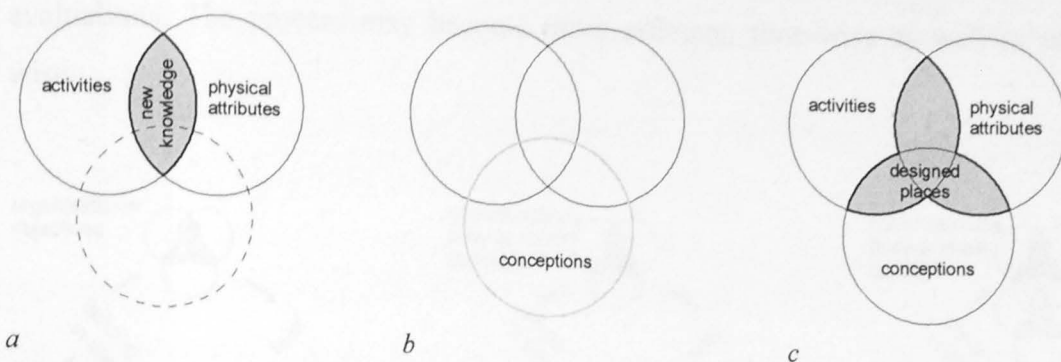


Figure 2: Visual metaphors for a: Empirical evidence and knowledge about uses and places from real environments, b: Designers' conceptions including knowledge about the usage-spatial relationships from real environments, c: Nature of a designed place⁴.

This proposed model seems of value, especially when, according to the operational value of the original model, Canter himself suggests: "... we may start looking for physical attributes by examining the conceptions which people [read here designers; the researcher's comment] have and the groupings which emerge from those conceptions, followed by a search for the physical attributes to those groupings" (Canter, 1977: 159-160). Imagining a designer's world, the information which is gathered about usage-spatial relationships in real places, reflecting 'behaviour' and 'sketching' at the same time in a behavioural map, can provide some of the information of/for one of the constituents of a place, the 'conceptions' (Figures 2.a and 2.b). On this basis, reflecting on the design brief and other relevant designer's knowledge, 'physical attributes' of a place can be suggested and appropriate 'activities' hoped/ expected. Finally, when the proposal is executed, it becomes a designed place in a real world, created thoroughly and with responsibility (Figure 2.c).

Studying physical and spatial dimensions of uses in places and relationships between them can bring designers' and users' conceptions about places closer together. When such information is available to a client or commissioning body, or any body involved in either design or decision-making processes, when addressing open public space design, for example, agreements on the evaluations are more likely to be arrived at quickly and effectively, as all the involved actors may, sooner or later, start to speak the 'same language'. Referring to Canter's schemata about that (Figure 3.a), the 'distances' between all three actors involved, may gradually, with an increasing common understanding, become smaller and smaller, as well as the number of repetitions of

⁴ The original Canter's heading for the original model is: "A visual metaphor for the nature of places", (Canter, 1977: 158).

evaluations. The process may become more efficient, time-wise as well as contents-wise.

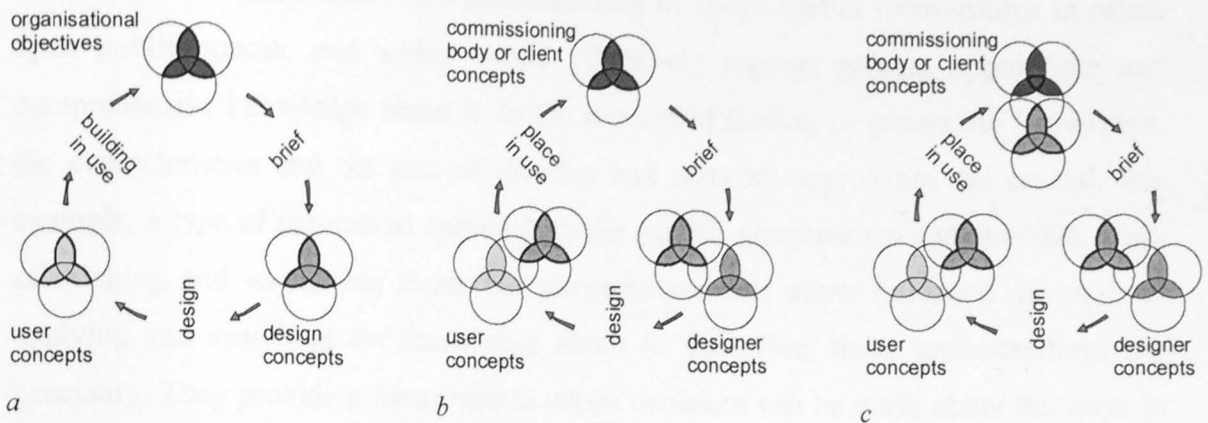


Figure 3: Visual metaphors for a: Conceptual system of evaluation (Canter, 1977: 165), b: Conceptual system of evaluation, reflecting better understanding and agreement between designers and users when designers' conceptions may be based also on knowing usage-spatial relationships, c: Conceptual system of evaluation and its efficiency when all the involved have a similar understanding about the usage-spatial relationship in places.

To comment on a difficult task which design *per se* has, as a responsible activity which, according to Carmona *et al.* (developed upon Vitruvius), “must satisfy certain criteria: firmness, commodity and delight” (Carmona *et al.*, 2003: 54), Treib (2001) elucidates the following. “Planners and designers who stress ecological factors as the sole basis of landscape architecture often disregarded the idea of landscape architecture as a form, space, and cultural practice. Those who favour social use have often rejected landscape design as an art. And those who have designed from aesthetic concerns alone, have often produced landscapes of stillborn human involvement or neglectful of basic site conditions” (Treib, 2001: 133).

This encourages a critical and balanced response to open public space design and by this, points to an equal consideration of all three aspects of design, artistic creativity, natural and social science. According to Milburn and Brown (2003) and Gazvoda (2002), the natural science-artistic perspective of landscape architecture design, somehow, suggests optimal potential design concepts, which are then refined by design in a narrow sense afterwards. Accordingly, an implementation of social science is seen as a crucial layer, which could be put in between, and operates as a generator of a design concept and as an evaluation tool of a design proposal at the same time.

Chapter 3 Research strategy and methodology

This chapter focuses on the research approaches, methods and techniques in order to best enable the examination and understanding of usage-spatial relationships in urban open public spaces, and which would effectively support gaining appropriate and comprehensive knowledge about it. In the process of finding or generating knowledge, the characteristics and the role of theories and research approaches are crucial. For example, a type of theoretical approach to the studied phenomenon can elucidate ways of thinking and wondering about this phenomenon, and allow reflection on ways of applying and searching for knowledge about it. Therefore, these understandings are necessary. They provide a frame within which decisions can be made about the ways in which the examined phenomenon should be looked at, about the options concerning a selection of the appropriate methodology, and about actual techniques which may be appropriate to implement the chosen methodology.

Fundamentally, the inductive and deductive way is recognised. The latter applies general principles or knowledge to specific cases, while the former moves from specific to more general. Discussing this polarity in the field of landscape architecture, Swaffield debates that, “theory may be derived either inductively or deductively, or more typically through some combination” (Swaffield, 2002: 1). He specifies, “Inductive theory is built up by the generalising from observation. In contrast it is possible to work from first principles, deducing formal hypothesis or propositions which are then tested experimentally” (Swaffield, 2002: 2).

With reference to behavioural science and environmental design, Lang (1987) discusses polar pairing of normative and positive theories. Generally, he recognises three different modes theory can refer to: a prescription, a model, and prediction. Prescription refers to a normative theory by which design principles, standards and manifestoes come into play. The explanatory and predictive power of both theory as a model and theory for prediction reflect positive theory nature. According to Southwell (2004), Lang firstly believes that understanding the distinction between normative and positive theory is important, in order to clarify the contribution of the behavioural sciences to environmental design, and secondly, that positive theory building provides the most promising approach to ensure the behavioural sciences are contributing to design. Similarly to Lang (1987) in references to prescription, model and prediction, Corner

(1990, 1991), addressing landscape architecture, discusses different roles theories can play, and the types and ways of knowledge they generate and reflect.

Corner (1990, 1991) has highlighted the contrast between two fundamentally different roles of theories: instrumental and critical theory. The first is described as the theory which can generalise and codify knowledge, as a basis for practical action. The second is characteristic for a more critical role, and as such resists and challenges taken-for-granted ways of thinking, and puts forward alternatives. Specifying further, Corner (1991) believes, that derivation from empirical observation or evolving from practical experiences are some of the key characteristics of an instrumental theory, while a notion of comprehensive and all-inclusive understanding and acting towards a search for new forms of basic knowledge and new ways of working is a crucial point of departure in critical theory. In disciplines such as urban landscape design, where a mediation between at least three components, society, nature and art is a necessity, Corner (1991) sees another potential role for theory in interpretative theory. This theory characteristically lies between the other two already discussed. Referring to Corner's discussions, Swaffield (2002) recalls the interpretative theory as a "form of knowledge that does not attempt to predict and control the world in the same way as instrumental theory, yet neither is it as disruptive as critical theory", and emphasises: "Instead, it helps us better understand a situation, without necessarily changing it" (Swaffield, 2002: 1).

Beside this evident recognition of a range of legitimate roles for theory in landscape architecture, Swaffield emphasises: "What is important is that a particular theory should be recognised it for what it is and the knowledge it offers interpreted accordingly. Similarly, there is a need for theory in different scales of application. We need theoretical understanding that is particular to site, region, and culture, in order that our actions respond sensitively to the richness and variety in the world" (Swaffield, 2002: 3). Moreover, the effective value of any theory at any scale is reflected through its implementation and delivered forward through application of the knowledge which is gained when theory is applied. From this point of view, Southwell (2004) stresses Lynch's contribution, particularly in building and applying positive theories in urban landscape design.

While Swaffield (2002) points out the importance of scale, Lynch (1981) emphasises the importance of the contents and its constituents. Developing a ‘full theory’, Lynch proceeds from the often claimed notion of understanding place as a consideration of social, biological and physical whole, but critically referring to it, he says, “an important preliminary to seeing things whole is to define and understand their parts” (Lynch 1981: 49). It being so, building a ‘full theory’ is recognised to be a long-range effort and accordingly the theory itself is addressed as that which “deals with form and process, and which is an understanding, an evaluation, a prediction, and a prescription all in one” (Lynch, 1981: 49).

In the framework and interest of this thesis, a close discovery of ‘social’ and ‘spatial’ parts of the whole, may represent a crucial constructive development based on a concept of building a ‘full theory’ in the detailed scale of urban design. This reflects on the appropriateness of the type of knowledge and research-design approach, and indicates the ways in which the knowledge could be searched for and the ‘theory’ development built up. In this respect, to get as much insight as possible in to specific phenomena and obtain initial descriptions and explanations in the first place, generally, there is a need for a research framework predominantly consisting of an inductive approach, positive in nature. To assure a high level of reliability in a process and credibility in data collection, repetition and constant interpretation are necessary.

3.1 Strategy

A strategy in general, informs about how to guide the interplay between collecting and analysing empirical evidence and principal concepts of entailed choices and decisions concerning the usefulness of various alternative procedures in the research process. The strategy underlying this research is based on the notion about how a behavioural phenomenon and its spatial context can be mutually addressed. It suggests an examination of a usage-spatial relationship in urban open public spaces from learning about it via the ‘people’ component to re-addressing the whole entity of public space through its ‘place’ component. Following the main aim of the thesis, the examination of real and concrete usage-spatial relationships (in scale 1:1) and learning from them to contribute to urban landscape design theory and practice, attention needs to be paid to daily life in urban open public spaces. The research strategy suggests three main steps

when addressing such an aim. Each suggested step addresses public space as a *publicspace* but exposes its examinations to its different aspects.

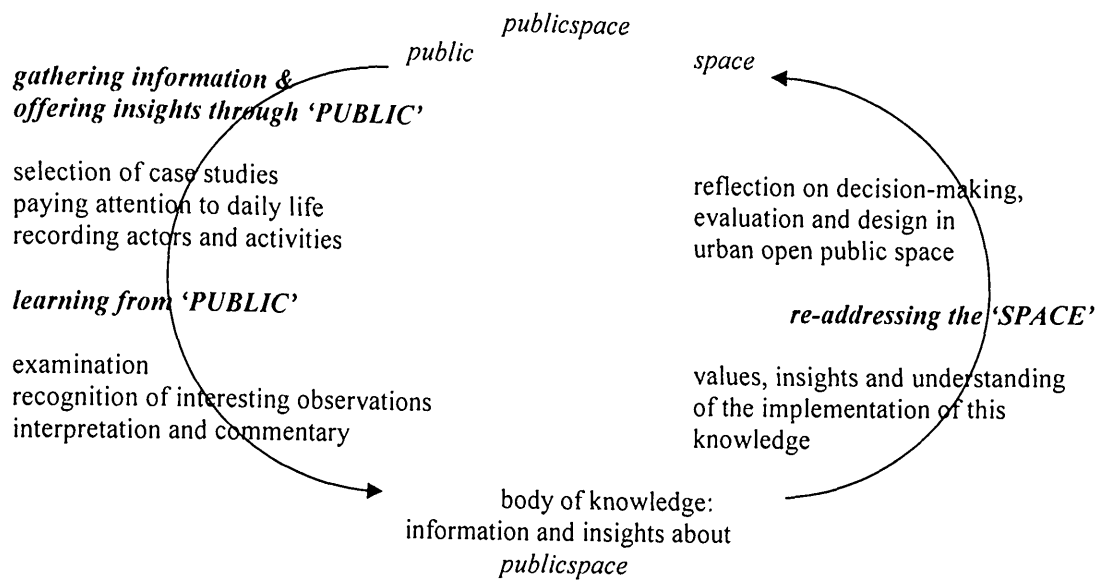


Figure 4: The research strategy.

The goal of the set of starting-point actions is gathering information and offering insights about public space through the ‘people’ component. This set of actions firstly, consists of the selection and argumentation of case studies. Secondly, it is concerned with recording of actors and their activities, paying attention to daily life in chosen public open spaces. A second set of undertaken actions reflects on the act of learning about places through the ‘people’ component. It represents stages such as the examination of collected data; a recognition of interesting observations with regard to dynamic, diversity and distribution of activities in places and physical characteristics of these places; and finally, an interpretation and commentary on their relationships.

Both building the arguments and searching for likely significances about usage-spatial relationships, either based on original or derived data, stratify collected evidence and their advanced processing in a body of empirical knowledge. The challenge of the last set of actions is to concentrate on the validity, insights and understanding of the implementation of that empirical knowledge and its reflection on decision making, evaluation and designing of public open spaces. In this respect, there is a challenge to address the design of places on the basis of the collected evidence from daily records and the knowledge gained from that.

This entire research process stated as the strategy of the thesis suggests a complex methodological approach which can provide possibilities for the examination of the behavioural phenomena in an environmental context as well as refer to the environmental phenomena through its behavioural context. In other words, in the first part of the process, when public spaces are addressed via the ‘people’ component, behavioural patterns such as sitting, walking or playing, for example, are the results of the process. When there is a discussion about re-addressing public space through its ‘spatial’ component, the concerns are about actual design, either a process or final physical form of a place. In this case, behavioural patterns are sources of information to inform a better design. A designed place is the result.

In this respect, the methodology and set of methods for the examination of usage-spatial relationships in urban open public spaces must allow for a generation, not necessarily a generalisation, of knowledge from the individual settings, and for a provision of an opportunity to check on its value and significance with linkages to places’ design in various ways.

3.2 Methodology

Strauss and Corbin define methodology as a “way of thinking about and studying social reality” (Strauss and Corbin, 1998: 3). They argue that, in fact, “in many ways, research may be conceived of as a circular process, one that involves a lot of going back and forth and around before finally reaching one’s goal. This being so, it follows that researchers can, and do, put together combinations of procedures” (Strauss and Corbin, 1998: 30). Also, many other theorists and researchers stress that combining methods is not new, it is in fact a very common and reliable way of addressing problems and may be done for supplementary, complementary, informational, developmental, and other reasons. The selected research approaches and concepts which meet the required characteristics of the steps and aspects of the research process and which are relevant for their application when addressing urban landscape are: Grounded theory, Case study and RSVP Cycles.

Grounded theory (Strauss and Corbin, 1998), as an approach which purports an inductive character following a simple idea of collecting data, getting its messages and building the reasoning about them and the context they refer to or emerge from, is

recognised as an overall conceptual environment for the implementation of the suggested process. The case study approach (Yin, 2003) is recognised as appropriate on the operational level. It is characteristic for an examination of real environments and allows critical exploration and description of studied behavioural phenomena and their spatial context. Its implementation results in original data. In this particular examination, intended to be conducted under the umbrella of grounded theory, where new knowledge is emerging, (new) norms/criteria can evolve during the process, as well. From this point of view, concerning their validity, a multiple case study approach is suggested.

While grounded theory is considered as a common conceptual framework of the research strategy, the case study approach addresses the mode of its implementation. The processes, which grounded theory and case study run together, reflect cycles of exploration, data collection, exploration of collected data, selection and/or more data collection, further exploration and evaluation... and so on, towards a final conclusion. These operational sequences and a need for interpretative links between them display and indicate similarities with the essence of Halprin's RSVP cycles theoretical approach in environmental design. It is recognised as a detailed way of conducting the research and represents an operative link between both general approaches. Halprin's (1969) theoretical reasoning about procedures inherent in the creative process is seen also as a potential for detailed linkage between research and design, as it reflects the way physical form and behavioural patterns of spatial occupancy could/should be understood.

3.2.1 Grounded theory

Strauss and Corbin define grounded theory as a "theory that derives from data, systematically gathered and analysed through a research process" (Strauss and Corbin, 1998: 12). Although some researchers and theorists call it 'do-it-yourself methodology', the way of 'doing-it-yourself' is well established and defined, and as such reflects its essence. Its importance lies in the fact that a grounded theory approach requires the emergence of the theory or new knowledge from the data, but does not see these as separate. Data collection, analysis, critical selections towards building knowledge or formulating a theory are regarded as reciprocally related. Chamberlain (1995) argues the distinctive features designed to maintain the 'groundedness' of the approach are as

follows. “Data collection and analysis are deliberately fused, and initial data analysis is used to shape continuing data collection. This is intended to provide the researcher with opportunities for increasing the ‘density’ and ‘saturation’ of recurring categories, as well as for following up unexpected findings. Interweaving data collection and analysis in this way is held to increase insights and clarify parameters of the emerging theory.”

According to Strauss and Corbin, theory is a set of well developed concepts related through statements of relationship, which together constitute an integrated framework that can be used to explain or predict phenomena (Strauss and Corbin, 1998: 15). This thesis uses the main principles of the grounded theory approach generally for the conceptual framework which underlines the research and reflects its process. In this context, when addressing emerging and emerged results, the term ‘grounded theory’, is substituted by a less rigorous one: a body of empirical knowledge. There are several procedures of the grounded theory building approach which the researcher undertakes when gaining an inductively derived ‘grounded knowledge’ about a phenomenon. Firstly, the focusing/narrowing down process derives from discovering and identifying data which are relevant to the research question. Following this initial stage, the aimed sampling at locating data follows. It confirms, elaborates or validates relations between categories, or it limits their applicability. Finally the stage of a discriminate sampling is reached. This confirms and verifies core relationships and provides a basis for a new body of knowledge.

Southwell examines applicable qualities of grounded theory approach in the implementation of environment-behaviour studies in landscape design, stressing that it “offers a way of thinking about data that is both reflective and interpretive” (Southwell, 2004: 303), and finally argues that, “grounded theory was highlighted for providing a style of research which is design-like” (Southwell, 2004: 314). In the case of this research, such an approach is of key importance, especially, as the discussion in Chapter 2 points out the need to address physical characteristics of places and behavioural patterns in them as mutually inclusive and, as it reflects also on the intentions for their efficient and informative visualisation through the actual conduct of the research in a design manner.

3.2.2 Case study

Yin discusses the fields where the case study can be applied, saying, "... case studies continue to be used extensively in social science research including the traditional disciplines (psychology, sociology, political science, anthropology, history and economics) as well as practice oriented fields such as urban planning, public administration, social work and education" (Yin, 2003: xiii). Addressing this wide use of implementation of a case study approach, he argues further: "The distinctive need for case studies arises out of the desire to understand complex social phenomena" (Yin, 2003: 2).

Referring to the topics of the case studies Yin (2003) identifies several of them. Generally he refers to Schramm, who identifies 'decision' as a topic concerning case studies, and states that the "essence of a case study is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented and with what result" (Schramm, 1971 in Yin, 2003: 12). Moving to specific topics on which case studies are focussing too, Yin (2003) itemises also 'individuals', 'processes', 'neighbourhoods', and even 'events', to name a few related to the topic of the thesis.

On the basis of knowing topics which interest a researcher, and the spatial and temporal contexts in which they are intended to be studied, Yin states a general definition of a case study as an inquiry that "investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2003: 13). It can take three different forms: explanatory, exploratory and descriptive. According to Yin (2003), the relevant situation for conducting a case study is when there is no required control over behavioural events, focus is on a contemporary event and when a research question expresses a how or why question form. The sequences of narrowing down the initial research curiosity about 'what is really going on in urban open public spaces in town centres, where and how?', developed into a research challenge about usage-spatial relationships in them, which has finally raised the question as to *how* conducive are they to spatial occupancy, suggested the case study approach as appropriate.

Francis (2001) studies the role and utility of the case study in landscape architecture. He recognises its role in development of knowledge, emphasising that cases studies "serve

as the collective record of the advancement and development of new knowledge in landscape architecture” (Francis, 2001: 15). Accordingly, he stresses their role as crucial in the: “effective form of analysis, criticism, and dissemination for landscape architecture research and practice” (Francis, 2001: 15). The relevance and reliability towards new knowledge, criticism or analytical review reflect the importance of case study organisation and definition. In this respect, Francis (2001) stresses two key considerations: a landscape typology and issue typology. In this thesis, a clearly addressed landscape typology, public spaces in city centres, and the issues that face responsive design addressing use and users and design decision-making, support the appropriateness and validity of case study as a methodological approach.

3.2.3 The RSVP Cycles

The RSVP Cycles (Halprin, 1969) are a theoretical reasoning which deals with usage-spatial relationship based on four interrelated components of a cycle: Resources, Scores, Valuation, and Performance. Although Halprin’s approach is quite abstract, or perhaps just for that reason, its application in researching urban landscapes is a challenge. Addressing environmental design, he usually discusses it with reference to big-scale landscape projects. However, with regard to its influential origins from the field of a dance-theatre, the nature of its operation, and final definition, it is equally applicable on smaller scales, too. A score, the symbolisation of processes which extend over time, included in all the fields of human endeavour, and a key procedure-element of the RSVP cycles approach, refers to a “notice of the facts about an actual situation”. Beside this informative role, score is also seen as a way for “making process visible” and, when discussing design, as a medium which actually “enables designing with process and allows participation, feedback and communications along the process”.

Halprin has been working with a wide range of scores, from those related to different arts, for example, musical scores and scores for happenings, to scores of environment represented by street scores, city scores and the like. However, he finds the inventorial characteristics of scores powerful but not able to judge relationships or direct decisions. When he discovers the nature of scores and scoring further, he realises a clear differentiation between the score and the performance. Enabling judgement and/or any reasoning about performances described by scores, a consideration of the context is necessary. Principles for analysing and understanding need to be set. In this respect, the

interrelations between resources, scores, valuation, and performance express the complex view on a design. According to Halprin (Halprin in Swaffield, 2002: 45) they are understood and defined as follows.

- R Resources which are what you have to work with. These include human and physical resources and their motivation and aims.
- S Scores which describe the process leading to the performance.
- V Valuation which analyses the results of action and possible selectivity and decisions. The term “valuation” is one coined to suggest the action-oriented as well as the decision-oriented aspects of V in the cycle.
- P Performance which is the resultant of scores and is the style of the process.

Halprin argues for the multidimensional and moving interconnectedness between all the elements of the cycle, and stresses that “the cycle operates in any direction and by overlapping, that it can start at any point and move in any direction, and that the sequence is completely variable depending on the situation, the scorer, and the intent” (Halprin in Swaffield, 2002: 45).

The RSVP (a shortcut for Resources, Scores, Valuation and Performance) thus describes all the procedures inherent in the creative process, not only in terms of a narrow sense of design itself as a process, with which a designer is involved; but also in terms of the everyday practices, environmental designs are made for. This essence is stressed and defined as, “In a process-oriented society these procedures must all be visible continuously, in order to work so as to avoid secrecy and the manipulation of people” (Halprin in Swaffield, 2002: 45).

Halprin sees scores as the key link in the entire RSVP cycles. Accordingly, from the interest of this thesis, scoring has the potential to identify the physical and temporal dimensions of behavioural patterns in urban open public spaces. It seems even more appropriate when it is recognised that the RSVP cycles approach assumes that landscape as a medium where human beings and nature interface is process-oriented, rather than simply result-oriented (Halprin, 1969). Equally, a consideration that those two initial sources which Halprin combines in this approach, dance and environment, “derive their strengths and fundamentals from a deep involvement in activity” (Halprin in Swaffield,

2002: 43) reflects on the appropriateness of this approach to be used and interpreted in this research.

Halprin hopes for a wide applicability of the RSVP approach, saying, “I have been searching for years (and still am) for means to describe and evoke processes on other than a simply random basis. I thought that it would have meaning not only for my field of the environmental arts and dance-theatre, but also for all the other arts where the elements of time and activity over time (particularly of numbers of people) would have meaning and usefulness” (Halprin in Swaffield, 2002: 43). Referring to scores and scoring, which may lead into new ways of design and planning, Halprin finally stresses, “I hope to see scores used as catalytic agents for creativity leading to a constructive use of change” (Halprin in Swaffield, 2002: 44).

Understanding *Resources* as public spaces in their whole meaning, equally concerning a place’s form and its main articulation and dynamic pattern of uses (*publicspace*), for example, and seeing *Performance* as a literal reflection of the activities/events themselves in places reflect a possible application of Halprin’s approach in the context of urban landscape design. Referring to the resources as any milieu where the environment and people interact allows a recognition that R as well as P have already drawn some researchers and designers’ attention to themselves, while potentials of S and V have been underestimated, overlooked or unexploited. Cognitive maps as special examples of symbolised processes could represent scores in the field of urban landscape design. However, following Halprin’s original definition, *Scores* can be paralleled with more complex contents, describing any other different aspects of actual engagements people have in places. Equally, some of Halprin’s original scores, scores of happenings and scores of environment for example, hint at some closeness of the RSVP cycles approach with the topic of this thesis.

Referring to closeness of score and performance and building the application of the RSVP approach in this thesis on the fact that it can operate in any direction and by overlapping, the RPSV variation represents a valuable sequence. In such case, the process does not reflect a situation when scoring is prepared in advance and a performance is following ‘reading’ it. The initial curiosity about ‘what is really going on in urban open public spaces in town centres, where and how?’, as the vehicle of the

thesis, calls for 'knowing' performance at the first place and lets scoring follow. Once scores are produced, performance in another mode can be applied again.

In this respect, following the original definition for *Performance*, a *resultant* of scores is seen as imaging the spatiality of usage using the original records of scores, while the *style* of the process is reflected in a form of a new knowledge or understanding about a place. *Valuation*, a component addressing the analysis of the results of action and possible selectivity and decisions, reflects creating, managing and maintenance of databases resulted from scorings, and calls for recognition and selection of interesting observations considering usage-spatial relationship, which may have an applicable value for further research or direct implementation in planning or design decision-making process. In this case, cycles run then as RPSVPV and by various and different repetitions operate towards compatibility of the two activities in urban landscape design: research and design. However, the RSVP cycles approach, grounded by a designer, reflects a possible effective nature of a research-design framework in urban landscape design.

3.3 Methods and techniques

Teklenburg *et al.* (1996) discuss methodological aspects in spatial analysis in environment-behaviour studies, and summarise that "we cannot speak of a convergent body of techniques", and that it "seems that every topic in environment-behaviour interaction evokes a number of suitable techniques, and no overall technique will become available." Also recognising a problem which arises from such a multitude of available techniques, they state that "for each new research project and each new architectural and planning project the question must be answered, which technique is applicable in this situation", and that this "lays a lot of pressure on the wisdom of individual researchers and practitioners." Comments on such findings further reflect two contrasts, not necessarily in contradiction. Teklenburg *et al.* (1996) recognise a lack of capability in describing an environment-behaviour interaction at a very fundamental level on the one hand; and the nature of the environment-behaviour interaction being too complex, and too situation-dependent for overall descriptions to satisfy the need for understanding, on the other.

The fact is, that environment-behaviour research and projects also address a wide range of spatial contexts and studied behaviours in them, from regions to classrooms, and accordingly aspects such as scale and in/outdoor environment produce divergent rather than convergent possible techniques, too. However, this thesis has pointed out certain underlying principles which may allow for a common overall frame for some frequently applied techniques. Halprin (1969) and Thiel (1997) both have suggested scoring as a key vehicle of such a frame. Although they approached it from different angles and ways, Halprin from an inductive approach, studying different scores of happenings and environments at the first place, for example; while Thiel started from general reasoning and developed the 'environmental score' in a deductive way.

Thiel argues that, "we must describe a physical environment that is both possible and effective: "possible" in the sense that it can be built, arranged, operated and maintained; and "effective" in the sense that when used by the given user-participant groups under the given circumstances, it will provide them with a temporal pattern of signals that is perceivable by them under the given conditions of use and that will probabilistically facilitate the preferred pattern of response" (Thiel, 1997: 200). According to Thiel, a result, when this temporal pattern of signs, symbols and percepts is written in a discursive, abstract notation is an environmental score, which in its final applicable description is understood as the score which "represents the functional essence of the means for the achievement of the intended experiences" (Thiel, 1997: 200).

These reasoning and the ideas about scores and scoring, either related to descriptions of processes which lead to the performance (Halprin), or to a representation of the experiences (Thiel) imply on the importance of imaging and visualisation of processes, when addressing usage-spatial relationships in places. When Treib (1980) addresses the communication of spatial relationships, existing or virtual, he sees the map as a "prime vehicle for it". He speculates, whether maps are designed for metrical or cognitive purposes, in both instances "they are projections of experiences" (Treib, 1980: 22). In this respect, and with regard to the theoretical discussion about design-research integration, which sees its potential manifestation in mapping and map-making, especially, because they are means with which designers are comfortable and familiar, in this research, behavioural mapping is grounded as a principle method.

Behavioural mapping as a representation of scoring is not only crucial in the first stage of the research, as it provides the empirical evidence about places' use, but it is equally important as the way of designing places when addressing and producing design. It represents a key underlying principle when addressing places' design from a designer's viewpoint, too.

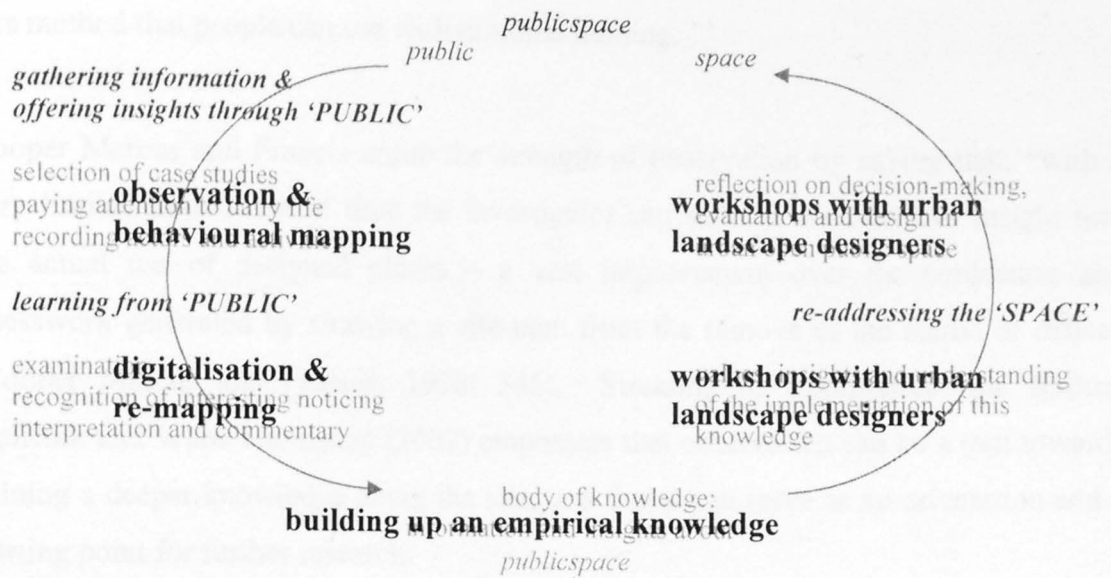


Figure 5: The application of the methods based on the research strategy.

A final selection of the series of methods and techniques, which follow the proposed strategy and enable the examination of public spaces, starts with observation and behavioural mapping. It continues with the digitalisation of the original data; and on its basis builds up an empirical knowledge which provides different original information about uses. On the base of repeated observations, it can show further the results arising from statistical analysis and calculations, as well as generated results arising from maps as graphical sources of locations and dimensions of the uses. Comprehensive workshops with urban landscape designers close the series of examinations of public open spaces. They address validity and understanding of implementation of empirical knowledge, focusing on exploring designers' beliefs and experiences in relation to the nature of public space use.

3.3.1 Observation and behavioural mapping

Observation as a research method is well known in the field of environmental psychology. It deals with how to understand what people do in particular spatial settings

and what they consider right or correct regarding environmental design or spatial reality. Bechtel *et al.* stress that the “ultimate goal of observational methods in environment-behaviour research is primarily to gain insight into research questions and problems” (Bechtel *et al.*, 1987: 12). They describe observation as a method having five dimensions: behaviour, environment, time, observer and record of observation; and stress that it has developed into a highly technological field, and that yet it remains the one method that people can use with minimal training.

Cooper Marcus and Francis argue the strength of observation by saying that, “with a very limited investment of time the investigator can achieve considerable insight into the actual use of designed places – a vast improvement over the conjecture and guesswork generated by studying a site plan from the remove of the studio or office” (Cooper Marcus and Francis, 1998: 346). Stressing its informative role further, Goličnik and Ward Thompson (2002) emphasise that observation can be a tool towards gaining a deeper knowledge about the site; and that it can serve as an orientation and a starting point for further research.

There are different techniques available in recording observations, depending on the scale and the nature of the research problem. Chronologically, some of the frequent ways known are these such as systematically written notes and filled formatted tables. The development of photo-video techniques has influenced the latter methods, and nowadays computer-oriented and supported techniques are forthcoming. Environment-behaviour studies take as their basis the inseparable and reciprocal duality of the behavioural phenomenon and its environmental context, especially in the outdoor environment often recorded through photography and/or videotape. Both these media clearly show the evidence and temporal consequences of events within a place but they cannot give either very detailed micro-scale relationships or the overall synoptic situation of the place itself. However, for the purpose of this research, the latter objectification is especially necessary. Thus, the medium of urban designers and planners, the map, is adhered to. This medium can convey basic and exhaustive information about an environment and enables the researcher to record changes, suggestions, decisions or any other movement in/about a place, too.

Behavioural mapping is the recording technique that often supports an observation. It was developed by Ittelson *et al.* (1970) to record behaviour as it occurs in a design

setting. Accordingly, spatial features and behaviour are then linked in both time and space. There are some fundamental conditions which need to be met before any recording of behaviour can start. It is necessary to obtain an accurate scale map of the area to be observed, to decide clearly on the types of and details about behaviours to be observed, to schedule specific times and their repetitions for observation, and to provide a system of recording, coding, counting and analysing. Although an accurate scale map is a first 'pre-condition' of behavioural mapping, the literature review on the application and development of this method/technique shows that it does not always serve as a 'recording board'. It could have a role of an informative object in the whole process and can result in some general notes, while, for example, behavioural records are collected in a carefully developed table.

Such findings in research practice show possible different manners in which behaviour can be recorded, and suggest two general principles: behavioural tables and behavioural maps in a narrow sense. Such tables usually consist of rows representing physical locations and columns representing behaviour. An index mark at the intersection of a row and column then indicates whether the behaviour occurs at the location. The behaviour map in a narrow sense is a result of literally noting behaviour, as it occurs in its true location, on the map. Some code vocabulary for observed behaviours needs to be developed in advance. Goličnik and Ward Thompson (2002) refer to a literature review and show that behavioural tables were quite often used in recording behaviour in indoor environments, while the maps in a narrow sense became more common in outdoor research, which is still not as widely carried out as indoor-environment research.

In terms of an analytical tool in evaluating urban open public space, the observation and its recording thus represents the very complex process that binds observation and recording techniques into one entirety. It is usually known as one of the post-occupancy evaluation techniques, a systematic evaluation of a designed and occupied setting from the perspective of those who use it. Cooper Marcus and Francis (1998) emphasise its systematic approach and the fact that it is based on function or use rather than on aesthetics alone. Bearing the latter in mind, they agree that it affects use and enjoyment but considering occupancy aspects and purposes of designed places, they argue that "too often aesthetic/design critiques evaluate only form, whereas these (post-occupancy) evaluation techniques look at how people and form interact" (Cooper Marcus and Francis, 1998: 346). In order to indicate, analyse and understand this interaction, they

see activity mapping as the main comprehensive method which could be additionally supported or explained, for example, by behaviour traces, messages from administration and other direct readings of the environments which are indirectly linked with past or present situations within a place.

Commenting on the purpose of behavioural mapping, Bechtel *et al.* summarise that: “it is to locate behaviour on the map itself, to identify kinds and frequencies of behaviour, and to demonstrate their association with a particular site. By associating the behaviour with a certain environment it is then possible to both ask questions and draw conclusions about the behaviour and its relationship to a place” (Bechtel *et al.*, 1987: 23). Generally, it is about a search for the demonstration of a spatial relationship between the ‘production of space’ and space itself. It reflects intentions to show aspects of human activities and their relationship with environments within these environments. However, behavioural maps in a narrow sense record peoples’ behaviours in real spatial settings and, by that, talk the language of research in a design manner. They offer a great potential to represent behavioural patterns as visual data, and as such act towards the reconciliation between design and research in the field of urban design.

Although behaviour mapping and real/literal map-making were introduced in quite a simplistic way, in some researches concerning urban issues (Gehl, 1987; Whyte, 1980), and despite a post-occupancy evaluation (Cooper Marcus and Francis, 1998) which concerns people-environmental interaction and aims at its deeper understanding, a systematic inventory and information to support credible decisions, it seems to be a technique that values and exploits the potential for discovering landscapes which had previously been underestimated. Recording behavioural patterns of uses in a manner of map-making and its interpretation offers a comprehensive way of communicating diverse spatial issues and values related to them. It also captures and translates primarily ‘non-spatial data’ into visual data and preserves its connection to the material place.

The common act of observation and behavioural mapping shows up as an effective way of searching for empirical knowledge about usage-spatial relationship in public urban open space. It is a comprehensive way of collecting the evidence about ‘where, how and what is going on’ in a place. Moreover, mapped physical dimensions of uses are seen as a potential which could inform about places’ design and become a way of negotiating landscape forms.

3.3.2 Database creation

An effective and comprehensive contribution from observations and activity mappings to design practice is addressed when all relevant collected aspects are successfully linked together to provide a concise picture of the whole and the wholes of the parts. Therefore, the way collected data is treated further is of key importance.

Cooper Marcus and Francis (1998) recognise three essential steps of data summary before any analysis can be made. Firstly, they suggest aggregating the data collected via activity mapping onto several new maps to show overall use by different aspects, for example gender, activity or age group. In addition to such maps, they also suggest the creation of a map of all users observed on all the visits to get insights about over- or under-use of a place. Secondly, to provide an insight into the number of people in places, they suggest the aggregation of data sheets into comparative bar-graphs showing, for example, relative numbers of users by age, gender, type of activity and the like. Finally, taking into account some other additional findings, they suggest, for example, the aggregation of data collected on behavioural traces on an additional map, too.

These steps and techniques of organising data are helpful in giving a researcher a quick impression of overall patterns of use and in making complicated observations more comprehensible, both to the researcher and reader. Such procedures usually reflect a focus on certain specific aspects and results in highlighting these variables and dimensions of an investigation which are crucial and of interest in a given situation. Until a researcher is aware of and has a control over the other studied relationships, such manual procedures of selecting aspects of interest from the original maps and notes could be sufficient. It usually serves effectively so long as either the sample or the number of repeated observations is small. As soon as the sample is bigger and the observation period longer, the collected data converge into a rich source of evidence about a place with complexly structured, hierarchical and interrelated data.

There are always more or less obvious relationships presented on the maps. Some are recognisable at first glance, the others stand out when the data is manipulated. As there is obviously more underlying information embedded in collected data than could be presented at once, to prevent data being left aside, blocked out or even completely

overlooked, more transparent techniques in creating summaries and assembly collections need to be introduced. Accordingly, a decomposition of comprehensive evidence into single variables which compose each activity and leave open the possibility of any combination of the selection of aspects in interest, is necessary to be able to use data/knowledge according to any angle of the usage-spatial relationship that the researcher wants to be addressed.

A transparent database is possible in a digital environment, which enables interrelated layered-image presentations to be supported with lists of attached information. As in the case of this research, where positions and dimensions of behavioural patterns in places are of key importance, a GIS application seems valuable. ESRI's⁵ definition of Geographic Information Systems (GIS) is that they are systems of computer software, hardware, data and personnel for visualisation, manipulation, analysis and presentation of information, which concern spatial location. They combine layers of information about a place to give a complex/better understanding of that place. ArcView, for example, a GIS-supported software, offers an effective way to connect these collected data and their sources of origin such as spatial settings into comprehensive and interactive databases. It enables data to be organised in thematic layers in which information is listed in their attached tables.

3.3.3 *Workshop*

On the basis of the previous sub-chapter which focuses on the tools and ways in which new information, which may generate new knowledge, could be stored and maintained, this sub-chapter aims to see the relationship between such new knowledge and the knowledge designers already possess and use when they design. Equally, as the previous chapter addresses effective ways to elucidate the comprehensive spatial relationship between uses and sites, this one explores the possibilities about applying and reflecting on such relations when designing. Its challenge is to examine aspects of generated empirical knowledge on the base of existing knowledge, skills and routine designers already have.

Lawson (2004) discusses designers' knowledge on the basis of Ziesel's (1984) arguments about design, relating to two types of information, a heuristic catalyst for

⁵ ESRI is a world known leader in GIS data supply, software and technology. <http://www.esri.com>

imaging and a body of knowledge for testing, as follows. “Essentially, this tells us that designers rely on knowledge that helps them to decide how things might be, but also that they use knowledge which tells them how well things might work” (Lawson, 2004: 14). Commenting on sources and types of knowledge further, Lawson refers to Goel’s (Goel, 1995 in Lawson, 2004) experimentally gathered design protocols discussed upon the structure of design process, consisting of ‘problem structuring’, ‘preliminary design’, ‘refinement’, and ‘detailed design’, summarising that the designer was the chief source of knowledge in all four of his stages. Specifying it even more precisely, the designer was the source for about half the knowledge statements in the first stage and over ninety per cent in the subsequent three stages. Lawson concludes that, “this strongly suggests that the vast majority of the knowledge used to solve the design problem was brought into the process by the designer” (Lawson, 2004: 14). Beside the ‘design makers’, the constraints that shape design knowledge, are according to Lawson (2004), also ‘paying clients’, ‘legislators, regulators’ and ‘users’.

However, according to Lawson’s emphasis on the amount of knowledge coming from the designers’ side, the question is how these aspects are balanced and how designers prioritise them, and finally, how flexible they are in getting new knowledge and relying on it. Moreover, discussing the design as a process that suggests how the world might be, Lawson characterises the knowledge beyond as “predictive but uncertain and laden with values” (Lawson, 2004: 14), and refers to the application of this knowledge as a highly selective process which inevitably results in a unique interpretation of a design problem made by designers. Accordingly, he finally argues that, “in theory Zeisel’s second kind of knowledge, that is how well things work, could be more empirically based and more commonly shared” (Lawson, 2004: 14). Concerns about the presented challenges are implemented in the last method applied in this thesis, the workshops with urban landscape designers.

Based on spatiality of uses and their relation to designed places, the workshops used in the research have two significant parts: a short questionnaire and three different drawing tasks. Having such a structure, they clarify and critically elucidate designers’ roles and positions in thinking about *publicspace* and give a critical reflection on the roles, usage and values of the empirical knowledge as knowledge itself and as a source of information available for practitioners. They build the stepping-stones through the ‘fringe space’ between theory and practice, research and design.

3.4 Key conclusions

On the basis of the understanding of public spaces in urban landscape as places of mutual interrelationships between people and places, this thesis sees patterns of spatial occupancy as potential configurations, which imply a structure that is not static or fixed but is something dynamic and in continuous flux. In this respect, the idea, which underlies the research strategy, is to make the implicit spatial structures that represent a place's usage (potential), explicit, and to address the physicality of places via such understanding. In this respect the act of observing and mapping the observations becomes crucial.

Behavioural patterns in the concrete physical environments are the central focus of the entire research. In the process of the examination of usage-spatial relationship they play three significant roles. Firstly, gathered records about them represent the evidence about place use. Secondly, different elaborations and analysis upon such evidence result in new and multi-informative patterns and as such gain a new knowledge about the usage-spatial relationship. The last, but certainly not the least important, role which the behavioural patterns play in this research, is in their incorporation in a design process. Based on such recognitions, a general conceptual framework, a relevant methodology and detailed research methods and techniques were selected in order to ensure a development of appropriate and credible empirical evidence about these physical relationships between places and their occupancies, as well as to enlighten its value, place and role in a design process.

Grounded theory was recognised as an underlying conceptual framework which operated the research strategy. Southwell (2004) stresses the utility of grounded theory in the design research field, when she emphasises the concepts embodied in grounded theory which are relevant to problem setting, information gathering and knowledge generation. All these aspects were central to being addressed when the framework for this particular thesis was built. In practice, the grounded theory approach helped the case study approach to provide the examination of the phenomenon and its context, and supported the RSVP cycles as a principal idea underlying the collecting, evaluating, and selecting of the data in order to re-form it in a new advanced form of empirical knowledge. Detailed methods and techniques suggested as appropriate to address different aspects of such empirical knowledge from its generation to its potential for the

implementation in a design decision-making process, are the observation and behavioural mapping, organisation of the recorded data into databases, and workshops with urban landscape designers.

Chapter 4 Application of the methods and techniques

This chapter discusses the ways in which the selected methods and techniques are applied in the thesis. It comments on them according to two aspects of their implementation: operative and supportive.

Primary data collection based on the observation and behavioural mapping, creation of the digital databases of these collected data, and the implementation of workshops with designers represent the operative nature of the application of the research methods and techniques. To provide a fully considered environment for the core essential method, the observation and behavioural mapping, a support from the appropriately applied case study approach, and from the improvement, renewal, and adjustment of the observation and mapping techniques for their application in this particular research, is needed. Firstly, the argumentation of case studies' selection and comments on the improvement, revision and adjustment of the observation and mapping techniques are discussed. Secondly, the chapter reviews the primary data collection, its organisation in the digital databases, and the implementation of workshops with designers.

4.1 Case study selection

Yin (2003) stresses that when fundamental characteristics about the phenomenon and its context, and the nature of the research question are argued, and the situation is clear that a case study approach can be applied for a certain research, then the investigator has to follow systematic procedures towards the explanation building and has to design the case study carefully. This means that the sequences of identification of relevant devices and their reflections in real examples are addressed and specified. In this thesis, concerns about the conduciveness of places to diverse occupancy are the foundations from which the case study design develops.

The questions which reflect on the basic research challenge and stratify it into a series of interrelated questions are exemplified as follows: Where do uses take place? When do they take place? What activities are participated in? Who are the participants? For how long do uses take place? What patterns of used/unused place have appeared? What are their dimensions, densities and intensities? Do forms of places have any (particular) restrictions/stimulations for certain activities? A more speculative question which arises

from these straightforward questions and actually reflects already on some possible results from them, could be, for example: Can we predict how uses might be distributed within a place of certain characteristics considering certain circumstances?

To resume, the study intends to focus on the compared examination from both spatial and behavioural points of view. On the one hand, it primarily pays attention to similar physical forms and their behavioural patterns (which may be similar or dissimilar) while, on the other hand, it seeks for similar behavioural patterns and accordingly refers to the physical characteristics of settings where they happen.

As soon as the questions related to the phenomenon are detailed and clear, it is necessary to define the context within which they are conducted and examined. In this respect, this thesis, for example, requires the types and locations of studied urban open public spaces to be addressed, as well as generally commenting on the broader city or town structure and, in the case of a multiple case study, to comment also on similarities and dissimilarities between selected towns or cities. Accordingly, it was decided to focus the case studies on two urban environments with similar characteristics such as size, density, topography, cultural significance, etc., but in different parts of Europe. Edinburgh and Ljubljana provided the appropriate case study sites.



Figure 6: Maps representing the selected sites included in a case study in Edinburgh and Ljubljana.

Both cities, Edinburgh and Ljubljana, are middle-sized European cities, capitals, with relatively small populations in total (Scotland, c. 5million; Slovenia, c. 2million). Edinburgh has about 450 000 inhabitants, Ljubljana has about 300 000. Due to their

being important national and international cultural as well as political centres, and to the fact that each of them hosts perhaps up to 50 000 university-students, in this respect, they have a similar atmosphere in terms of their daily routine. Considering physical dimensions, Edinburgh and Ljubljana appear quite similar in size, too, about 275 km² each. Although they both have pre-medieval origins and city structures, a walled medieval town is significantly reflected in the urban development of latter phases of each of them. The historical old towns are partly (Edinburgh) or almost completely (Ljubljana) transformed into pedestrian zones, and together with other areas of their city-centres' later developments, are significant in terms of mixed land uses, from service, cultural and educational to residential.

Both cities, Edinburgh and Ljubljana, belong to the mid-latitude temperate climate zone. Regarding the weather conditions, some daily circumstances might be very similar, but because they belong to different sub-zones, Edinburgh to the oceanic, Ljubljana to continental, they can be quite different, too. In mid spring, a popular season for outdoor activities, for example, similarities might be found, especially when conditions are dry, no matter whether there is sunshine or wind. Concerning dampness and humidity, their frequency, duration, density and size of rainfall are more likely to be different. In the continental climate, heavy rain is usually a downfall, whereas in the oceanic climate, types of downfall vary, from mist or deep overcast drizzle, to mild showers and heavy rain.

Comparable parks, park locations and their size and function, and squares in the old towns, as well as in other locations in city centres were selected within an area of about 2 km² in each city, nine in Edinburgh, and eight in Ljubljana. A comparable number and typology of selected places represent popular central open public spaces of different sizes and micro-spatial contexts. The case study of Edinburgh consists of two parks, the Meadows and Princes Street Gardens; six squares, Bristo Square, Festival Square, Usher Hall Square, Conference Centre Square, Hunter Square and the Grassmarket; and one square-like street, the Royal Mile. The case study of Ljubljana also refers to two parks, Tivoli Park, and Argentinski Park; five squares, Trg Republike, Plečnikov Trg, Prešernov Trg, Dvorni Trg and Mestni Trg; and a park-like square, Kongresni Trg. The thesis refers to the original names of places in both cities. As the name of a place usually reflects its typology and/or character, clarification concerning the original

names related to proper nouns in the Slovene language, is introduced. 'Trg' is a square, while 'park' is a park.

Cooper Marcus and Francis stress keen observation and the thoughtful consideration of what is observed and argue that, "the comparative approach is important, highlighting key design elements and challenging assumptions that observed use in any one setting is typical" (Cooper Marcus and Francis, 1998: 346). Indeed, the multiple case study is chosen to allow observation of as many places as possible and manageable to be examined. Based on the notion about environmental possibilism and probabilism, the research allows for the possibility that there may be different and dissimilar uses noticed in places with similar physical characteristics across the case studies, as well as that there may be similar uses seen across different places.

The occupancies of places by the residents of the cities were targeted as the focus of this research. Spring time was selected as the appropriate overall observation period. In each city, the month of May (Edinburgh, 2002; Ljubljana, 2003) was selected, when tourist- and other theme-excursions are still not fully developed and the weather is usually very pleasant for outdoor activities.

4.2 Improvement, revision, and adjustment of the techniques

As discussed earlier, a behavioural map is an observational tool for recording people's behaviour. Although observation was recognised as a non-complicated and quickly learned technique, its recording as behavioural mapping required more preparation for a correct, comprehensive and systematic conduction. Bechtel *et al.* (1987) stress that a critical point in behavioural mapping is to decide on the categories of behaviour needed and to pre-test these in an actual environment. Cooper Marcus and Francis, for example, suggest recording the answers to: "Who is using the site? (men? women? couples? groups? singles? old? young? etc.). Where do they tend to gravitate? (sun? shade? a particular form of setting? everywhere?), What are they primarily doing? (eating? talking? watching? snoozing? etc.)" (Cooper Marcus and Francis, 1998: 347). There is a set of questions concerning the temporal dimensions and involvement of users in places, which has not been mentioned in the Cooper Marcus and Francis approach to observation, but which is equally important when studying usage-spatial relationships. This is discussed below.

However important it is to think about every single aspect of behaviour in such a decomposed way, recording itself needs to be as condensed and inclusive as possible. So it is important to think, for example, 'Who is doing what, where, and with whom?' or 'Where and for how long is what taking place?'. Accordingly, attributes such as type of activity, gender, age, duration of activity, time of day of occupancy, time of week of occupancy, movement direction and weather conditions at the presence of the activity, all describe located activity in a place. Preparation and thinking about the activities reflects a clear definition of the human behaviour observed, counted, described or diagrammed, required as one of the five essential conditions that need to be met before actual observation. Thus, the list prepared includes some anticipated activities, their related symbols and additional coding for those activities which were prepared in advance, but stayed open-ended for any possible new activity to be added, and attached symbols for these unexpected or infrequent activities to be developed in the course of the observation.

Consequently, a coding and counting system is another pre-condition that needs to be thought out before a technique's implementation is addressed. Designed in a way that minimises the effort required in recording observations, it reflects both recording techniques, the behavioural table and the behavioural map in a narrow sense. The table, which addresses basic attributes such as type of activity, age, gender, user and duration of an activity, and contextual and explanatory data such as sub-area, date, time, weather conditions, and other comments, was developed. At the same time, the symbols for drawing behaviour maps, expressing the type of activity and gender but with additional codes noted next to them, showing also age and duration of the activity, were prepared. In addition, sketch paper and a camera became part of the researcher's equipment.

Concerning the graphic rendering of places which also needed to be determined before the actual observation, layouts of selected places were prepared on at a scale of at least 1:1000, showing the place itself with its nearer surroundings. In the case where the observed place was small and a print of its layout on a scale 1:500 did not exceed A4/A3 format, and it was comfortable to work with in the field, this detailed scale was preferable. Each chosen place was divided into sub-areas if its original size was too big to be observed in one piece. In the case of Edinburgh, the source for field-work maps were maps at a scale of 1:1250, based in the Environmental Studies Library at Edinburgh College of Art. For the purpose of the observations, they were enlarged to

the mentioned scales. The observations in Ljubljana were based on a source of digital maps of original scale 1:500 archived at the Urban Planning Institute of the Republic of Slovenia in Ljubljana.

Before the final schedule for observations was prepared and accepted, a pilot study was conducted in urban public open spaces in Barcelona, to check out the recording system and the researcher's ability with regard to the planned procedure, developed to be applied in the selected places in Edinburgh and Ljubljana. Relevant maps for visited places, tables and sets of symbols were prepared as described above. The original plan for the observations in Edinburgh and Ljubljana was to make them in one particular place at three different times in the day and at all other places only once that same day. This highlighted place, observed three-times per day, at least twice during the weekdays and once at the weekend, would be a different one each day. The pilot study from Barcelona resulted in some very practical problems such as a general daily routine, the time-consuming and exacting process, the skills and concentration needed for every observation, and demonstrated the impracticability of the planned schedule.

Accordingly, the observation procedure was modified and divided into four sections per day: morning, between 10 and 12am; early afternoon, between 12 and 2pm; afternoon, between 2 and 4pm; and late afternoon after 4pm, and usually until 7pm. The observations were carried out during the weekdays and weekends as well, and were scheduled so that all places were equally covered at different times of day as well as times of week. Each spatial unit was observed for 10 minutes. Beside a time-table framework, a behavioural table for recording behaviour and a suggested but still open-ended set of symbols were refined and finalised on the basis of the pilot case study. The revised table for recording results and, a final set of symbols for marking activities on maps, including indications for expected behaviours developed in advance as well as those developed in the field are shown in Figure 7.

The behavioural mapping matrix sub area: date: time: observer:

Weather conditions:		temperature:						wind:	damp/dry:	cloud/sunshine:						other comments:												
who	activity	FEMALE														MALE						comments						
		0-5	6-12	13-19	20-34	35-50	51-65	-65	0-5	6-12	13-19	20-34	35-50	51-65	-65	time												

time scale: 1 = less than 1 min, 2 = 1-2 min, 3 = 2-5 min, 4 = greater than 5 min. The whole observation time takes 10 minutes

- female male
- sitting
 - sitting on a bench
 - sitting ar. a table
 - standing
 - stopping
 - lying
 - lying on a bench
 - skateboarding
 - rollerskating
 - playing
 - playing football
 - playing frizbee
 - walking
 - cycling
 - jogging
 - walking a dog
 - walking a child
 - pushing a pram

Figure 7: Matrix and some symbols used.⁶

4.3 Primary data collection: observation and behavioural mapping

The observation and behavioural mapping took place within one month, from Thursday 2nd of May until Sunday 26th of May 2002 in Edinburgh and over about the same time, from Monday 5th of May to Sunday 25th of May 2003 in Ljubljana. All together nine public spaces: two parks, six squares and one square-like street were observed in Edinburgh; and eight: two parks, five squares and a park-like square in Ljubljana. In the cases of division of places into sub-areas, all observed sub-areas in the same day section count as one observation unit. Taking this into account, 105 observations were made in Edinburgh and 106 in Ljubljana. A day observation unit represents four sections: morning, early afternoon, afternoon, and late afternoon. Each spatial unit was observed for 10 minutes.

The application of the method followed the nature of observations and behavioural mapping planned in advance but allowed a certain flexibility to enhance the richness of the gathered data. In an early stage of the observation periods, a broad diversity of variety of uses amongst places was noticed, mainly in the larger parks of both the cities. Therefore, they were looked at slightly more often than other places. Equally, a constant frequency of very obvious activities such as walking/passing through, sitting and standing, and a low diversity of other uses was noticed in places in the old towns in both cases. The observations in those places were reduced in order to devote more time to the others. There were also some exceptions when observation and behavioural mapping

⁶ For a full set of the symbols used in this research, see Appendix B.1.

were not carried out, although they had been scheduled, for example, a constant heavy rain either all day long or prolonged at certain points; or specific public events such as celebrations or sports entertainment which disrupted everyday public life into a subordinate position.

The observations were usually conducted from one location in a setting, from where a good overview across a place was provided. The standing point was changed for each next observation. Behavioural patterns were recorded in matrices and on the maps, either at the same time or one technique was used primarily, while the other might served secondarily for some particular or specific notes or sketches. Full engagement of both techniques is shown and briefly described below, commenting on the matrix first and discussing the maps second.

Every cell in the matrix can collect quantitative and qualitative data. Short vertical signage put into the cells represent quantitative data. As the matrix ranks people according to age classes and distinguishes male and female participants at the same time, the first level of qualitative data is reached by structure of the matrix itself. Other qualitative data, such as the duration of an activity, the number of people belonging together, the direction in which they move and the like, were added directly to those vertical lines that needed additional explanation. The completed matrix from the field observation is exemplified in Figure 8.

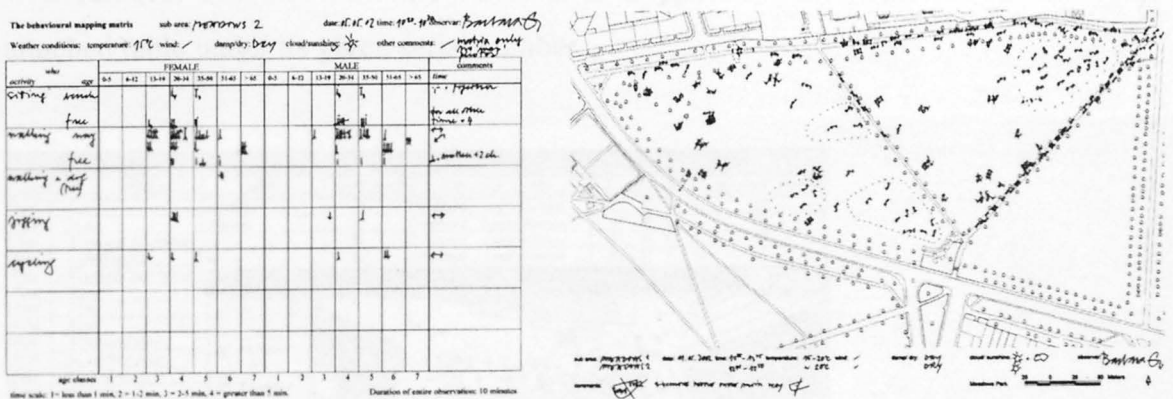


Figure 8: Two examples of completed records from two different observations in the Meadows, Edinburgh: completed matrix and completed behavioural map.

When recording behaviours on the maps, in Edinburgh the appropriate symbols were drawn on the transparent maps of the sites. The transparent maps were introduced to enable any quick intermediate comparisons and the development of working results

during the process, and to gain some initial working conclusions as the conduct of the research followed the grounded theory approach. In the time between the observations in Edinburgh and Ljubljana, transparent digitalisation of collected data was introduced and implemented, so manual maps in the case of Ljubljana were drawn on paper prints. However, all such records were accompanied by some qualitative information as well. Numbers beside the symbols explain the classes of the duration of an activity and the age classes each person belongs to. Both the coding systems, duration and age, harmonise with those introduced on the matrix. Equally, the areas occupied by certain activities or behaviours were documented by map.

4.4 Digitalisation of data and databases' creation

As GIS is recognised as a tool that enables data to be organised in thematic layers in which information is listed in the attached tables and finally visualised on the maps, the digitalisation of the collected evidence about spatial occupancies in urban open public spaces was appropriate. In the context of this thesis, the term digitalisation describes a procedure that transmits manually-collected data, using observation and behavioural techniques into a digital version. It followed a simple way of re-mapping the original records into GIS-supported databases operating in the ArcView GIS software system. Every symbol recorded manually was transmitted into its digital variant in the same way. A map of the observed area was projected on the computer screen. The location of the re-recorded activity was identified with the cursor and clicked when the location was verified. All the attributes of each re-mapped symbol were described in the attached table under its given serial number.

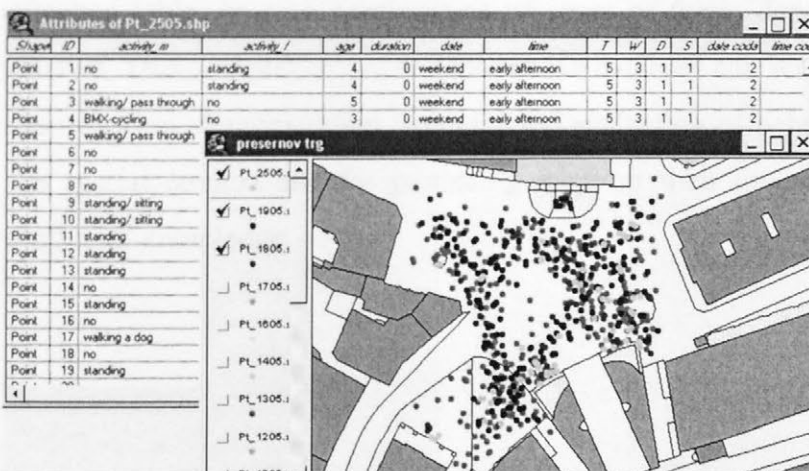


Figure 9: A table showing some records of a daily observation in Prešernov Trg, Ljubljana and the example of a map consisting of layers of daily records for four different days, also in the Prešernov Trg, Ljubljana.

Following such a procedure, every database of each place consists of layers of information, based on a day-order structure. Point symbols within the layers represent single users originally recorded in the place. Properties of an activity included in symbols developed for manual behavioural mapping and the characteristics of other circumstances, such as weather conditions, time of day and day of the week, captured within symbols and matrixes of original records, are described in the table attached to those point symbols visualised on the map. Such a table, attached to every map consists of columns of different variables, such as type of activity, gender, age, duration of activity, time of day of occupancy, time of the week of occupancy, movement direction and weather conditions at the presence of the activity (temperature, wind, dry/damp, sunshine/cloudy, rain) describing the located activity in a place.

Shape ID	activity_M	activity_F	age	duration	date	time	T	W	D	S	direction	
Point 176	walking/ pass through	no	6	0	week:day	afternoon	3	3	1	2	16.5.2002	6
Point 177	sitting	no	5	2	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 178	sitting	no	4	3	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 179	sitting	no	4	3	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 180	no	sitting bench	5	2	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 181	walking/ pass through	no	6	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 182	walking/ pass through	no	6	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 183	no	walking/ pass through	4	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 184	walking/ pass through	no	4	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 185	no	walking/ pass through	5	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 186	no	walking/ pass through	5	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 187	walking/ pass through	no	4	0	week:day	afternoon	3	3	1	2	16.5.2002	7
Point 188	no	walking/ pass through	3	0	week:day	afternoon	3	3	1	2	16.5.2002	7
Point 189	walking/ pass through	no	4	0	week:day	afternoon	3	3	1	2	16.5.2002	3
Point 190	walking/ pass through	no	4	0	week:day	afternoon	3	3	1	2	16.5.2002	3
Point 191	walking/ pass through	no	2	0	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 192	walking/ pass through	no	2	0	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 193	walking/ pass through	no	3	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 194	no	walking a child	4	0	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 195	walking a child	no	6	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 196	walking a child	no	5	0	week:day	afternoon	3	3	1	2	16.5.2002	4
Point 197	walking/ pass through	no	0	0	week:day	afternoon	3	3	1	2	16.5.2002	0
Point 198	no	walking/ pass through	7	0	week:day	afternoon	3	3	1	2	16.5.2002	4

T - temperature scale

code	1	2	3	4	5	6
T	<5	5/9	10/14	15/19	20/25	>25





W - wind

code	1	2	3
windy	yes	yes/no	no

D - dry/damp

code	1	2
dry	yes	no

S - sunshine

code	1	2	3	4				
direction								
code	0	1	2	3	4	5	6	7
	n	nw	w	sw	s	se	e	ne

The variables age and duration were coded as suggested in the matrix.

Figure 10: A part of a completed table showing descriptions and codes for different attributes of activities observed on one day in Hunter Square, Edinburgh.

The map itself, linked to such a table, shows locations of observed behaviours, which can then be expressed with regard to any variable or elementary aspect registered in the attached table, or as a combination of some of them, depending on the researcher's interest. This comprehensive and interactive database can serve as an exhaustive tool for visualisation, demonstration, analysis and evaluation of behavioural phenomena within the spatial context and for producing maps as their products and sources of gained empirical knowledge.

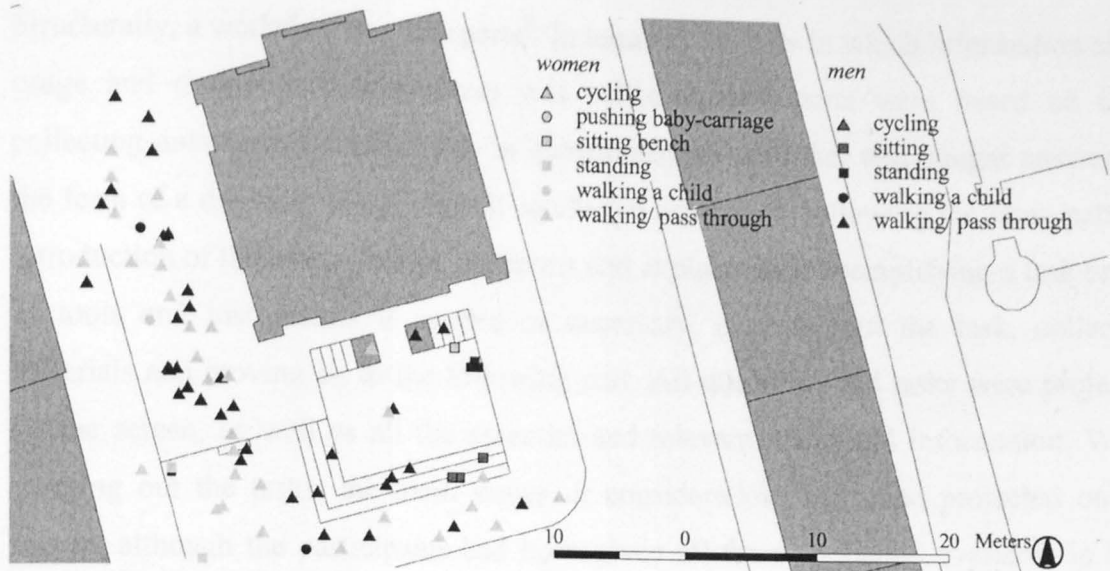


Figure 11: A daily pattern of occupancy in Hunter Square, Edinburgh, stratified with regard to gender and type of activity.

4.5 Implementation of the workshops with designers

Each workshop usually took about one hour. It was run six times, each time attended by a group of five to ten designers, the researcher who chaired the workshop, and an assistant. All the workshops took place in Edinburgh. The participants were landscape architects from two offices based in Edinburgh as well as mature and postgraduate students from courses in landscape architecture and urban design at the Edinburgh College of Art. Although participants carried out the tasks individually, the introductions, instructions and explanations were given to them as a group. Power Point software was the crucial medium supporting the running of the workshop. The pilot implementation of the workshop, with four architects and one landscape architect, resulted in the understanding that controlled and guided information about the tasks is of key importance for the effective application of the workshop itself, as well as for comparable answers as the source, quality and the nature of information participants received were equal for everyone.

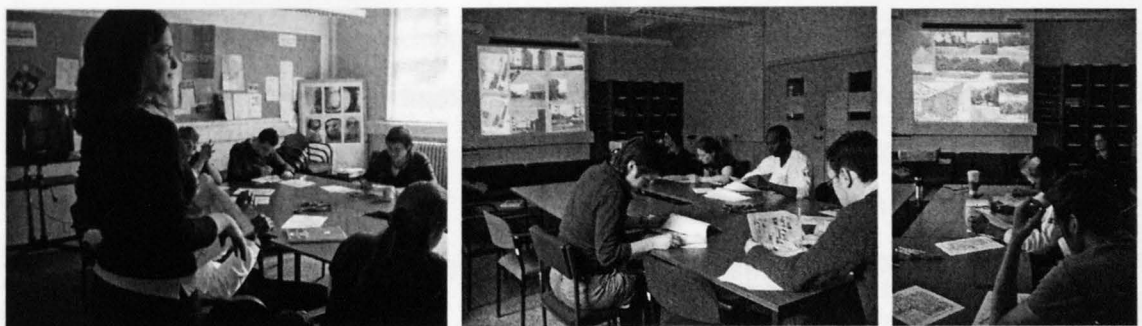


Figure 12: Workshop session with the urban landscape designers in Edinburgh.

Structurally, a workshop has four parts⁷. In terms of the way in which information about usage and design in public places was collected, two parts were based on tasks collecting answers on questions as in questionnaires, the other two sought answers in the form of a drawing. They were all conducted separately, following the same pattern: introduction of the task, eventual questions and explanations, exemplifying a task or use of tools and instruments if needed or necessary, carrying out the task, collecting materials and moving on to the following part. All questions and tasks were projected on the screen, as well as all the essential and relevant additional information. While carrying out the tasks, the main issues or considerations remained projected on the screen, although the participants had been given all the information available in hard copies, as well.

Typologically, questionnaire-based parts predominantly consisted of semantic-differential oriented questions, asking about the importance and ranking of the design aspects or use determinations and influences in urban landscape design. Simple, one-aspect or objectivity-oriented questions were either semantic-differential based or simple, yes/no type.

There were two types of drawing-based tasks. In one, participants were asked to draw an indication of individuals or group users in a place, and the other, based on the given information on users, designers were asked to produce a physical layout of the place itself. Both tasks referred to real places. In order to get as reliable information as possible in these drawing exercises, it was very important that designers were unfamiliar with the places they were designing or responding to in terms of their likely uses. Therefore, the selected examples for these drawing tasks were from Ljubljana.

For the first task, which asked about the indication of likely occupancies in places by either individuals or group users in a selected place, the brief provided the physical layout of a place, a main structural configuration, and its nearest physical context, labelled with land uses, information about climate and geography, as well as about the place's location in city. For the second task, where drawing of a physical layout of the place was the question, the brief offered the same type of information as the previous one, with the exception of the physical configuration of the selected site itself. This was

⁷ See tasks for all four parts in Appendix C.

not shown, but, instead information was provided about the likely behavioural patterns in the site, based on the observations conducted within this research.

Part one and part four, which concerned answering questions, were not time limited as the common introduction and the nature of either semantic differential or simple questions based on straightforward answering supported an immediate, direct response and so took just as much time as needed. Drawing tasks were time-limited: up to 15 minutes per task.

4.6 Key conclusions

Observation and behavioural mapping was the key method used in the study. The represented research uses both recording techniques: literate mapping and matrix approach. The data was recorded in the matrix and/or drawn on the maps. Every technique used claims different approaches and has some advantages and disadvantages. Observing and recording using the matrix considered especially the number of people involved, noting their age, gender and many times the duration of an activity as well. Drawing a map emphasised the particular location, certain uses and their duration. Age and gender were easily recorded variables in each approach. The researcher would recommend undertaking both approaches at the same time, if the frequency of changes in uses or the number of people involved is not too big. According to the experience gained from the pilot study in Barcelona and the case study in Edinburgh, the researcher found it most suitable to use a matrix to record the activities in which the main characteristic is movement, such as walking, jogging or cycling and to use a map technique to record more static activities, such as sitting, playing within a certain area, waiting and the like.

However, any of the behavioural maps provides a shorthand description of the distribution of behaviours throughout the place. It compares the use of spaces on the settings by male and female, by activities engaged, duration of the activities and their distribution. The major value of behavioural maps, as a research tool, lies in the possibility of developing general principles regarding the use of space that apply in a variety of settings. The overlap of drawn behaviour maps can show some characteristics and changes in using chosen open spaces in terms of activities, number of people engaged, gender, and all the other variables that were explored.

The researcher supplemented and refined recording techniques for the purpose of the present research. The developed behavioural matrix enabled simple and complex collection, both of quantitative and qualitative data. The maps were found especially appropriate for observing areas with frequent changes. Furthermore, their overlapping allowed the researcher to get a brief intermediate review. The combined use of both recording techniques assures a qualitative database for further comparisons, raises new challenges and offers new possibilities in data collecting, their further use and analysis. The matrix was shaped so that the translation of the collected information to an appropriate digital version was simple. The researcher intended to digitise the collected data and use the ArcView software program as a recording and analytical tool. In this way the research could contribute some innovations to methodology in the practical and theoretical field of environment-behaviour studies.

The original data collection, carried out manually, became the first step in the way of building the whole body of empirical knowledge. The steps which enabled a critical dimension to it, were provided by application of the workshops with urban landscape designers. In this method the drawing-based parts were central, and of key importance.

Both approaches in drawing, one asking about designing places when knowing potential behaviours, the other about likely behaviour in places whose physical layout is known/given, fully satisfy the purpose about the role and meaning of empirical knowledge. To successfully meet the purpose about the designers' convictions, beliefs, and experiences, the act of drawing is complemented by inquiry. It enables cross checking and examining the 'drawn statements' and by that elucidates a possible disagreement between designers' beliefs and their actual knowledge or ability to design with people in mind. The application of both modes, drawing and questioning, also increases the validity and credibility of the results.

When comprehensive interactive digital data were provided, the research process applied GIS (Geographic Information System), which became a method to visualise, manipulate, analyse and display spatial data. It addressed the physical spatial capacities and intensities of the occupancies of places. They deal with levels of people's use of places such as shared-use areas, or single use-areas, and with the reflection of patterns and density of clusters people create when occupying a certain place within the context of the entire form of that place. Thus the evaluation firstly obtained a general basic

descriptive analysis, reflecting a record of how each observed place is used and, secondly, examined the flexibility of physical dimensions taken up by the uses observed. Results that addressed patterns of spatial occupancies were described, summarised in tables, and supplementarily shown on maps.

Chapter 5 Analysis and results

The analysis is based on summaries, facts and findings concerning a literature review, data collection and the further procedures relevant to the main techniques, *observation and behavioural mapping*, and *workshops*. The data collected by the mapping is reliable because of repeated observations on different days, times and weather conditions. Conditions regarding the reliability of the data collected at the workshops were met by asking experts in urban landscape design about places that were unfamiliar to them. Concerning mappings, the focus was on behavioural patterns in squares and parks, as spatial dimensions of places. The workshops discovered designers' imagination and their views about these places' use and design.

This analysis is based on interactive digital GIS databases. By debating issues of empirical knowledge about usage-spatial potentials, and its generation through the distribution and physical dimensions of behavioural patterns in places, the results from observation and the workshops, along with the findings from the literature review, are seen as complementary. Thus developed empirical knowledge is recognised as valuable and important in urban landscape design.

Behavioural patterns show the possibilities of occupancies in places, while designers' drawings from the workshops show what they consider is likely to happen in a particular place, and reflect the environmental probabilities of places. Analysis on either behavioural evidence and its further analysis, or individual and/or general notions from the workshop participants, focuses this examination of city-centre squares and parks on 'what is going on there', and 'how does it take place there'? The activities in which people are engaged are typified by the nature of spatial involvement, rather than categorised into the levels of compulsory/voluntary occurrences (categorised by Gehl, 1987) or any other specific categorisation of 'street people' and 'skilled pedestrians' (recognised by Whyte, 1980). In this way, examination of the usage-spatial relationship more directly addresses 'what, how, to what extent and where do people do what they do?' and 'what choices do they make?' in public spaces. In this respect, the examination aims to address the usage-spatial relationship as the notion of both a 'probabilistic' and 'possibilistic' approach.

When commenting on physical references of places, the analysis uses a conventional vocabulary which refers to the fundamental principles of spatial composition, usually used in structural and morphological analysis of places in any scale. For example, when addressing the main spatial characteristics, it refers to volumes, areas and boundaries or edges. When dealing with a general inner structure of places, it concerns boundaries and sub-divisions. When paying attention to their qualitative aspects, some descriptions which may be used are as follows: edges and boundaries can be described as solid or transparent, concretised by walls or boulevards; level changes, as ramps or steps; surface changes, as grass versus paved surfaces; and surface's structural dynamic such as trees on the grass, statues or 'useful pieces of art' on the surface, and the like.

Comments later in this chapter address the most interesting and illustrative findings relevant to each discussed point, rather than discussing all the observations available from the rich databases.

5.1 Behavioural map analysis

Different analyses have been undertaken over the years about the interrelationships between behaviour and properties of the man-made environment in the field of environment-behavioural studies, however, there is no common and uniform terminology in use for them. The term spatial analysis, for example, is very common in disciplines such as architecture, landscape architecture, urban design and even geography, when this addresses transportation or refers to regional planning. It is concerned with analysing any aspect of studied places, including people and their behaviour if/when it is of interest. Social science analysis, when addressing environment-behavioural issues, usually talks either about behavioural analysis or uses the bipolar term, environment-behavioural research. However, Teklenberg *et al.* (1996) use the term 'spatial analysis in the field of environment-behavioural studies', when discussing techniques that objectively describe environments and relate this description to specific problems of human behaviour. In other words, they specify, "it is about mapping environments, mapping behaviour and researching their relationships" (Teklenberg *et al.* 1996).

This definition suits the type of research and the way it was conducted in this thesis. However, to clarify a working vocabulary of this research, as it also spatially analyses

behavioural patterns and responses to them by the design in the designers' drawings from workshops, in this chapter, the term 'behavioural maps' analysis' substitutes for Teklenberg *et al.*'s definition.

Body behaviour can be classified in a number of ways and, therefore, an activity or occupation of a place could be described from different points of view. However, it always relates to time-scale, in terms of presence and duration, and to subject, the user him/herself, in terms of the way he/she is engaged with it. In terms of 'activity and time', three situations are usually significant, such as being continuously sited in the scene; occurring while temporarily present in the scene; and occurring while in (incidental) transit through the scene. In terms of 'activity and subject', the following three general situations are very common: passive; intermittently active/passive; and active.

The interrelation between whichever aspects of each group, describes the presence of users within a space in a more complex way and gives it an additional qualitative dimension. Accordingly, two-component categories of the criterion of the nature of spatial involvement, created from the interaction between the aspects of 'time-occupation' and 'way of involvement', resulted in nine categories. They address actual activities by their common denominators such as the mode of active involvement, presence and time occupation at the same time. All the pairings cannot be represented with equal relevancy, but theoretically, all the options are possible. They are presented in the Table 1, below.

Activity		Time occupation in a place		
		<i>continuously present</i>	<i>temporarily present</i>	<i>in transit through</i>
Way of involvement	<i>active</i>	movement all the time within a place	movement, break, continuation of the movement through a place	movement through a place
	<i>intermittent</i>	movement, break, coming back to the 'stage'	repeated movement-break patterns (along the way) within a place	repeated movement through a place
	<i>passive</i>	posing all the time within a place	reposing a certain time period within a place	be transported by somebody/something through a place

Table 1: Two-component categories for descriptions of activities in places with regard to their ways of involvement in actions and their ways of presence concerning time.

Being ‘active and continuously present in a scene’ describes a movement all the time within a place. ‘Active and temporarily present in a scene’ describes a movement that was interrupted by stopping and doing another activity and then finally continues with the previous movement within a place. The pairing of ‘active and in transit through a scene’ represents a movement through a place. The category of ‘intermittent and continuously present in a scene’ describes a situation when engagement in the main activity is broken by taking a break, staying within a place and after that, returning to the activity. ‘Intermittent and temporarily present in a scene’ describes repeated movement-break patterns (along the way) within a place. The pairing of the next two attributes such as ‘intermittent and in transit through a scene’ represents a repeated movement through a place. It means that a person in motion is circulating in the place, for example. The last set is based on a passive aspect of the nature of involvement with the activity and describes activities’ characteristics as follows: ‘passive and continuously present in a scene’ expresses reposing all the time within a place; ‘passive and temporarily present in a scene’ describes a situation of reposing for a certain time period within a place; while the last category, ‘passive and in transit through a scene’, describes a situation such as being transported by somebody/something through a place.

Place	Tivoli Park	Meadows	Princes Street Gardens	Trg Republike	Bristo Square	Festival Square	Kongresni Trg	Dvorni Trg	Royal Mile	Hunter Square	Conference Square	Mestni Trg	Argenstinski Park	Usher Hall Square	Plecnikov Trg	Presevnov Trg	Grassmarket	
Involvement	Tivoli Park	Meadows	Princes Street Gardens	Trg Republike	Bristo Square	Festival Square	Kongresni Trg	Dvorni Trg	Royal Mile	Hunter Square	Conference Square	Mestni Trg	Argenstinski Park	Usher Hall Square	Plecnikov Trg	Presevnov Trg	Grassmarket	
<i>active in transition</i>	12	9	6	5	4	5	6	7	4	3	4	5	8	6	7	9	6	
<i>passive in presence</i>	11	6	6	4	5*	5	7	7	4	5	4	5	4	4	4	5	4	
<i>active in presence</i>	9	10	5	5	3	3	1	2	1	1	2	1*	2	1	1*			
Evolved category	all types of engagement well balanced						low presence of long-stay active uses but well balanced passive and transitory ones						low presence of long-stay active uses and unbalanced passive and transitory ones					

Table 2: Number of activities recorded in the entire observation period in all the places of the case study, categorised with regard to the general involvement in activities. Note: * includes rather temporarily present activities.

On a general level, the inter-city examination has identified three significant categories of ways of engagement with the activities in places. One exemplifies a quite balanced relationship among all three modes of involvement in an activity, whereas the other two demonstrate quite a remarkable lack of a presence of long-stay active engagements, such as playing, street theatre or skateboarding. Some of these places share the

characteristic of a well-balanced relationship between a long-stay passive, such as sitting or standing, and transitory engagements, such as cycling or roller-skating, for example. In other places, different types of transitory activities, from simple walking, walking a child or pushing a pram, to jogging and cycling, prevail over a passive stay such as sitting around a table or sitting with a dog.

Although all the places share some such general characteristics in terms of involvement, they differ with regard to the number of different activities recorded in each and their frequencies of use. To be able to comment on as many likely possible attributes of the usage-spatial relationship, the presence of the greatest diversity of uses and/or of specific uses in public spaces is also relevant. Accordingly, two sub-groups are examined in more detail.

One example consists of parks such as the Meadows, Princes Street Gardens and the Tivoli Park, in which the greatest diversity of uses is reached with activities that were recorded once or twice only. This concerns an examination of specific activities, for example, climbing a tree, flying a kite, playing volleyball, baseball, badminton, performing street theatre, making art exhibitions and the like, rather than the usual activities such as walking, sitting, cycling, jogging, walking children and pushing baby-carriages, and walking dogs, the majority of which happened often.

The greatest diversity of uses in the other sub-group used as an example here, consisting of two squares, Trg Republike and Bristo Square, is in that both squares witnessed the usual everyday activities such as walking, sitting, standing and cycling. The situation is additionally enriched by the presence of a specific use, skateboarding, which is carried out quite often, too. Although, generally, Festival Square might have been included in this sub-group, a closer look at the characteristics of its patterns of occupancy excludes it. Long-stay active uses such as skateboarding, also bmx-acrobatics and roller-skating were infrequent there. In fact, they tended to be a regular occurrence only at the weekend. So, time-wise, (weekend-weekdays) they did not share a place with the long-stay passive engagements, which were predominantly recorded for weekdays.

A full set of observation records is available in the researcher's digital database as shp-formats, viewable using ArcView software. Some representative images are used as

small illustrations in the following chapters within this thesis. Selected observation records, usually related to assembly behavioural patterns in places or representing different variables of the same behavioural pattern, listed layer by layer, are available in the CD accompanying the thesis. A summary data of daily occupancies in observed places with a typical representative map of such occupancy in each observed place is available in Appendix D.

5.1.1 Squares

Gehl and Gemzøe (2001) examine the role of squares and their characteristics in architectural expression, as well as the ways people are engaged with them in today's society, studying mainly central public places. They recognise the whole spectrum of places typologically categorised from 'main city squares', 'recreational squares', 'traffic squares', 'monumental squares', and 'promenades'. Along with such general usage-function-based categorisation of places, they also characterise them with reference to their architectural features. They suggest four main categories: 'surface treatment', 'surface and elements', 'composite character', and 'combined square and building design'. Finally, Gehl and Gemzøe's study shows that places differentiate in expressing either of the main characteristics, *functional typology* and *architectural features*, and that places can serve different purposes and can have multiple architectural identities. A predominant character in each of these main characteristics, finally defines a place. Equally, the identification of a place with any of the categories has to be understood within the scale of a city and the spatial context of the evaluated square.

According to this typology, Trg Republike can be recognised as a 'main city square', which, according to Gehl and Gemzøe, is defined as "the central square in a city, town or a quarter" (Gehl and Gemzøe, 2001: 87). At the same time, it can be qualified as a 'monumental square', which in Gehl and Gemzøe's categorisation is described as "this type of public space which provides a pause in the city fabric and often has symbolic importance" (Gehl and Gemzøe, 2001: 87). Reflecting both these typological characteristics architecturally, Trg Republike fits the category 'combined square and building design', which describes places where "both the space and the surrounding buildings were designed as one unified architectural composition" (Gehl and Gemzøe, 2001: 87).

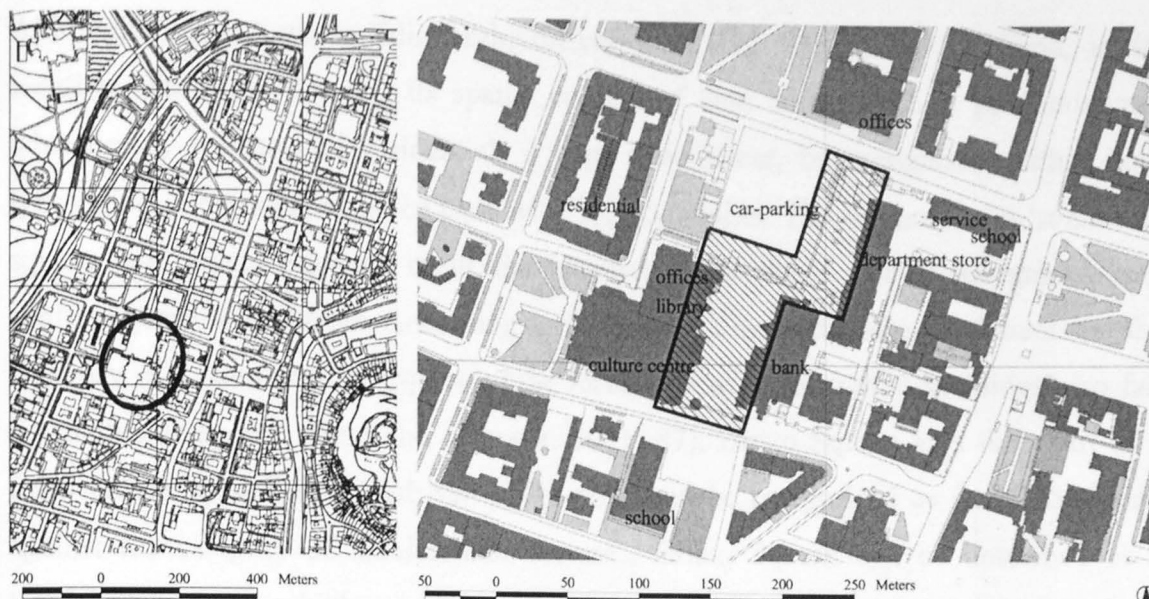


Figure 13: Trg Republike within a broader and narrower spatial context of the city of Ljubljana⁸.

It is located in the civic centre of Ljubljana with explicit mixed land uses, from service, commercial, cultural, educational, political to residential. Its general spatial structure consists of two sub-positioned longitudinal platforms, attached to the surroundings with steps and ramps. One platform has a built frame along both of the longest sides, the other along one side, only. The open side borders on a car parking area. This whole complex was built in the 1970s. From a usage point of view, Trg Republike is regularly occupied by the usual everyday uses such as walking, cycling, sitting and standing, but it is also often enriched by a specific use, skateboarding. Other long-stay active uses, such as playing, bmx-acrobatics, and propelling scooters were present occasionally.

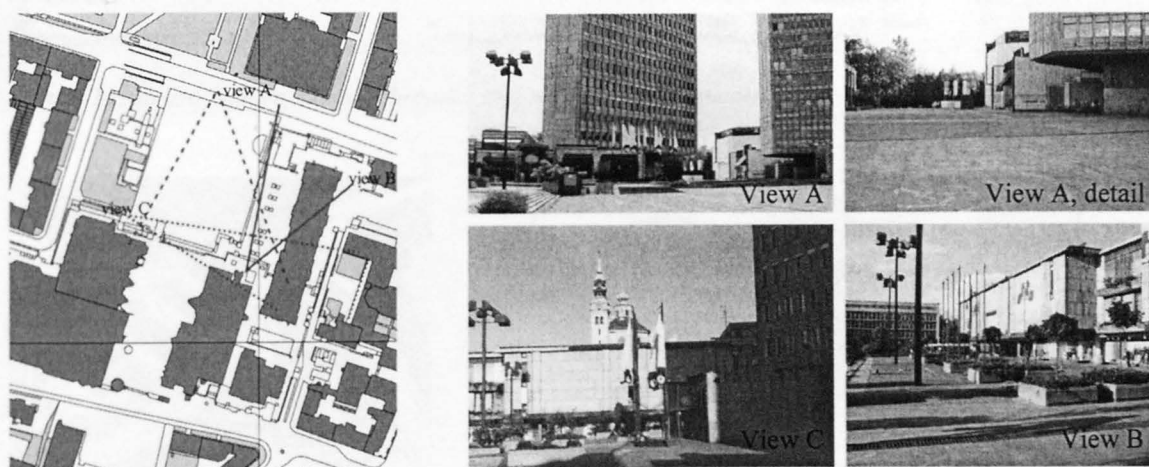


Figure 14: Images of Trg Republike, Ljubljana: a view towards a platform with a built frame along both its longest sides (View A), a platform with a built frame along one of its sides (View B), and a node between both the longitudinal platforms (View C).

⁸ For more information about Trg Republike's spatial context, land use and detailed spatial articulation see Appendix C.3.

Although Bristo Square, Edinburgh, differs from Trg Republike, Ljubljana, in its location within the city and its spatial context of land uses, which is predominantly educational, service and residential, it can, nonetheless, be recognised within both typological categories, as is the case with Trg Republike. The category of a ‘main city square’ and Bristo Square’s scale and location mean that it can be recognised as a central square of a quarter. According to Gehl and Gemzøe’s further comments on the category of a ‘monumental square’, “the forecourts of monumental buildings also fall under this category” (Gehl and Gemzøe, 2001: 87), Bristo Square as a forecourt of a main university hall (the McEwan Hall) may then be categorised as such. Classified against the category of architectural features, Bristo Square can be described as a ‘surface treatment’ which, according to Gehl and Gemzøe, represents a place “whose renovation largely involves surface treatment” (Gehl and Gemzøe, 2001: 87).

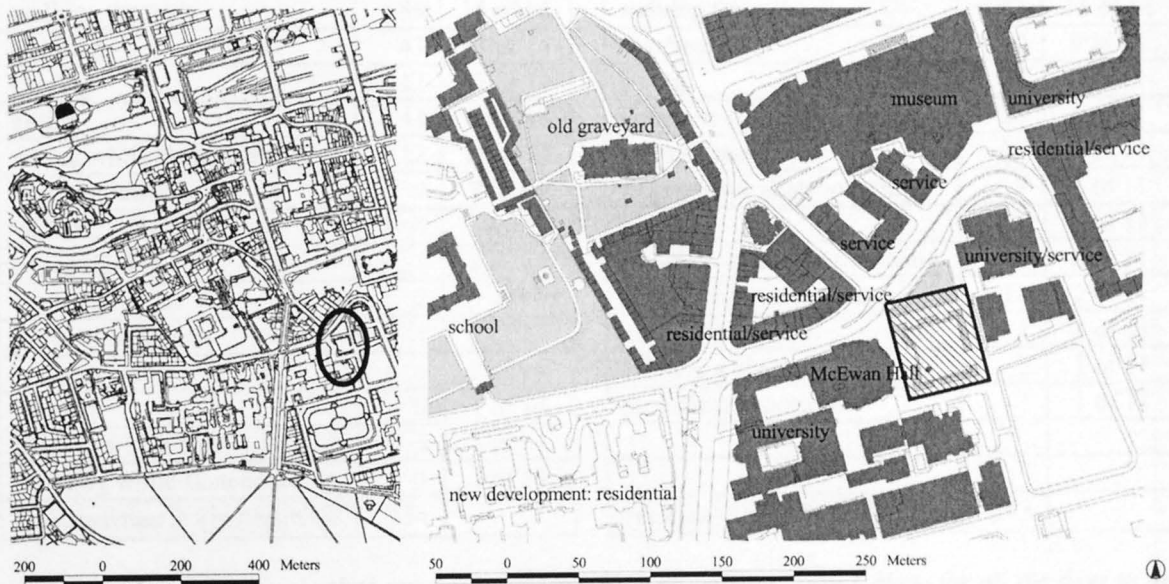


Figure 15: Bristo Square within a broader and narrower spatial context of the city of Edinburgh.

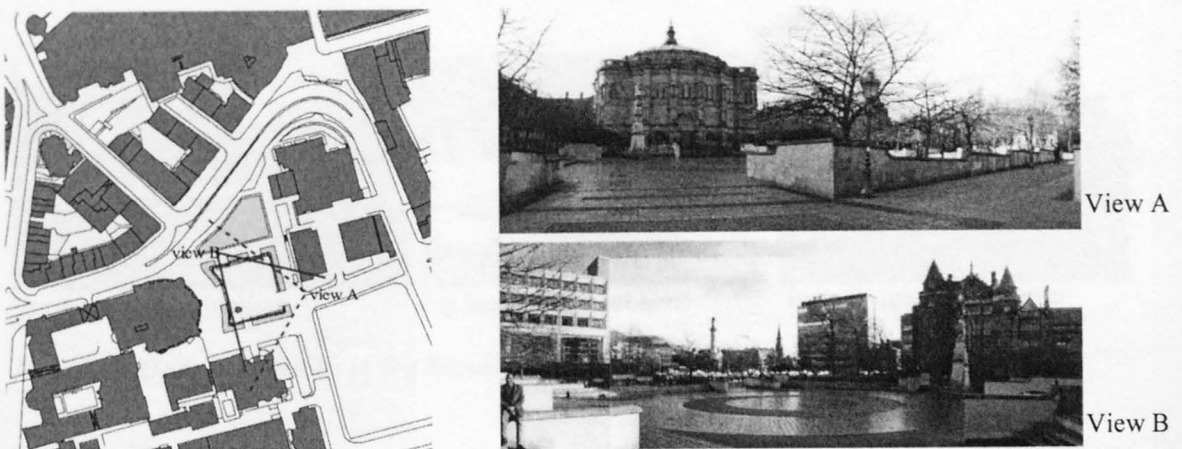


Figure 16: Images of Bristo Square, Edinburgh: a view towards the McEwan Hall (View A), and the main sunken platform with the articulated edges and a monument in the corner (View B).

Bristo Square was renovated in the early 1980s, as a part of bigger project to solve the main local traffic communication system. It is a squared, enclosed space with no ramps, but it is attached to a spatial frame which ensures that the sunken platform, the core of the place, is accessible by wheelchairs, prams, bikes and the like. This enclosure is composed of a voluminous edge of stairs along each side, on some sides explicitly partitioned into shorter sections. Along the sides, large planting beds with low trees finally define the edges. Thus, compositionally, it expresses a strong spatial connection with the university hall. This reflects its initial character, designed as a place for gathering and ceremony. Located at the outer edge of the whole complex of the University of Edinburgh, its daily patterns of occupancy reflect general public use, as illustrated with some figures in the table below.

Activity	Max	Frequency	Activity	Max	Frequency
walking through	86	14 of 14	walking through	183	11 of 11
standing	43	13 of 14	standing	22	9 of 11
cycling	12	11 of 14	sitting	48	8 of 11
sitting	43	11 of 14	skateboarding	23	6 of 11
sitting while skateboarding	12	10 of 14	roller-skating	14	5 of 11
skateboarding	9	9 of 14	sitting while skateboarding	7	4 of 11
walking a child	4	3 of 14	cycling	4	2 of 11
roller-skating	1	3 of 14	standing while skateboarding	8	2 of 11
bmx-acrobatics	2	3 of 14	sitting while roller-skating	11	2 of 11
propelling scooter	1	3 of 14	pushing a pram	1	1 of 11
walking a dog	1	2 of 14	walking a child	2	1 of 11
playing	9	1 of 14	propelling scooter	1	1 of 11
playing with a ball	5	1 of 14			
standing while skateboarding	1	1 of 14			
Total activities in Trg Republike	154		Total activities in Bristo Square	243	

Table 3: The maximum absolute numbers recorded for each activity in each place for all the days in the whole observation period. Activities are listed in descending order, according to the numbers of days they were recorded. In the case of the same frequency, they are listed regarding the way of involvement, from 'in transition through a place', 'active but present in a place' and 'present but being passive'.



Figure 17: Daily occupancies in Trg Republike, Ljubljana, and Bristo Square, Edinburgh.

With regard to the evidence from the observation, both squares can be also categorised as recreational. Gehl and Gamzøe's definition states that, "recreational places reflect

their primary function for meeting or recreation.” With no further specific elucidation, this category is described as follows: “lively squares as well as spaces with more passive recreational character come under this category” (Gehl and Gemzoe, 2001: 87).

Bristo Square, for example, is such a place especially for teenagers and children. Young male participants are usually engaged in active skateboarding or roller-skating, usually in the afternoons or at any time during the weekend when the weather is predominantly dry. Smaller or bigger groups of youths often sit on the upper stairs to observe them or chat away to each other. Individual younger adults sometimes sit there, reading or relaxing. People of all ages and gender pass by on a regular basis, sometimes taking a rest in the area attached to the sunken platform on its northern part. They may sit or lean on a low wall of a bigger planting bed, to take a break on their way from food shopping, or simply just to take a short break from their other engagements in their everyday routines.

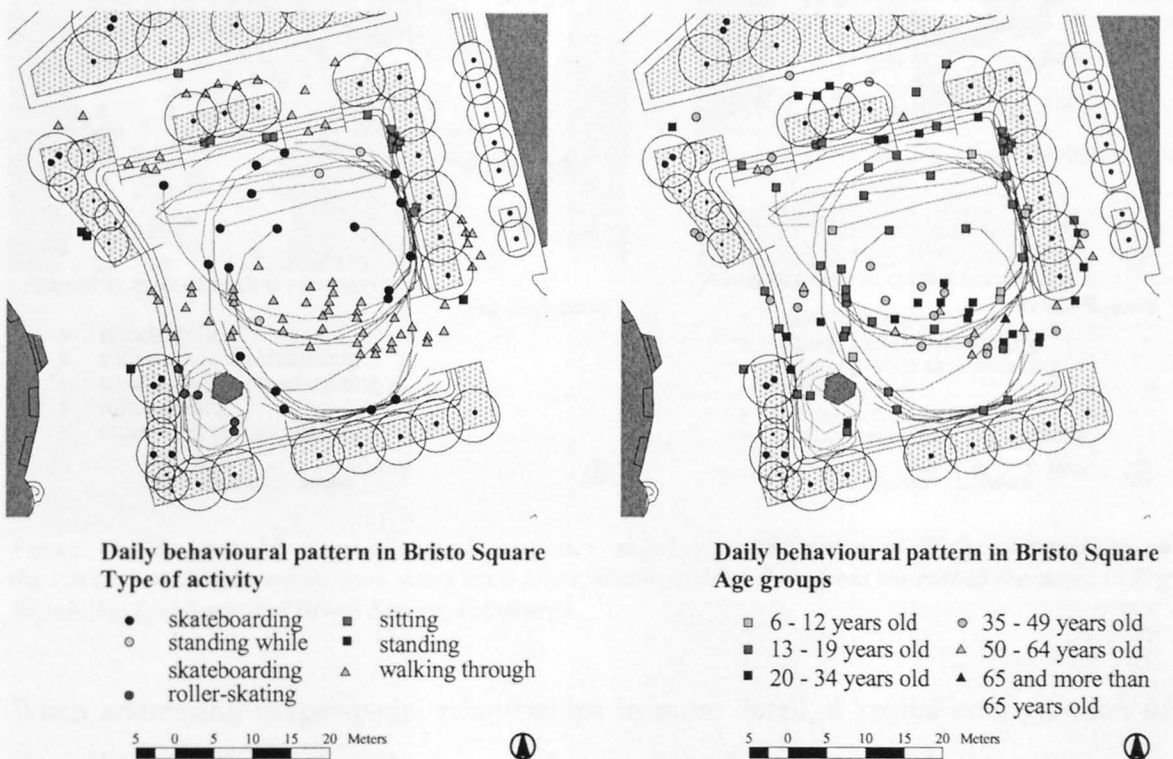
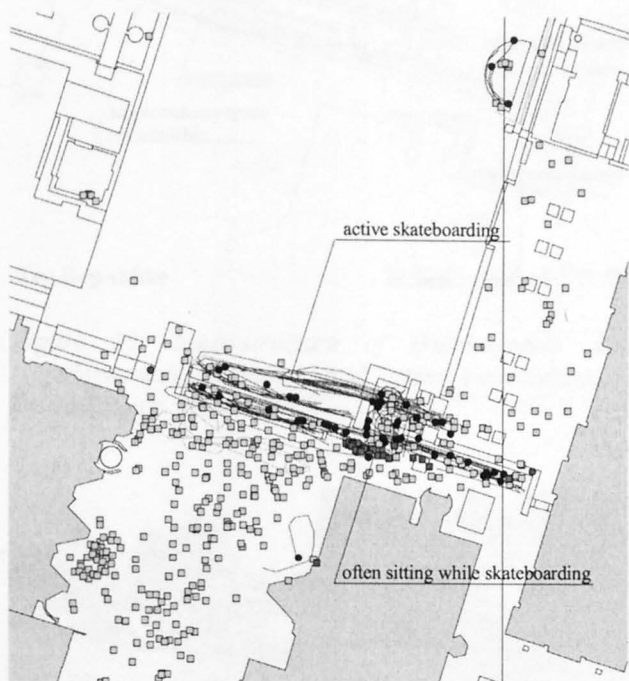


Figure 18: The usual example of a daily occupancy in Bristo Square, Edinburgh, ranged with regard to the type of activity and age group to which any participant belongs.

A quite remarkable presence of skateboarders in each of the two squares, Bristo Square and Trg Republike, shows that they both share a level of interest in that activity (see Table 3). Detailed evidence referring to both squares shows that there were up to 35 teenagers skateboarding per observation unit in Edinburgh, from which 23 were actively

engaged and the rest of them were either sitting or standing aside. The most common number of actively engaged skateboarders in Bristo Square at the same time was 12 and usually the few others were having a rest or waiting for a few minutes until there was space for them in the ‘arena’. There were usually 10 to 15 skateboarders actively using the ‘arena’ in Ljubljana as well. But in contrast to the situation in Edinburgh, more than half of them sat out for longer and observed the others. There were usually about 5 young men skateboarding comfortably at the same time.



Assembly map of spatial occupancy

Trg Republike

- skateboarding
- sitting while skateboarding
- standing while skateboarding
- roller-skating
- other users in their engagements

10 0 10 20 30 Meters



Assembly map of spatial occupancy

Bristo Square

- skateboarding
- sitting while skateboarding
- standing while skateboarding
- roller-skating
- sitting while roller-skating
- other users in their engagements

10 0 10 20 30 Meters

Figure 19: The assembly maps of spatial occupancy, showing a combination of all the observations on the days when skateboarders were using each place, distinguishing them from the rest of the users in Trg Republike, Ljubljana and Bristo Square, Edinburgh.

When addressing usage-spatial relationships in more detail, a spatial configuration of places becomes important. The examined cases show that steps, which merge into a flat platform, are essential elements that attract skateboarders; but this merged, flat area is crucial to enable their actual use. Physical traces of actual activities, represented as graphical information on the map, elucidate the inner structure of the effective space, reflect usability and in this way, address its spatial capacity. In Trg Republike, the capacity of the supplementary space, the available space which actually enables the complete activity to happen fully, was simply not big enough to support skateboarders’

complete active involvement (see Figures 20 and 23). Equipment such as boxes and some other light structures, which skateboarders brought to the stage, evokes latent environments.

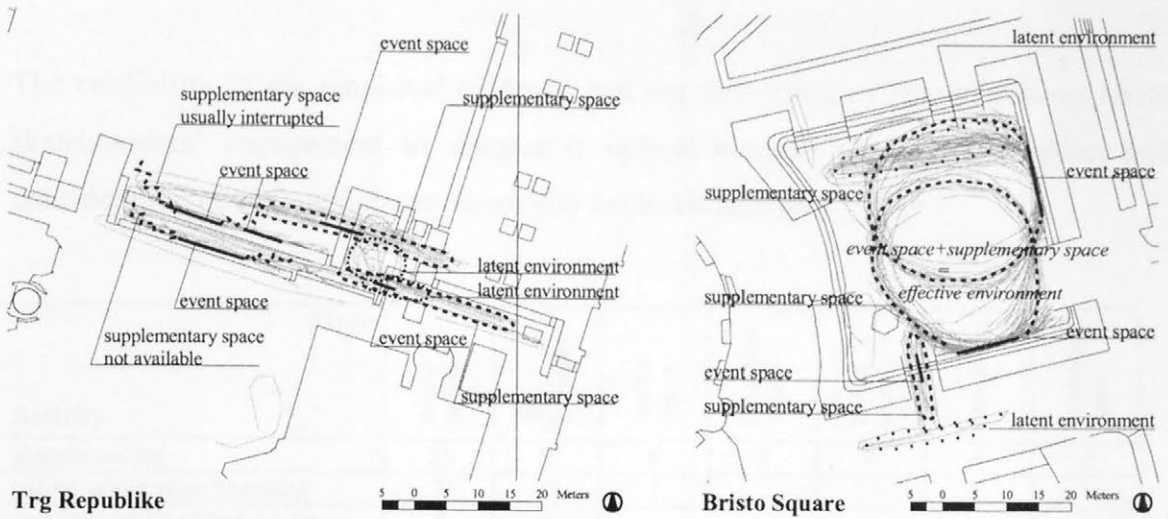


Figure 20: Inner-structure of skateboarders' behavioural patterns revealed as the 'event', 'supplementary', 'effective' and 'latent' environments for skateboarders in Trg Republike, Ljubljana and Bristo Square, Edinburgh.

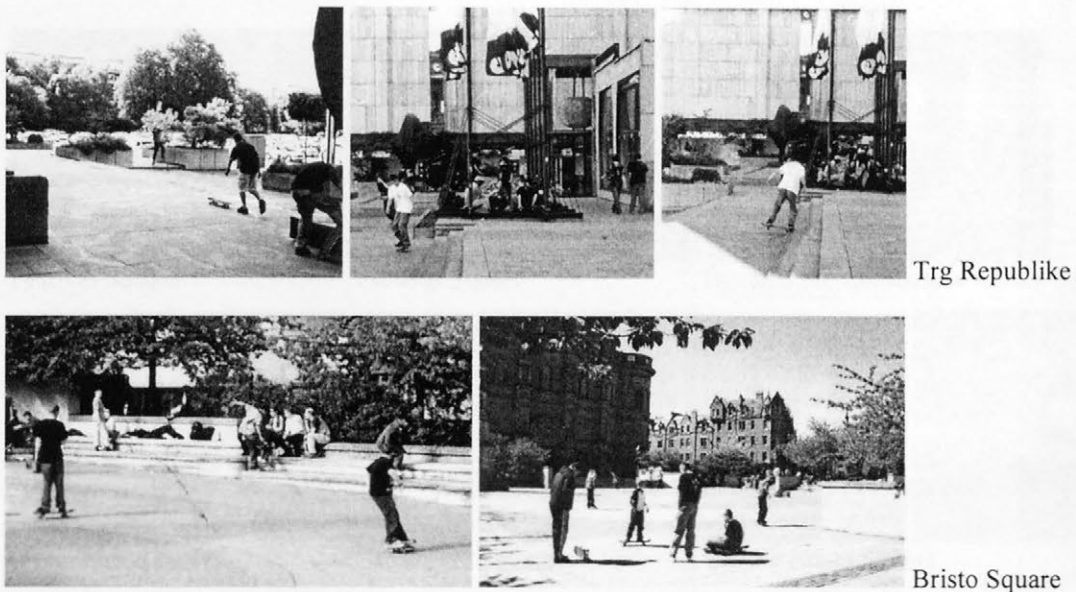


Figure 21: Skateboarding in Trg Republike, Ljubljana and Bristo Square, Edinburgh.

Hard landscapes, which have wide-open platforms, not partitioned by walls or ramps, and directly attached to articulated elevations such as steps, generally successfully facilitate dynamic and active use, such as skateboarding and roller-skating. Skateboarders are engaged in acrobatic activity in two significant ways. They are either jumping over a few steps or approaching the along site of the lowest stair, jumping on, sliding across and finally jumping off it. A cumulative height (number of steps),

important for the first course of action and a length of the lowest step, important for the second one, play significant roles. The settings of a couple of steps connecting two platforms that facilitate ‘jumping over’, are also quite conducive to figure-acrobatic roller-skaters.

The credibility of the empirical evidence and the discussion of generalisations about skateboarders’ engagement in squares is upheld because of the examination and consideration of different places across city centres where they gather.

Activity	Place						
	Bristo Square	Trg Republike	Festival Square	Usher Hall Square	Hunter Square	Dvorni Trg	Conference Square
skateboarding	23	9	8	5	4	4	2
sitting while skateboarding	7	12	1				
standing while skateboarding	8	1					
all variations on skateboarding	38	22	9	5	4	4	2

Table 4: The maximum numbers of skateboarders in any variation of their engagement in each place within the whole observation period.

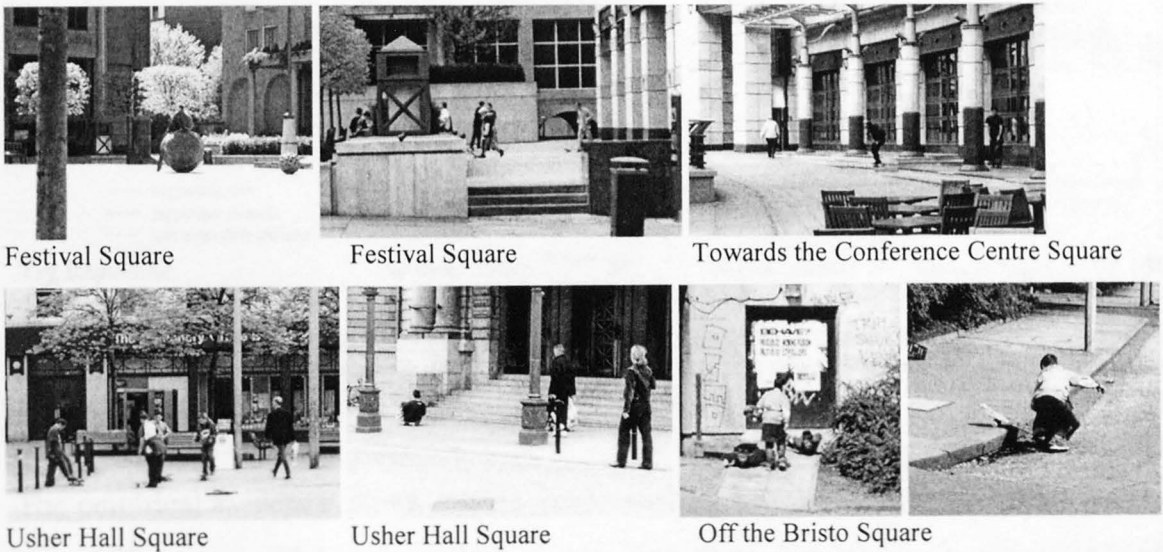


Figure 22: Skateboarders in other squares of the city centre of Edinburgh⁹.

Edinburgh’s urban skateboarders’ web site lists all the squares in the city which they use as a venue for this particular activity. Festival Square has a remark as follows: “A quiet alternative to Bristo Square for beginners and chillers alike” (www.boardwise.com, 2005). Younger teenagers or children gather also at the Usher Hall Square (opposite the Festival Square, on Lothian Road), practising some basic jumps but, mainly, they play

⁹ For detailed spatial locations of the squares, see Figure 6 in Chapter 4.

sliding on the board down the slope. In Festival Square, they usually skateboard on the steps off the main water motif, but often travel on towards Conference Square from the articulation on Festival Square's northern side, which extends towards the other square. Children hang around Bristo Square, too, to practise their initial slides and jumps beside the main 'arena' which is reserved for older and skilled skaters.

To recapitulate, neither Bristo Square nor Trg Republike, and none of the other squares of Edinburgh discussed recently, was planned as a skateboarders' platform but a certain articulation of those places has stimulated its users to be there and to use it for their pastime. However, this certain articulation in itself does not ensure optimal use. The size, shape and vertical articulation of the available space are of key importance.

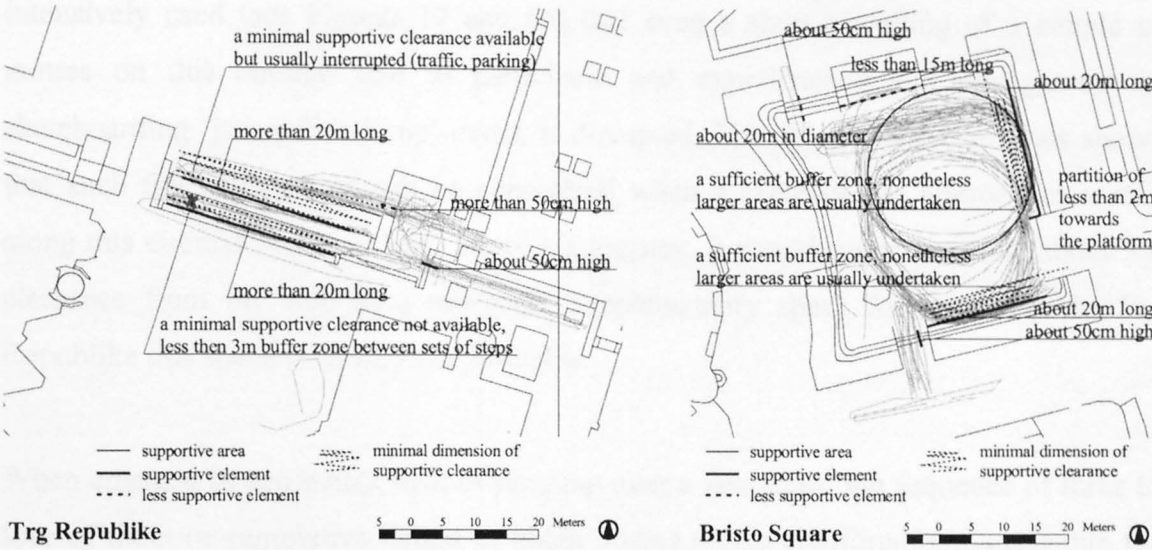


Figure 23: Dimensions of supportive and disruptive environments for skateboarders, exemplified from the cumulative evidence represented on assembly behavioural maps in Trg Republike, Ljubljana and Bristo Square, Edinburgh.

The empirical evidence shows that an action such as a 'jump on a step, slide over and jump off', is successful in the middle of quite long steps. The 'sliding event' most likely takes about 5m, or more. As this 5m space occupies the middle of the step, the necessary full length of the step required needs to be at least 15m, not necessarily continuous in level height along it. The dimensions of the examined steps most frequently used are about 20m or more. A short part of the north side of Bristo Square is less than 15m long and, as recorded, it is used less frequently than the most intensively used parts.

A preparation for such 'jump-slide' actions requires some more space to hand before the step. The Bristo Square study shows that skateboarders usually approach the middle of such a long step following a curve of a circular line of at least 20m in diameter. Thus, in Trg Republike, for example, although the upper line of two steps in the setting is long enough and was used for 'sliding over', the narrow platform which leads into the next pair of stairs heading to the platform of the car-parking area, does not make a circular approach towards the step possible.

A ramp, low wall and staircases, which define the sides of these long steps, create a sub-platform underneath, before the big opening of the car-parking place. It could eventually provide an area for a partial travelling on a 'potential' circular line which a skateboarder may follow as a preparation for sliding over a step. However, the parking place is so intensively used (see Figures 17 and 66) that even a short travelling of a couple of metres on this circular line to participate and experience a full engagement in skateboarding 'jump-slide-jump' event, is disrupted. The Bristo Square analysis shows that such full engagement can be considered when a skateboarder approaches a step along this circular line in at least 5m of his journey. It would suggest at least about 3m clearance from the step as a minimum supplementary space for the jump. In Trg Republike this space is usually not available.

When engaged in acrobatics such as jumping over a few steps, the sequence of three to four of them (a cumulative height of about 50cm) seems comfortably manageable for the skateboarders. When more steps create a deeper staircase, skateboarders might bring some additional requisites to a setting to transform such staircase into a ramp, and slide on it. Dimensions of platforms above and below the steps also vary, and seem not to have any inhibitive characteristics for the activity. The examination also shows that skateboarders perform movements towards jumps, either over some steps or on a step, against or along the slight slants (Bristo Square, Hunter Square, Dvorni Trg), and that a slightly curvy character in a long step, appropriate to slide over, might be encouraging too (Conference Centre Square).

Travlou (2004), studying teenagers' use of public spaces in Edinburgh, including skateboarders as a sub-culture, points out different particularities addressed by different sub-groups, reflected in either spatial or social contexts, but concludes: "nevertheless, teenagers consider as their ideal place a hub of co-existence." Urban skateboarding is

probably more likely to do with it being an informal sport activity. It is an expression of young people's recognised co-existence in public spaces, rather than their being challenged by their engagement in extreme sport.

Skateboarders are a small and particular example of public space use, which in this thesis is examined from quite a specific point of view, a usage-spatial relationship. However, study of their activities addresses general concerns about democracy and (social) sustainability, two overall goals of current beliefs in spatial planning and design. Accordingly, achieving public places of social interaction and diversity of uses has been discussed, valued and encouraged often in recent years (Worpole, 2000; Gehl, 1987, Gehl and Gemzøe, 1996; Ward Thompson, 2002; Hajer and Reijndorp, 2001; and many more).

From the interest of this thesis, there is a recognition that knowing the potential spatial requirements of certain uses per se, helps to understand their own peculiarities. However, their interpretation within patterns of other uses present and their co-existence reveals their actual abilities in occupancy and a place's availability for single or multiple occupancy. The distribution of uses and spatial occupancy of places is particularly interesting in places where certain spatial elements such as steps, low walls or even art works may imply multiple use. For example, steps are often structures used for informal sitting and as discussed above, they are essential fixed elements in public spaces which may attract skateboarders. The discussion illustrates further such issues in the cases of Trg Republike and Bristo Square.

Neither square has any benches but participation in sitting is remarkable (see Table 3). According to Whyte: "people tend to sit most where there are places to sit" (Whyte, 1988: 110). Potential environments, including some steps, may then seem similar for sitters and skateboarders, but the analysis shows that their actual effective environments do not overlap. Sitters are searching for sheltered (not necessarily from sun), back-covered, less exposed areas, and places with a view of either attractive landscape or events (Gehl, 1987; Whyte, 1988).

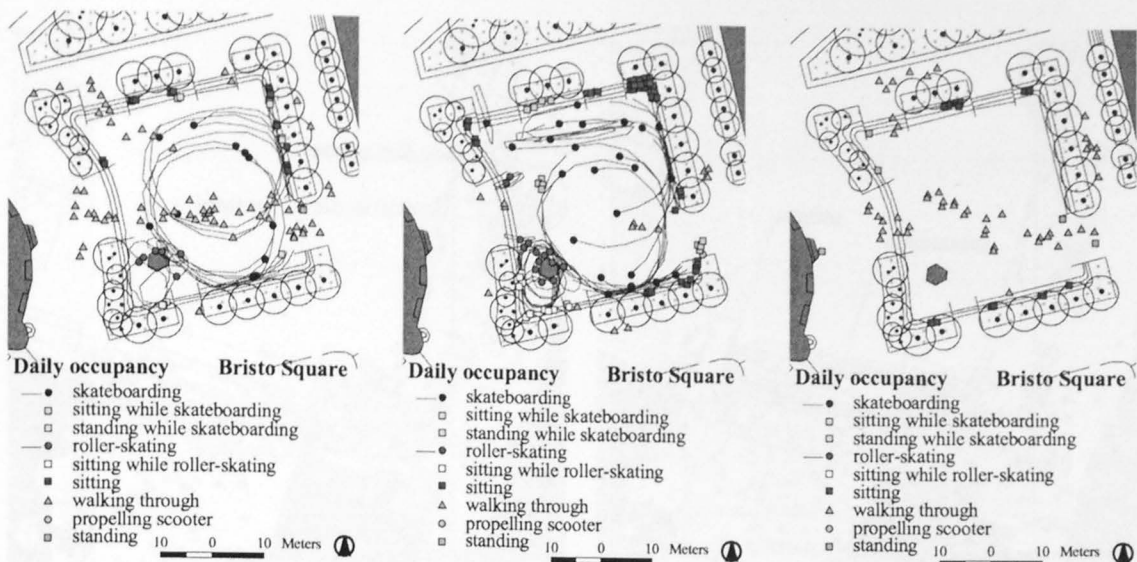


Figure 24: Maps of typical occupancies in Bristo Square, Edinburgh represent, from the left to right, daily occupancy on a weekday afternoon of poor weather, daily occupancy on a weekend afternoon of very good weather, and daily occupancy on a weekday early afternoon of good weather.

Although the intensities in participation in any long-stay occupancy on a cold, windy and cloudy afternoon (first map), in comparison to a warm, sunny weekend afternoon (second map) is lower, both maps show a similar behavioural pattern of occupancy. People sitting were mostly occupying the upper steps in the parts where broad planting beds finally enclose the square. The distribution of uses recorded on a nice early afternoon during the week (third map), when there were no skateboarders and people sitting there could have occupied any square inch of the staircases, it shows a similar pattern of passive occupancy with the other days. One may speculate that sitting along the eastern edge was not evident as the skateboarders' performance on the stage was missing.

These examples show that, spatially, optimal settings for sitting and skateboarding are different and that Bristo Square successfully serves both activities at the same time. They also show different concerns addressing time aspects of occupancies. According to a weekly occupancy, transitory activities occur more during the weekdays than at the weekend. Time differences, recorded for different times of the day, reflect that active long-stay activities such as roller-skating and skateboarding are usually participated in of an afternoon, no matter what the weather, whereas they might not be seen earlier in the day.

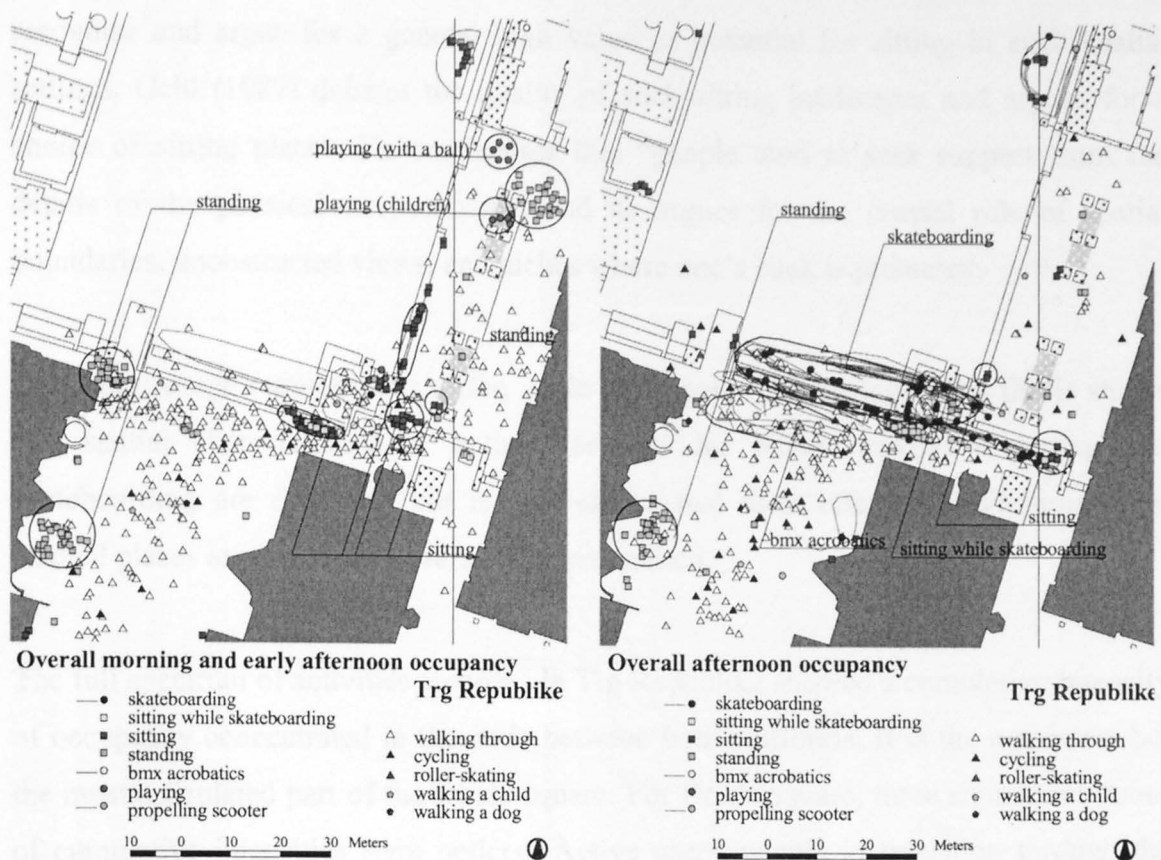


Figure 25: The overall patterns of daily occupancies of the whole observation period, in the setting with the most stairs or other relevant articulation, varied at different times of the day: morning and early afternoon, 10am-2pm; afternoon until late, 2pm-7pm.

In the Trg Republike, the overall patterns ranged by different times of the day show that people engaged in transitory activities such as cycling, walking through and roller-skating and group gatherings, especially in front of the technical library, regularly occupy this particular area of the square all day long. Skateboarders, as in Bristo Square, significantly, most frequently occupy the staircases of the settings which connect both the longitudinal platforms in the afternoons, whereas people sitting in some of these settings and other relevant articulations in the square, as shown in Figure 25, were recorded in their greatest numbers in the late mornings and early afternoons. The setting of long steps, frequently occupied by skateboarders, is completely exposed at the back towards a wide-open platform. Inevitably, it lacks shelter or niches that might make people choose it as a place to sit. Thus, also in the mornings and early afternoons, when skateboarders usually do not occupy a place, these particular steps are not in use for sitting.

In other micro settings in this part of Trg Republike, sitting locations are either flat areas or steps articulated by planting boxes, low walls or steel flagpole constructions. In their studies, Cooper Marcus and Francis (1998) and Gehl (1987), for example, also

recognise and argue for a general high value or potential for sitting in such spatial settings. Gehl (1987) debates the quality of such sitting landscapes and argues for a choice of sitting places. He emphasises that “people tend to seek support from the details of the physical environment”, and he argues for the crucial role of spatial boundaries, unobstructed views, and niches where one’s back is protected.

Generally, usage requirements differ, as do preferences for settings. This thesis shows that spatial characteristics of optimal settings for either occupancy, sitting and skateboarding are different, but is also shows that their effective environments in studied places are not always available or are limited.

The full spectrum of activities recorded in Trg Republike showed a cumulative intensity of occupancy concentrated in the node between both platforms. It is the narrowest but the most articulated part of the whole square. For Bristo square, three significant zones of cumulative intensities were noticed. Active users, people in transition through the place, and skateboarders, all take their places from the boundaries between edges and periphery, peripheries to central areas. When evoking a latent environment for skateboarding, the intensity of occupancy is increased at the periphery, between the articulated edge and the area which is off one of the most used lines for passing by (see Figure 26 below and in the accompanying CD).

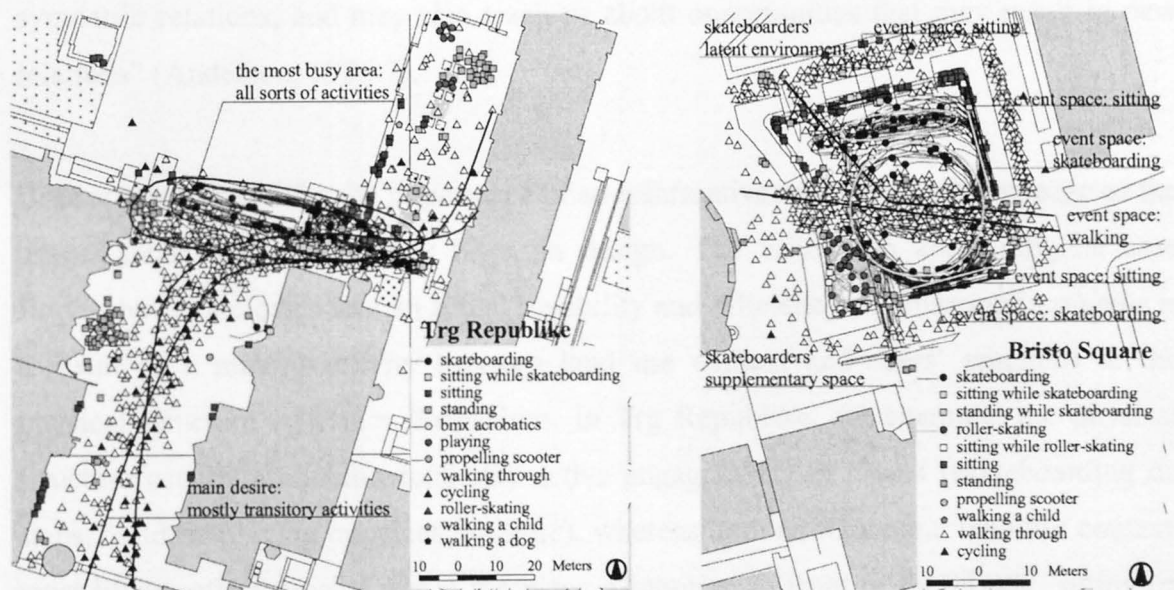


Figure 26: Cumulative maps of spatial occupancy in Trg Republike, Ljubljana and Bristo Square, Edinburgh, show the types of activities and areas of their cumulative intensities as well as some effective, supplementary and latent environments. (See also CD, accompanying the thesis, File 5.1.1, Figure 26).

This evidence shows that different combinations of the same elements of spatial definitions may create different opportunities of co-habitation and intensity of occupancies in places. For example, in Bristo Square, the interaction between people in transit and skateboarders happened mainly in the skateboarders' supplementary spaces that they needed for their actions, while in Trg Republike, interaction occurred in the areas of the actual events themselves. In the context of the use of public parks and squares in urban renewal areas in Vienna, Grimm Pretner (2004) concludes that, "Spatial arrangements can, however accommodate or anticipate public recreational and social needs". In this context, she also states that, "the spatial structure of a site-design is the most durable of decisions and will continue to form the basic structure into which future elements and equipment are fitted", and she appeals to designers to provide "possibility spaces" and flexible design.

Reflecting on possibilities, Anderson points out that, "within the same physical place, different individuals have different influential environments; and that one person's influential environment may reveal what is latent for another" (Anderson, 1986:7). Reflecting on a 'durability of spatial structures', he also stresses that, "similarly, the inter-subjective influential environment of society changes over time, without necessarily changing the physical form". Pointing out social attributes which may shape environments, the importance of their consideration and the message they may send, he concludes further, that, "all these differences may allow for so-called non-competitive sympatric relations, and may also teach us about opportunities that may result in new relations" (Anderson, 1986:7).

Both arguments call for the importance of an informative role which a knowledge of the usage-spatial relationship may have on design. The Edinburgh and Ljubljana case studies have elucidated that an actual flexibility and efficiency of urban environments is a result of a mutual activity between land use context and users' reactions to the physical structure of places themselves. In Trg Republike, for example, the physical structure usually stimulates long-stay active engagements in places (skateboarding on steps, children playing on street furniture), whereas both structure and land use context, most likely reflect passive use in the place. Gathering in front of the library, sitting on the stairs or having a quick ball play during a main break in school on a late morning, may reflect a land use context, for example. Accordingly, the provision of interwoven

relationships of long-stay passive, as well as active activities with transitory ones, is recognised as important when addressing democratic and all-inclusive design.

5.1.2 Parks

Although parks and squares are all public places, the nature and role which public parks usually play in meeting public life are different. Hayward (1989) sees urban parks as community assets, and discusses their provision of a setting for a broad variety of leisure and recreational activities. These serve the needs and interests of all kinds of people and many sub-groups of the population such as young and old, groups and individuals, affluent and poor, male and female, athletic or not and the like. Reviewing trends in park planning, Hayward (1989) points out two emphases, “active recreation” and “nature in the city”. He associates the latter with “passive experience and the park as a visual aesthetic resource”, and lists the activities that might be encouraged by it such as picnicking, sitting and relaxing, nature walks, watching birds or other animals, reading or sunbathing (Hayward, 1989: 195).

When addressing active recreation, he refers to facilities for its provision rather than discussing any particular type of activity, summarising that, “landscape architects and planners are usually directed to accommodate recreational needs through ball fields, tennis courts, swimming pools, playgrounds, bicycle paths, jogging paths, fitness courts, ice skating rinks, and so on” (Hayward, 1989: 195). These reflect engagement in active activities for/in parks, associated with a variety of settings and the provision of built facilities and structures.

Contemporary parks’ design attests to other themes which have become increasingly popular, for example, education, manifested from art and social disciplines to natural and cosmic sciences. Thus, not only sport facilities, but also other buildings or built structures such as museums, galleries and the like have become part of parks’ programmes. Treib (2002), commenting briefly on the nature of the park under contemporary conditions, and focusing on its basic spatial characteristics, illustrates two sides of the thinking on designed urban green space. He gives the examples of La Villette and the Parc André Citroën, two parks which have been debated often and commented on from all sorts of angles concerning parks and contemporary society: “Although interesting as architecture, as a park today, La Villette’s lawns and trees are

relatively uninteresting, if benign. Remove the buildings (well-termed ‘follies’) and there is a little landscape of any consequence” (Treib, 2002: 146). Discussing the character of the other park, he states that, “this green space offered many of the amenities one expected of a park: lawn, water features and a surfeit of plantings that rivalled a botanical garden”, and he argues that, “what it did not offer was the informality, simple bosks with earthen floors, or even shade” (Treib, 2002: 146).

However brief, in this illustration, Treib (2002) critically highlights the importance of the character of greenness, that main basic tissue of a park, its ultimate constituent, which addresses the presence of nature within a built world around it. Whatever form this nature takes, whether well maintained or left to its spontaneous growth, is another question. It addresses the purpose of a park or its parts, with regard to broader spatial and ecological contexts, as well as the expected/desired future use, and users’ preferences towards engagement with nature. Addressing both issues, social and ecological, Ward Thompson (2002) recognises ‘loose-fit’ landscapes, which can allow for opportunities for social diversity and ecological shifts, as a key flexible approach to open space definition and usage. With regard to the usage-design aspect, she emphasises further that: “The key to loose-fit spaces is how they are used and designed to be used”, and she exemplifies that “therefore the illusion that open, empty space is not constrained is incorrect” (Ward Thompson, 2002: 70).

In parks, where large voids are usually one of the basic spatial constituents, the question how loose-fit landscapes can be (in)formed by uses is relevant here. Making a point about park design, Ward Thompson (2002) refers to Dovey’s critical comments on La Villette that, “the emphasis on static, visual qualities of space do not in fact make for loose and free use of space, but one where use is highly controlled and limited” (Dovey 2000 in Ward Thompson, 2002: 70). Recognising the potentials and problems of/for loose-fit spaces in designed places, this thesis considers one aspect of their examination through occupancies, and aims for some insights as to how this flexible concept of loose-fit landscapes of larger central parks (in a European context) can be implemented and closely considered.

To recapitulate and highlight, parks are settings of less explicit limits, usually bigger in size and predominantly green. Spatial determination and articulation of settings is often less defined on a small scale, which is usually the case in squares, but it is often defined

on a larger scale by the notion of surfaces, their size, shape and physical as well as programme articulation. In this context, a physical articulation refers to level changes in and between main surfaces (lawns) and the quality of outer and inner boundaries, for example, a solid boundary such as the edge of a parks' woodland, a transparent boundary such as a tree line, and an indication of horizontal divisions such as paths or dikes. The inner partition of so defined surfaces in parks is usually marked by different elements such as single trees or groups of trees, and on a smaller scale, also by water motifs, walls and benches, for example, which actually address a programme articulation of a park, too.

Parks are often considered as negative or soft spaces, places of implicit limits (Trancik, 1986). In parks where physical limits are well defined, effective environments are easily recognised and realised. Where voids are larger and the physical limits are further apart, uses themselves structure the resilience of the potential environment to become effective for one or more of them. Thus, a structure is given to loose-fit spaces. This chapter examines such usage-spatial relationships, and builds the discussion and supports the arguments by reference to the physical contexts and behavioural data relevant to the three large parks included in the study, Tivoli (Ljubljana), the Meadows and Princes Street Gardens (both Edinburgh).

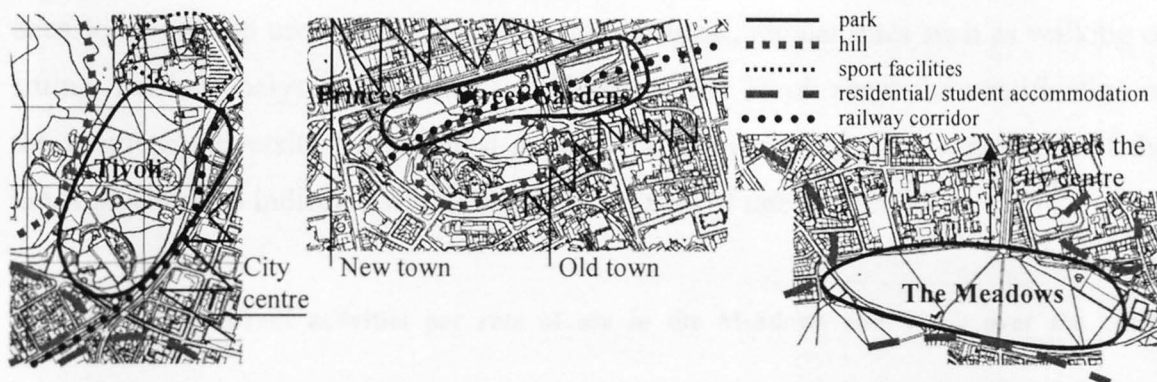


Figure 27: Large parks and their broader spatial context, Tivoli, Ljubljana¹⁰, Princes Street Gardens and the Meadows, Edinburgh.

Tivoli is the only big public park in the centre of Ljubljana. It carries out the functions, meanings and importance of a public park on its own. Tivoli and Princes Street Gardens share the attributes of spatial content such as a social programme, in terms of the nearness of galleries, churches, outdoor cafés and a children's playground in an adjoining area. The sense of place of each is as a space for a short rest and to relax.

¹⁰ See more about Ljubljana's spatial context and detailed spatial articulation in Appendix C.5.

Although different in size and topography, both have traditional park features such as benches and fountains. Their location and the spatial features of their context is set by a railway corridor and the slopes of a hill. Tivoli has also some other characteristics of spatial content that are not found in Princes Street Gardens but that are in the Meadows, the other central public park of Edinburgh. These are size (about 230000m²) and overall shape, the meaning, in terms of passive and active recreation, and their context, in terms of the nearness of student accommodation. Tivoli has inner articulations and some slight slopes in some parts, whereas the Meadows is completely flat, and has no articulation besides its main walkways' system and tree lines along them.

Although Tivoli, as a park, is part of a larger recreational area, attached to a natural urban forest, and it is equipped with some sports facilities on its northern end for in- and outdoor activities, a distinctive area of a 'green open space', forms a recognisable spatial entity and this has been included in the study as a park, in a narrow sense. So, all the parks included were green spaces with no large built structures and with a similar policy of maintenance.

An overall characteristic, resulting from observation of all three main parks, is reflected in the complementary concerns of frequency and diversity of recorded uses in them. As already mentioned, diversity in activities recorded in each place is constituted from rare, occasional noticed uses, rather than from conventional, regular ones such as walking or sitting. Further analysis shows that the Meadows and Tivoli share the stratification of the frequency-diversity pattern most strongly. Moreover, they also share many of the kinds of activities indicated within certain categories of rate of use.

A number of different activities per rate of use in the Meadows and Tivoli over the entire observation period

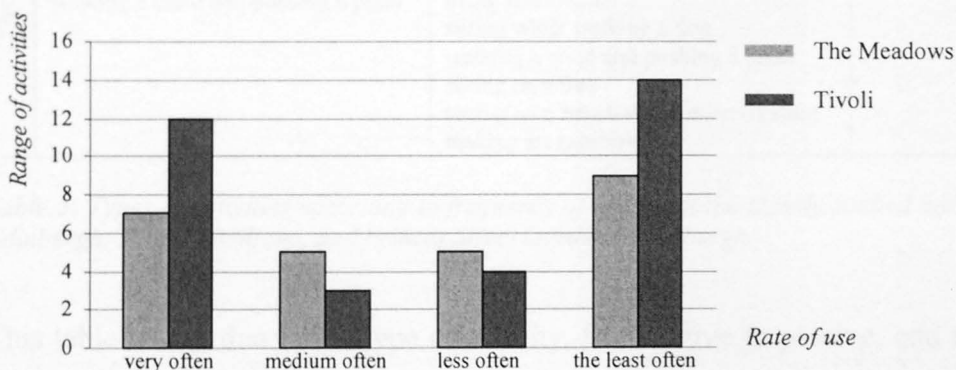


Figure 28: Comparative chart for the number of different activities in the Meadows, Edinburgh and Tivoli, Ljubljana, according to frequency of use.

Coincidence of activities in the Meadows and Tivoli for the entire observation period

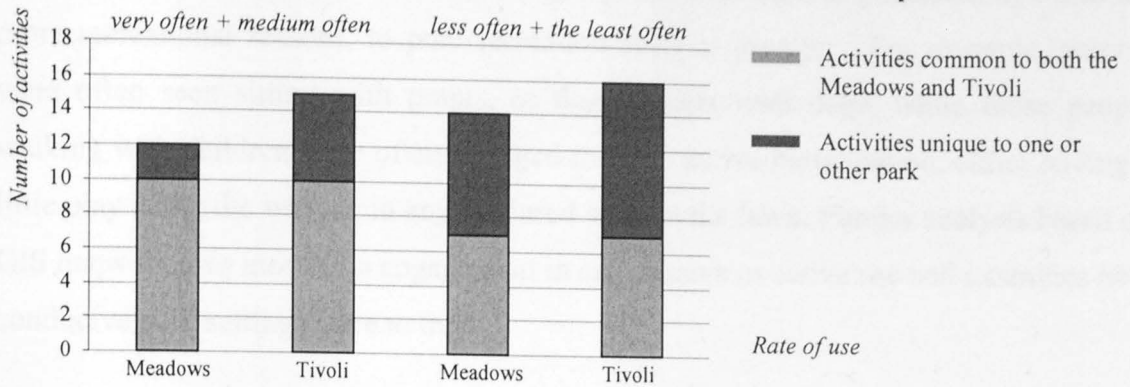


Figure 29: Comparative chart for the coincidence of activities in the Meadows, Edinburgh and Tivoli, Ljubljana, according to frequency of use.

	the Meadows	Tivoli	Princes Street Gardens
Very often	walking, walking a dog jogging cycling sitting on a bench sitting playing football	walking pushing a pram sitting on a bench sitting cycling walking a dog walking a child lying down standing sitting around a table roller-skating jogging	walking sitting on a bench sitting standing
Medium often	playing frizbee walking a child standing lying down pushing a pram	playing lying on a bench sitting with a pram	playing lying down walking a child pushing a pram walking a dog
Less often	playing cricket playing with a ball roller-skating skateboarding stopping while walking a dog	playing frizbee playing football climbing sitting on a bench with a pram	playing football sitting around a table playing with a ball
The least often	playing golf bmx-acrobatics and cycling performing street-theatre climbing playing baseball flying a kite sitting on a bench with a pram sitting while walking a dog walking a child and pushing a pram	playing with a ball playing volleyball propelling scooter bmx-acrobatics and cycling skateboarding exercising fishing playing badminton using wheel-chair sitting while walking a dog walking a child and pushing a pram sitting on a tree sitting on a bench while roller-skating making art exhibition	lying on a bench rolling down climbing roller-skating skateboarding jumping over the fence

Table 5: Types of activities according to frequency of use in all the closely studied parks, the Meadows, Edinburgh, Tivoli, Ljubljana, and Princes Street Gardens, Edinburgh.

This table shows that either type of activity, from active to passive, and from transitory to long-stay in parks, can be realised in many different ways. Transitory activities range from simply walking, cycling or roller-skating as transportation, to their different

variations such as walking a child, pushing a pram, walking a dog which may occur for more recreational reasons, to pure recreation such as jogging. For example, parents were often seen sitting with prams, or dog walkers with dogs, while those people walking with children were often engaged in more active participation, either having a little play along the way, or in any favoured area on the lawn. Further analysis based on GIS maps focuses mostly on engagement in any passive or active use and examines how conducive park settings were to them.

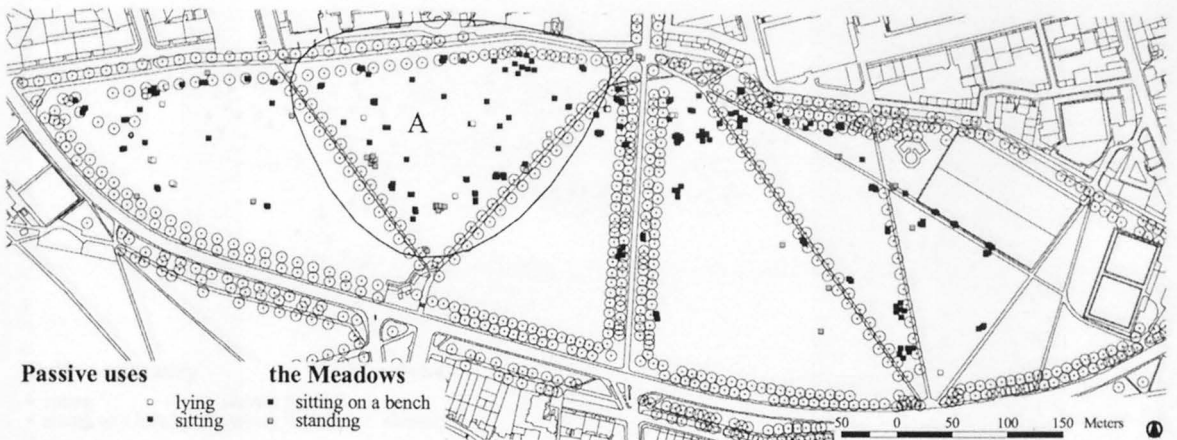


Figure 30: An assembly map of passive uses such as lying down, sitting on the grass and sitting on a bench as recorded on all the days of the entire observation in the Meadows, Edinburgh.

This overall assembly map, demonstrating records of people lying down in the Meadows in all days of the entire observation, shows that they were mostly in sharp corners of patches determined by tree lines along paths, and at peripheries along such edges, usually along well defined, solid edges. Some were in semi-peripheral areas, further away from paths, at a mid distance between two corners (paths' intersections) or off them, towards the centres of a lawn patch. Sitting was recorded more often, twice as often as lying down and was also more intensively participated in than lying down. People lying down, sitters as well, were often recorded in corners (especially groups) and in broad, peripheral areas off them and at any location along the paths, towards the biggest openings of voids. Shorter, inner edges and the closeness of well-defined boundaries behind a path, for example, seem also to play an important role in searching for a place to sit down in green places.

One of the large patches in the Meadows, about 30000m², is most regularly and wholly occupied by these passive uses (see A in Figure 30). From a spatial structure point of view, it is the only area which is not directly attached to the southern edge of the park.

At the same time, it has its longest side along a non-transparent, quite solid and little exposed edge of the entire park. This whole patch has the most ‘inward’ character of the whole park. Relative to other users occupying the place, possible conflicts might occur over the most desired settings and the like, however, the empirical evidence shows that people sitting and lying down in places were not taking left-over places. They could have chosen other places when they arrived, as they were available, but they had indeed decided on those locations discussed above.

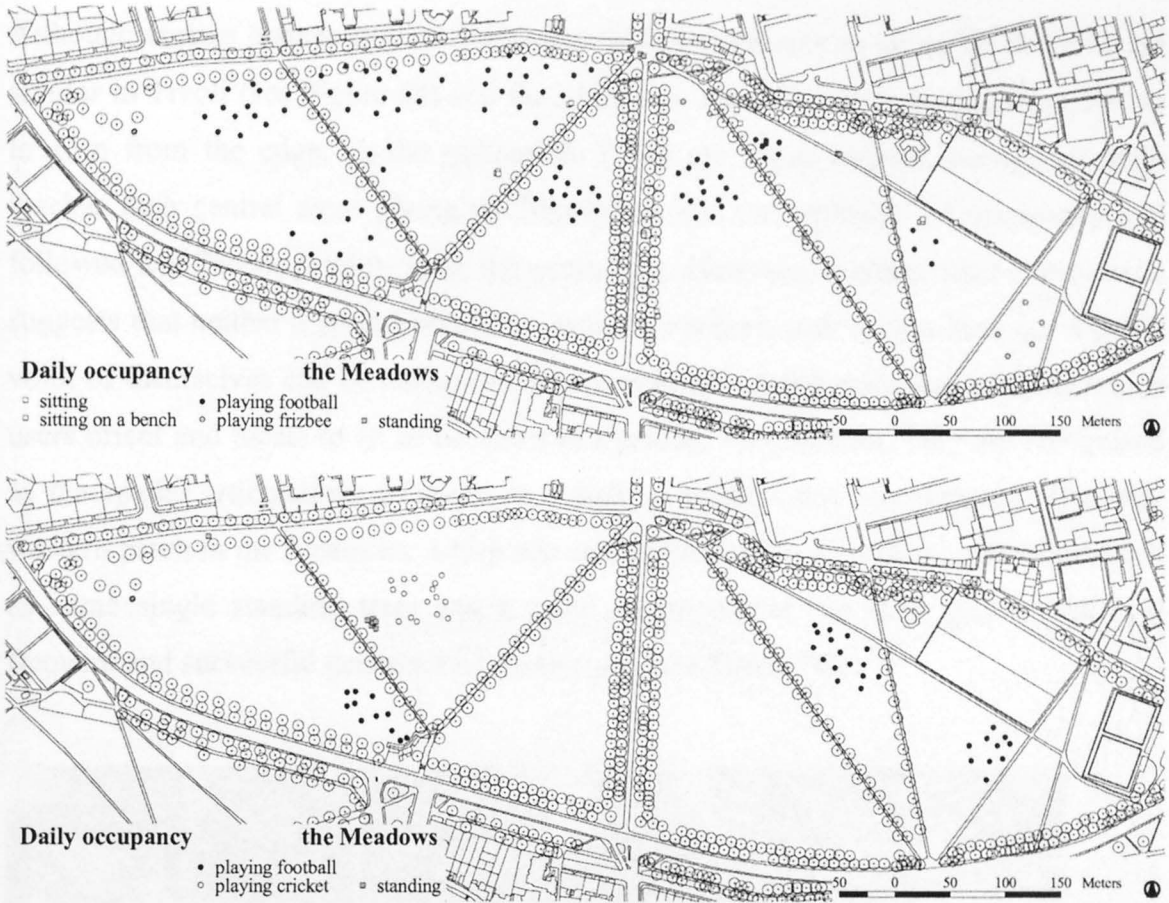


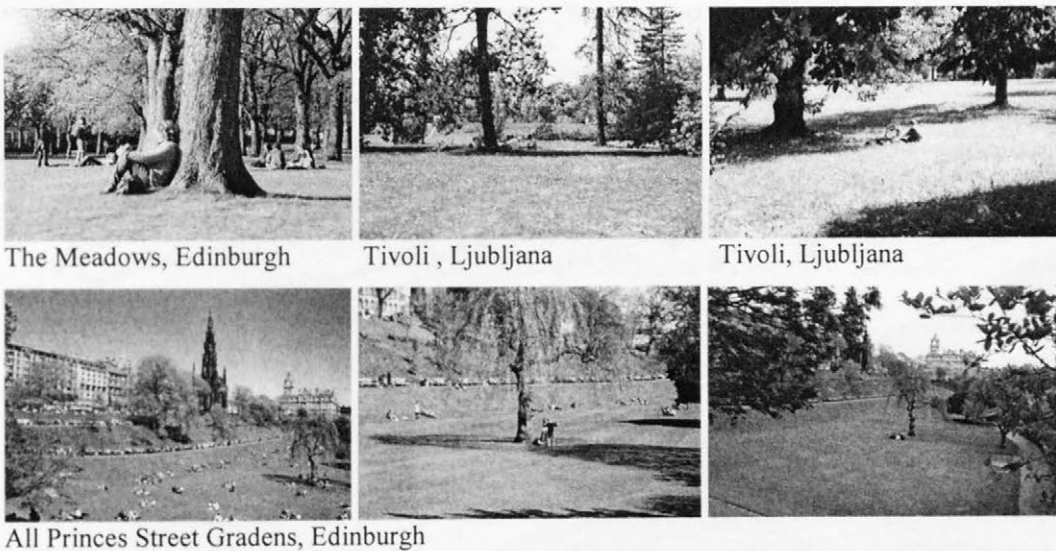
Figure 31: Two typical examples of daily occupancies in the Meadows, Edinburgh, showing records of long-stay occupancies, passive and active.

These maps also show that the occupancy of informal uses in the Meadows fills in the place from the corners and mid points along the edges, then further along these edges and towards the centres. Cricket, for example, as the use which respects the dimensions of a playing field, usually takes place in the centre of one of the big patches.



Figure 32: Two snap shots from the Meadows, Edinburgh: cricket players; a combination of passive and active long-stay occupancy.

Although certain distances from the paths which people take to sit or lie down in are similar in Tivoli (see Figure 44) and the Meadows, approximately starting from 5m up to 15m from the edge, as the patches in Tivoli are much smaller, occupancy soon reaches their central areas giving the impression that the ‘strategy’ of occupancy had followed a different pattern, from the centre out. However, a closer inter-comparison suggests that neither a spatial boundary, such as a corner, path or tree line, nor a green void, of themselves can be recognised as the absolute spatial structures towards which users orient and locate to sit or lie down in a setting. Nevertheless, they are recognised as the spatial articulations of lawns in a park to which users are attracted. The very western patch in the Meadows, which has an additional type of spatial articulation, such as some single standing trees and a stone monument in the open green void, is a frequent and successful generator of passive use (see Figure 30).



The Meadows, Edinburgh

Tivoli , Ljubljana

Tivoli, Ljubljana

All Princes Street Gradens, Edinburgh

Figure 33: Sitting in parks’ settings articulated by explicit landmarks such as trees and/or solid edges such as a steep slope. The last picture in the second row, showing a group of teenagers gathering in Princes Street Gardens on a cold afternoon is particularly eloquent as they had the whole plot available but they chose this particular location, which has proven to be chosen quite often, illustrated from the other pictures of Princes Street Gardens in the set, as well as from the map below.

As groups of trees and solitaires, especially in Tivoli but also in Princes Street Gardens, articulate some central voids of green patches, it is notable that sitting or lying down are often recorded in central areas, too. These examples reveal a notion about the articulation of places. Depending on preferences such as being in the shade or lying/sitting in the sun, teenagers, individuals, couples or families, find places under or between trees, using them, or voids between them, to orient and mark the territories.

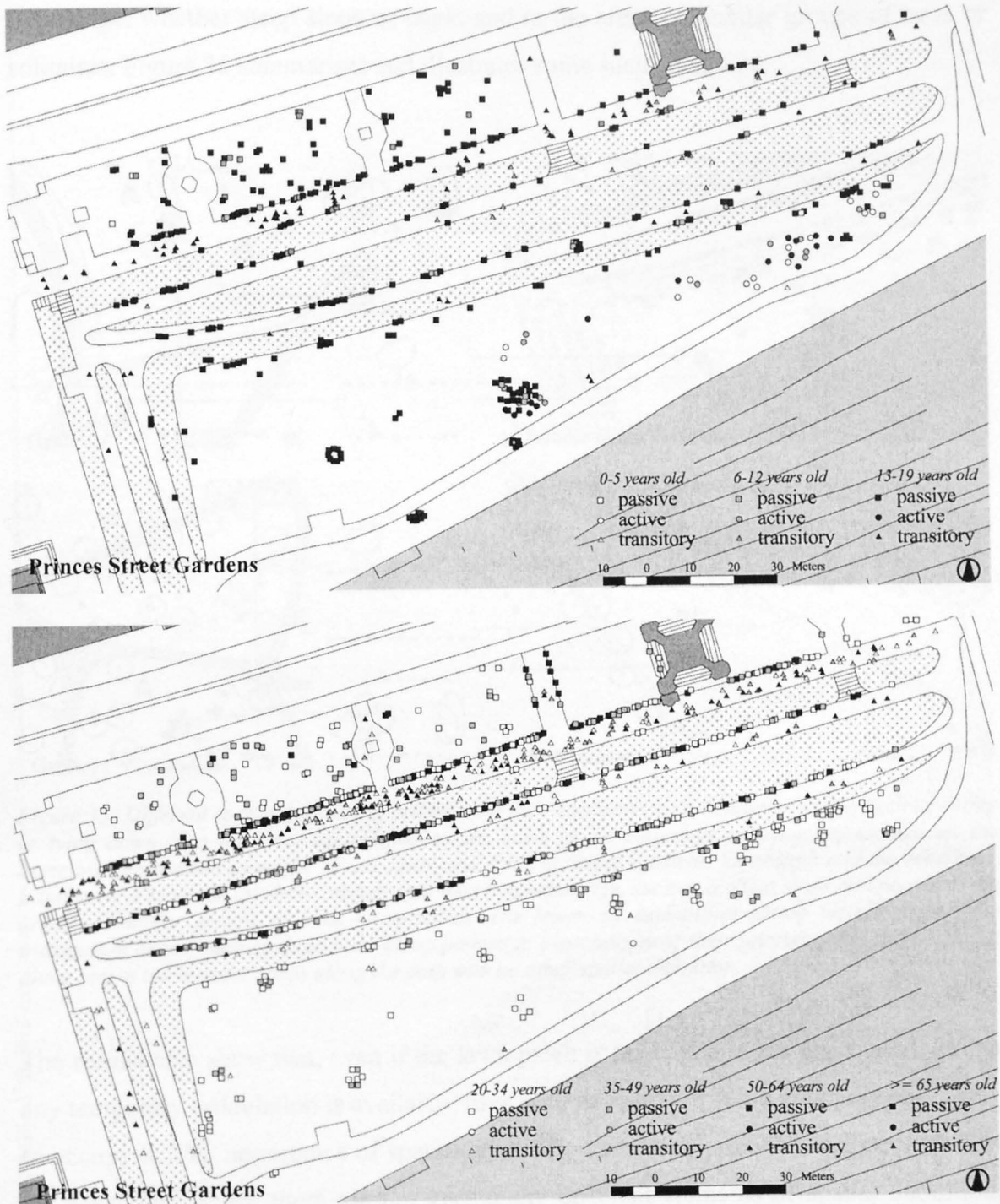


Figure 34: Cumulative assembly maps of occupancy stratified with regard to age groups on all the days of the entire observation in the north part of East Princes Street Gardens, Edinburgh, showing participation in different types of activities, such as long-stay, passive and active, as well as active in transition through the place. (See also CD, accompanying the thesis, File 5.1.2, Figure 34).

Analysis of these different parks shows that a certain spatial definition such as a corner or a path with different degrees of transparency are not the ultimate clues to spatial occupancy per se. Groups of trees, some prominent single trees or any other objects can play a crucial role. What matters, is a spatial articulation and a placement of uses in a place relying on a certain distance from it. It is reflected, for example, in occupancies, distanced from at least 5 metres away from transparent edges such as tree lines along pathways of the patches, predominantly without trees, congregations right up against a solid edge, whether steep slope or bank, and in the areas of smaller groups of trees or solitaires. Figure 35 summarises and illustrates some such situations.

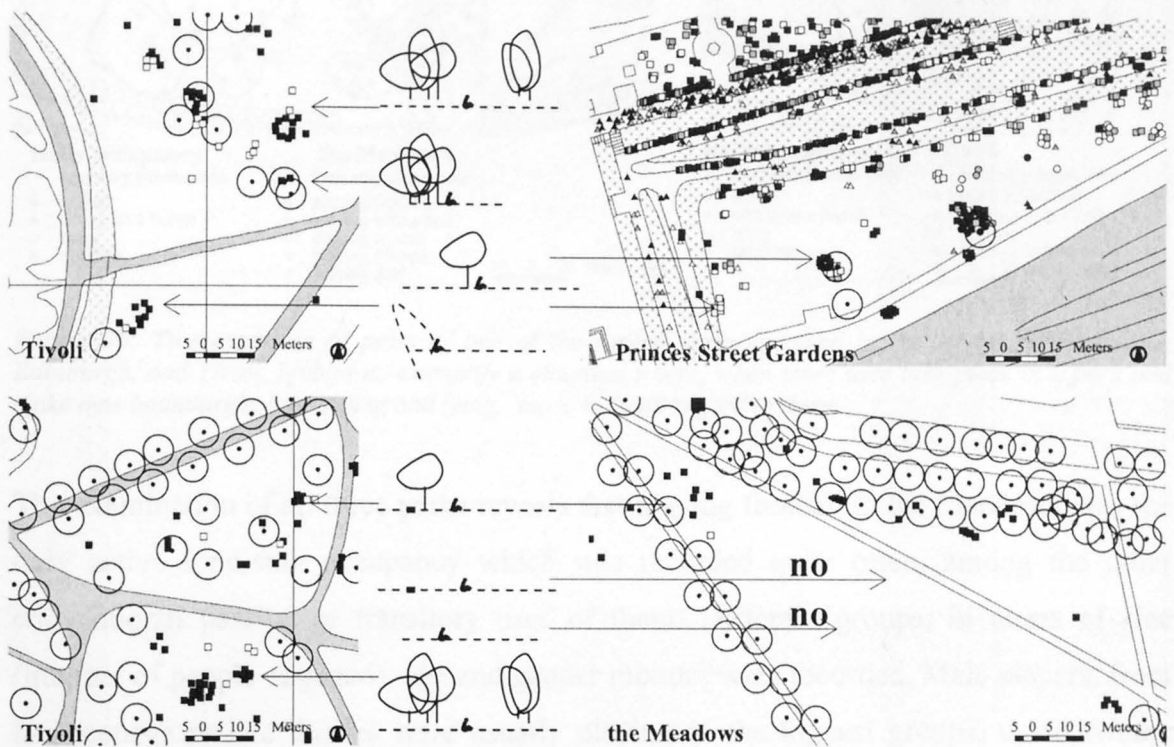


Figure 35: Different spatial qualities of settings and their conduciveness to passive usage, such as sitting or lying down in a park are exemplified on the basis of the empirical evidence represented on the assembly behavioural maps for Tivoli, Ljubljana, Princes Street Gardens, Edinburgh and the Meadows, Edinburgh. The upper set shows sitting right next to a solid edge, such as a slight slope and people in the areas of smaller groups of trees or solitaires. The lower set exemplifies sitting further away from transparent edges, such as three lines along pathways, especially near their intersections, and no sitting along any of the broader zones along the path with no other spatial definition.

The results also show that, even if the lawn patch is huge, if it is not articulated, unless any temporary articulation is available, uses such as sitting or lying down are less likely to occupy it. The importance of spatial articulation reveals, especially in places such as the Meadows, where there are not very many different elements of spatial definition, that it is not only physical spatial definitions that might direct uses in certain spatial occupancy, but also that the presence of other uses, to a certain degree, can perform this

function, too. Mainly, larger groups of active participants articulate places and, in so doing, they create room for themselves and for others (see A and P in Figure 36). The examination, so far, has found that the size and the shape of lawns in parks are not particularly crucial for any passive occupancies. Later in the thesis, it will be shown that they can be of greater importance for informal ball games, especially playing football.

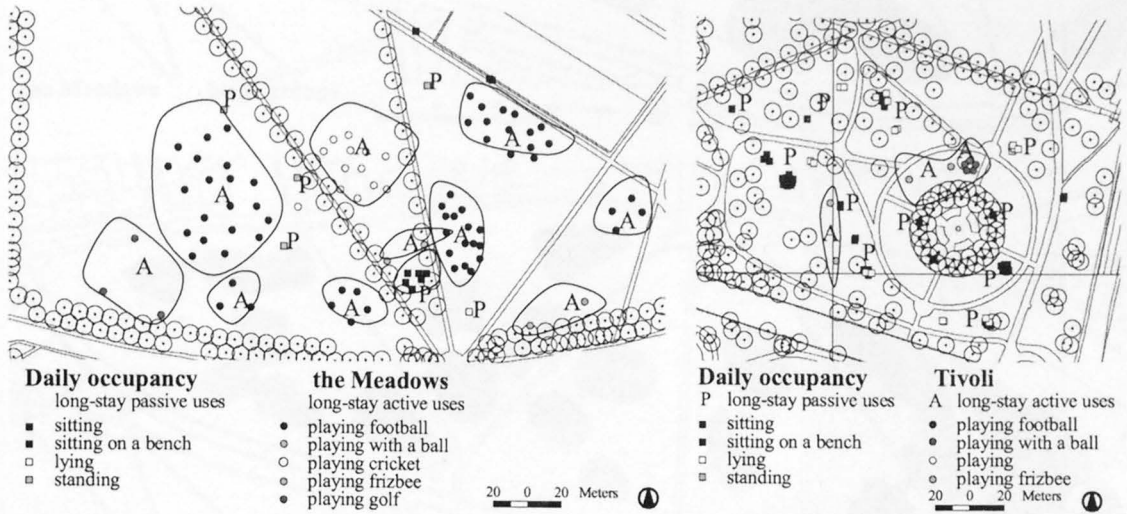


Figure 36: Two examples of parts of two of the larger parks involved in the study, the Meadows, Edinburgh, and Tivoli, Ljubljana, exemplify a situation where, when more uses take place in a park and make new boundaries, how sitting and lying, ‘move in’ with regard to them.

The examination of all three parks reveals that playing football in the Meadows was the only active long-stay occupancy which was recorded quite often, among the other conventional passive or transitory uses of them. Different groups, in terms of size (number of people engaged), age and gender mixture were recorded. Male players, from late teenage to late thirties were usually playing in the biggest groups, up to twenty players per group. The biggest such group, at its full extent, considering the movement required for play, occupied about 7000m², which is more than a playground for a formal game. Such an area covers the maximum area occupied when the men were playing, including all accidental movements resulting from engagement in playing football. It reflects the effective environment needed, including following a ball in an unwanted direction, for the sake of keeping it on the side of the group which aims to score a goal. Usually, the extent of such environments for similar number of players engaged was about 5000m², or less. Groups which occupy more than 3000m², are considered as large, and usually have about 15 players or more. The shapes of these large groups of male football players were markedly longitudinal, outlining a play territory between the ‘goal keepers’.



Figure 37: Large and medium-sized groups involved in any active long-stay activity on all the days within the whole observation period in the Meadows, Edinburgh. (See also CD, accompanying the thesis, File 5.1.2, Figures 37-38).

The majority of groups representing any kind of long-stay active engagement in the Meadows were small or medium-sized, about 35 in each category within the entire observation period. Medium-sized groups refer to those that take the effective areas of between 1000 and 3000m²; small groups to less than 1000m². They are also diverse in shape and compactness. This latter refers to the number of people engaged with the activity on its effective territory, hence, it is strongly linked with a particular kind of activity undertaken. Football players usually represent very compact groups, whereas groups of frisbee players, for example, are very loose as players are further apart from each other. Small groups usually are formed from up to five players. However, in the Meadows, the majority of small-group cases were represented by football players such as children and families, and also young men kicking a ball from one to another, rather than playing a formal game. Playing frisbee and playing with a ball, are the other two activities quite often participated in by two to five players.

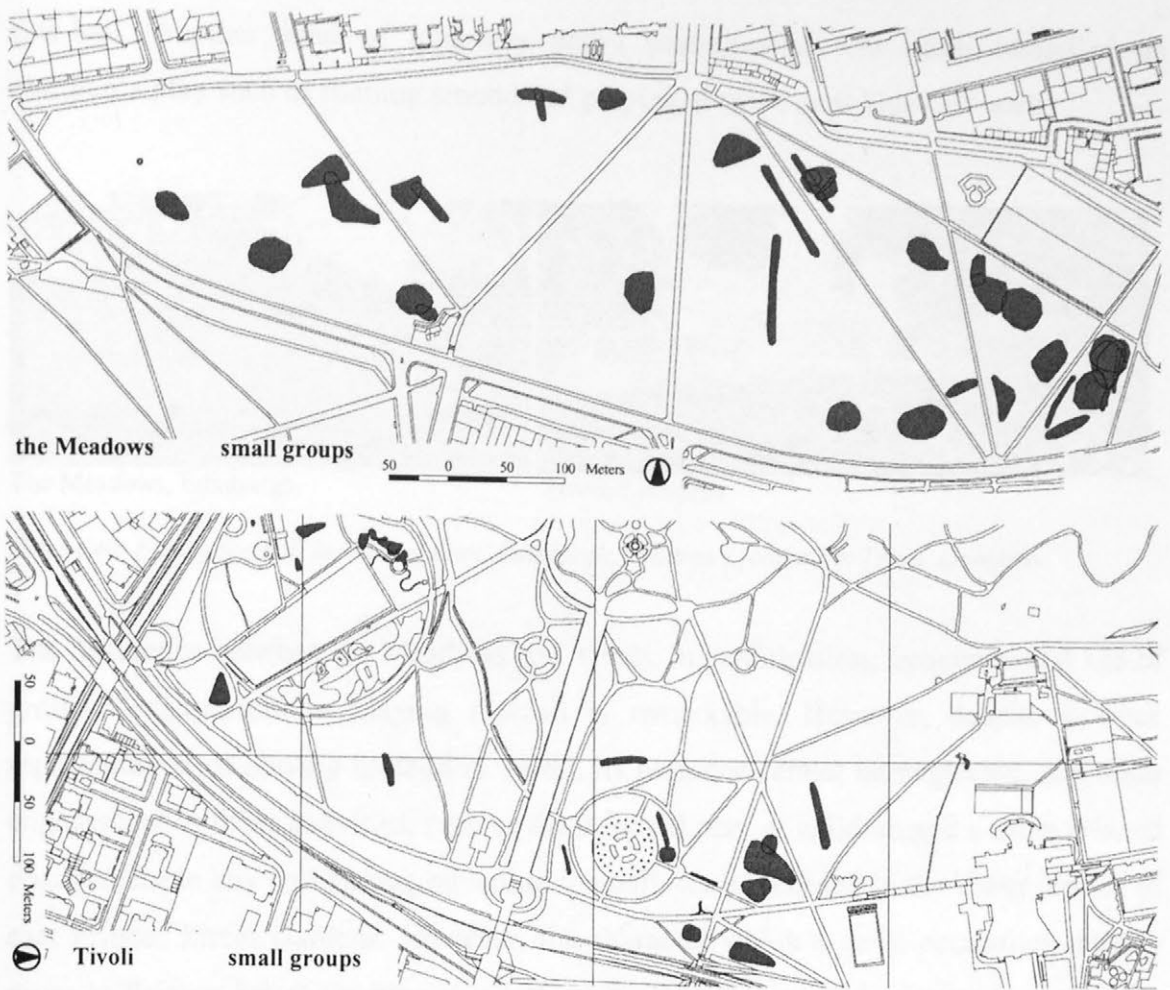


Figure 38: Small groups involved in any active long-stay activity on all the days within the whole observation period in the Meadows, Edinburgh and groups participating in active long-stay engagement in Tivoli, Ljubljana. (See also CD, accompanying the thesis, File 5.1.2, Figures 37-38).



Tivoli, Ljubljana



The Meadows, Edinburgh

Figure 39: Small compact group playing with a small ball in Tivoli, Ljubljana, larger looser groups playing with a baseball and playing frisbee in the Meadows, Edinburgh.

Playing with a ball and playing frisbee were recorded in Tivoli, too. There, playing football in a big group was noticed once only, when a group of kids came with a coach. Smaller groups such as family football (a parent with two or three kids) were recorded a couple of times. Beside these football engagements, a few more ball activities were recorded as follows: two young men playing with a ball, a group of young people (male and female) playing volleyball, and another group of young men playing with a small

rice-ball. Another kind of long-stay active participation was often classified as children's play such as running around and playing at catch or at hide-and-seek.



The Meadows, Edinburgh



Tivoli, Ljubljana

Figure 40: Family football in the Meadows, Edinburgh, children's football in Tivoli, Ljubljana.

The difference between the Meadows and Tivoli, in participation, frequency and age of groups' engagement in playing football is remarkable. However, despite a weak representation of playing football in Tivoli, its presence cannot be neglected. A similar engagement in these activities, such as the informal play of children and a more relaxed engagement in any ball games, including football, were recorded in the lower terrace of east Princes Street Gardens. However, the character which a daily occupancy usually gives to Princes Street Gardens is mostly as a place for rest and relaxation, for adults, families, teenagers, individuals and groups.

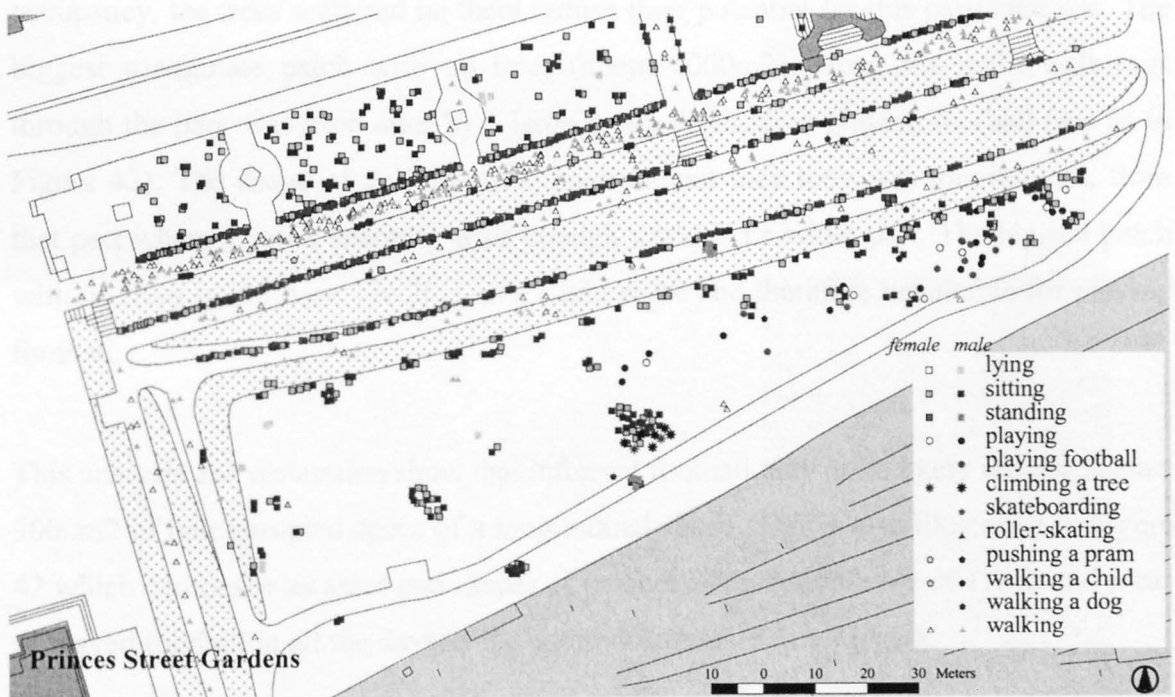


Figure 41: The overall assembly map of a part of east Princes Street Gardens, Edinburgh showing different long-stay and transitory activities, classified by gender. (See also CD, accompanying the thesis, File 5.1.2, Figure 41).

Activity											
Place	jogging	playing with a ball	playing cricket	playing football	playing frizbee	kids playing	skateboarding	roller-skating	propelling scooter	exercising	walking a dog
Meadows	17	14	19	176	9		6				15
Tivoli	35	6		16	5	21	1	35	2	6	23

Table 6: Maximum participation in daily occupancy in any active engagement/recreation in the Meadows, Edinburgh and Tivoli, Ljubljana.

This data from collected observation shows that the Meadows and Tivoli are popular for active recreation, although they are differentiated in the types of activities which are most participated in. Active, transitory activities such as roller-skating and jogging are more popular in Tivoli, whereas long-stay, active activities such as playing football are more popular in the Meadows.

Referring to empirical data from observation in the Meadows, one of the reasons for low participation in playing football in Tivoli, especially hardly ever by adult participants, might be that there simply is not enough room for it to occur. It was shown that large groups demand clear areas of at least 3000m², and then, besides that, still some void areas around it. Sizes of big, flat patches in Tivoli are from about 6500 to 10000m². Although they could just be big enough and suitable in size for such occupancy, the trees scattered on them reduce their potential for this particular use. The biggest triangulate patch with no trees (about 4000m²), along the main walkways through the park was used once by a large group of children playing football (see M in Figure 42). The shape of an ‘effective’ environment they took was longitudinal, from that part where a patch becomes wide enough towards its wider part. The biggest patch with no trees in northern Tivoli is on a slight slope and therefore unsuitable for playing football.

This analysis and discussion show that informal football may quite likely require at least 3000m² of uninterrupted space of a longitudinal shape. This is also illustrated in Figure 42 which demonstrates sizes and shapes of patches in the Meadows and Tivoli and areas of played football in all the days in the entire observation in each park.

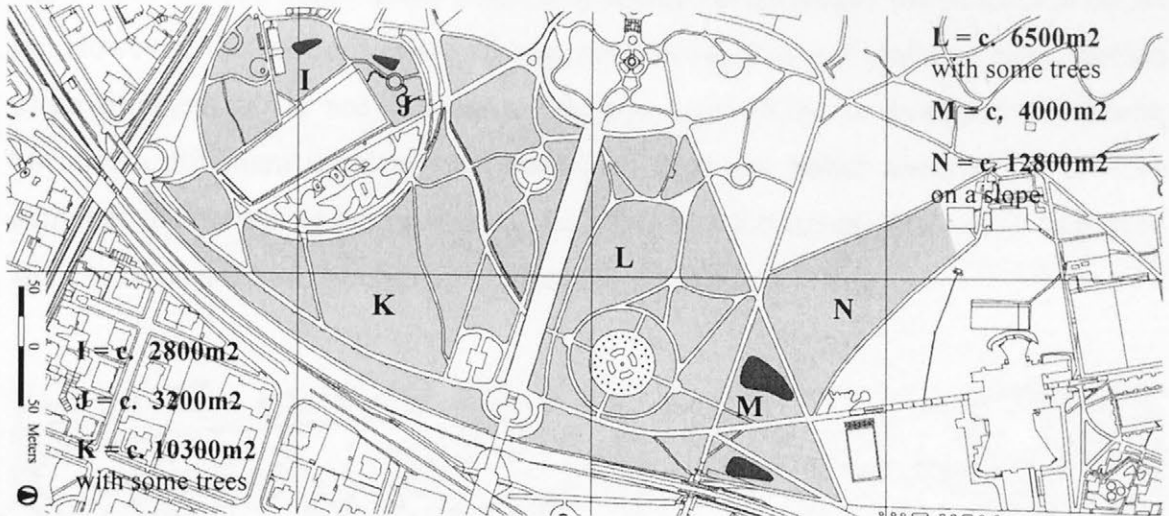
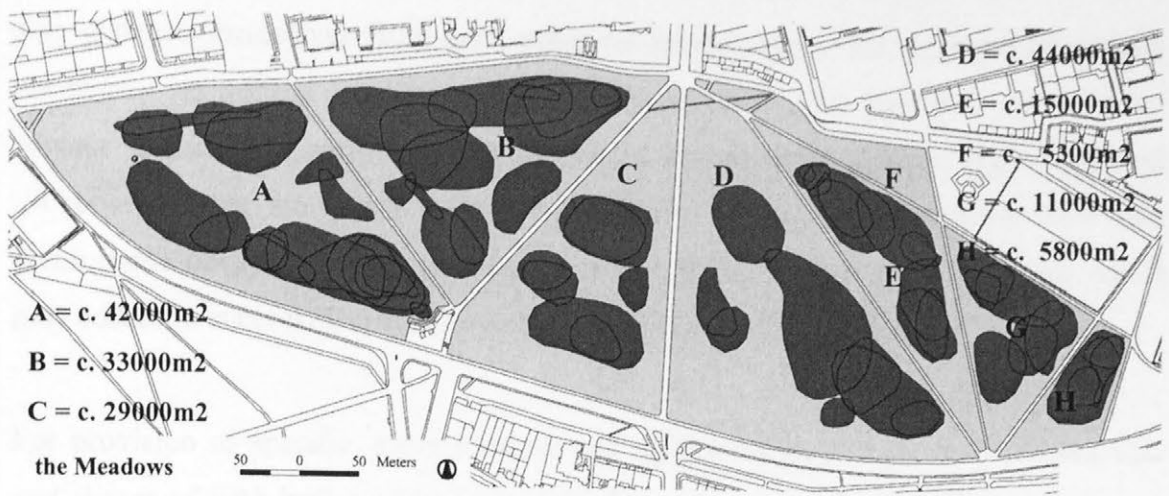


Figure 42: Sizes and shapes of lawns in the Meadows, Edinburgh and Tivoli, Ljubljana with additional information showing the occurrences of playing football in the entire observation period.

To recapitulate, some of the key findings concerning spatial-usage relationships from the observation regarding long-stay active and passive occupancies in places are summarised in the following. Large, flat patches, not partitioned by paths or articulated by trees, allow active use by large groups to take place. Despite being large and spacious, such areas are less likely to invite passive participants to the open available space towards the centre. If such spacious patches are articulated by trees or a group of trees, passive use such as sitting or lying are more likely to occur. If those patches are partitioned by inner paths, big user groups looking for room for active engagement might be excluded, although they too, seek some spatial definitions in places, which is evident from their occupying areas along the paths or in corners from the point which enables them satisfactorily to carry out a game.

Not only that uses, passive or active, take place with some distance from physical, spatial boundaries such as paths and their intersections (see A in Figure 43), but they

also distance themselves from each other on several ways. An example of a daily occupancy on quite a busy day in the Meadows shows, for instance, that a 'point contact' at shorter or narrower sides of areas of occupancies (see B in Figure 43), and 'in between space' along such areas (see C in Figure 43), seem to be significant for their comfortable occupancy. This reflects a concept of 'buffer zones' of activities which may address a successful spatial co-habitation of occupancies in places.

For provision of specific, more accurate and significant results about the dimensions and shapes of such buffer zones a specially focused examination would need to be set up. However, this research raises an important recognition that neither a configuration of environment *per se* nor dimensions of usage required for its successful placement, but also a minimum supplementary space, shrieked into buffer zones either between activities themselves or between them and physical attributes of places is an important issue to be considered in public space decision-making and design.

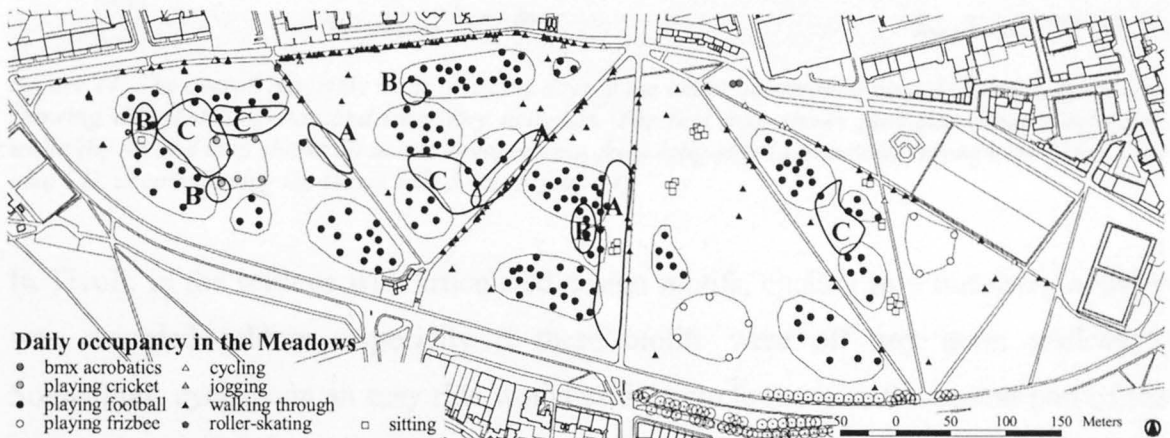


Figure 43: An illustration of different types of voids between uses and between them and physical environment. A speculation on their importance may provide crucial clues about necessary needed supplementary spaces for their overall comfortable co-habitation in a place

This and further analysis of the recorded data from the observation shows that, from the usage occupancy point of view, parks are very complex settings. This complexity can be reflected in either greater diversity of activities or diverse engagement in those more conventional uses. Children playing, for example, does not happen as an active long-stay activity only, but was often recorded as an incidental, intermittent activity, when they were on their way to a final destination in a park, or just on the way through it.

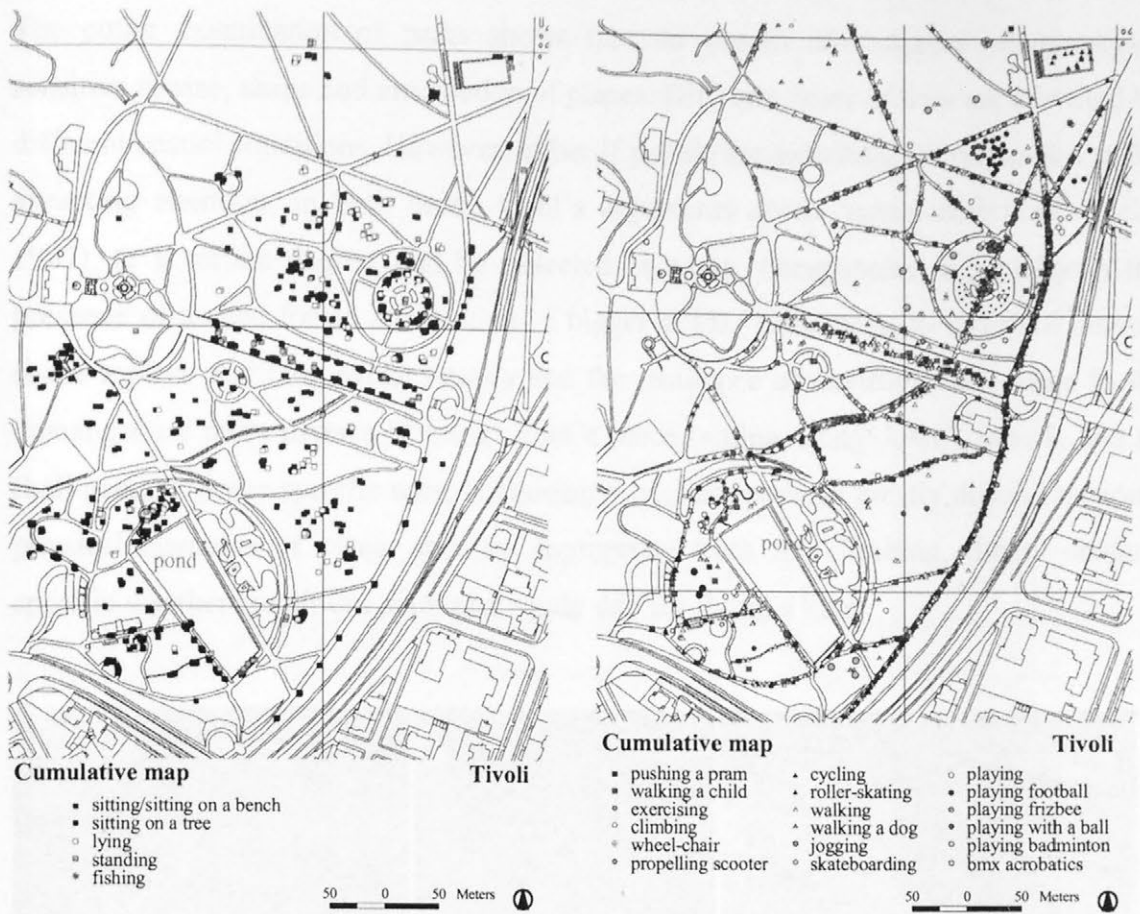


Figure 44: The overall assembly maps of all the days in the entire observation period in Tivoli, Ljubljana, showing different long-stay and transitory activities. The first map shows long-stay passive activities, while the second map shows all active engagements, from long-stay to transition through the place. (See also CD, accompanying the thesis, File 5.1.2, Figure 44).

In Tivoli, in the settings with articulated design motifs, cycling as a transitory activity was recorded seldom, especially if these motifs were off any main walkways. Sometimes, cyclists on an easy ride would cross a circle motif in the central part of the park, and use paths leading through designed areas of the south end of the whole park. In the setting with a water mirror above the pond, a young cyclist used his bike as a playing requisite and the water motif as a play setting.



Tivoli, Ljubljana



The Meadows, Edinburgh

Figure 45: Two examples, Tivoli, Ljubljana and the Meadows, Edinburgh, illustrating a less straightforward engagement with certain requisites such as a bicycle or any other incidental spatial elements placed in a park.

The entire examination of parks shows that an overall all-inclusive occupancy is sensitive to size, shape and articulation of places. Different types of uses are attracted by different spatial conditions. However, either if people are searching for relaxation or for attracting attention, in both cases, Gehl's arguments about 'social activities' (Gehl, 1987), to a certain degree, can be reflected in parks' occupancies, especially in the presence of a need for an articulation of bigger voids. Thus, uses, to a certain degree, shape a place and they evoke latency and the resilience of environments, some in the demand for a more diverse 'footing' from a place (sitting, lying down), others, less so (ball games). Some specific uses, occasionally noticed, perhaps greatly depend on some physical elements of place, such as appropriate trees for climbing, others demand specific weather conditions such as a windy day for flying a kite.

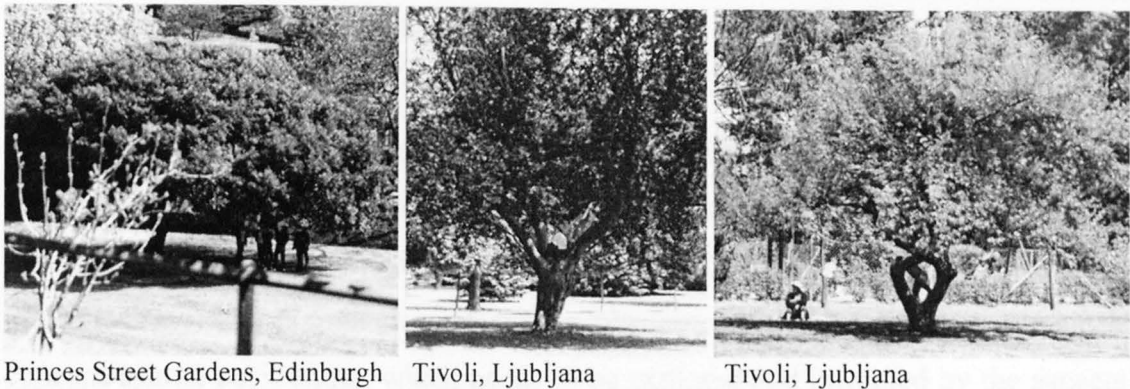


Figure 46: How to climb a tree? With difficulty in Princes Street Gardens, Edinburgh. With ease in Tivoli, Ljubljana.

The examination of usage-spatial relationships and the articulation of places by uses, so far, has been mostly related to types of activities, their spatiality and spatial requirements for their full engagement. Other aspects, reflecting such issues as diversity in occupancy, additionally enlightened, for example, by gender studies, overall participation, intensity of occupancies and their duration, are discussed next. These aspects are linked to a discussion about GIS as a tool to communicate them with regard to spatial location.

5.1.3 GIS mapping

This sub-chapter emphasises the relevance of graphical expression in the process of building a comprehensive body of empirical knowledge about the relationship between places and their occupancies and it shows maps as the main scripts of that knowledge. GIS was introduced initially into this research as a medium to help deal with data

systematically. During the research process, it developed into a sophisticated approach which supports a building of interactive digital databases and enables visual demonstrations of different aspects of one and the same studied behavioural phenomena in a place. This interactive relationship between database and maps provides and/or assures a consistent dealing with the data, addressing the same, similar or new aspects of interest.

To summarise, GIS as a tool can play four significant roles: creating interactive databases, visualising facts of the inventory or original evidence, demonstrating derived results, based on statistical calculations, and analysing maps as graphical sources in order to address, for example, sizes, shapes, density and intensity of occupancies in places. Together, they reflect a complex evaluation system which serves as a comprehensive evaluation tool.

This thesis originates from the premise about public space being an entity of a two-way process operating between both 'public' and 'space' components, and it is interested in their interrelationship. A medium was crucial which could provide best the basis for an understanding and examination of such a phenomenon. The examined relationships concern spatial positioning, which needs to be explored and informed by the aspects of usage-spatial relationships relevant to the research problem as thoroughly as possible. GIS, which concerns spatial location and extracts evidence into layers of information about a place, to give a better understanding about that place, is viewed as a useful tool.

As such a tool, it collects all possible evidence into tabulated databases and, according to them, provides simple maps displaying locations of subjects in places. Depending on the nature and focus of the research, it can organise data for display according to any selected variable. Databases can be structured, for example, on a day-order structure, type of activity, or age groups, as, for example, has been demonstrated in the sub-chapters earlier. It supports and enables a preparation for exhaustive further displays concerning usage-spatial relationships. Principally, databases can be extended at any time. New information gathered by using the same principles can be added and a 'monitoring' can be applied to studied phenomena in the same spatial context over different temporal frames. Having such databases, essentially, any further research which can rely on them or wants to refer to them is possible.

A visualisation of any such data is understood as a final step in a process of creating images to communicate a certain message. GIS databases are sources of such processes. They can serve as an ‘inventory’ tool, providing basic descriptions and information about activities in places. In so doing, they offer an understanding of those places by patterns of spatial occupancy with regard to their elementary characteristics, those that describe their peculiarities when being carried out. These databases enable a visualisation of the same original pattern, emphasised by a chosen elementary aspect amongst all of them, which describe and determine a located activity in a place.

Lawson emphasises that, “drawing seems a useful source of potential insight into the knowledge that designers use”, and stresses further that, “designers are inextricably associated with drawings” (Lawson, 2004: 31). This highlights the importance of visualisation as both process and product, which may serve as an informative tool in the design decision-making process. From this point of view, GIS as a visualisation tool provides a wide range of different drawings and enables a designer to follow it and participate in this process of the evolving image. As such, it offers a transparent examination of places through different combinations of attributes of behavioural patterns. Further, it enables a designer to look at places from any desired combination of those attributes which may most intrigue him or her.

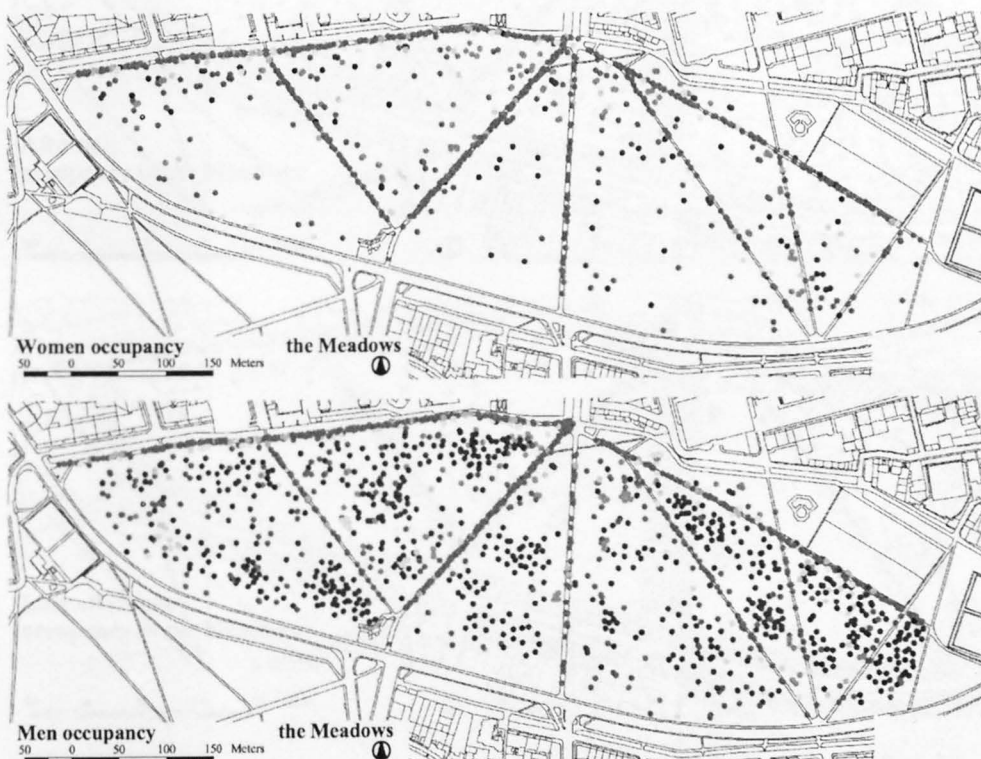


Figure 47: The overall spatial occupancy in the Meadows, Edinburgh, stratified by gender: women, and women and men. (See also CD, accompanying the thesis, File 5.1.3, Figure 47).

However, GIS enables either basic display, visualising activities' locations and using one key symbol all over, or it can be advanced, specifying the behavioural pattern with regard to one of the elementary characteristics, based on the original data collection outlining the different levels of the 'inventory' of places. For example, maps, as products of visualisation, can represent the spatial data of behavioural patterns as patterns reflecting occupancies at different times of a day, or days of a week; as patterns structured by the duration, nature or type of occupancy; as patterns showing the occupancies only under pleasant weather conditions and the like.

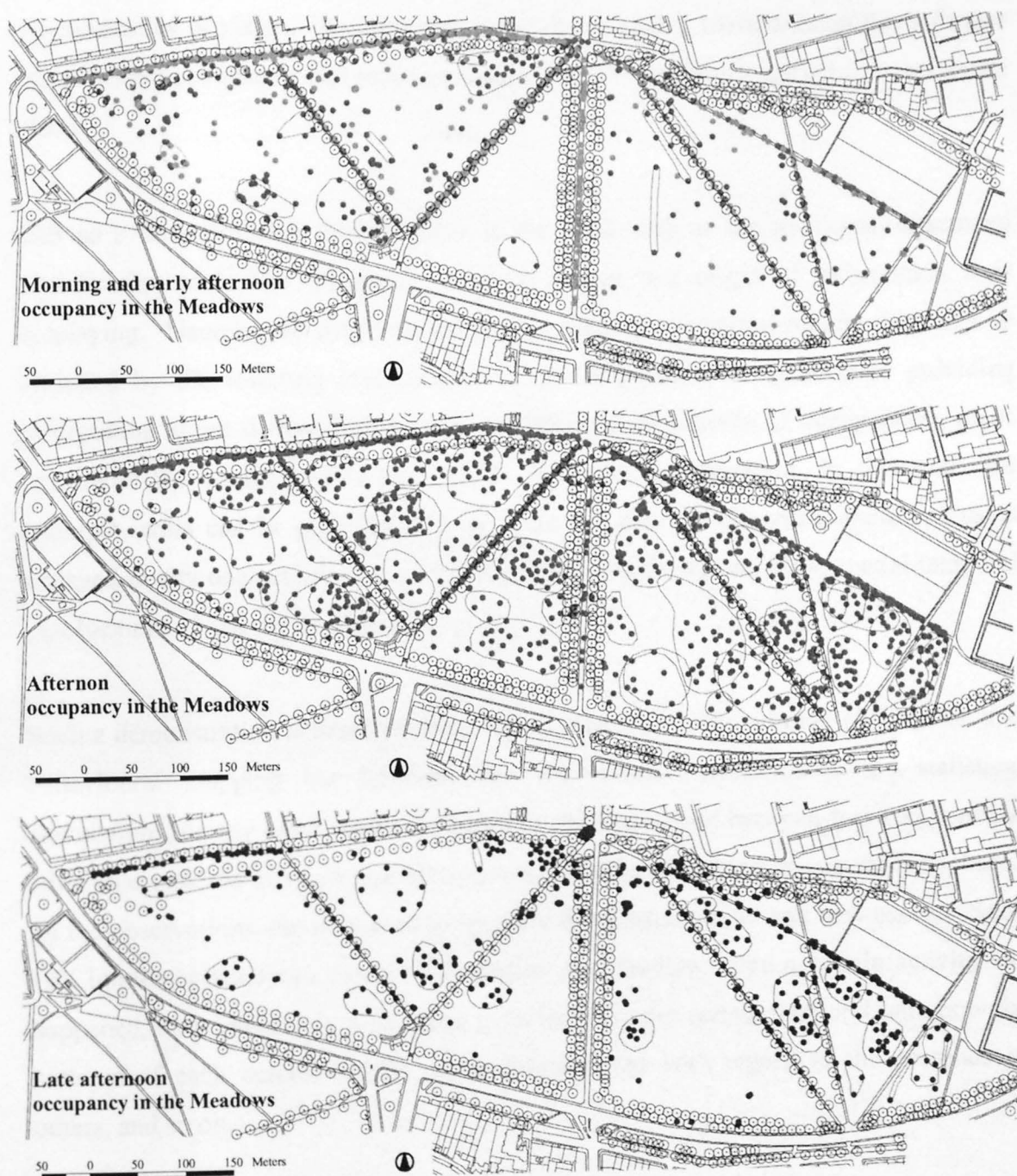


Figure 48: Patterns of spatial occupancy in the Meadows, Edinburgh, specified according to times of day, from late morning and early afternoon, afternoon, and late afternoon.

These recent figures regarding the Meadows (Figures 47 and 48) from different angles elucidate concerns about 'where' in a place 'what' is going on, and reveal matters of spatial articulation. In the first case (Figure 47), this is addressed by significances with regard to gender occupancy, strongly reflecting a connection to types of activities. The second visualisation (Figure 48) shows that, generally, afternoons are the busiest parts of a day in the park. Regarding the operative principles of occupancies discussed earlier, in both cases it also shows information about filling up places. For example, the morning/early afternoon situation and the late afternoon situation display similar patterns. They reflect a situation in which occupancy responds to the given spatial characteristics of places. The afternoon situation, on such a basis, exemplifies a further aspect, when occupancy also relies on the distribution of already carried out uses in the place.

GIS as a demonstration tool, operates in the same way as the previously discussed visualisation tool. The difference is in the source and origin of information it is displaying. Namely, the empirical knowledge about usage-spatial relationships can be enriched by the resulting investigation of its components. In addition to providing information about different elementary peculiarities of patterns of occupancies, maps can show the results which have arisen from that investigation. In this case, for example, what can be presented are the values of rates of use, participation of users engaged in any one activity and their intensity of use, the nature of the spatial-temporal involvement of activity and the like.

Such a demonstration is based on the patterns gained from the original observation and behavioural mapping but labelled with the results derived from the statistical calculations, or any other reasoning based on the interaction between two components, which has resulted in a new one. Behavioural patterns, visualised as general facts, based on the observations, are now used to spatially demonstrate other and new aspects. Such GIS implementation can contain information such as how often a certain activity has happened, how intensively it has been participated in per certain temporal unit, how the patterns of each certain activity were differentiated with regard to the presence of others, and so on.

However, such GIS maps also embed the knowledge that brings the indirect insights of usage-spatial relationships. Accordingly, the information, which shows some indirect

essences about occupancies and places of their engagement, preserved in places as key informative facts about users and sites, enables us to see abstract notions and primarily, non-spatial characteristics linked to physical environments.



Figure 49: Patterns of spatial occupancy arranged with regard to the participation of users engaged in any one activity in the Meadows, Edinburgh, showing where activities with similar intensities of participation took place in the park. (See also CD, accompanying the thesis, File 5.1.3, Figure 49).

In Figure 49, the participation in a certain activity is a calculated rate, and addresses users' involvement with a particular activity per day. A number of the people involved in the same activity on each day, with regard to all the users engaged in whichever activity in a park on that day, represent a certain rate. The map shows, for example, that all sorts of activities participated in by many people, such as sitting and playing football, as well as those participated in by a few, such as playing with a ball, performing street-theatre and standing, all take place mostly in the peripheral and semi-peripheral areas.

Evaluation and negotiation of the configuration of spatial forms with patterns of uses are final challenges in the implementation of GIS in the context of this thesis. From this point of view, public space is addressed as a collection of components made from areas of events. GIS, as an analytical tool, enables and supports an investigation of each component part of a whole and their relations in making up the (new) whole. Locations, sizes, shapes and the distribution of spatial occupancy of activities matter. Results can arise from maps as graphical sources of such information. Examining this information and their inter-relationships reflects a process, which re-shapes and generates the original data into new advanced forms. It can generate images about spatial intensity and the spread of the activities in places.



Figure 50: Cumulative intensity of spatial occupancy by long-stay active and passive uses, from a low to high degree in the Meadows, Edinburgh. (See also CD, accompanying the thesis, File 5.1.3, Figure 52).

When searching for knowledge about under- and over use, for example, or about any other overall views which require multi-layered reviews, GIS analysis seems particularly appropriate. This thesis exemplifies such implementation when studying the intensity of occupancies, for example. By studying the qualitative objectives of places, generally addressed as the suitability or conduciveness of places to occupancy, such analysis enables us to refer knowledgeably to them of the cumulative spatial capacity of places. This may result from generated patterns of different intensities of occupancies and the voids between them. While the overall behavioural patterns and their interpretation address a common spatial capacity of places, voids between them in daily patterns of use reflect buffer zones between activities and they refer to the effective distribution and cohabitation of diverse use in a place.

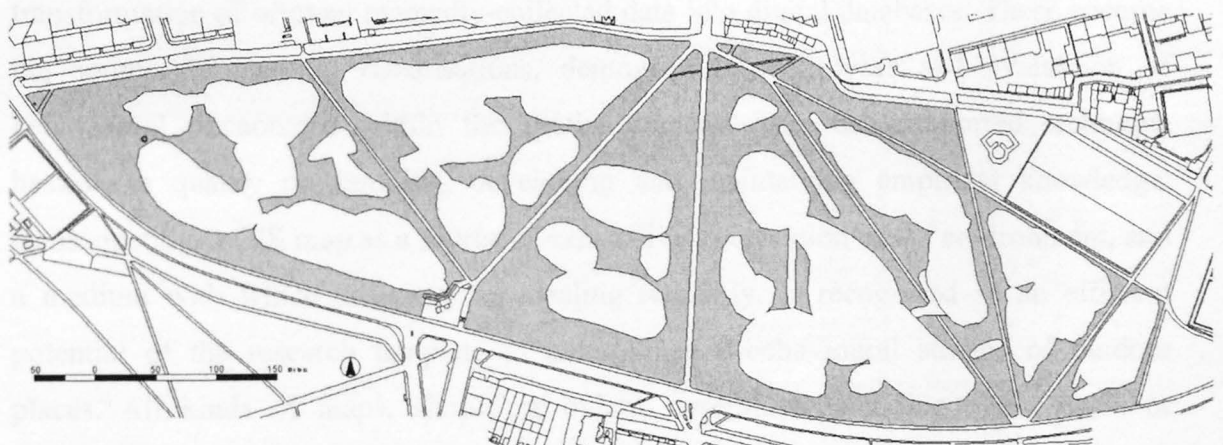


Figure 51: As opposed to a situation of different levels of occupancy by long-stay active uses from small to large groups, this map illustrates an area which always remained unused, a sort of 'minimum cumulative buffer zone' of the park.

The roles GIS play are mutually inclusive, not necessarily conditional in sequences of order but always complementary to each other and, as such, together they act as a comprehensive evaluation tool. This operational power is based on the interactive GIS databases which are recognised as a very effective way to build, develop and maintain (new) empirical knowledge about the distribution, sizes and shapes of potential and effective areas of use, levels of shared areas of use, and any specific dimensions that emerge as significant when exploring usage-spatial relationships.

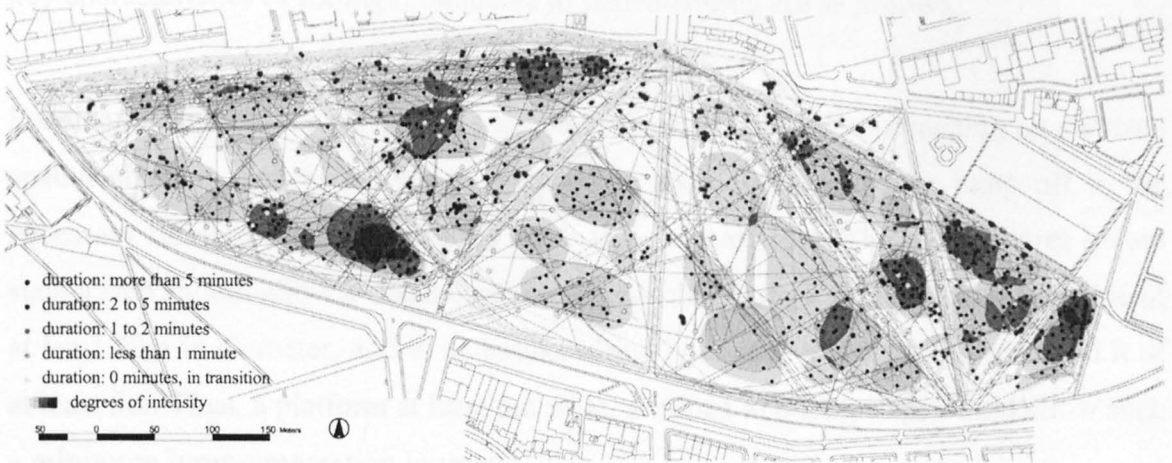


Figure 52: Cumulative intensity of temporal-spatial occupancy, from low to high degrees and from being in transition to prolonged stay in the Meadows, Edinburgh. (See also CD, accompanying the thesis, File 5.1.3, Figure 52).

A search for the implementation and objectivity of the thoughts about providing potential environments and increasing place potential for occupancies, results in an emerging body of empirical knowledge. The application of the GIS software enables the transformation of original manually-collected data into digital databases. These become the source for various visualisations, demonstrations, analyses and evaluation of behavioural phenomena within the spatial context. This GIS-supported technique bestows a quality on building, developing and maintaining empirical knowledge. Consequently, a GIS map as a source of exhaustive information of the environment, and a medium with which designers are dealing regularly, is recognised as an efficient potential of the research template in environmental-behavioural studies of outdoor places. All kinds of maps, simple or overall assembly, providing either basic or advanced information of empirical knowledge, outline a spatiality of usage in places and recognise their spatial capacity for occupancies.

5.1.4 Key findings from the mapping behaviour

A systematic observation and recording of collected data with GIS, especially based on cumulative assembly maps, revealed empirical knowledge about stimulating and effective environments for single or multiple occupancies in squares and parks in city centres. The examination of the squares showed that skateboarding has become a popular urban culture, and revealed that effective environments for this use or shared use change with the composition of otherwise supportive spatial elements. Some of the key characteristics of settings conducive to skateboarding are as follows.

For one of the usual skateboarder's actions, which consists of approaching an elevated spatial element such as a step, to jump on it, slide along, and then jump off it, the necessary full length of step required needs to be at least 15m. The adjacent area before such a step should allow a skateboarder to approach it along a curve of a circular line of at least 20m in diameter, and to undertake virtually a jump-preparation journey on it of at least 5m. Thus, a platform at least 3m wide, attached to a long step, would allow such a minimum jump-preparation journey.

While a long step attached to a clear and flat platform facilitates a sliding action, a set of a couple of steps stimulates skateboarders to jump over it. Compositions of steps are attractive as sitting places, too. However, this examination showed that sitters' and skateboarders' actual effective environments do not overlap. Sitters are searching for sheltered (not necessarily from sun), back-covered, less exposed areas, and places with a view of either attractive landscape or actions.

Sitting as well as walking through, passing by, and stopping or standing for shorter periods were always noticed in any observed square and participated in by all sorts of people, from young to old, and from them being on their own, in pairs, groups of friends, colleagues, or with children. Informal sitting, similar to skateboarding, reflects the importance of stimulating and effective environments, while sitting on benches or around tables was always noted when such furniture was available. It being so, choices for creating effective environments are limited if these elements are not present. The intensity in participation in either of these modes of sitting also reflects the spatial and temporal contexts of a square, as well as the pleasance of the weather.

Summarised data from observations, concerning squares' use are presented in the Appendices from D.1 to D.13.

In terms of the observation of large parks, the results showed that they are mainly used for rest and relaxation. Passive use such as sitting on a bench is popular with young and old, from a single person to groups. Sitting or lying down freely on the grass is popular with the younger population, especially teenagers, young adults, and families with children. Several different types of settings were conducive for passive use, such as sitting and lying down. They were recognised in the situations as follows: occupancy right next to a solid edge such as a slight slope, people in the areas where there were smaller groups of trees or solitaires, and sitting in a buffer zone of about 5 to 15m away from transparent edges such as tree-lined pathways. Settings such as broader zones along the paths with no other spatial definitions are usually not attractive for such occupancy.

Large, flat patches, not partitioned by paths or articulated by trees, allow active use by large groups to take place. Despite being large and spacious, such areas are less likely to invite passive participants to the open available space towards the centre. If such spacious patches are articulated by trees or a group of trees, passive use such as sitting or lying are more likely to occur. The study also showed that larger groups of active participants articulate places and, in so doing, they create room for themselves and for others. The examination has found that the size and the shape of lawns in parks are not particularly crucial for any passive occupancies, but they are of key importance for long-stay active engagements, especially those participated in by a large number of people.

Park users are, regularly or from time to time, involved with long-stay active engagements such as playing. Intensive football playing by large groups of young men requires big clear grass areas, of at least 3000m² per group for about 15-20 players, whereas family playing requires smaller areas and usually takes place in a setting which generally is conducive for sitting. Young women occasionally join group ball games, but, more often, they are engaged in park life as passive participants, sitting on the grass, reading and watching the world go by. They are often involved in active, intermittent movement through a place, pushing a pram or walking with children (Tivoli) as well as jogging (Tivoli, the Meadows).

Tivoli and the Meadows represent the important pedestrian links between different parts of the cities, therefore walking through as well as cycling and roller-skating (Tivoli) are frequent and well participated in activities, popular again with all age groups (up to about 50 years old) as well as gender-balanced. In Ljubljana, cyclists and roller-skaters were often part of squares' pedestrian traffic, too. Except for this peculiarity, which reflects the fact that the city centre of Ljubljana is flat and, as such, it is attractive to roller-skaters participating in urban traffic, and that cyclists are allowed to ride on paved squares' surfaces not necessarily indicated specifically as cyclists' routes, the study has not found any major differences between places' usage in each city.

Summarised data from the observations, concerning parks' use are presented in the Appendices from D.14 to D.17. A summary of the data linked to the overall general findings for each of the examined cities is available in the Appendices D.18 (Edinburgh) and D.19 (Ljubljana).

5.2 Workshop analysis

The examination of the variety and richness of information and empirical knowledge, which may be gained from observation and GIS mapping, raises the question, what type of information about usage-spatial relationships, if any, would be most required or in demand to inform designers about better design? A search for an answer might reflect on the meaning, value and role which empirical knowledge may have in the design (process). In other words, what are designers' perceptions and imagination about public places and the likely activities that occur in them?

To illustrate some of these challenges, several workshops were conducted with urban landscape designers in Edinburgh, a sample of 35 participants in all: 10 landscape architects from two landscape architecture offices, and 25 students, mature undergraduate and postgraduate students from the Landscape Architecture department as well as postgraduate students from the Urban Design course in the Architecture department, all based at the Edinburgh College of Art. This inquiry was intended as a pilot study, to look for some basic insights about such issues, rather than a fully-fledged investigation. The full questionnaire and an illustration of the workshop procedure are shown in Appendix C. Completed questionnaires and original as well as digitalised drawings are available from the researcher. A summary, which concerns the key

responses of workshops participants' on written questions as well as drawings, is provided in Appendix E.

The majority of those questioned thought that they could predict the future use of places pretty well (see Figure 53).

How well do you think you can predict how people will use a place you have designed? (Question 3)

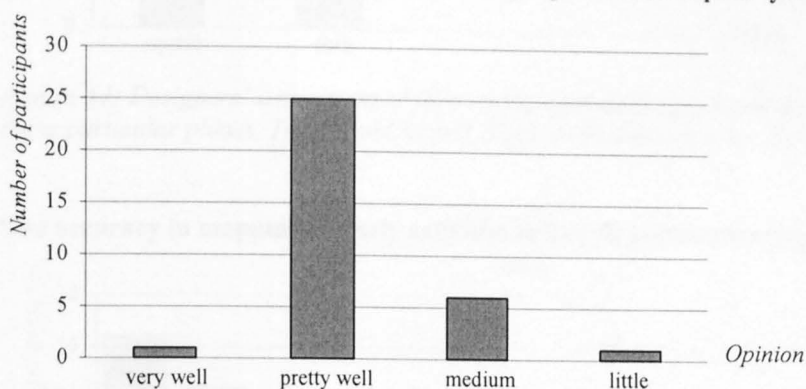


Figure 53: Designers' opinion about their ability to predict uses in places.

Besides the answers to some questions, asking for designers' opinions about the relationship between a place's design and its use, the participation in actual drawing, as one of the fundamental activities in which designers are involved in their daily work, was of key importance. This involvement was rather unusual. Being informed about the physical layout of a place they did not know, its closest and broadest spatial and land use context, the participants firstly mapped out likely occupancies in two different given places, Trg Republike and a part of Tivoli. Secondly, and equally after the introduction of spatial and land use contexts, the opposite task was given. Respondents were asked to read given behavioural patterns recorded in another of Ljubljana's squares, Dvorni Trg, and to propose a likely suitable physical layout of a place to support them.

Although the majority of workshop participants believed that they predicted uses better in a park than in a square (Figure 54), detailed analysis of the actual mapping of likely uses in these two places revealed that, interestingly, they were more accurate about the selection and location of uses in the case of the square (Figure 55).

For which of the places involved in task 4 do you think you have best predicted the most likely patterns of uses? (Question 6)

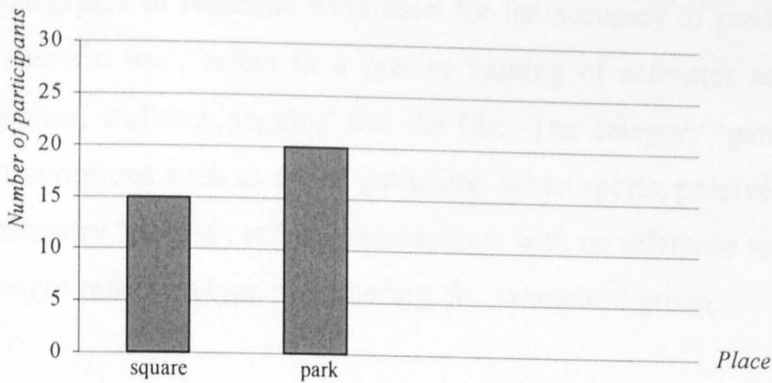


Figure 54: Designers' assessment of their ability to predict uses in places after mapping out likely uses in these particular places, Trg Republike and Tivoli, both public spaces of the city centre of Ljubljana¹¹.

The accuracy in mapping of likely activities in Trg Republike (a square) and Tivoli (a park)

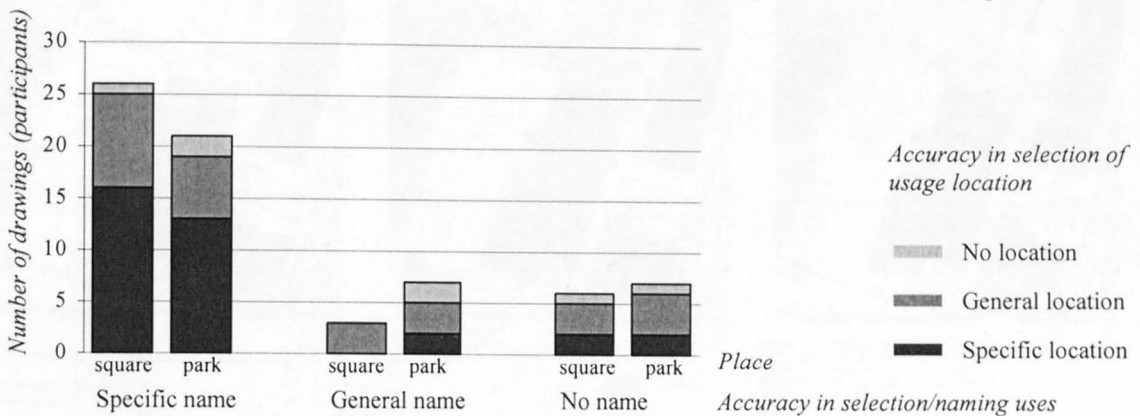


Figure 55: Designers' responses in terms of the accuracy of predictions of precise use and its precise location when mapping likely uses in Trg Republike, Ljubljana and Tivoli, Ljubljana¹².

The accuracy about the selection and location of uses in given urban open public spaces, Trg Republike and Tivoli, was the main starting-point criterion against which the participants' responses on likely uses in these places were stratified. As this criterion is common to both sets of analysis, use of a square as well as a park, detailed introduction and definitions are discussed below. Although the accuracy in drawing was also an important aspect in the analysis of the other graphical output from the workshops, the proposed design of a square (Dvorni Trg, Ljubljana) based on given behavioural patterns, a reflection on a specific pattern of use or more of them, was a key starting-point criterion. This is introduced and defined in more detail later on in this chapter, in the section entitled *Place design*.

¹¹ Summary of answers on the other questions concerning usage-spatial relationship, asked in the workshops, is presented in Appendix E.1 and its sub-divisions.

¹² Follow the discussion about variables concerning a precise naming and/or locating of predicted uses in places below and find final categorisation in Table 7.

In analysing the drawings in relation to the use of urban open public spaces, three categories of response were used for the accuracy of predictions of use. The category 'specific use', refers to a precise naming of activities such as waiting, playing ball games, walking, jogging and the like. The category 'general use', addresses general descriptions such as social gathering, urban sports, passive recreation and the like. The category 'no use', reflects descriptions with no reference to any particular activity but it might refer to a type of gathering, for example, a group.

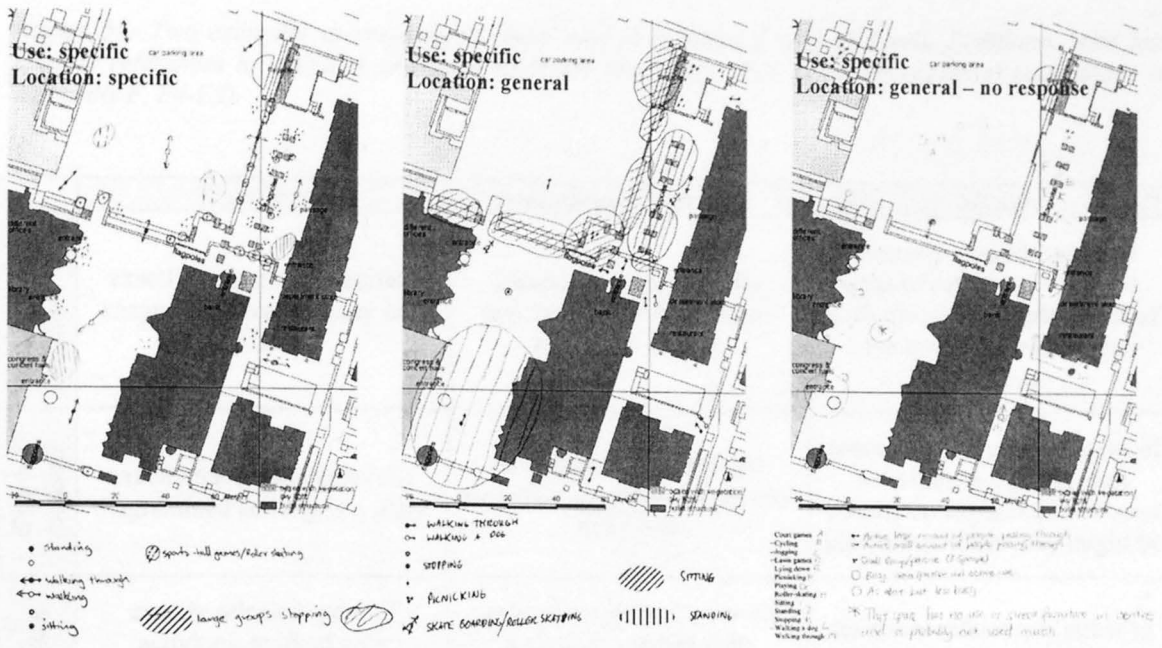


Figure 56: Three examples of mapping of likely uses in Trg Republike, Ljubljana, with regard to the precise naming of the imagined uses, but with responses ranging in the accuracy with which locations in a place are depicted, from specific to general and to non-response. (See full-sized copies of these maps in Appendix F, F.1-F.3).

The categories used to describe the level of accuracy in designers' depiction of the locations and groupings of likely uses were as follows. A 'specific location' refers to demarcating a distinction between individual and group users, including distinctions between big and small groups and the shapes they might form when occupying a place. 'General location' reflects situations when 'bubble diagrams' or wide arrows indicate expected uses, with no distinction about shapes and clustering in which the uses might be distributed. Mostly there is also no reference to a size of a group. The category 'no location', refers either to an inscription of the activity in a map, with no specification how, exactly, the described activity may take place, or it addresses the overall areas selected, so that a selection just repeats a whole section of a place and as such, it makes no contribution to any recognition about the actual precise location of activities in a place.

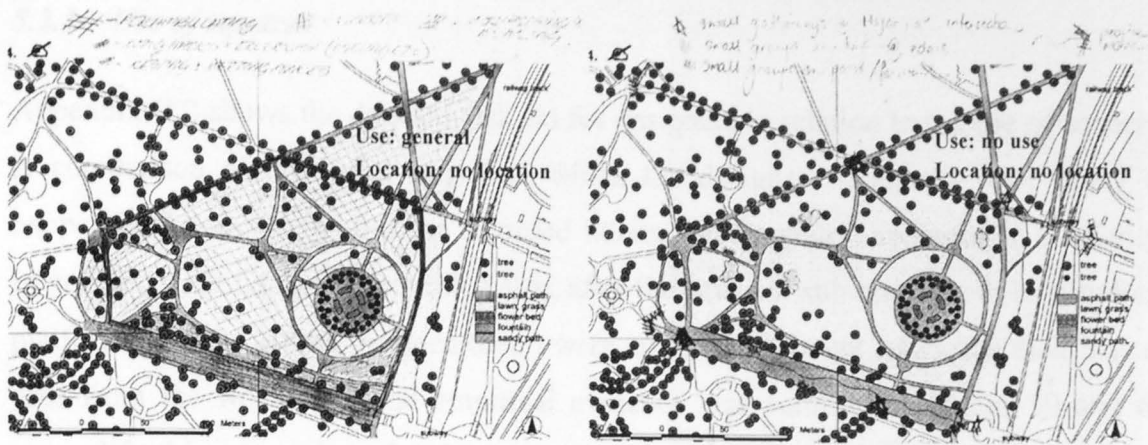


Figure 57: Two examples of mapping of likely uses in a selected part of Tivoli, Ljubljana, with less specific references to activities and their locations in a place. (See full-sized copies of these maps in Appendix F, F4-F5).

	<i>Specific use</i>	<i>General use</i>	<i>No use</i>
<i>Specific location</i>	exactly named and precisely shaped and sized activity in a place	commonly described but precisely shaped and sized activity in a place	precisely shaped and sized areas of activities in a place, with usually no explanation of what kind of activities they might be
<i>General location</i>	exactly named but generally diagrammed activity in a place	commonly described and generally diagrammed activity in a place	generally diagrammed areas of activities in a place, with usually no explanation of what kind of activities they might be
<i>No location</i>	exactly selected types of activities, marked with 'initials' or overall descriptions, with no actual references to their dimensions	generally selected types of activities, marked with 'initials' or overall descriptions, with no actual references to their dimensions	no actual references, either to specific or general types of activity or spatial dimensions and shapes they might take

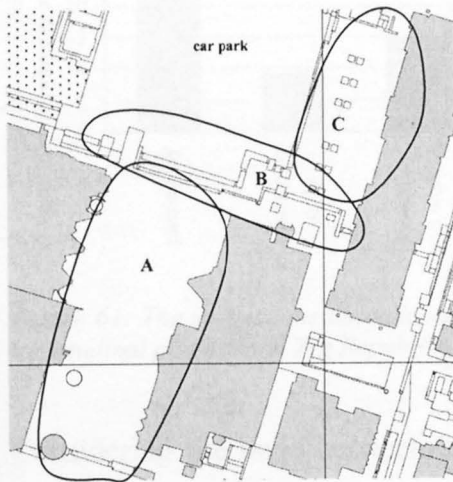
Table 7: The classification of responses, from strong to weak descriptions of activities and their participants as well as different levels of accuracy when locating these likely uses in places.¹³

Such analysis reflects to a certain degree, designers' concerns and responses to uses in places, but it does not fully concern the relevance, meaning, and expedience of these suggested and located uses in a place. However, the more accurate and precise location and use definition is, the better the comments on such issues are possible. The examination of maps as a graphical source about the actual parameters of usage-spatial relationships such as locations, distributions, dimensions and sizes, for example, brings relevant insights. This chapter firstly discusses such issues in relation to squares, and secondly to parks.

¹³ Appendix E shows the representative examples for each category in the case of Trg Republike (E.2) as well as Tivoli Park (E.3).

5.2.1 Use of squares

Appendix C.2 shows the detailed task set for designers in relation to the use of squares. A comparison of the listed activities, which the designers imagined were likely to happen in the square, with those recorded in situ, shows quite a remarkable similarity. In general, a similarity was revealed also, after the squares' sub-areas (both longitudinal platforms and the setting between them) were taken into account and when their lists of uses from the workshops and empirical evidence was compared. Figures 59 and 60 exemplify this comparison for the setting between both longitudinal platforms of Trg Republike (see B in Figure 58). Appendix E.4 summarises the results from the workshops in relation to use of Trg Republike, and illustrates more comparisons between observed data and workshops-results for the square as a whole as well as its sub-areas.



- C An articulated platform with a built frame on one of its longest sides and open towards the car-parking area on the other
- B An articulated node between the platforms
- A A non-articulated platform with a built frame on both its longest sides

Figure 58: Sub-areas of Trg Republike, Ljubljana.

The observed activities in settings of sub-area B of Trg Republike in the entire observation period

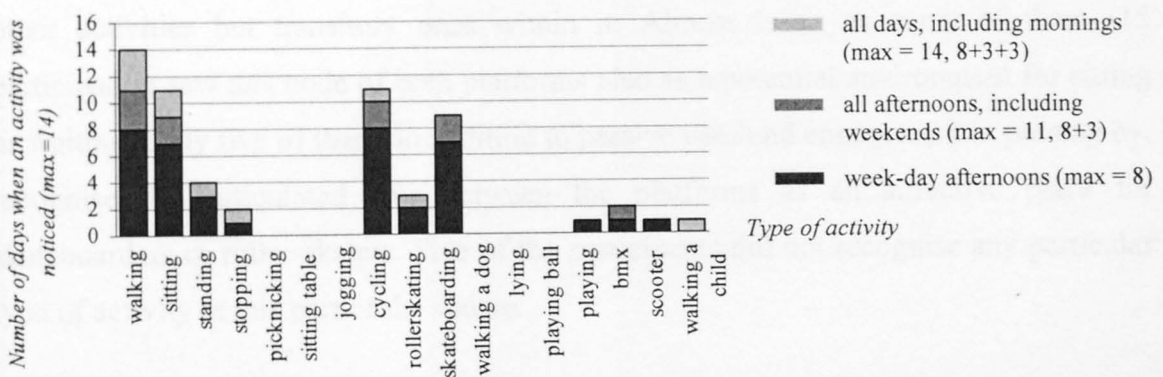


Figure 59: Frequency of recorded uses (number of days each of them was noticed) in the area between both longitudinal platforms of Trg Republike, Ljubljana.

Notification of the activities likely to happen in settings of sub-area B of Trg Republike

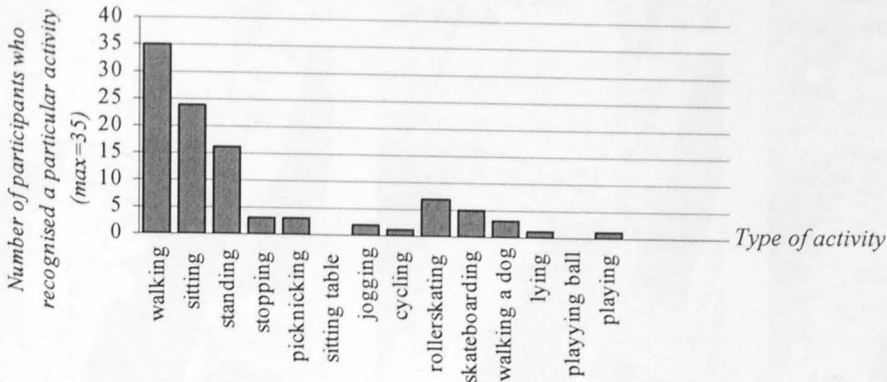


Figure 60: Intensity of designers' suggestions (number of participants outlining the same activity for this particular part) about the likely appearance of each of those uses being observed (Figure 59) in the area between both longitudinal platforms of Trg Republike, Ljubljana.

Frequency in recognition of different types of activities in settings of sub-area B of Trg Republike

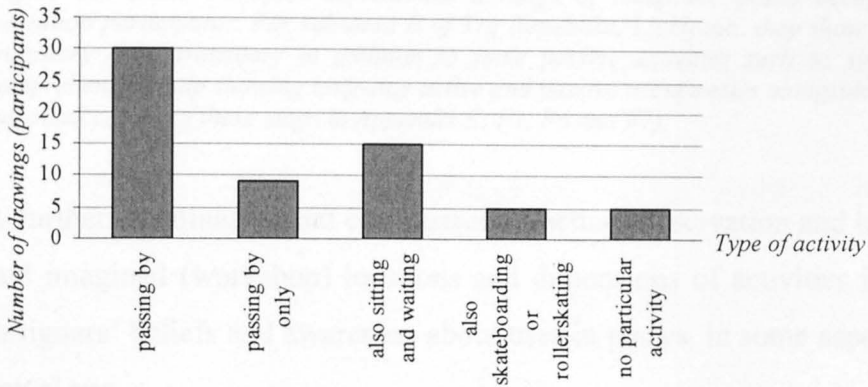


Figure 61: The suggestions about locations of some likely occupancies in the area which connects both longitudinal platforms of Trg Republike, Ljubljana.

Considering the node between both platforms in Trg Republike (sub-area B), proven from observations to be the busiest in the whole square (see Figure 26 in Chapter 5.1.1), the biggest majority of workshop participants (86%, 30 participants) saw it as a setting for passing by. About one third of this majority (9 participants) did not recognise any other activities but transitory ones within it. Almost twice as many of them (15 participants) saw this node of both platforms also as a potential environment for sitting or waiting. Only five of them, in addition to passive uses and engagement in passing by, recognise this articulated area between the platforms as an attractive place for skateboarders or roller-skaters. Five of the participants did not recognise any particular type of activity in this part of the square.

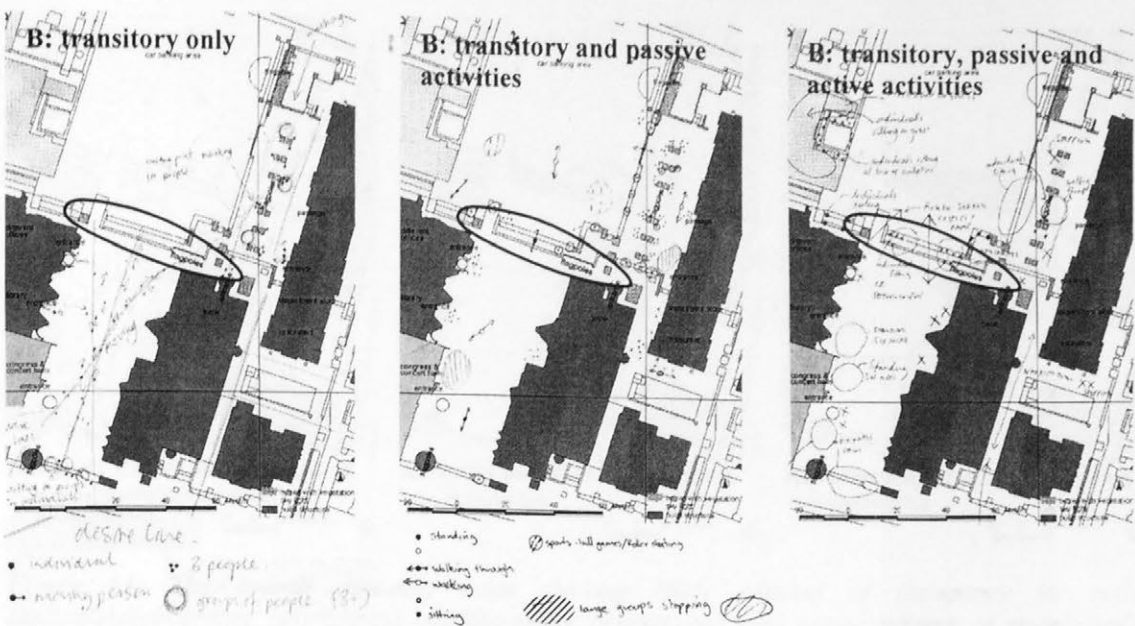


Figure 62: These examples demonstrate a range of imagined spatial occupancies by some of the workshop participants. For sub-area B of Trg Republike, Ljubljana they show types of occupancy from transitory only, transitory in addition to some passive activities such as sitting and standing, to a comprehensive map showing long-stay active and passive occupancies alongside the transitory ones. (See full-sized copies of these maps in Appendix F: F1, F6 and F7).

A further examination and comparison of actual (observation and behavioural mapping) and imagined (workshop) locations and dimensions of activities in places shows, that designers' beliefs and awareness about uses in places, in some aspects, differ from their actual use.

The workshop analysis in more detail shows that, for the whole square, only two participants recognised skateboarding as a specific use, usually indicated along the steps of the one-sided, open, longitudinal platform (sub-area C) and the two sets of long, parallel, linear steps in a narrow setting, connecting both longitudinal platforms (sub-area B). Five of the participants consistently recognised roller-skating/skateboarding as a common usage category and selected the same areas or elements of spatial definition as suitable for these two uses, located either on the stairs along the platforms or peripheral areas on the platforms themselves.

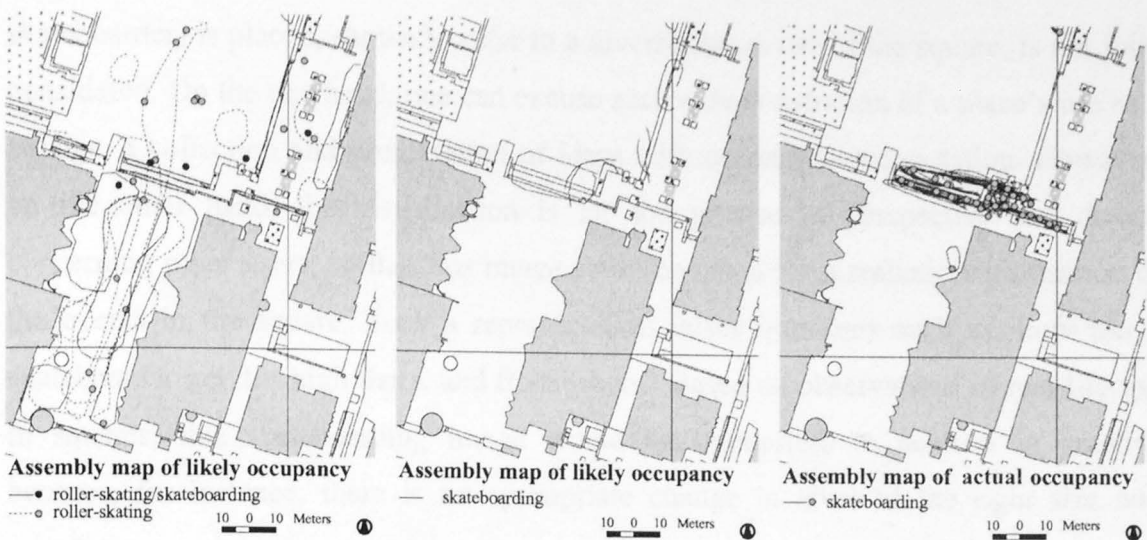


Figure 63: The overall assembly maps showing likely patterns of occupancy for roller-skating/skateboarding (workshops), skateboarding (workshops), and actual pattern of skateboarding (observation) in Trg Republike, Ljubljana.

According to this empirical evidence about skateboarders and roller-skaters' effective environments, the workshops' results show that only a few participants from the whole sample recognised the essential spatial elements that may attract skateboarders. Equally, they show that an even smaller number of them can imagine quite well the relationship of these spatial elements which, crucially, introduce and form a conducive setting for skateboarding. The evidence also shows that designers, by suggesting a common category roller-skating/skateboarding, do not always consider that the engagement in either activity, skateboarding and roller-skating, can differ, and therefore different settings are preferred and looked for, as found in the empirical evidence discussed earlier (see maps of Bristo Square in Chapter 5.1.1). The fact that designers often have skateboarders in mind but do not necessarily know of a type of environment in an urban open public square that may suit them best, is exemplified in the following illustration.



Figure 64: A visualisation of a winning design proposal for Alexander Square, Berlin, Germany. *Garten und Landschaft*, 2004/8: 45.

Although generally, a presentation of this Alexander Square project reflects awareness about uses in place and speculates on possible future usage of a square, visualised in the perspective and shaded ground plan, the way that one of the main actors (a

skateboarder) is placed, shown to refer to a diverse future use of the square, is not fully considered. On the one hand, one can excuse such a demonstration of a place's use as a collage, a collection and presentation of ideas with no realistic connotation. However, on the other hand, the visualisation is far too precise in perspective and details concerning other users, so that this image could be taken for a realistic visualisation of the events in the square. Such a representation raises questions such as, how can a skateboarder get this high there, and from where? Based on observations of real-life use in squares, this skateboarding image would be impossible to achieve in practice because, for instance, there is no appropriate change in level of the right size and orientation nearby.

The examples from a design-practice routine such as the workshops' results and collage presentations as for Alexander Square indicate a lack of an appropriate knowledge and imagination about usage-spatial relationships in urban places, such as squares in civic centres of cities and towns. The discussion and argument about locations and dimensions of likely and/or observed uses so far, have been based on rather a specific use, skateboarding, which, nevertheless was frequently observed and also reasonably often recognised as a likely occupancy in squares. A scrutiny of sitting, as one of the more usual activities in urban open public spaces reveals a better response from designers but in some cases, it was not sufficiently precise, especially when concerns relate to a selectivity in usage's placement. Some spatial entities, which the workshop participants suggested were most likely to be used for sitting, were revealed by the observation-based evidence to be marginally in use or even unused.

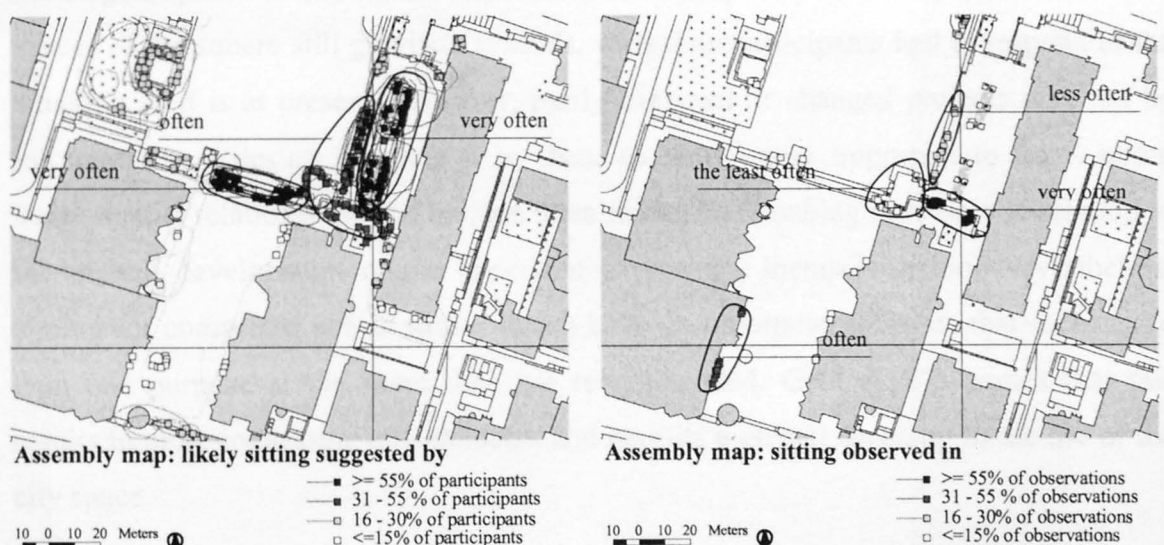


Figure 65: Locations of likely occupancy by sitting in Trg Republike, Ljubljana as they resulted from the workshops and actual occupancy recorded in the entire observation period.

The analysis in more detail shows that a sizeable number of the workshop participants selected practically all possible settings as probable for sitting, for either individuals or groups. Consequently, (types of) settings which were proven successful from observation (and not only Trg Republike), such as flat areas or steps articulated by planting boxes and low walls, were included almost automatically. Similarly, some such niches on the platform along side the department store (sub-area C), which were also widely suggested by designers as likely to be used for sitting, were proven to be used quite often. In these situations a back-covering provision, complete or partial, solid or transparent, is assured. When sitting on the long steps, screened by some flagpole-structures and with planting boxes nearby, for example, the view across the car-parking area is short and the eye is drawn to the green scenery of a residential block, across the car park (see right image in Figure 66).



East-end of sub-area B of Trg Republike



Western edge of sub-area C of Trg Republike

Figure 66: Sitting and its settings in Trg Republike, Ljubljana.

In spite of the unfortunate presence of the car-parking area, which was not suggested in the original plan for this square and which, according to spatial composition, the open spaces of the square still gravitate towards, workshop participants had to respond to the situation as it is at present. However, partly executed or changed projects may not be infrequent in a design practice. It is, then, so much more important to know about usage-spatial relationships and include them in decision-making processes in relation to the phased development of the execution of projects themselves, too. Nevertheless, aiming for completed public spaces which have multipurpose elements that serve more than one purpose at the same time are recommended. Gehl (1987) argues that this results in more interesting city elements and permits a greater diversity in the use of the city space.

Further analysis of various overall assembly maps shows that, in many cases, the likely settings proposed by the designers for some activities such as skateboarding, playing or even sitting, differ in their rates and intensity of use from that recorded by surveying the actual use of settings which usually facilitate any such activity. It shows that designers were not only generous when placing certain activities, such as sitting, practically everywhere possible, but also general in graphical expression using a ‘bubble-diagrammatic’ technique. Sixteen workshop participants (about 45%) were quite specific and accurate in their depiction of likely activities in the square (see Figure 55), but very few of them were selective and thoughtful about accurately placing activities in a place. In so doing, they made the whole usage-spatial relation in the square appear more consistent and coherent than perhaps their understanding warranted.

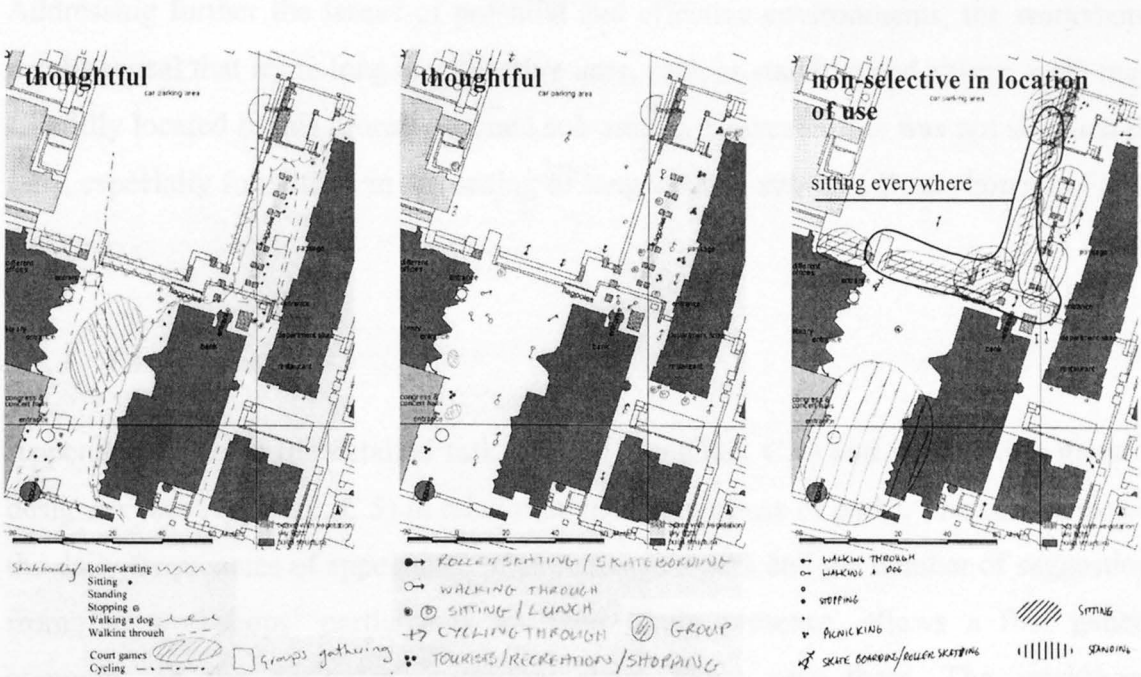


Figure 67: The examples of drawings from quite thoughtful responses, to a response thoughtful in selection of uses, but non-selective in their locations. (See full-sized copies of these maps in Appendix F: F8, F9 and F2).

By analysing the overall designers’ response in more detail, and taking into account a simple listing of suggested uses in the whole square, particularly on the platform with a built frame on both its longest sides (sub-area A) and in the node between the platforms (sub-area B), their response seems quite adequate (see Appendices E.4.1 and E.4.2). In sub-area C, a platform which is open to the car-parking area along one of its longest sides, the suggested and observed uses differ the most. Quite a few more uses were suggested by the designers than were actually observed, such as picnicking, jogging, and lying down (see Appendix E.4.3). According to the empirical evidence (see Appendix D.8), these uses were not seen at all.

Similar examples in this study confirm what Gehl (1987), Cooper Marcus and Francis (1998) and Whyte (1980) have shown, ie. that, the spatial character of this part of a square, its structure and composition as well as its hard surface, are quite likely to be unattractive for such uses. Simplifying this, these findings address an incorrect interpretation of a potential environment by designers.

Other uses, such as walking a dog and skateboarding, which were not seen in this sub-area C but which, again, were suggested by the designers, were more likely to be supported by this spatial setting. However, they happened in practice in some other parts of this square, seemingly slightly more suitable and conducive to them. Arguably, the effective environment was not fully considered by workshop participants. Addressing further the issues of potential and effective environments, the workshops' results reveal that some long-stay, passive uses, such as standing and sitting, were more carefully located in this aforementioned sub-area C. However, this was not so much the case, especially for sitting, in the setting of long steps in sub-area B, as shown in Figure 65.

5.2.2 Use of parks

Appendix C shows the detailed task set (see Appendix C.4) and information given to designers (see Appendix C.5) in relation to the study of use of parks. The comparison of the daily frequencies of appearance of activities in a park and the number of suggestions from the workshops' participants for their likely presence, allows a first general comment on the designers' responses about likely uses there. The workshops' examination of usage-spatial relationship in parks was limited to a representative part of the Tivoli Park. This was an enclosed spatial entity, which covers different types of settings that would conventionally be parts of a city's central park.

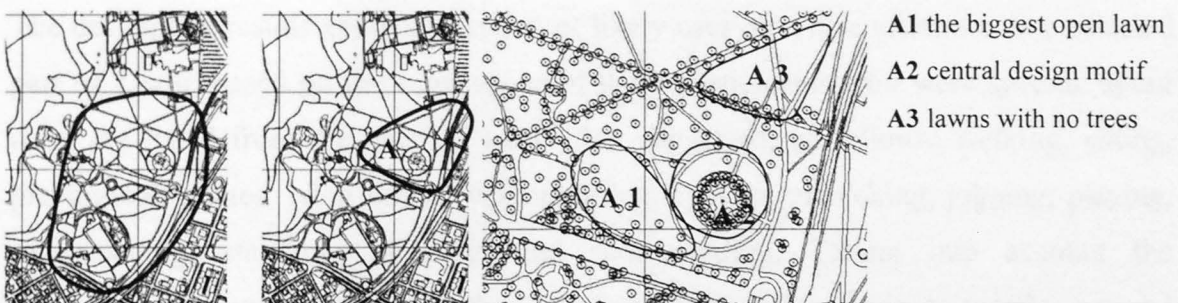


Figure 68: Tivoli Park, Ljubljana as a whole and the entity involved in the workshops (part A) with an indication of some of its characteristic areas.

Firstly, a brief comparison between the basic descriptions about this part (see A in Figure 68) and the whole Tivoli Park is provided. The charts in Figures 69 and 70 show that a distribution pattern, representing the number of days when any activity was recorded in a place, are similar for both spatial settings, the smaller spatial entity (part A) and the park as a whole.

The observed activities in part A of Tivoli Park

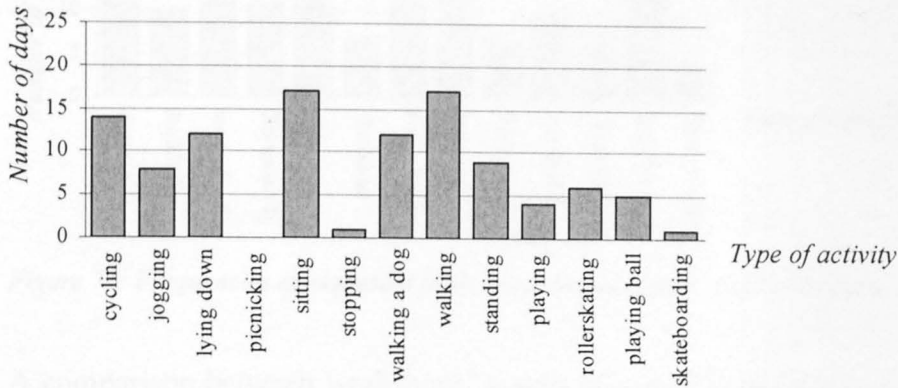


Figure 69: The frequencies of uses in part A of Tivoli Park, Ljubljana, recorded in the afternoons (2pm-7pm) of the entire observation period. The selection of activities listed on the x-axis is based on the activities resulting from the workshops.

The observed activities in the whole of Tivoli Park

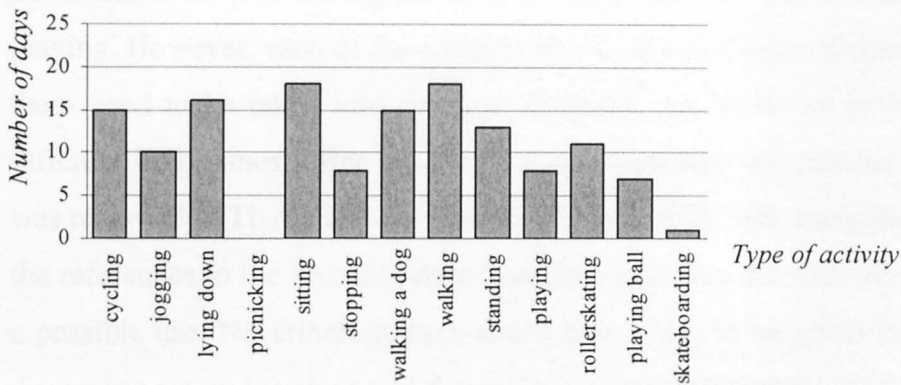


Figure 70: The frequencies of uses in the whole of Tivoli Park, Ljubljana, recorded in the afternoons (2pm-7pm) of the entire observation period. The selection of activities listed on the x-axis is based on the activities resulting from the workshops.

The descriptive results about a selection of likely uses on a nice afternoon in a selected part of Tivoli, based on the suggestions of those participants who were specific about uses, are listed from the most to least often suggested, as follows: walking, sitting, playing ball games, lying down, walking a dog, cycling, picnicking, jogging, playing, roller-skating, standing, stopping, and skateboarding. Taking into account the interpreted suggestions from other participants, who, amongst mostly general descriptions, specified some of the uses, the suggestions mostly increased for walking

and sitting. In a few cases, they suggested cycling, jogging, picnicking, playing and walking a dog, locations here and there were also used for standing and stopping.

Workshop results about occupancy of part A of Tivoli Park based on the accurate naming of uses, no matter the accuracy in location

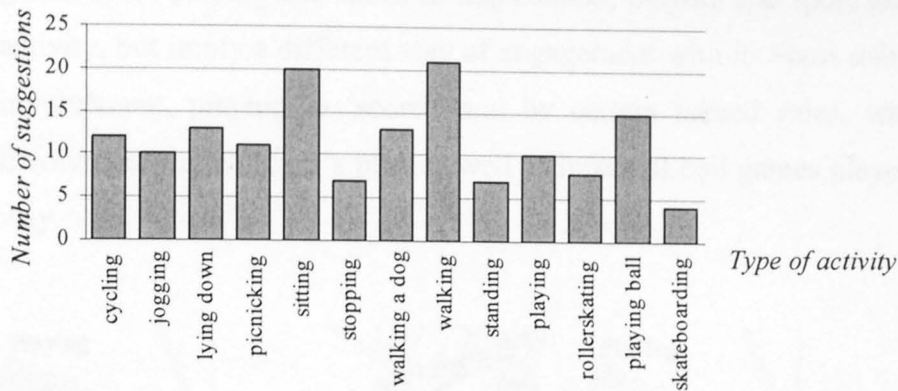


Figure 71: Frequencies of suggested likely occupancies of part A of Tivoli Park, Ljubljana.

A comparison between workshops' results (Figure 71) and the equivalent recorded data from observations (Figures 69 and 70) shows quite remarkable similarities, especially for the frequently suggested and often recorded uses such as walking, sitting, lying down, walking a dog and cycling. Picnicking, as such, has not been recorded in observations as it is a complex activity which may consist of sitting, lying down and playing. However, each of these single activities was observed, therefore the parallels to them need to be taken into account. Although results for an activity such as playing different ball games differ the most, when comparing the number of days on which it was recorded in Tivoli, and the number of participants who imagined it likely to happen, the references to the recorded data from the Meadows, for example, make it credible as a possible use. Nevertheless, such active play needs to be given further attention when discussing actual locations and dimensions of suggested uses.

The part of Tivoli which was included in the workshops (see A in Figure 68) is about the same size, and similar in shape to one of the largest patches in the Meadows in Edinburgh (see Figure 42 in Chapter 5.1.2), with which workshop participants will have been familiar. However, Tivoli has more inner articulations by paths, geometric and organic patterns and thus represents a group of different lawns with or without trees. Bearing in mind the importance of the requisite size and open-ness of lawns for informal sports as observed in the Meadows, and relying on the empirical evidence

about the dimensions of areas which such uses might require, the designers' responses about likely active uses in a park are discussed below.

According to the vocabulary used by the workshops' participants, two categories were generalised: playing and sport. In this context, playing and sport may address the same activity, but imply a different way of engagement with it. Sport refers to a more serious involvement, playing to 'score', and by certain agreed rules, whereas playing may involve general children's play as well as informal ball games played in a more relaxed way.

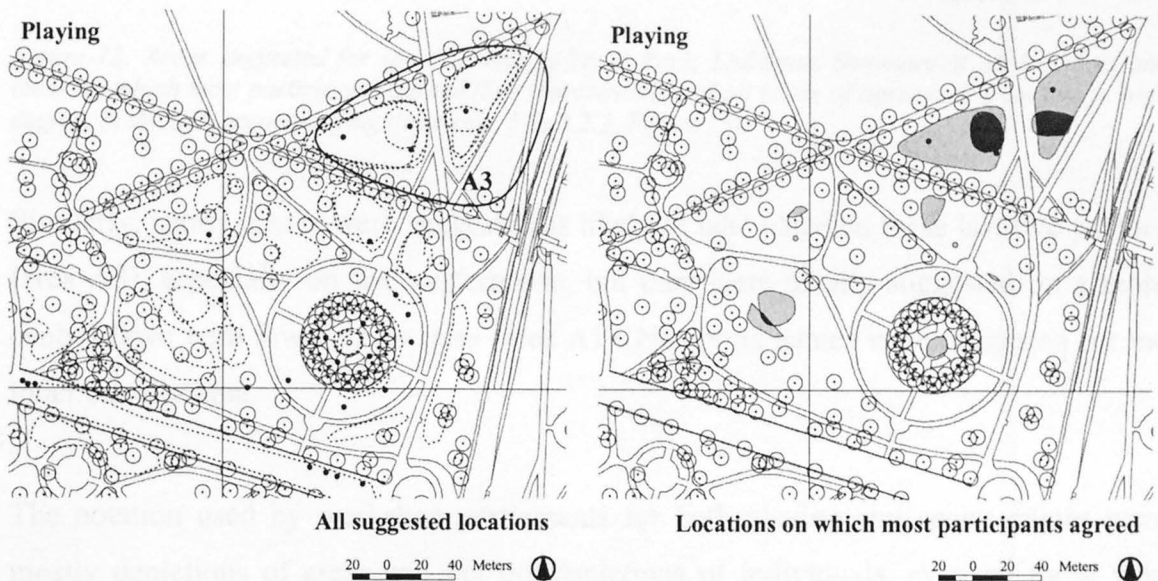


Figure 72: Areas suggested for playing in Tivoli Park, Ljubljana. Summary of all locations and those on which most participants agreed. (See representation of all levels of agreement from low to high degree, in the CD, accompanying this thesis, File 5.2.2, Figure 72).

In general, playing was suggested by the participants usually in all the bigger green areas, but also close to the fountain in the centre of the circular designed area. Sometimes, however, suggestions for any likely occupancy of playing cover the whole size and shape of the patch. Those which do not are usually located quite centrally. The areas on which the majority of participants agreed the most are the smaller central areas of sizable open patches, defined by inner paths through the park and around the fountain. The bigger areas for playing were suggested in both nearly triangular patches on each side of the main longitudinal way through the park, which have no trees on the lawn's surface (area A3).

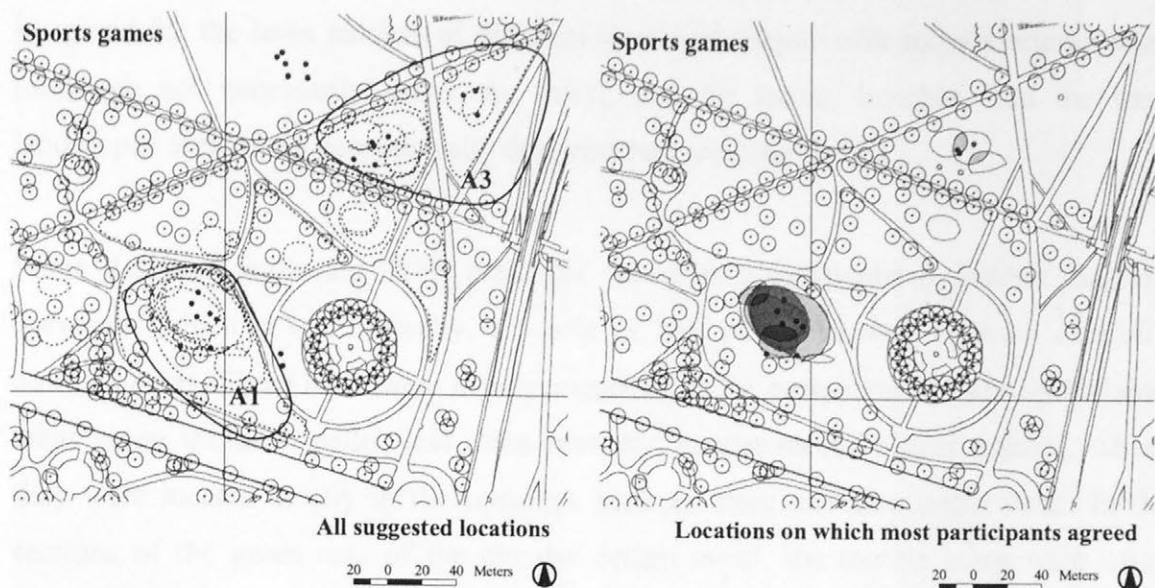


Figure 73: Areas suggested for sports games in Tivoli Park, Ljubljana. Summary of all locations and those on which most participants agreed. (See representation of all levels of agreement from low to high degree, in the CD, accompanying this thesis, File 5.2.2, Figure 73).

Similarly, sports games were suggested as likely to take place on these last two patches (area A3), especially on the western one, but they were mostly suggested on a more central lawn with fewer or no trees (area A1). No sports games were suggested for the inner circular area.

The notation used by workshop participants for both playing and sports games were mostly depictions of areas and not dot-depictions of individuals, even by those who used dot-depictions for other uses such as stopping, sitting and lying down, for example. Thus, although the locations which were suggested as likely to be occupied reflect quite thoughtful suggestions and settings conducive to an activity, there was no reference to the number of participants who might be involved with it. However, such a reference is important as playing or sports games can refer to playing football and frisbee, for which the same area of occupancy might be suitable but for quite a different number of participants, as was shown earlier in observations of the Meadows, Edinburgh.

Sitting, either on provided street furniture or freely on the grass, was widely recognised as a likely occupancy in a park. Designers' responses in locating sitting were often very specific, using dot-symbols, sometimes general, either outlining big overall areas or smaller areas, with which they usually referred to groups. The overall assembly map, which visualises responses relating to the level of accuracy of mapping of likely sitting in a park, shows that sitting was suggested for a range of different settings. It was

imagined for the lawn patches of different sizes and shapes with some scattered trees (although not necessarily under the trees), and for lawns, benches, and the hard landscaped area of the geometrically designed part (circular motif).

Some designers indicated likely areas for sitting as non-articulated, bubble diagram drawings, which cover, basically, a whole or half patch, as well as more carefully outlined areas. These latter were mostly suggested in the peripheral and semi-peripheral areas along the inner-paths, less often centrally, except on the bigger patches, where they were located mostly in the openings between trees and also under them. In the sections of the green ring of the circular design motif, the middle areas were often suggested as likely to be used for sitting down. In addition, the participants who depicted a likely usage in more detail, using dot-symbols, indicated peripheral locations in almost any lawn. In some larger lawn patches and in lawns of geometrical patterns, the locations selected for sitting occur towards the centres of green areas, too.

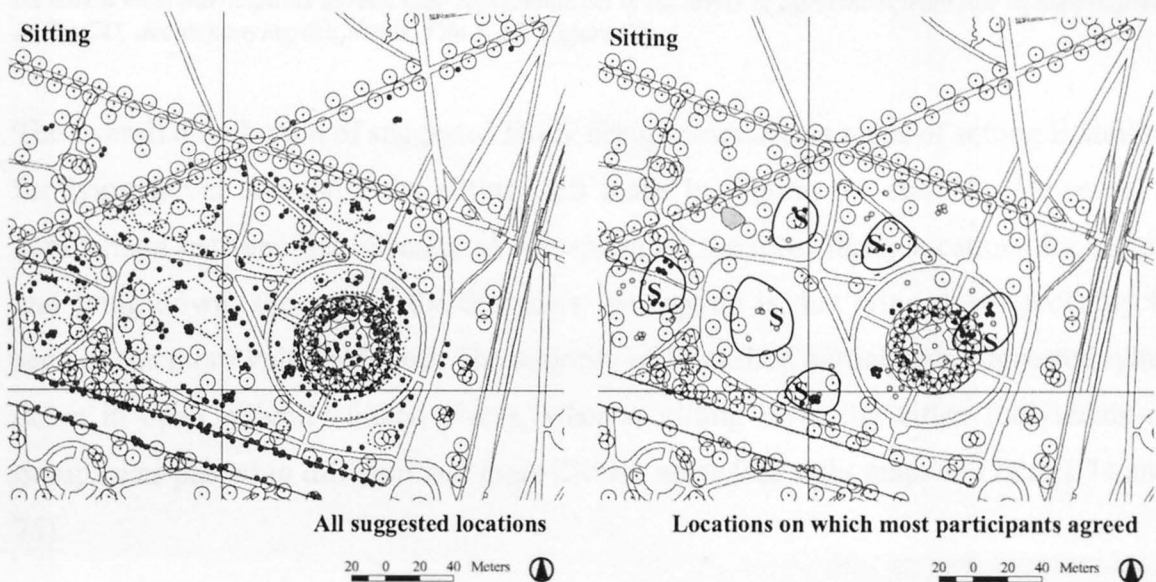


Figure 74: Areas suggested for sitting in Tivoli Park, Ljubljana. Summary of all locations and those on which most participants agreed. (See representation of all levels of agreement from low to high degree, in the CD, accompanying this thesis, File 5.2.2, Figure 74).

However, all these locations were not suggested with the same intensity. Some locations seemed to attract more designers than others. When looking for those locations for sitting on which designers agreed the most, an overlapping map demonstrates the intersections between all credible suggestions and shows that the designers imagined different types of sitting (groups, individuals) in all kinds of settings in a park (see S in Figure 74). Similar analyses for lying down, for example, reflect a different layout.

Final results show that, commonly, lying down is suggested in settings which are characteristic for their openness (see L in Figure 75).

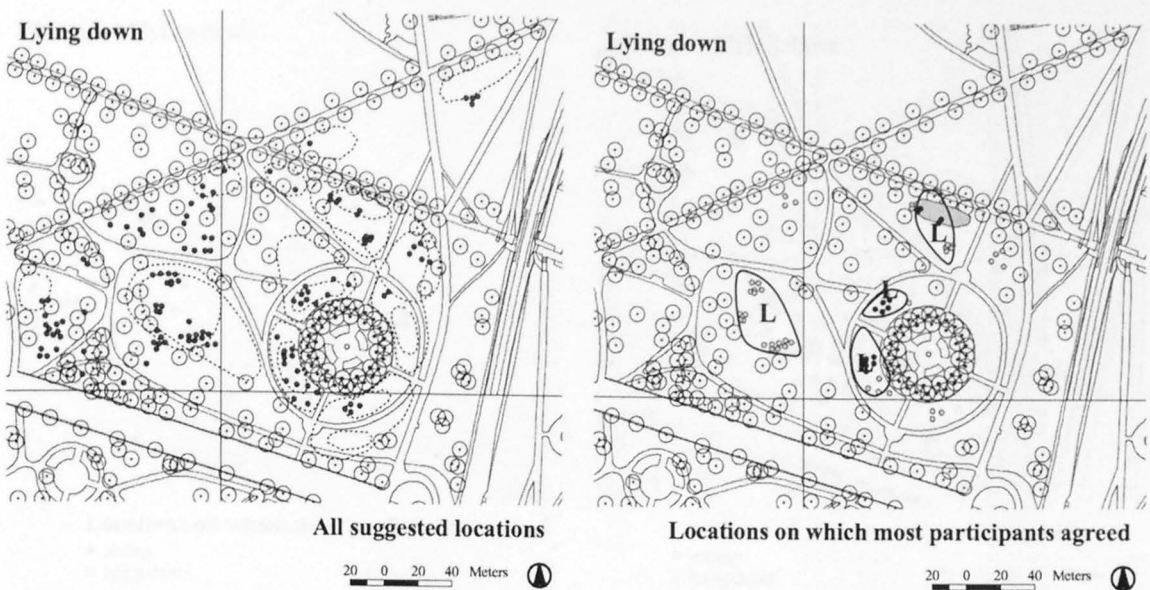


Figure 75: Areas suggested for lying down in Tivoli Park, Ljubljana. Summary of all locations and those on which most participants agreed. (See representation of all levels of agreement from low to high degree, in the CD, accompanying this thesis, File 5.2.2, Figure 75).

The overall distribution of suggested likely occupancies across types of setting is similar for lying down and those for sitting (left maps in Figures 74 and 75). However, a comparison between the intensity of agreement on the most likely locations for sitting and lying down, shows that the designers' perception is that lying down probably is seen as the more vulnerable use. The majority of workshop participants suggested lying down in open, visually linked places, whereas sitting involving either individuals or groups was placed in different and more diverse areas (see right maps in Figures 74 and 75).

A comparison of these results, from workshops' drawings and the observation records for some conventional long-stay passive and active activities, shows that the designers located them in the same types of settings as were observed to be conducive to them. Designers' imagination about passive uses such as sitting and lying down, relates quite well, in particular to the recorded patterns in this particular part of the park (see Figure 76), as well as reflecting the principles of any such occupancy recorded in other parks. However, spatiality of usage or its distribution upon any such setting has not always shown such clear results. It is exemplified, for instance, in relation to consideration of

the extent of active ball games and the number of participants occupying any suggested area (see Figure 77 and maps of the Meadows in Chapter 5.1.2).

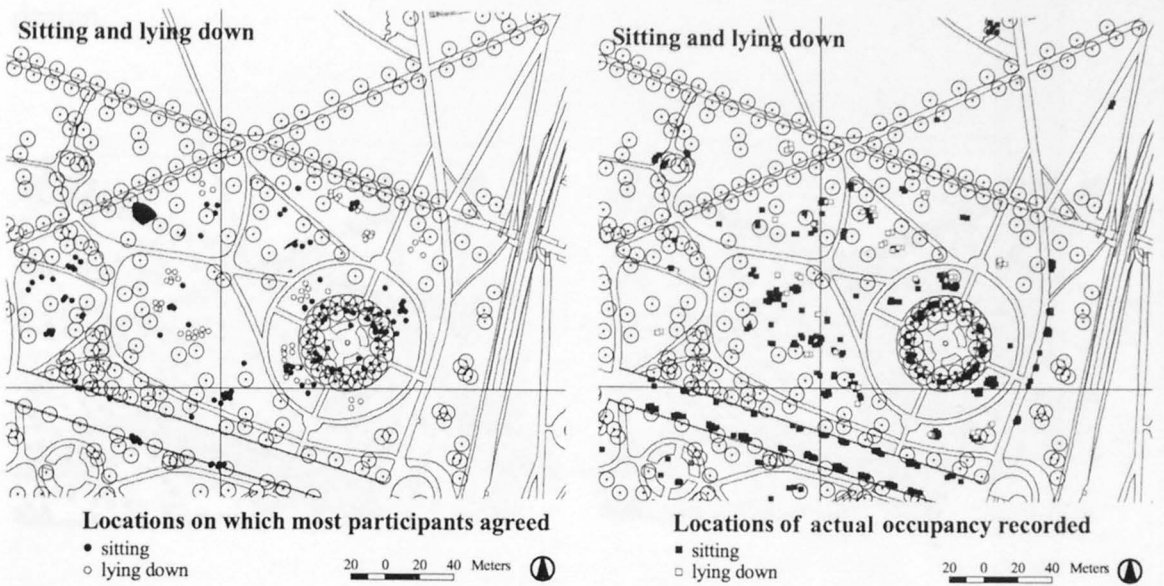


Figure 76: Locations of likely occupancies by sitting and lying down on which designers agreed the most and actual occupancies by these two types of passive engagement in park life, as recorded in the entire observation period in Tivoli, Ljubljana.

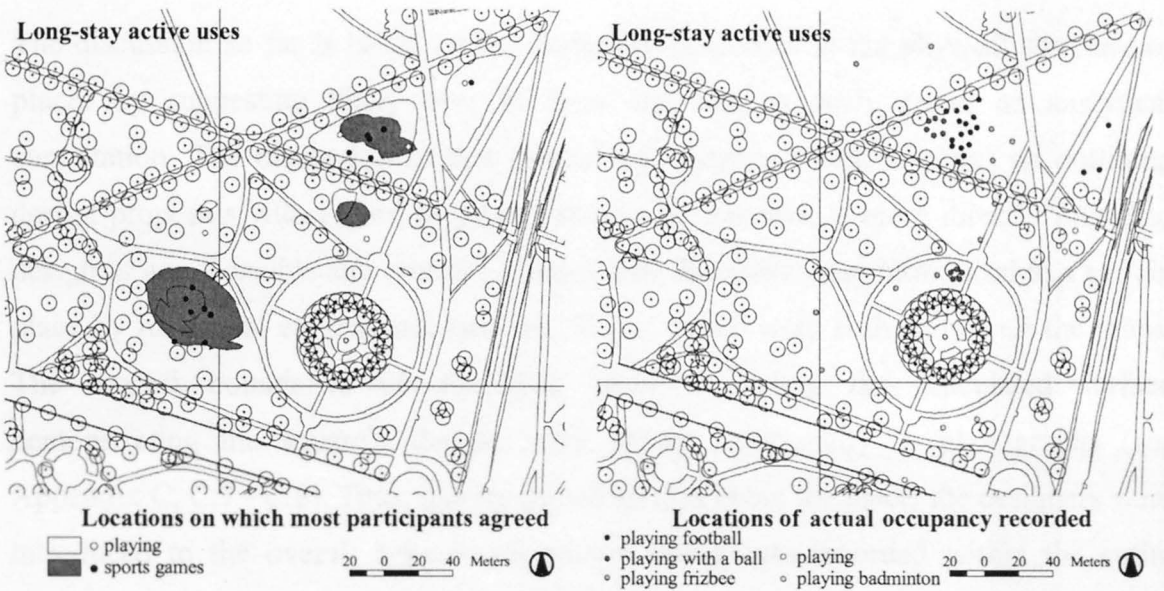


Figure 77: Locations of likely occupancies by long-stay active uses on which designers agreed the most and actual occupancies by such uses in park life, as recorded in the entire observation period in Tivoli, Ljubljana.

Although the designers' responses to locating uses in places can generally be estimated as good, one must bear in mind that these results relied on drawings which had achieved an adequate response in terms of the level of accuracy in recognising types of activities as well as in drawing their locations. A sizable number of those which had not been included in the comparison and discussion, referred to weak awareness and a poor level

of detail about usage in parks (see Figures 55 and 57). These latter cases highlight a lack of imagination by designers about spatial occupancies in parks and point to the need for a reference point which might be relied on in any process of decision making about park design.

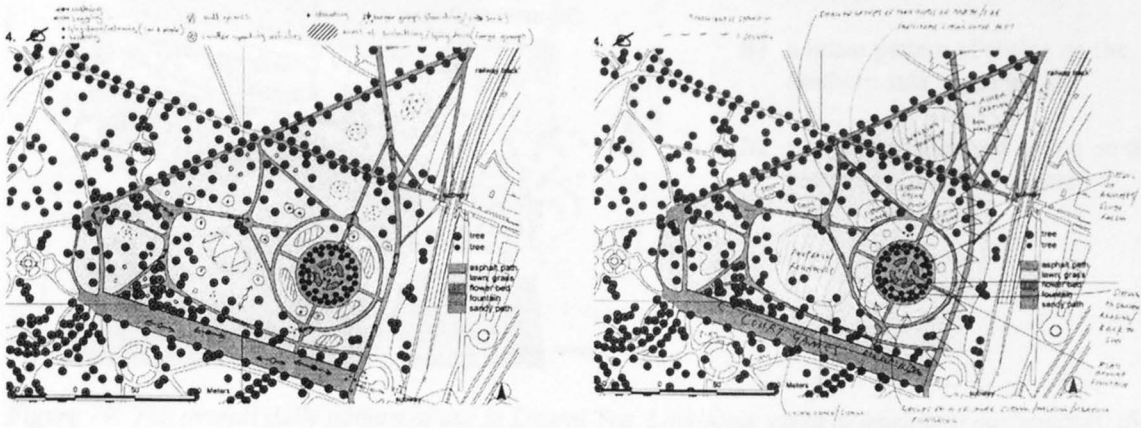


Figure 78: Two good examples of proposals for associated activities and their conducive settings in a park. Tivoli Park, Ljubljana. (See full-sized copies of these maps in Appendix F, F10-F11).

5.2.3 Place design

The discussion so far is based on the designers' responses to the physical structure of places by suggesting likely uses in them and has, as such, rather an analytical connotation. The discussion in this present sub-chapter, which is based on outlining design proposals with regard to given behavioural patterns, is more directly linked to design as a responsible and creative process. The designers were introduced to a certain place by its spatial context and land use frame, which were both shown on the maps. The nearest boundaries of the place itself, excluding the articulated surface demonstrating the square's design, were shown additionally in photographs (see Appendix C, C.7 - C.8). Thus, having gained an idea about the place, the designers were introduced to the overall behavioural pattern which was recorded within the entire observation period. With all this information to hand, on the basis of an additional single observation record of a nice weekday afternoon, they were asked to outline a basic design proposal for a square which might support such occupancy within it.

The user groups given were, for example, people in transition, patterns of passive engagement, predominantly sitting, and some long-stay active users, such as skateboarders and participants playing with a ball (see Figures 79 and 80). The analysis categorises the design proposals as responsive or indifferent. They were responsive or

indifferent with regard to meaningful suggestions about spatial compositions and the relations between proposed elements of spatial definition in response to given uses, and to spatial issues such as a height drop between the two ends of a square.

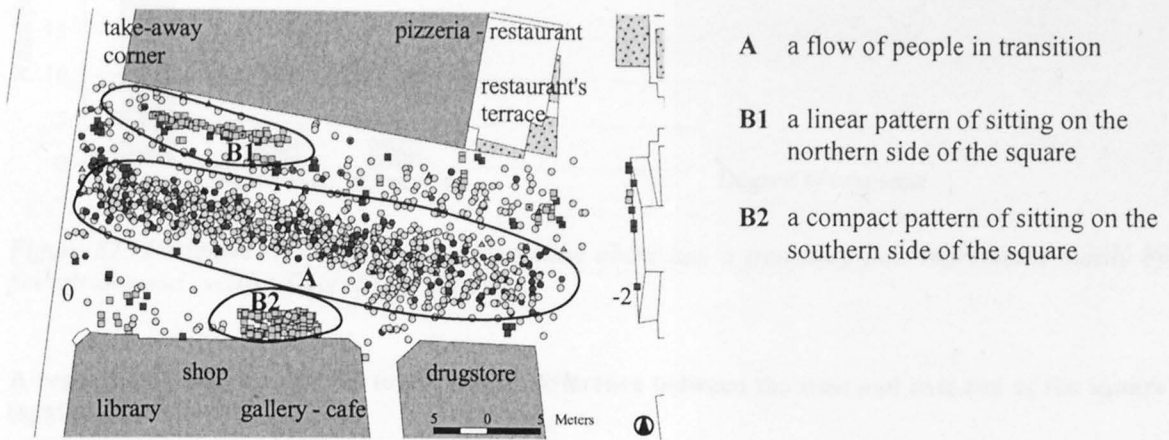


Figure 79: The overall daily pattern of use in Dvorni Trg, Ljubljana, given to workshop participants. (See the original maps of behavioural patterns in Appendix C.8).

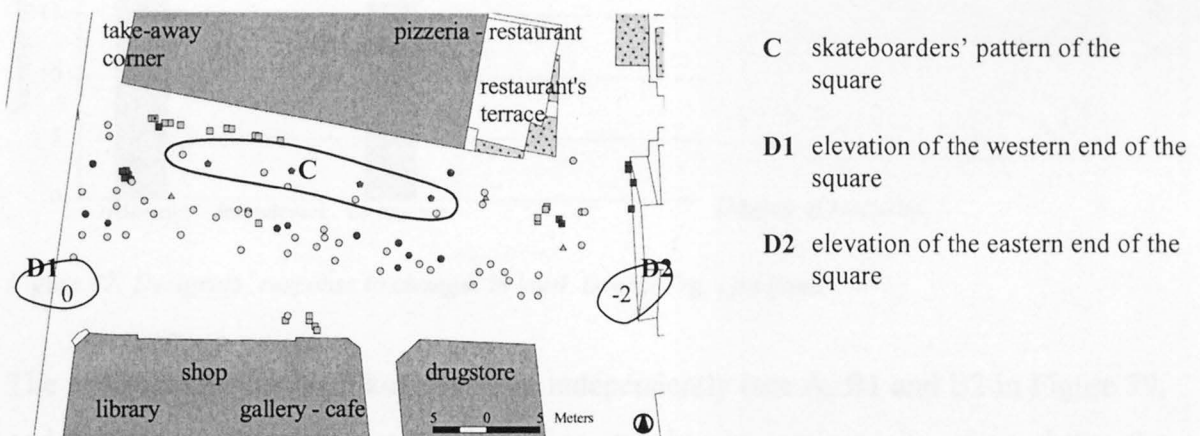


Figure 80: A daily pattern of use in Dvorni Trg, Ljubljana, given to workshop participants. (See the original maps of behavioural patterns in Appendix C.8).

Aside from some explicit messages from the behavioural patterns, such as a transitory flow, represented mostly by pedestrians and cyclists, a line of sitters in the north-western area, and sitting in groups along the southern edge, the key information required for such a basic design layout of a place, and given to participants was that there is a 2m height difference between the west and east end of the square.

A response of design solutions to the transitory flow (behavioural pattern A)

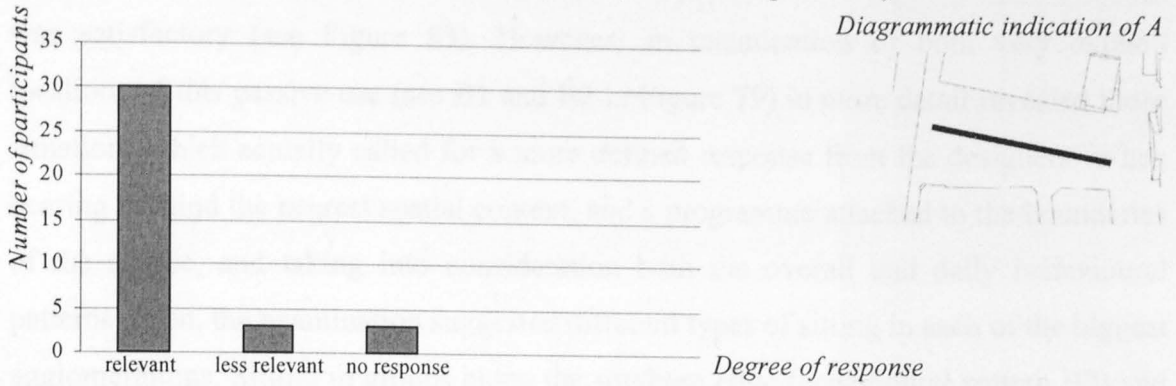


Figure 81: Designers' response to the information about use, a transitory flow represented mostly by pedestrians and cyclists. Dvorni Trg, Ljubljana.

A response of design solutions to the height difference between the west and east end of the square (spatial characteristic D1D2)

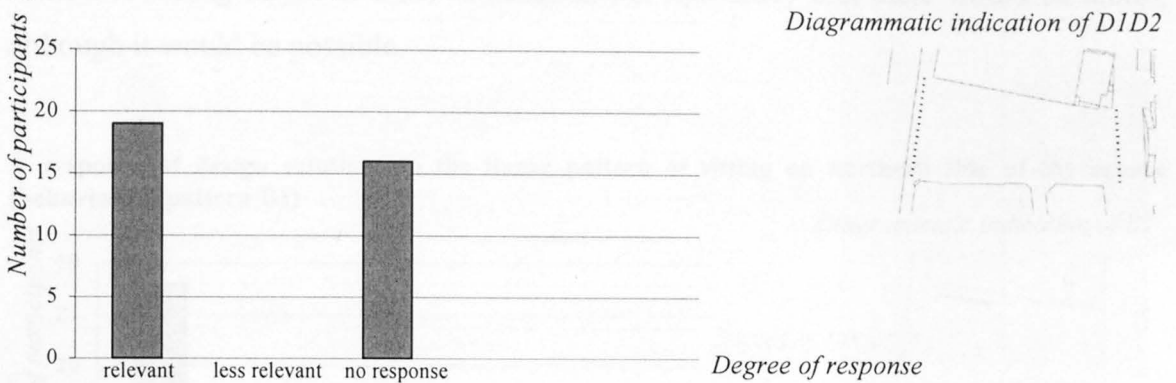


Figure 82: Designers' response to changes in level. Dvorni Trg, Ljubljana.

The analysis on each such key elements independently (see A, B1 and B2 in Figure 79, and C, D1 and D2 in Figure 80), and then step by step reciprocally, showed that the majority of the designers had interpreted a longitudinal partition of the square as a spatial element which might support people's walking, cycling, roller-skating and pushing prams, for example. A response to an issue of the level changes was sizably lower. All together, about 55% (19 participants) indicated some design response to that, whereas about 45% (16 participants) did not. A detailed look at this issue shows that about one third (11 participants) of this majority (30 participants), who had marked a partition suitable for a pedestrian flow, had not responded to a question about how the level change in the square might be dealt with. However, this pedestrian and cyclists' flow, occasionally accompanied by roller-skaters and parents pushing prams, walking children and adults walking dogs, between the west and east end of the square, could be associated, for example, with a graduated wide ramp or a set of platforms linked with staircases or ramps, in various ways.

A general overview, given by a reading of passive patterns in the square, such as sitting, was satisfactory (see Figure 83). However, an examination of both very explicit locations of this passive use (see B1 and B2 in Figure 79) in more detail revealed those situations which actually called for a more defined response from the designers. When bearing in mind the nearest spatial context, and a programme attached to the boundaries of the square, and taking into consideration both the overall and daily behavioural patterns given, the examination suggested different types of sitting in each of the biggest agglomerations. Sitting in groups along the southern edge (behavioural pattern B2) and the information about a gallery and a café there, would most likely imply people sitting around tables. A line of sitters in the north-western area (behavioural pattern B1), and the fact of a take-away delicatessen around the corner, would most likely indicate a low wall, a low long bench or a set of benches, but less likely that there would be tables, although it would be possible.

A response of design solutions to the linear pattern of sitting on northern side of the square (behavioural pattern B1)

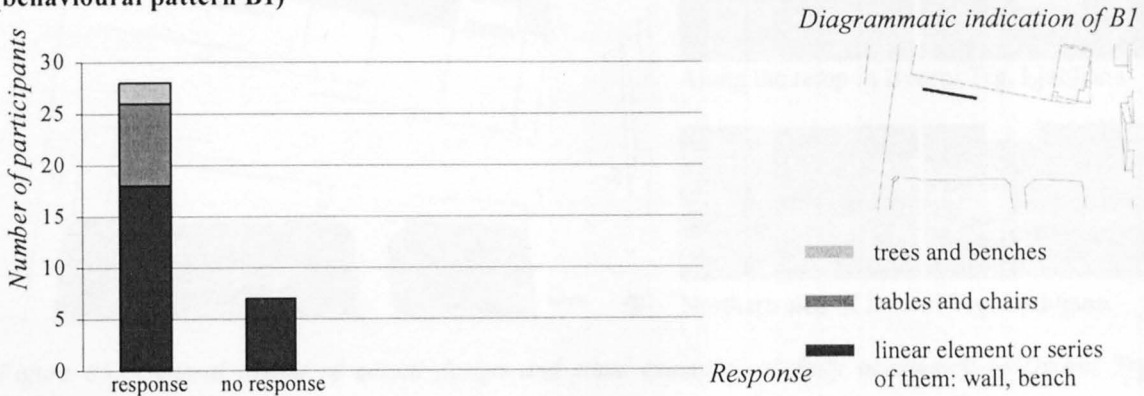


Figure 83: Designers' response to sitting on the northern part of the square, Dvorni Trg, Ljubljana.

A response of design solutions to the sitting pattern on the southern edge of the square (behavioural pattern B2)

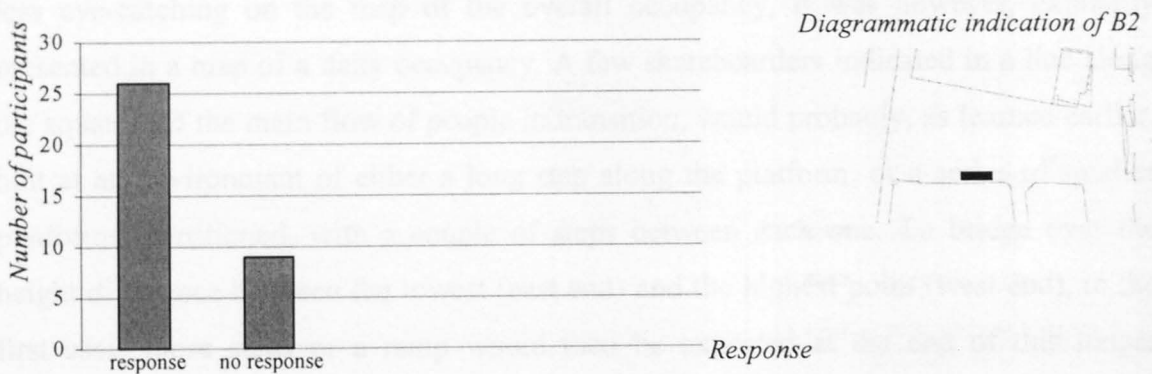


Figure 84: Designers' response to sitting on the southern part of the square, Dvorni Trg, Ljubljana.

About 75% of the participants responded to either of those two patterns of sitting. Some drawings were recognised as non-responding. They either had no suggestions or they suggested a correct element of spatial definition such as a platform, benches, tables with chairs, even a line of trees with benches underneath and so on. However, they did this as a pattern per se, disregarding the actual location of sitting observed, and therefore, not as a 'reaction' to given behavioural data. The greatest variety of different sitting options was suggested for the linear pattern in the north-western part of the square (B1). Those whose responses were recognised as relevant, reacted as follows: 8 participants suggested sitting around tables, 2 suggested a short line of trees with different compositions of benches underneath, and the biggest majority, 18 participants, suggested different arrangements of longitudinal sets of benches or a low wall, from which 9 of them read the pattern especially thoughtfully.

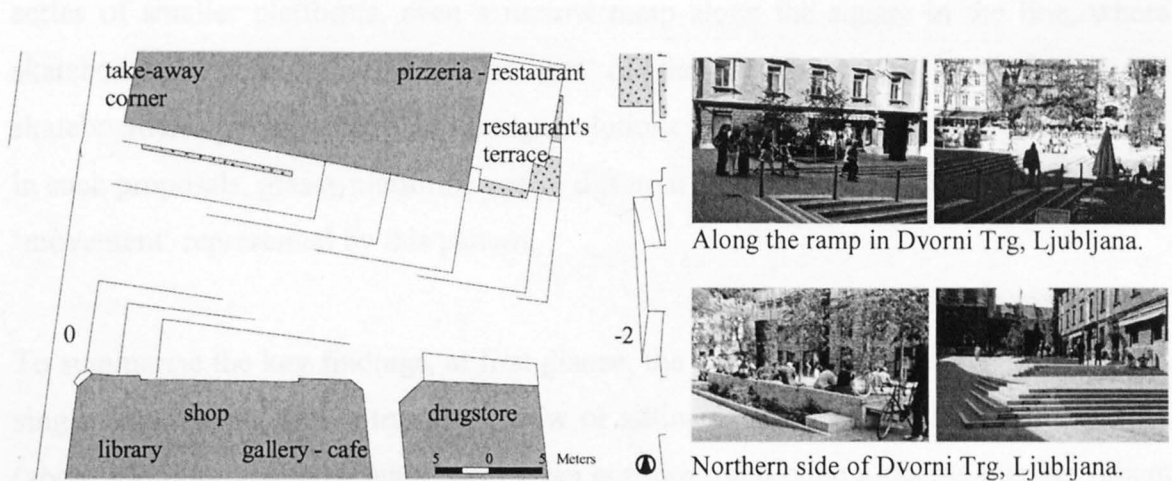


Figure 85: General layout of actual design and some examples of daily occupancy in Dvorni Trg, Ljubljana.

Skateboarders' movement along the place represents another distinctive pattern (see C in Figure 80) which might indicate some particular spatial articulation. Although it was less eye-catching on the map of the overall occupancy, it was however, explicitly presented in a map of a daily occupancy. A few skateboarders indicated in a line along the square, off the main flow of people in transition, would probably, as learned earlier, hint at an environment of either a long step along the platform, or a series of smaller platforms, partitioned, with a couple of steps between each one. To bridge over the height difference between the lowest (east end) and the highest point (west end), in the first case, more steps or a ramp would then be expected at the end of this longer platform. In the latter case, this difference might be gradually bridged by a set of smaller platforms, linked by sets of steps in between.

A response of design solutions to the skateboarders' pattern of the square (behavioural pattern C)

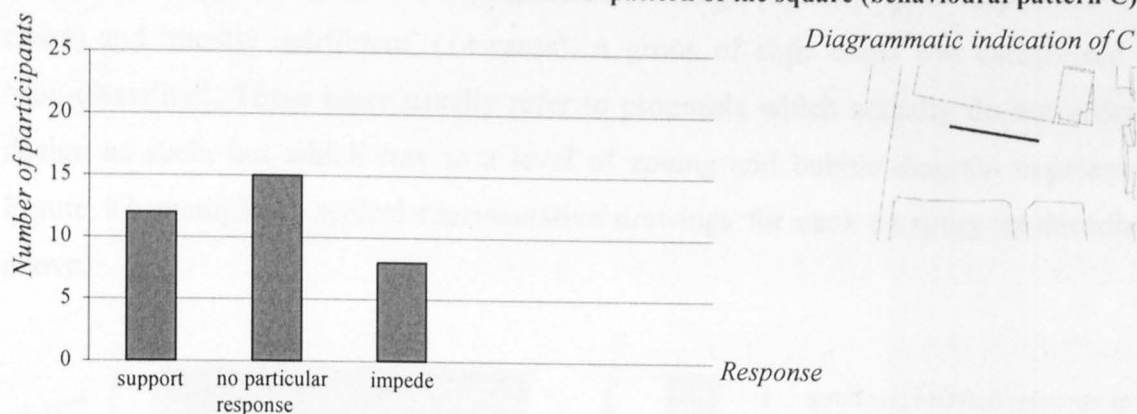


Figure 86: Designers' response to skateboarding in Dvorni Trg, Ljubljana.

The examination of this particular pattern shows that designers mostly did not react to it. About one third of the participants specified some level changes, such as steps, a series of smaller platforms, even a narrow ramp along the square in the line, where skateboarders were presented. The rest of the designers clearly neglected the skateboarders' pattern, proposing design solutions that would inhibit such use. Usually in such proposals, grassy platforms and/or different articulations with benches block any 'movement' represented by this pattern.

To summarise the key findings, at first glance, the general designers' response to some single patterns, such as a transitory flow or sitting is quite satisfactory. The majority (about 85%) interpreted a main 'pedestrian corridor', and quite a sizable number (about 75%) responded to sitting patterns. However, further analysis shows that about 50% of the participants did not give any indication as to how the height difference between both ends of the square might be addressed or they neglected the skateboarding patterns in their design proposals. To a certain degree, these two issues might complement each other, as the knowledge about, and response to, skateboarders' movement might help to figure out how the level changes could be arranged. Indeed, the majority of those who responded to skateboarders, had actually proposed the level changes along the place.

These last observations and the examination of the design proposals as a whole, not only show sometimes partly considered responses but also other characteristics of these proposals. They are reflected, for example, in solutions which, many times, are driven by a spatial context itself, a formal structural message from the area or the ideas beyond that, addressing a place's integration in a broader context. In fact, in all such cases, there was little response to a behavioural pattern as such in the first place. Accordingly, this

study reveals two categories reflecting the basic design layouts, ‘quite responsive’ (13 cases) and ‘mostly indifferent’ (14 cases). A group of eight cases was categorised as ‘non-classified’. These latter usually refer to proposals which actually do not address design as such, but which stay in a level of zoning and bubble diagram expression. Figure 87 exemplifies typical representative drawings for each category as described above.

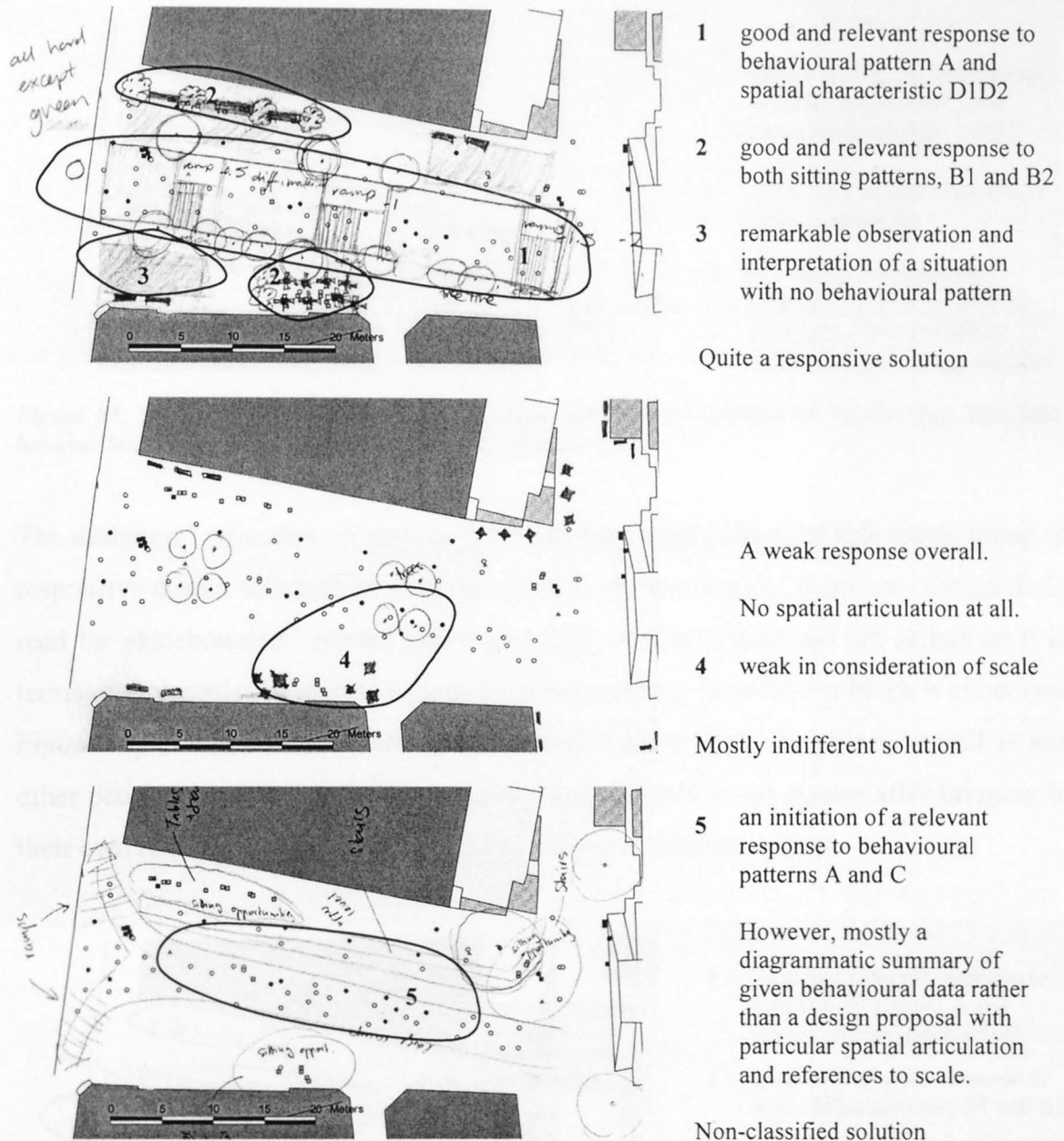


Figure 87: Categorisation of drawings in relation to comprehensive design proposals for Dvorni Trg, Ljubljana.

The category of ‘quite responsive’ represents the proposals which reflect very well on both explicit passive patterns (see 2 in Figure 87), as well as the main pedestrian flow (see 1 in Figure 87), and they address the areas with no or limited uses, too (see 3 in Figure 87). Recognising such areas as different from the main tissue, they are usually

interpreted as soft areas, planted areas or some hard surfaces divided from the rest of the square with a few stairs or walls. Although in all the cases, the main articulation of a place, as a direct interpretation of behavioural pattern and its spatial context, is mostly well read and responsive to the level change, in a few cases the types of surfaces seem less appropriate or thoroughly selected for certain uses such as skateboarders, or even walking and cycling (see 3 in Figure 88).

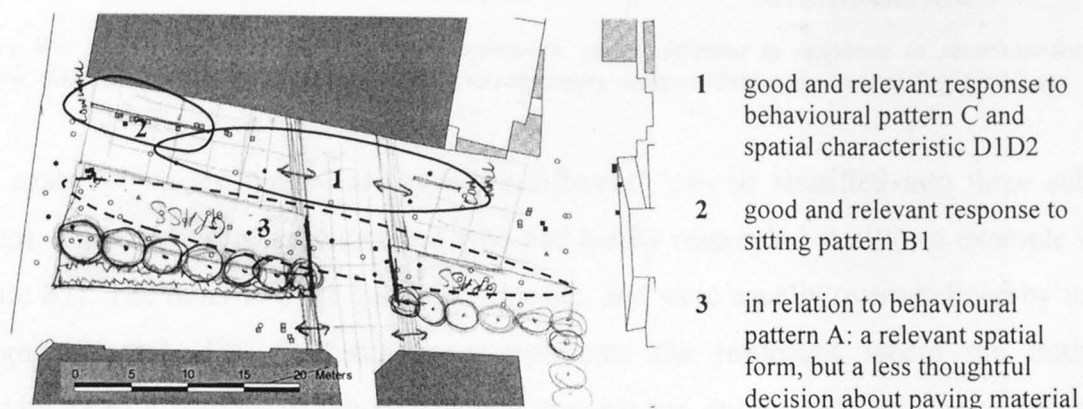


Figure 88: An example of generally, a quite responsive design solution for Dvorni Trg, Ljubljana, however less careful in the selection of landscaping material.

The designers' reflection on skateboarders allows a stratification of this whole group of responsive design solutions in more detail, showing that some of them very thoughtfully read the skateboarders' pattern (see Figure 89), whereas others did not reflect on it in terms of any particular spatial structure but importantly, they did not block it either (see Figure 90). Nevertheless, skateboarders may just move along the places as well as any other people in transition through a place, or participate in the square after bringing in their own requisites to create effective and attractive settings to them.

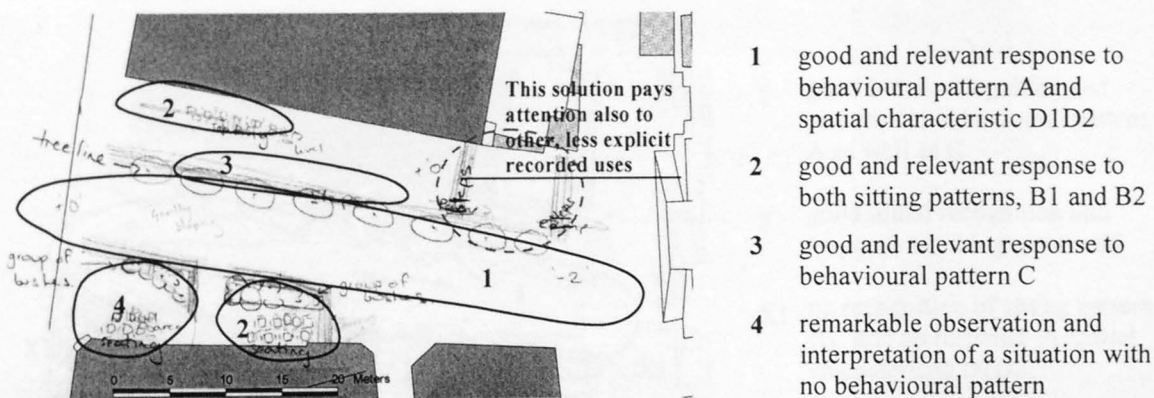
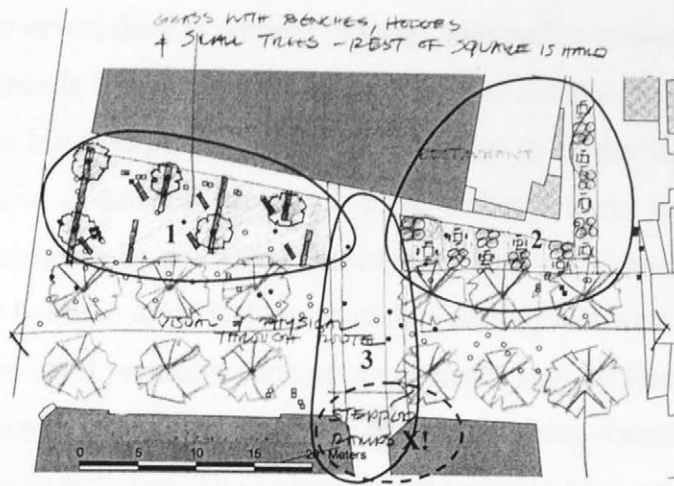


Figure 89: An example of a comprehensive and all-inclusive, responsive design solution for Dvorni Trg, Ljubljana. This task in a workshop allows designers to choose between a layout including a daily behavioural pattern and a map without it. (For detailed information about locations of behavioural patterns, see Figures 78 and 79 or Appendix C.8).



- 1 no support from behavioural pattern B1 for a proposed physical layout
- 2 no evidence from behavioural pattern for restaurant's occupancy of a particular part of the square
- 3 generally relevant, but 2m X! height-difference must be bridged

Figure 92: Indifferent design proposal for Dvorni Trg, Ljubljana. Except for a certain respect given to a main transitory flow, no other behavioural pattern has been taken into account at all.

These examples hint at the importance of a design as a composition of spatial elements with regard to their inner order and a response to its structural spatial context, rather than a combined response to applied creativity and consideration of the 'social structure' of a place. A study of the importance of selected objectives to which designers pay attention when they design, as revealed in the questionnaire responses from participants, also shows that both design as 'an aesthetic and artistic value', and as 'a response to a broader context', generally, played the most important role among some other objectives when addressing design.

How much attention do you pay to any of the selected objectives when you design urban parks or public space? (Question 1)

- a. Please mark each of them in the second column with one of the ranges between 1 and 5.
- b. Please, range the objectives in the third column in order from very important to less important, according to your beliefs. Use 1 as the most important and the gradation of ascending numbers towards the least important objective

1 = very much, 2 = pretty much, 3 = medium, 4 = little, 5 = none at all

1 st column	2 nd column					3 rd column
	range					
objective	1	2	3	4	5	
client's preferences						
construction ease						
costs						
design layout as aesthetic & artistic value						
design layout as physical characteristics & processes						
design layout as responsive to broader site context						
future users						

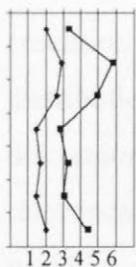


Figure 93: The average values for priority (first line in the chart) and order (second line in the chart) of the objectives which designers take into account when they design. (For more details, see also Appendix E.1: E1.1-E1.3).

However, there is nothing ‘wrong’ with such a conviction. It perhaps reflects a deep and versatile knowledge, including thoughts about a place’s usage. Although, according to the last comparison about the response to given behavioural patterns, quite a sizable group responded very well, there was still about the same number of designers who seemed to be much less sensitive to these very important concerns. However, it should be borne in mind that the workshop participants were subjects to major time constraints, and other pressures such as: an intensive introduction about places, limited time for any drawing tasks and no individual discussions, therefore there is no intention to make undue criticism. The comments are intended as observations, in the main. Nevertheless, this range of illustrations shows that designers’ perceptions about uses and places are not always in harmony and that, for still too many of them, there is insufficient awareness of this link between places and people’s use of them.

It should be borne in mind too that design, in the concept of this thesis, is very much considered as a creative and complex process, which cannot result in the pure application of all sorts of analytical maps, from ecological, functional, structural, perceptual and behavioural. Rather, it should be viewed as a thoughtful reaction to all such knowledge, stimulating creativity and imagination. These studies of designers’ responses to a given behavioural pattern relevant to a certain place, knowing its nearer and broader spatial context, but being unaware of its physical layout, most directly point to the need for, and value of, empirical knowledge.

5.3 Key conclusions

In squares and parks, spatial articulation may make uses more likely or create barriers to use. So, it is important to understand spatial articulation as a necessary but not sufficient condition for some kinds of use. In this respect, the examination of places through the distribution and physical dimensions of behavioural patterns in them has enabled a discussion about what are effective environments and implied their importance and relevance in design practice. Addressing spatial characteristics of places by their usability and by reflecting from that on the conduciveness of places to occupancy, this research’s empirical results have shown in some detail the nature of effective environments and have suggested some vocabulary for their descriptions.

By examining the effective environments for skateboarding in more detail, for example, it has shown that it consists of two adjacent spaces, 'event space' and 'supplementary space'. The event space is the actual space through which the activity is 'installed' in the place. It represents a position which a person or group, engaged in a particular activity, occupies in a place. The supplementary space is the available space at hand to this person or group, which actually enables the complete activity to happen fully. As the event space is necessary for that activity to be invited into the place, its supplementary space addresses its satisfactory staying in a place. Both spaces together form the effective space of an activity. The same is true of spaces for playing football and spaces for sitting.

However, the detailed spatial-behavioural analyses showed that activities form their own spaces and through them, shape places. Thus, behavioural patterns address usability and/or the spatial capacity of a place, reflect the spatial potential for occupancy, and refer to the conduciveness of a space being used. Many spatial forms are relatively adaptable and can accommodate a variety of patterns of uses but their conduciveness to usage is limited by both physical dimensions and articulation of places, and the dimensions which users require for satisfactorily carrying out activities.

An examination of a spatial form and behavioural patterns, at the same time, shows that the same elements of spatial definition, organised in different ways in a complex physical setting, can play different roles. They might always be facilitating but they may be neutral or even non-facilitating for certain single or multiple happenings in a place. The discussion also emphasises the importance of the presence of long-stay passive and active activities in squares and parks and through this addresses also age- and gender-diversity of occupancy. Accordingly, it points to a desire for different informal uses (active and passive, long-stay and transitory) and their co-habitation within adjoining and/or shared areas.

This thesis found that GIS, as an analytical and evaluation tool, draws the closest approximation to meeting the challenge of 'talking about the physicality of spaces using the language of patterns of uses'. GIS maps are recognised as an effective tool to represent and interpret behavioural patterns as visual data. They also translate recorded evidence into a body of empirical knowledge and preserve the connection of related non-spatial data to the material place. By such an association of the behaviour with a

certain environment, it is possible to ask questions and draw conclusions about the behaviour and its relationship to a place and from such reasoning, move towards a reconciliation between design and research in the field of urban landscape design. Mapping physical dimensions of uses is thus seen as a potential, which could become a way of negotiating (urban) landscape (design) forms.

The examination of public spaces' use from both angles, users' actions in them and designers' perceptions and beliefs about them, has shown that, often, there is a lack of knowledge about the nature of occupancy of one particular use or a certain combination of them. Despite generally there being often a good recognition and listing of likely activities in specific places, concerns about the spatiality of uses and conduciveness of places to support them were not always fully considered. Such findings argue for the importance of getting information from empirical evidence that might inform a better understanding of the usage-spatial relationship, as well as the design itself. Accordingly, knowing about physical dimensions, spatial peculiarities of activities and their interrelations, as well as about physical conduciveness of places to occupancy, and by this, recognising potential and effective environments, is of key importance when aiming for a responsible design.

To recapitulate, this comparative analysis shows that the physical spatial capacity and the usability of a place act as common denominators in the relationship between places and their occupancies. Furthermore, it reflects critically on designed public open spaces, and shows that design matters, but not absolutely. What matters is the conduciveness of a place for occupancy. Accordingly, empirical knowledge about the spatial-usage potential of places seems of key importance to the urban design professions and has an important role in urban landscape design practice. It might bring additional insights, validities and criteria for sustainable, successful and all-inclusive design.

Chapter 6 Conclusion

The thesis originates from concerns which generally wanted to address the gap between the application of environment-behaviour studies and design, as well as the gap between designers' knowledge and their notions about uses in designed places, and the actual (possible) relationships between these factors, focusing on it from a spatial point of view. Accordingly, it argues that there is a lack of appropriate knowledge and type of information about it. The common linkage, when addressing either concern, is recognised in different aspects and roles of empirical knowledge. The importance lies in the necessity of the search for such knowledge, the way of searching for it, and finally, in its operational applicability by gaining and selecting that information from it which may help to inform better design criteria. The importance of appropriate knowledge in the field of urban design is argued also by Rapoport who emphasises: "In urban design and planning, as in design at other scales, the need is for clear and explicit objectives based on real knowledge" (Rapoport, 1977: 4).

Rapoport (1977) aims for a changing approach and perception about cities and urban design, and stresses the need for an awareness about people and, accordingly, a change of viewpoint when addressing cities, as well as making any data collected by that operational. However, addressing the physical environment, researchers' and designers' reactions to Rapoport's demand and the different operational tools that have emerged since, in people-environmental studies, have been mainly based on visual perception and people's general preferences, and many times related to movement through a place, such as way-finding. Another often used and currently popular approach, addressing the spatial relationship between the structure of places and uses in them, is Space Syntax, often used as a predictive tool of the likelihood of drawing people to a place. Its prediction on occupancy, in general, with no references to what types of activities it might consist of and, thus, about a very basic usage-spatial relationship, is based on the broad scale spatial structure of places.

The integration of GPS technology in urban studies, mostly in studying transitory ways of people in towns, is increasing in popularity. Using this approach, places are described exclusively by traces of people's movement in/through places. In such studies, the individuals are selected and equipped with GPS devices, the instruments which provide direct information, relevant to the GIS. Nevertheless, in such studies, the behavioural-

environment interactions and relationships are studied for the sample of citizens selected in advance, as opposed to uninfluenced observations and behavioural mapping, another technique which questions the environment-behaviour interactions through the 'people' component, where anyone who happens to be in a place during the observation is recorded. Observation and behavioural mapping as a combined technique in studying the environment-behaviour relationship has been a known and used method for some decades. This thesis emphasises its connection to GIS and argues by this for more comprehensive ways of looking at that usage-spatial relationship.

GIS enables the easy manipulation of and exploration with the spatial data about users in places and, as such, pushes this reasoning and quality of the emerging knowledge further. If the demand in practice for all-inclusive designs calls for the importance of empirical knowledge, the 'technical' possibilities performed by GIS can show and reflect on richness of its contents. Moreover, its contents and the way it is gained and mediated are of key importance. In this thesis, the initial contents of the empirical knowledge directly reflect the information recorded through the observation. A GIS application upon it elucidated different aspects of this basic information about the usage-spatial relationship and provided a variety of different information derived further from this original collection. From this point of view, especially because this knowledge is visualised on maps, it also revealed the possibility for more effective design-research integration and stressed the effective incorporation of empirical knowledge in design.

Once a certain body of any empirical knowledge is established, its place and the manifestation in design are in question. Describing landscape design, Olin comments on the evolution and progress in design stressing: "Landscape architecture, like other fields, evolves as it finds new ways to perform operations upon a particular corpus of forms – reusing, reassembling, distorting, taking apart, transforming, and carrying forward on older set of forms – often quite limited in range, but constantly making new things with new meaning" (Olin in Swaffield, 2002: 77). Thus, in a similar way, as for any other concern benefiting the evolution and progress of a design, from the initial ideas about a spatial composition, to all sorts of spatial analysis related to the designed place and its context, the notions referring to dimensions and spatial characteristics of the relationships between activities and places, could be included in a design process. It is seen as a 'controlling mechanism' in a design process which may help to estimate

suitability and conduciveness of a new emerging design to expected, wanted or incidental future use.

The importance of such information about physical dimensions and spatial requirements of uses in places included in the design is stressed and reflected in the following. Carr *et al.* (1992) see the function of design in discovering the purposes of a substantial change in an existing place; organising the appropriate means of bringing it about; and guiding construction or reconstruction. Beside the design, as a factor that shapes people's perception and use of the environment, Carr *et al.* also address the usage-spatial relationship with the emphasis on two other factors: management and uses. They see design and management as: "the primary means for shaping and responding to the complex and changing relationships between people and their physical environment"; and recognise them as "critical phases in the endless process of creating the human environment and keeping it fit for its intended uses" (Carr *et al.*, 1992: 247).

Both design and management operate in the field of public space and may share the overall purposes but their roles and meanings are different. According to Carr *et al.* (1992) again, design, as a 'holder' of the already mentioned functions, is recognised as: "a relatively brief and intensive act", while management is seen as "the process of controlling the use of the resulting place and of maintaining and adjusting its form to satisfy changing needs. It is a lengthy endeavour, depending on the nature of the place and its use". Although they (design and management) are different, they complement each other in shaping the usage-spatial relationship in public space. It is clear, then, that discovering and building an empirical knowledge about this relationship makes sense. This connection between empirical knowledge about usage-spatial relationships and management and design of urban landscape reflects its general value. The other, more specific, value of an empirical knowledge lies in the notion about the effective environment, that what happens in any particular environment depends on those who use it. A consequential challenge results then in the demand to know (more) about 'those who use'. It is also important when, in design, the aim is to provide so-called 'loose-fit landscapes' (Ward Thompson, 2002) or 'possibility spaces' (Grimm Pretner, 2004).

Hence, while urban designers might create potential environments, people create effective environments. The challenge is not only to see to what degree or how much of

a potential environment can be ‘transformed’ into an effective one, but also to discover its inner structure. Empirical knowledge, stored in digital interactive databases and, through selection, on maps, can provide some insights into different dimensions of the usage-spatial relationship, such as gender or age differentiations and the like.

The findings presented here are argued on the basis of the empirical evidence collected in the central parks and squares of the case studies in Edinburgh and Ljubljana, using observation and behavioural mapping technique. The spatial-behavioural analysis, based on GIS, resulted in usage based spatial articulation of places, representing shapes, sizes, densities and intensities of places’ occupancies.

It is important to ground such a kind of comprehension of studied concrete behavioural phenomena and their physical context to understand present events and demonstrate ‘what is likely going to happen’ in a new or similar designed setting. It might contribute to designers avoiding situations which Lynch has discussed as follows: “Most often, when a designer says to himself that he is being ‘flexible’, in reality he is only being vague. By failing to define structure or allocation, he is simply shifting the responsibility for decision to other individuals, or to the play of circumstance. This may enhance immediate choice of first uses, but not future flexibility. Chaos or lack of structure is not flexible *per se*” (Banerjee and Southworth, citing Lynch, 1991: 381). On another occasion, Lynch also argues that, “the ‘valuable’ city was not an ordered one, but one that could be ordered: ... there should also be an ‘unfolding order’: a pattern that one progressively grasps, making deeper and richer connection” (Banerjee and Southworth, 1991: 252).

All the discussion about thoroughness with respect to the usage-spatial relationship and, especially, Lynch’s statements (above), call for designers’ responsibility when creating a design. Similarly, the results from workshops which were recognised as indifferent design proposals, in relation to the provided behavioural patterns, can be interpreted as irresponsible. However, there were a sizable number of design proposals for this given behavioural pattern recognised as appropriate and therefore, responsible. Nonetheless, the examination of mapping out likely uses in either square or park showed that the ideas and perceptions about spatial occupancies related to certain uses, such as skateboarding or sitting in squares, and active engagement in informal sports games in parks, for example, were revealed as little understood or of little concern to the

designers. Behavioural maps' analysis as well as analysis of the workshops showed that, however, the design matters in places' occupancies, not as a spatial composition *per se*, but as conducive setting, which in the best cases attracts long-stay passive and active users, as well as those passing by.

In this research, empirical knowledge resulted from using theoretical approaches such as RSVP cycles (Halprin, 1969), for example, within a certain research strategy and a combination of applied methods, and is understood and defined as follows. It is a result of studying a concrete phenomenon in its context. It reflects the understandings of the elementary relationships between the behavioural phenomenon and the spatial context and builds up its body of comprehensions from reasoning their advanced/resulted states of relatedness. It obtains a specific value but could also be generalised to a certain degree. This depends on the nature of the phenomenon observed and the universality of the context. Equally, the extent and quality of that knowledge depends on the quality and magnitude of the collected data, and the framework for, or in which, it is gained.

To sum up, the results from workshops point out that the empirical knowledge about the physical dimensions of activities, their peculiarities and spatial interrelationships, might bring additional insights for responsible and all-inclusive design. Such knowledge, reflecting and addressing the physical conduciveness of places to occupancies, may benefit not only designers but also planners, clients and commissioning bodies and others involved in decision-making processes when addressing urban public open space. Referring at this point to Rapoport's reasoning about 'real knowledge' in the field of urban planning and design, he argues for a similar approach: "These objectives are not only needed for design decisions to be made, but in order to evaluate the success of decisions made. In fact the absence of evaluation, and hence a cumulative body of knowledge about buildings and cities, has been a major weakness of the design endeavour" (Rapoport, 1977: 4). However, the type of empirical knowledge brought up in this thesis and encouraged to keep being developed, is seen as an addition and a complement to other research approaches and tacit designers' knowledge. For instance, to mention its practical connection to a few of the most popular and frequently used approaches in studying and reflecting on open space design, the examples are as follows.

Such empirical knowledge complements Space Syntax models, for example, with detailed information about the stratum of different uses which may be drawn to a place, and their spatial requirements and likely occupied settings within a place. It brings a good template and/or a starting point for further post occupancy evaluation analysis, as well as benefits to public participatory processes in planning and design decision making. It is especially important when addressing user-groups such as youngsters or elderly people, even homeless people, who may not respond to the participation, but whose preference and existence in a place is important, especially when talking about democratic, all-inclusive design. Observation and behavioural mapping and, moreover, a monitoring of places and collecting records in interactive databases of empirical knowledge, may well inform designers and decision makers about them. Other contributions and further concerns, closely linked to studying, examining and learning from the usage-spatial relationship as the subjects of a research activity which can benefit design, are discussed below.

6.1 Synthesis and contribution

The key overall contribution of this thesis is in the reflection on the physical attributes of places by the physical dimensions and spatiality of the different uses which occupy them. Operationally, in the sense of a mediation between the research and design, the representation of any nature of the relationship between uses and places as a visual image, is a crucial contribution, especially because the imaging and visualisation are the elementary designers' media. Concerning the usage-spatial relationship from the contents point of view, this thesis contributes to the field of urban landscape design in three different, but mutually connected, ways. Firstly, it promotes a specific type of spatial analysis based on GIS. Secondly, on this basis, it offers some initial empirical knowledge about usage-spatial relationships. Finally, it suggests an additional way in which urban landscape designers may be trained or educated to gain perception about the functional relationships between people and (designed) places.

GIS approach in the analysis of the usage-spatial relationships is essential as its basic function is in combining the layers of information about a place to give a better understanding of that place. The advantage in its application, especially in the case of this thesis, is in the possibility of overlapping maps and in the extension of the information linked to the original data. Thus, not only can the primary data be examined

in various ways but also new aspects related to the same data: numerical information such as codes for frequency of use and, more importantly, graphical information such as intensity of occupancy of the locations, can be studied and, consequently, knowledge about uses and places enriched.

The interactive and transparent data-bases are the key driving-forces of this type of analysis. The application of such an approach when studying the same places more than once and/or examining a new set of places, enables a constant emergence and improvement of empirical knowledge. Not only when there is an interest in studying a physical dimension of usage-spatial relationships in public spaces *per se*, however, this approach can also be applied to post occupancy evaluation or any monitoring when there is an interest in social change of places' use, for example.

A direct contribution, which this thesis brings to the design practice, lies in some initial empirical knowledge about dimensions and spatial requirements, especially, of some long stay active uses, such as informal ball games in parks and urban skateboarding in squares. It also shows how passive uses, such as sitting, might relate to these active uses in the same space, and how transitory activities relate to both. In addition, it illustrates how some activities can be contiguous, while others require 'buffer' zones between them for effective use. Such information can help designers as well as decision-makers, when discussing variations in spatial plans for public space, for instance. For example, there might be concerns either about any of the available plot's basic characteristics, such as size and shape, which may be more or less likely to support or inhibit a particular use. Alternatively, the information might give hints on the general layout of a place, such as how it should be articulated so that the desired uses might be most likely occupy it in the future.

Accordingly, the contribution from the empirical evidence is reflected in some principles of spatial occupancy, especially in spatially less defined places, such as parks' lawns. It stresses the importance of their size, shape and articulation, in relation to passive and active recreation in them. It is of key importance, especially, as it revealed that designers' perception about uses in places lacks some such imagination. In relation to this, the drawing exercises introduced in workshops are recognised as an approach which may be seen as a contribution to the education of landscape architects, urban designers and architects.

6.2 Further concerns

When addressing the richness and informative objectives of empirical knowledge about the usage-spatial relationships in public spaces, there is a desire: the more case studies and repetitive observation, the better. In this respect, from the contents point of view, the entire behavioural mapping approach presented in this thesis can be used, for example, to address specific user- or age-groups, and allows for addressing ethnic, anthropological and cultural questions in more detail. From a practical point of view, enhancement of the methods in case studies and/or observation must be related to, inevitably, a necessity for team-work. However useful and informative any data are, when once gathered and processed, the work of digital data-base creation itself is extremely time-consuming and tiring, especially, if there is no team-work introduced. Although modern sophisticated technology develops faster and faster, and there are GIS-supported notepads available which may enable exhaustive recordings to be taken directly in the field, their efficient capacity, in terms of size of screen, for example, which makes an overview of the layout of a place impossible, and the complexity of making notes, is still limited.

Whatever technique is used or can be expected to be used as the most efficient one in the future, taking into account IT development, GIS as a tool, with the ability to produce and use databases, remains of key importance. The further practical challenge linked to any similar studies in the future is in the technical field of computer software. Having the appropriate (and affordable) equipment for recording digital data directly in the field, a programme which could support a simultaneous coding of all sorts of behavioural attributes, such as gender, type of activity, its duration and the like; as well as any other conditions, regarding the weather, time of day or any other relevant aspects, would be very helpful. It would make the data gathering and its preparation for further analysis much more efficient and the whole process more 'researcher(s) friendly'.

To reflect on workshops as a method, it would be interesting to refine and use it in a bigger survey with urban landscape designers and, on the basis of the pilot study in this thesis, to examine particular aspects of a place design and its use, especially in reading behavioural patterns and proposing a likely design of a place. Perhaps besides maps and photos, a model of a place, from which behavioural patterns would emerge to which

designers would need to respond, might be responsible for a quicker, ‘three-dimensional’ engagement with a place. Also, some debate after the actual engagement in the workshops and, an immediate reflection on proposals, might be more beneficial for the practitioners or students themselves.

6.3 Final resolution

This thesis examined a particular aspect of research and knowledge building about people’s behaviour and places, important in/for urban landscape design. It found out that the theoretical demands about ‘making better places for people than they would otherwise be produced’ (Carmona *et al.*, 2003), and democratic and all-inclusive places (Ward Thompson, 2002; Worpole, 1992; Greenhalgh and Worpole, 1996, 1997), do not always have an equivalent in design practice. On this basis, and within the framework of the research, this thesis finally sums up into two questions: ‘Public urban places, for whom? or To whom may they be of concern?’ and ‘What should these places be like? or How should they be created?’.

Places for whom? To whom may they be of concern?

In the frame of the research, in the first instance, the ‘whom’ relates to the daily engagement in different types of activities such as active and passive as well as long-stay and in transition. The importance of the interwoven relationship of long-stay passive as well as active behaviours with transitory activities is recognised as crucial when addressing democratic and all-inclusive design. It is seen as complementary to and highlighting of an axiom about the city where “*vandare necesse est - walking is essential*”, argued by Gehl and Gemzøe (2001: 257), and the notion about building a city which follows this axiom: “once we take the subject of creating good and worthy surroundings for foot traffic seriously, the next step is to ensure that people can sit down to rest and relax along the way. Benches and café chairs enter the picture. A section of booths and shops also becomes relevant so that pedestrians can look and shop while they walk. The social aspect comes into play” (Gehl and Gemzøe, 2001: 257).

However thoughtful and essential such an understanding is, it rather expresses a planner’s view on the understanding of design, and the types of engagement with which adults are more likely to orient. As shown in the discussions throughout the thesis, a

'social aspect' in urban design can be considered more in detail and could upgrade such a view with a designer's understanding about spatiality of uses and user-groups and their interaction in a comprehensive and, as much as possible, inclusive way. It can inform about the designing of (potential) places, which may encourage long-stay engagements as well as providing formal (cafés, benches) and informal settings for passive contemplation, places for those who can buy or want to buy a coffee or enjoy window shopping, as well as for those who do not, and welcome everyone in a public place.

What should these places be like? How should they be created?

The notion and knowledge about effective places, relevant to certain activities or more of them, can help the concepts of 'loose-fit landscapes' (Ward Thompson, 2002) and 'possibility places' (Grimm Pretner, 2004) to be followed by and expressed in design. The thesis confirms and concurs with the notion that it is essential and important to allow uses and users to discover and shape places. Accordingly, correct designers' actions towards that are very important. To remind here, a belief of 'being flexible', meaning, 'being vague and failing to define a structure or allocation' (Banerjee and Southworth, 1991), is irresponsible. It is equally irresponsible when a design reflects primarily a rhythmic order of any geometrical or organic patterns and is overwhelmed by the spatial composition itself, rather than being equally concerned by future users, as resulted from quite a few examples from the workshop.

This thesis sees the possibilities in the refinement of urban landscape design in comprehensive solutions which, besides other concerns, ecological and perceptual, for example, must bear in mind the physical dimensions and requirements of uses, along with the principles of settings conducive to certain uses as a base for the creative process of design. Accordingly, the environmental-behavioural research-design integration and its insights are seen as a promising way towards more comprehensive democratic design, which, especially in city centres, is there because of and for everyone coming by. A future use of such design approaches will show if or how well they can fulfil this promise.

Summary

Based on the notion that the essence of public space is in the coexistence of different users in a certain area, and that a public space is a two-ways process between places and people, this thesis observed an insufficient knowledge about and representation of usage-spatial relationships in public urban open spaces, from the literature as well as from tacit designers' knowledge. Accordingly, it was concerned with research rather than with actual practice in the field of urban landscape design. However, despite the fact that it addressed research in landscape architecture design, it concerned empirical values rather than pure theoretical issues.

Observation and behavioural mapping was the main technique applied to gather empirical evidence from the squares and parks in city centres. Although the original data collection was exhaustive, the way it contained the information was limited in terms of a comprehensive data-mining. The exploration of the behavioural data by using GIS enabled data to be turned into spatial information and, thereby, through the system of values, into (new) empirical knowledge. Interactive GIS databases were recognised as an effective tool in building, developing and maintaining such (new) empirical knowledge, for example about distribution, sizes and shapes of potential and effective areas of uses, levels of shared areas of uses, and any specific dimensions emerging as significant when exploring usage-spatial relationships.

To illustrate a character of such relationships, patterns of spatial occupancy seem like x-rays of places, revealing a dimension of place which is hidden within its physical configuration. These aspects of spatial-human dimensions elucidate the anatomy of space and therefore make a critical reflection on designed public open spaces. The empirical knowledge suggests that this anatomy of space expressed by behavioural patterns could provide an additional point of view in/of an inclusive public open space design. However, the thesis emphasised a conduciveness of a place for occupancy, and recognised by that that the importance of spatial potentials of a place to be used lies in both the 'possibilities' for usability of a place and the 'probabilities' of spatial capacity of a place.

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Appendix A

Vocabulary for description of configuration of a physical form


general nature of space	
	positive space/hard space
	negative space/soft space
elements of spatial definition	
horizontal elements	<i>base plane</i>
	<i>elevated base plane</i>
	<i>depressed base plane</i>
	<i>overhead plane</i>
vertical elements	<i>vertical linear elements</i>
	<i>single vertical plane</i>
	<i>l-shaped plane</i>
	<i>parallel planes</i>
	<i>u-shaped plane</i>
	<i>4 planes: closure/cell</i>
openings	<i>at corners</i>
	<i>between planes</i>
spatiality of objects	<i>radiation</i>
elements of spatial articulation	
field: fields' definition	<i>common ground</i>
	<i>common enclosure</i>
	<i>continuity</i>
	<i>homogeneity</i>
	<i>alignments</i>
group: groups' definition	<i>similarity</i>
	<i>proximity</i>
object	
spatial order	
principles	<i>repetition</i>
	<i>gradation</i>
	<i>progression</i>
	<i>regression</i>
	<i>orientation</i>
	<i>parallelism</i>
	<i>convergence</i>
	<i>divergence</i>
	<i>hierarchy</i>
	<i>accent</i>
	<i>dominance</i>
patterns	<i>symmetry</i>
	<i>asymmetry</i>
character	<i>regularity</i>
	<i>dynamism</i>
	<i>contrast</i>
	<i>contradiction</i>
	<i>simplicity</i>
	<i>complexity</i>

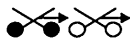

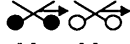
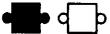

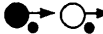

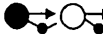



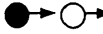
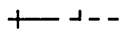
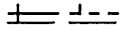

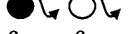





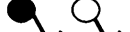
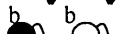

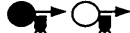
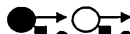

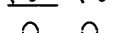

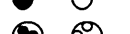
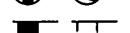
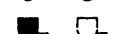
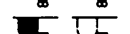

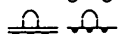



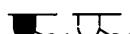
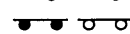
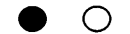
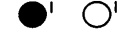
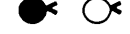

Appendix B.1

A set of symbols used to record observation

The main clue when developing symbols referred to the indication of gender: solid symbol – female, outlined symbol – male.

A full notation consisted of a relevant symbol and two codes next to it, referring to age group and the duration of activity in which the user was involved. For keys concerning these codes see matrix in Appendix B.2.

An example of a full notation:  3 4' **Description: A teen-ager is sitting in a place for more than 5 minutes.**

 BMX	Bmx acrobatics		Standing while skateboarding
	Cycling		Using a wheel-chair
	Climbing		Walking a child
	Fishing		Walking a dog
	Flying a kite		Walking fast
	Jogging		Walking/passing through
	Lying down		
	Lying down on a bench		
 PT PT	Performing street theatre		
	Playing		Pair situations: Walking together
	Playing cricket		
	Playing frisbee		Sitting together
	Playing football		
	Playing golf		
	Playing with a ball		
	Propelling scooter		
	Pushing a pram		
	Pushing a pram and walking a child		
	Rolling down		
	Roller-skating		
	Sitting		
	Sitting around a table		
	Sitting on a bench		
	Sitting with a pram		
	Sitting with a pram on a bench		
	Sitting while skateboarding		
	Sitting while roller-skating		
	Sitting on a tree		
	Sitting while walking a dog		
	Sitting on a bench while walking a dog		
	Skateboarding		
	Standing		
	Stopping		
	Stopping – talking		
	Stopping while pushing a pram		
	Stopping while walking a dog		

Appendix C.1

Workshop questionnaire for Part 1

Reference number:

Group: MLA, UD, MA1, MA2, MA3, MA5, professional-A, professional-LA, professional-UD

1. **How much attention do you pay to any of the selected objectives when you design urban parks or public space?**
 - a. Please mark each of them in the second column with one of the ranges between *1* and *5*.
 - b. Please, range the objectives in the third column in order from very important to less important, according to your beliefs. Use *1* as the most important and the gradation of ascending numbers towards the least important objective.

1 = very much, 2 = pretty much, 3 = medium, 4 = little, 5 = none at all

1 st column	2 nd column					3 rd column
objective	range					order
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	
client's preferences						
construction ease						
costs						
design layout as aesthetic & artistic value						
design layout as physical characteristics & processes						
design layout as responsive to broader site context						
future users						
other:						

2. **In practice, in relation to recent designs you have worked on, which aspect have been most important to the client/commissioning body in determining the final scheme.**

Please, mark the relevance of different aspects of urban landscape design from *1* to *5*.

1 = very much, 2 = pretty much, 3 = medium, 4 = little, 5 = have not/none at all

1 st column	2 nd column				
objective	range				
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
client's preferences					
construction ease					
costs					
design layout as aesthetic & artistic value					
design layout as physical characteristics & processes					
design layout as responsive to broader site context					
future users					
other:					

3. **How well do you think you can predict how people will use a place you have designed?**

very well	pretty well	medium	little	not at all

Appendix C.2

Workshop questionnaire for Part 2: SQUARE

Reference number:

Group: MLA, UD, MA1, MA2, MA3, MA5, professional-A, professional-LA, professional-UD

4. Please, map out where you think any use of the place shown on the map is likely to happen on a warm, sunny spring afternoon.

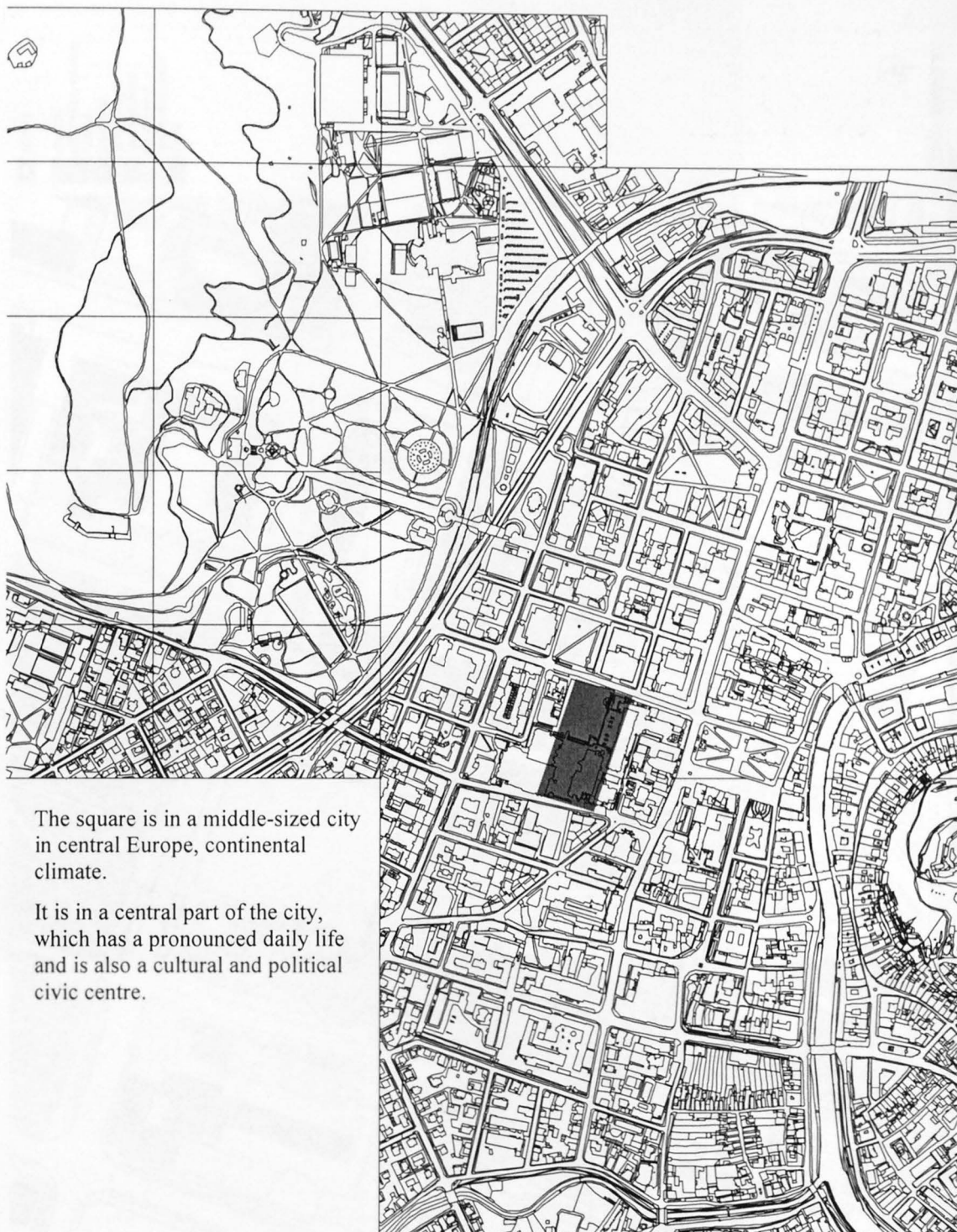
Please follow your own initial responses and ideas about the likely users.



Appendix C.3

Additional material to question 4 in Part 2: SQUARE

Broader spatial context of the square



The square is in a middle-sized city in central Europe, continental climate.

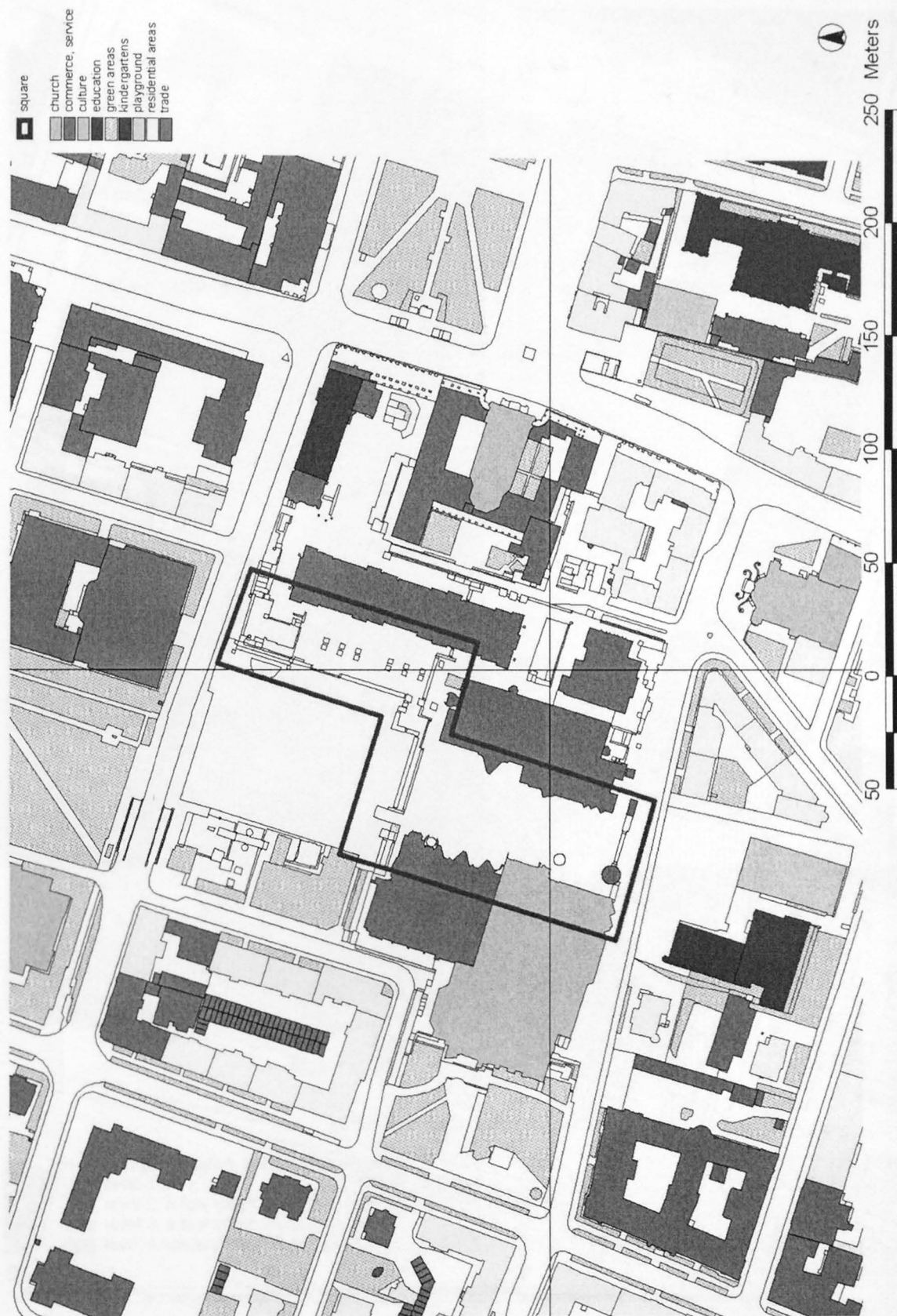
It is in a central part of the city, which has a pronounced daily life and is also a cultural and political civic centre.

250 0 250 500 Meters

Appendix C.3

Additional material to question 4 in Part 2: SQUARE

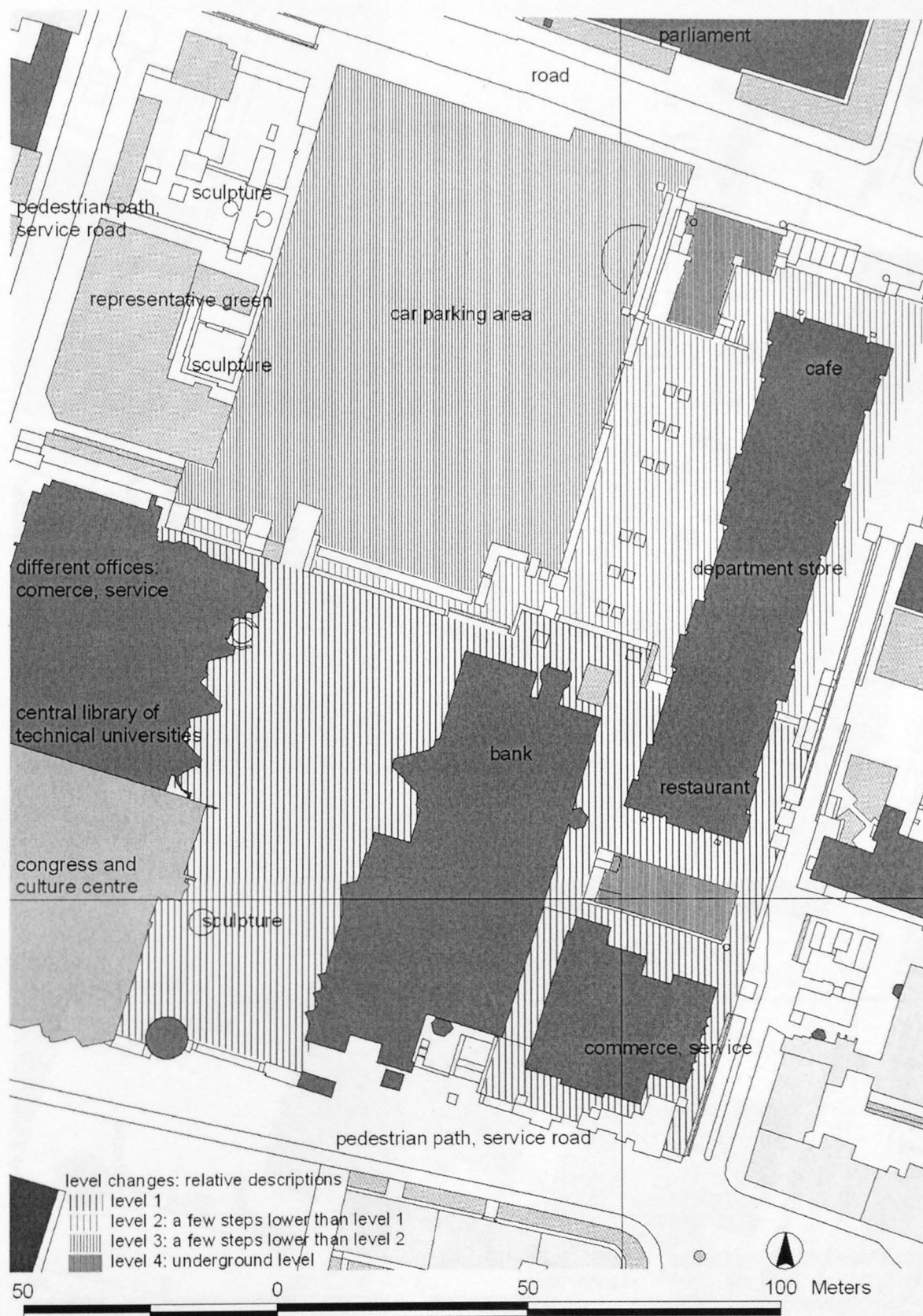
Narrower spatial context of the square



Appendix C.3

Additional material to question 4 in Part 2: SQUARE

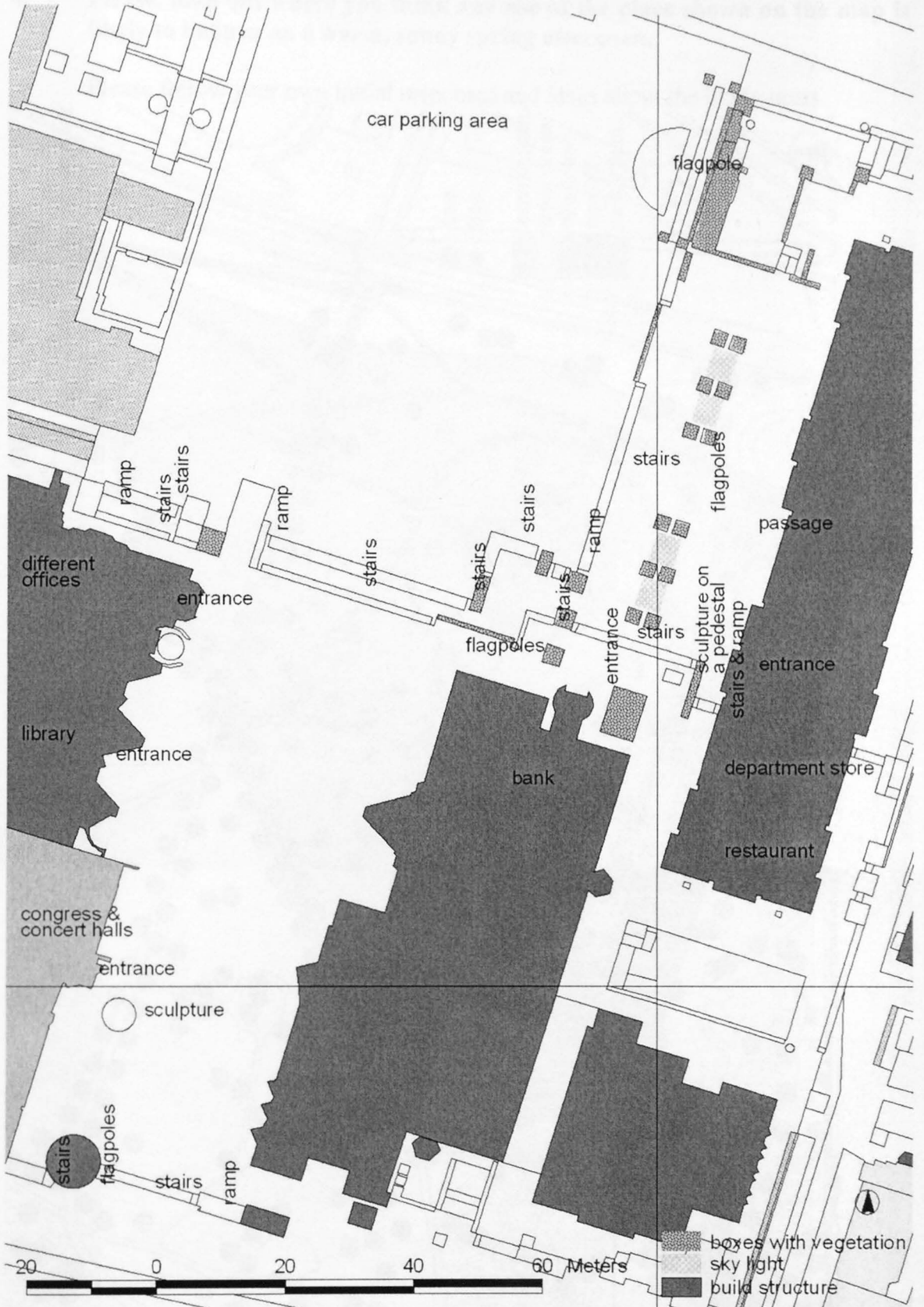
Basic level changes in the square



Appendix C.3

Additional material to question 4 in Part 2: SQUARE

Elements of basic spatial articulation of the square



Appendix C.4

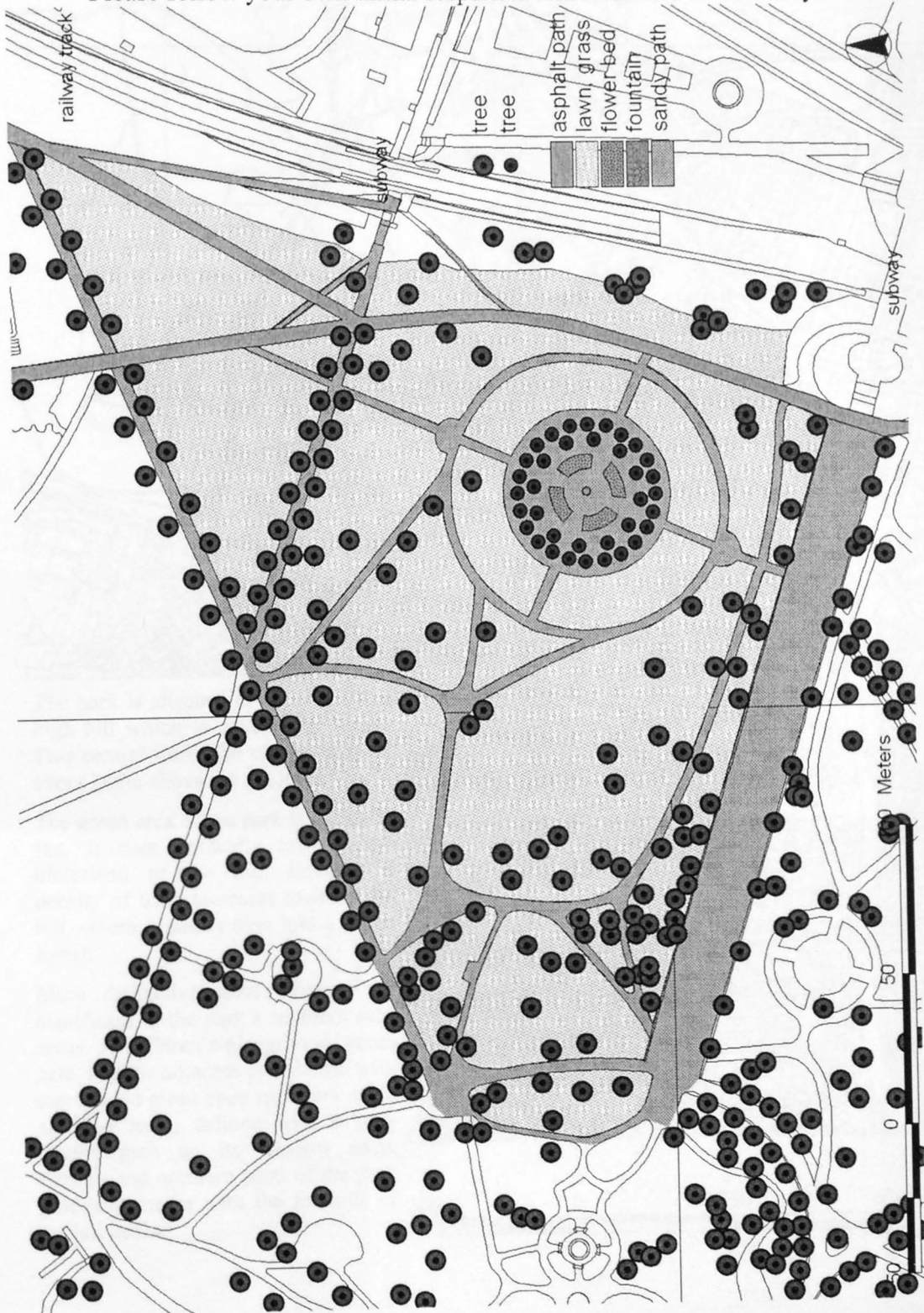
Workshop questionnaire for Part 2: PARK

Reference number:

Group: MLA, UD, MA1, MA2, MA3, MA5, professional-A, professional-LA, professional-UD

4. Please, map out where you think any use of the place shown on the map is likely to happen on a warm, sunny spring afternoon.

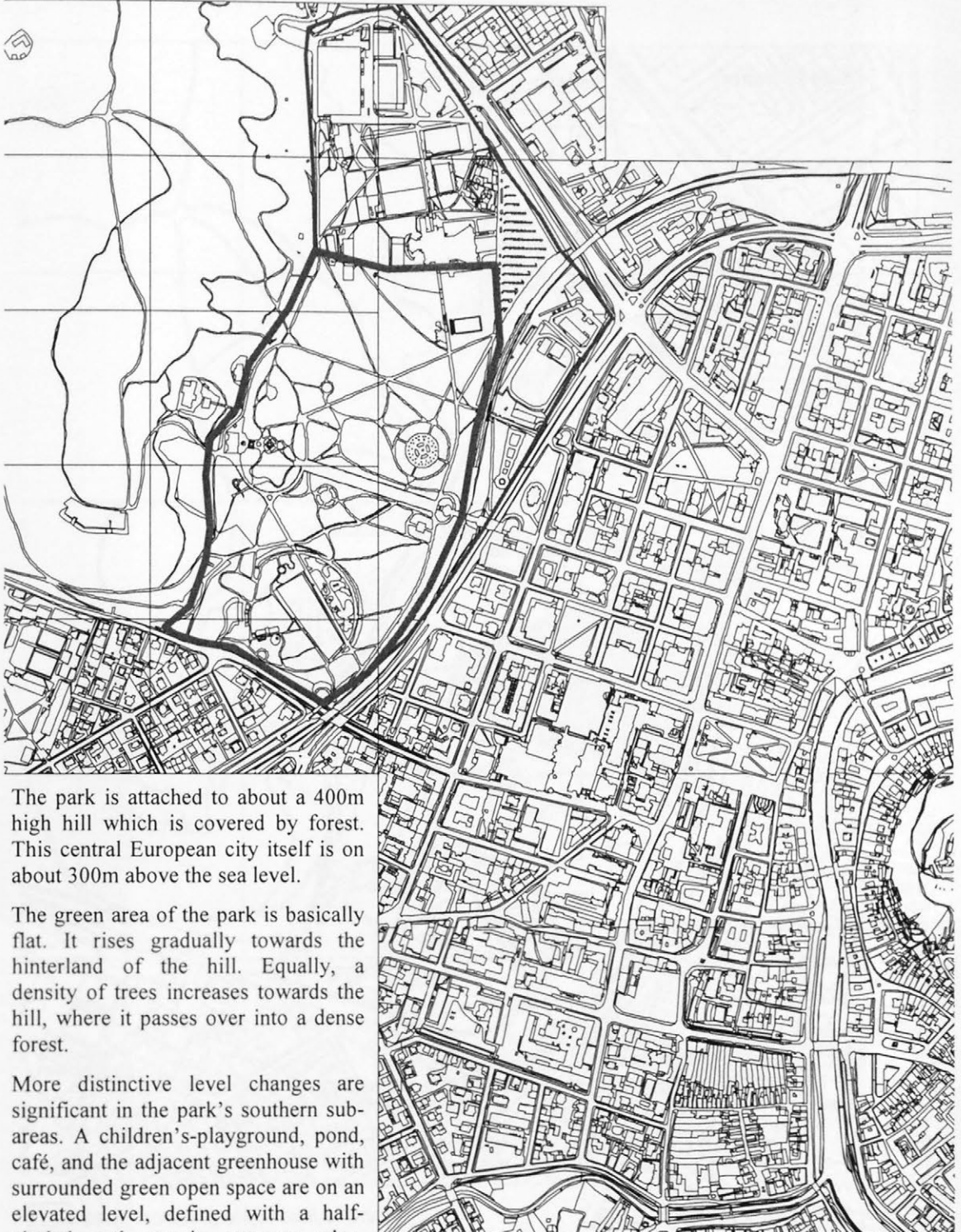
Please follow your own initial responses and ideas about the likely users.



Appendix C.5

Additional material to question 4 in Part 2: PARK

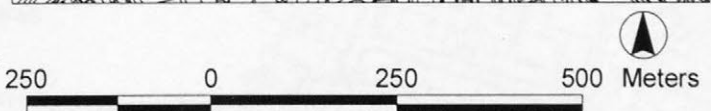
Broader spatial context of the park



The park is attached to about a 400m high hill which is covered by forest. This central European city itself is on about 300m above the sea level.

The green area of the park is basically flat. It rises gradually towards the hinterland of the hill. Equally, a density of trees increases towards the hill, where it passes over into a dense forest.

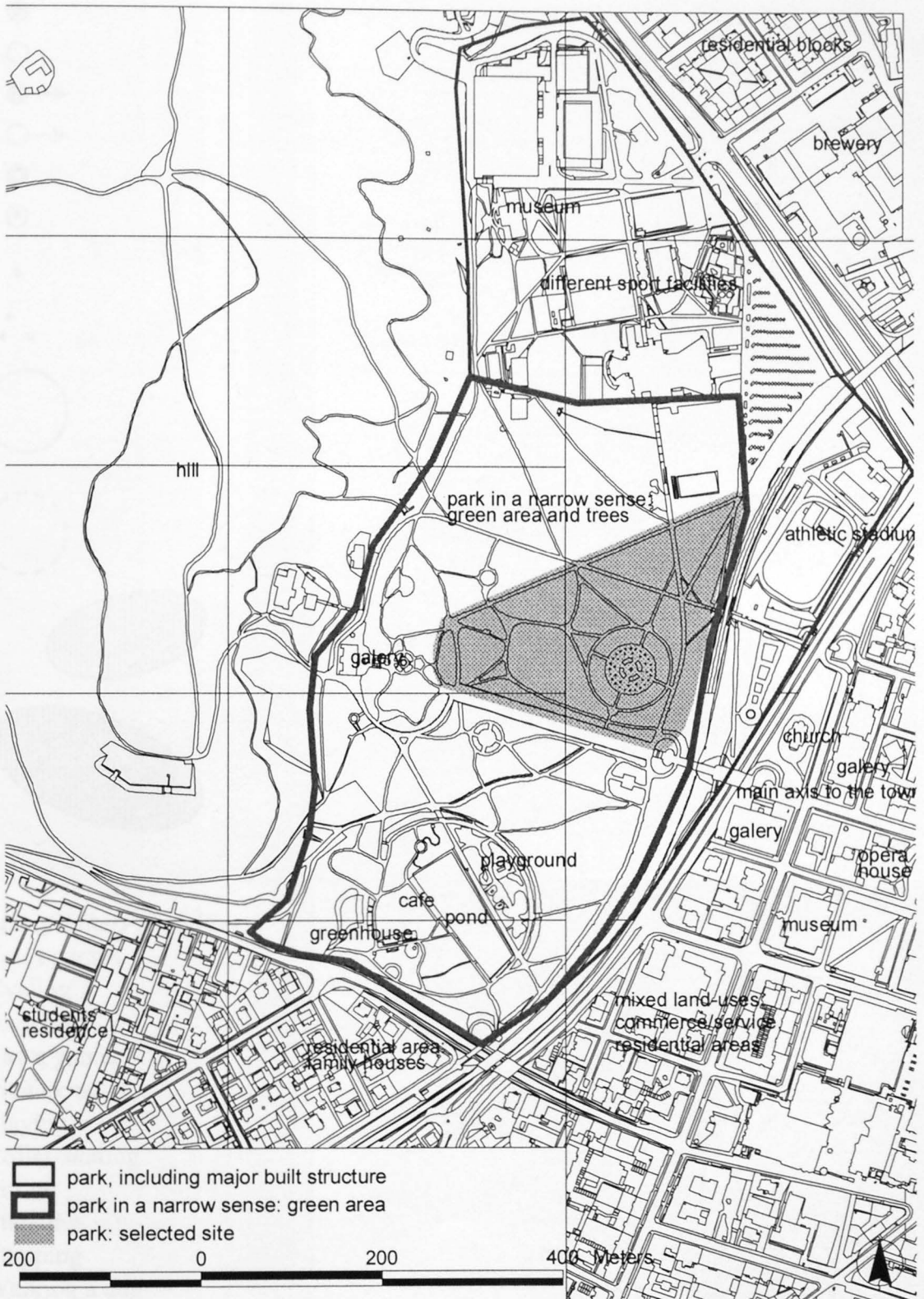
More distinctive level changes are significant in the park's southern sub-areas. A children's-playground, pond, café, and the adjacent greenhouse with surrounded green open space are on an elevated level, defined with a half-circled path on its western edge. Eastern and northern parts of the park gradually merge with the foothills of the hill behind.



Appendix C.5

Additional material to the question 4 in Part 2: PARK

Narrower spatial context of the park



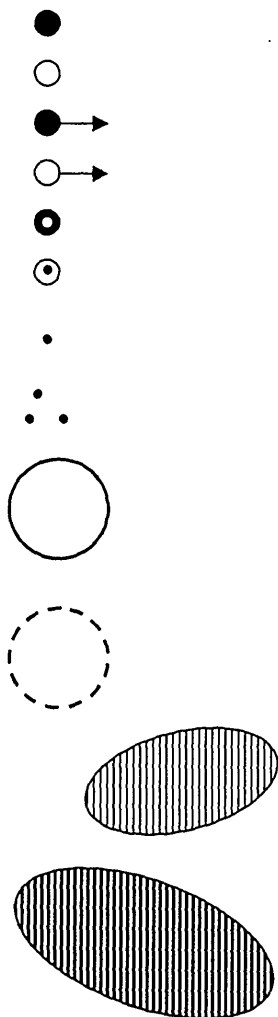
Appendix C.6

Additional optional material with reference to tasks of Part 2

Reference number:

Group: MLA, UD, MA1, MA2, MA3, MA5, professional-A, professional-LA, professional-UD

List of Optional Graphical Symbols



List of Likely Activities

Court games
 Cycling
 Jogging
 Lawn games
 Picnicking
 Playing
 Roller-skating
 Sitting
 Standing
 Stopping
 Walking a dog
 Walking through

Appendix C.7

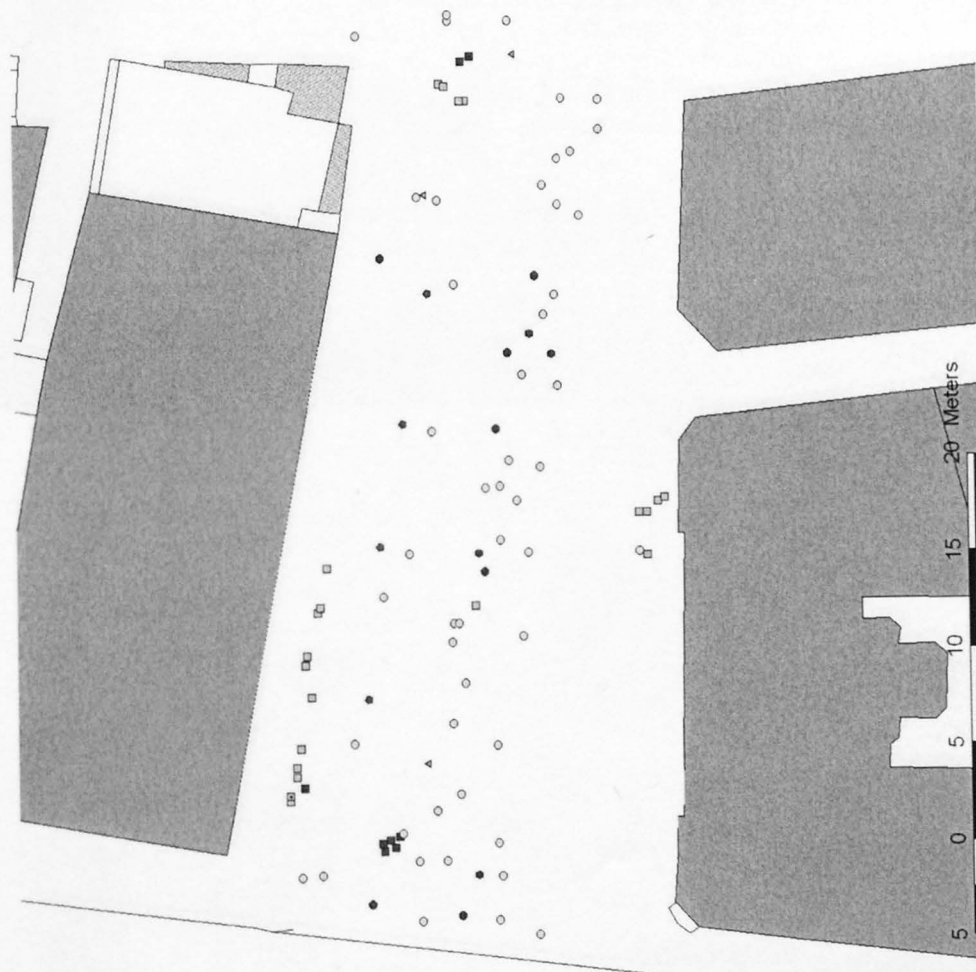
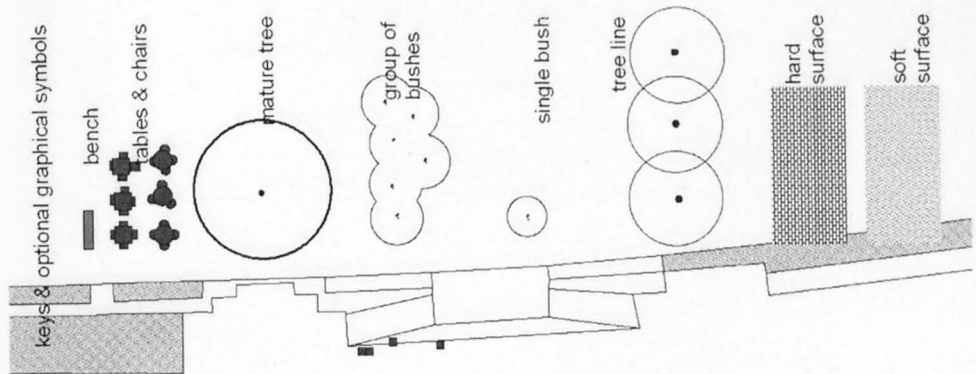
Workshop questionnaire for Part 3: PLACE DESIGN

Reference number:

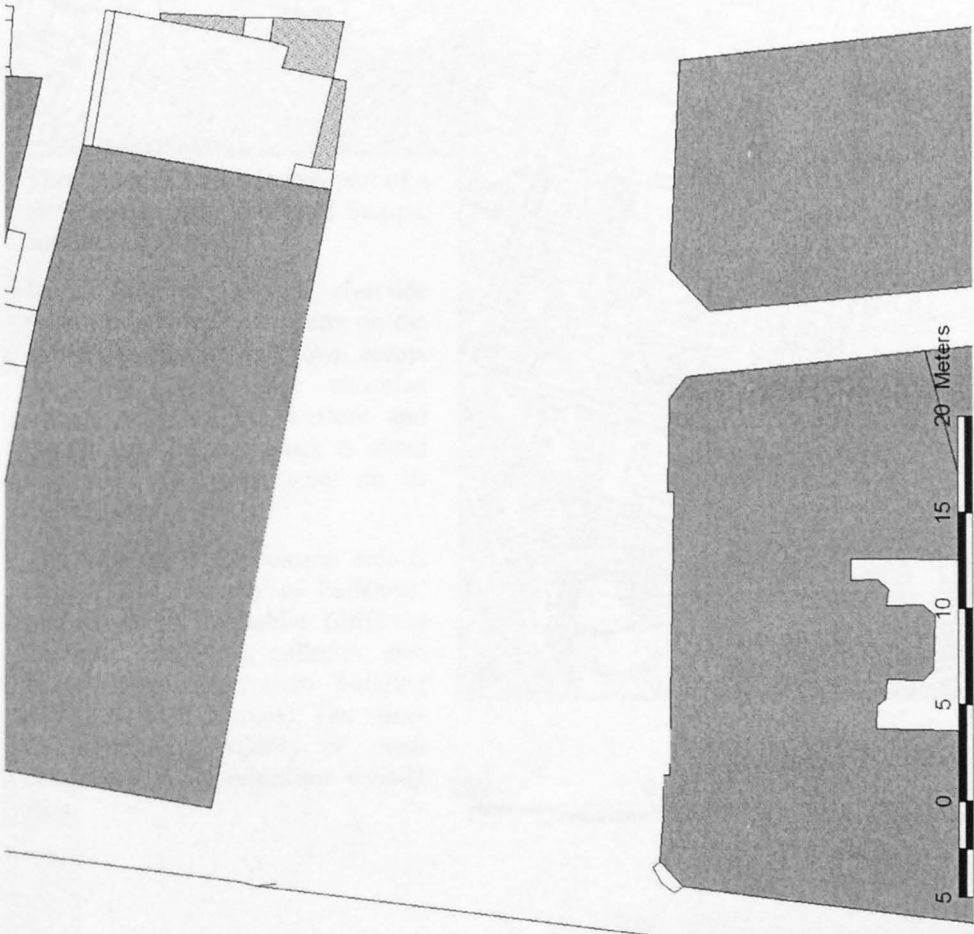
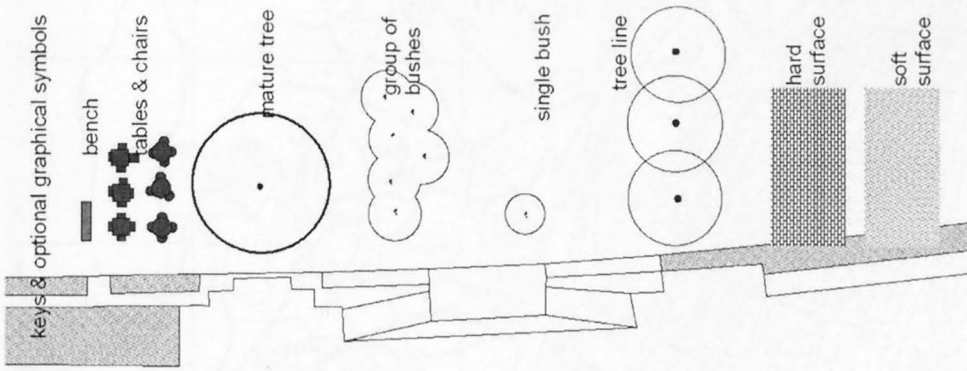
Group: MLA, UD, MA1, MA2, MA3, MA5, professional-A, professional-LA, professional-UD

5. Please, layout a conceptual design of a place which you think is the most likely to support the patterns of activities as follows.

The conceptual design means the indication of the general spatial properties and characteristics. It distinguishes between hard and soft areas, low and high vegetation or built structures, shows main articulations such as changes in elevations (stairs, platforms, ramps), and appearance of vertical elements such as columns, walls, hedges and trees, for example. The scale itself enables you to indicate street furniture such as benches, tables, lights, bike holders, and the like, too.



Layout option: A



Layout option: B

Appendix C.8

Additional material to question 5 in Part 3: PLACE DESIGN

Broader spatial context of the square



The square is in the central part of a middle-sized city in central Europe, continental climate.

It is attached to the riverside promenade. There are views on the castle hill and the old town across the river canal. The elevation change between the western and eastern part of the square is about 2m, with its lowest level on its eastern side.

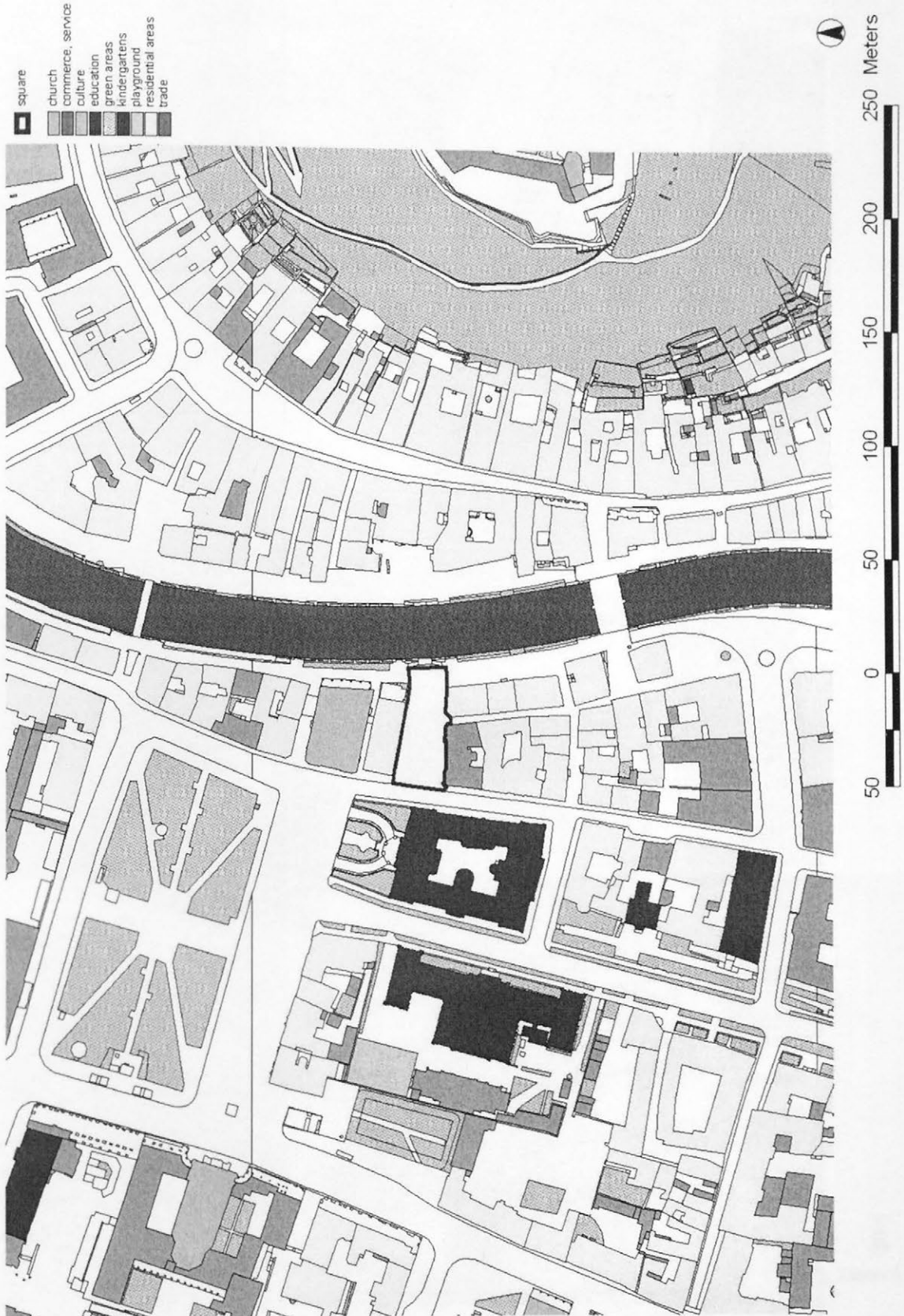
The land use of the closest area is mixed. The majority of buildings' ground levels is public (different services, commerce, galleries, also libraries, main university building and some high schools). The upper floors of the majority of small commerce and services are usually flats.

250 0 250 500 Meters

Appendix C.8

Additional material to question 5 in Part 3: PLACE DESIGN

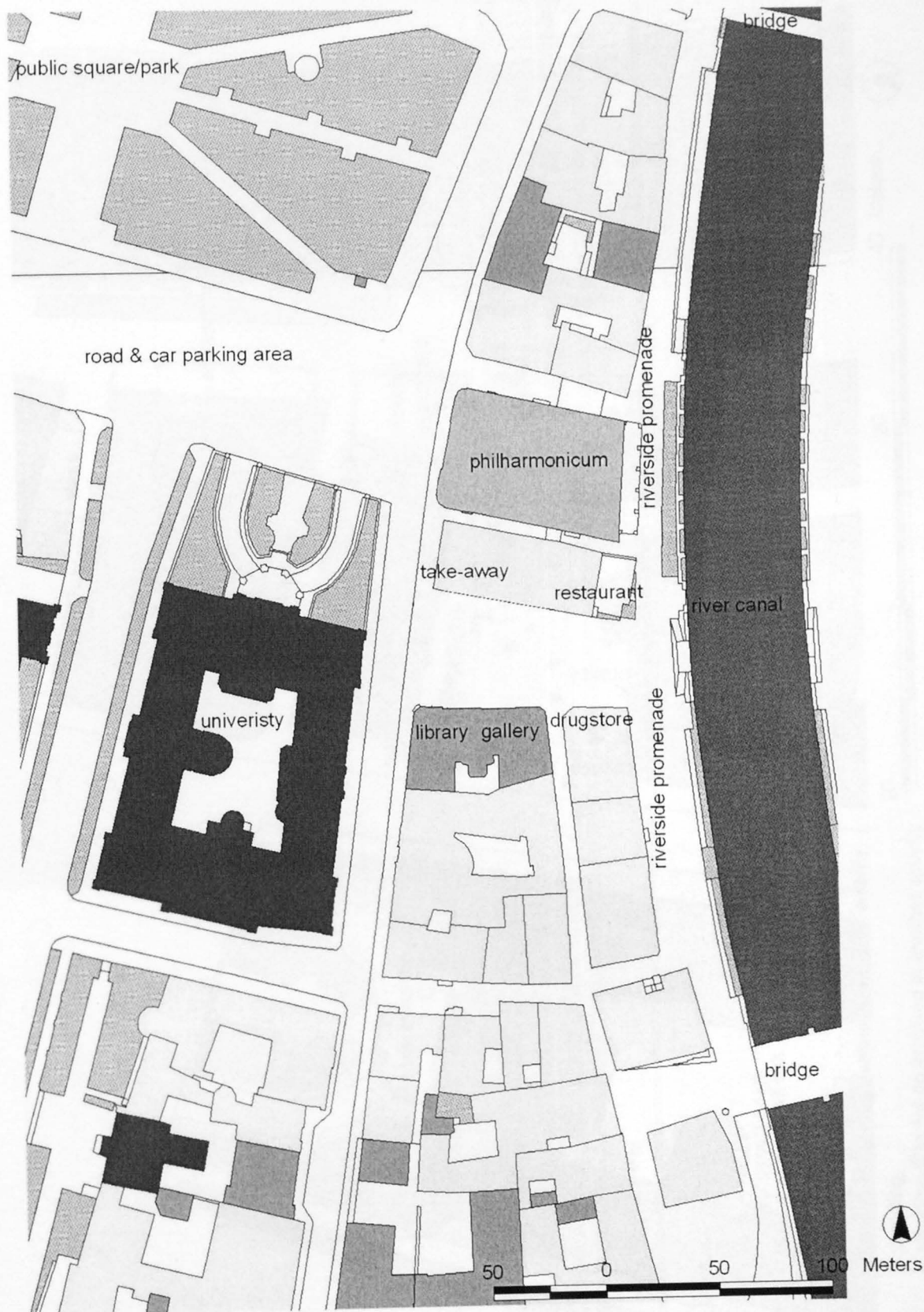
Narrower spatial context of the square



Appendix C.8

Additional material to question 5 in Part 3: PLACE DESIGN

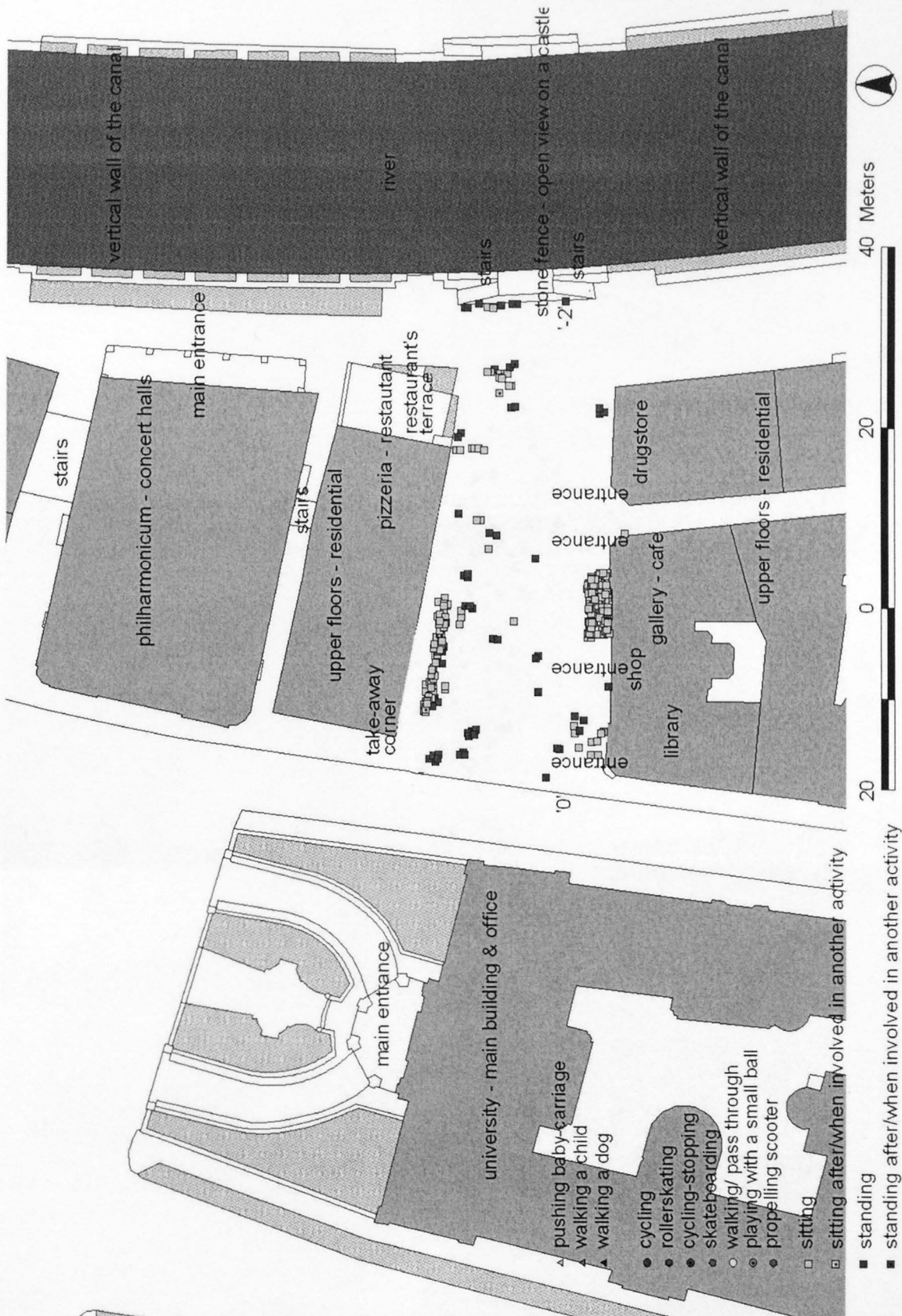
Detailed spatial context of the square



Appendix C.8

Additional material to question 5 in Part 3: PLACE DESIGN

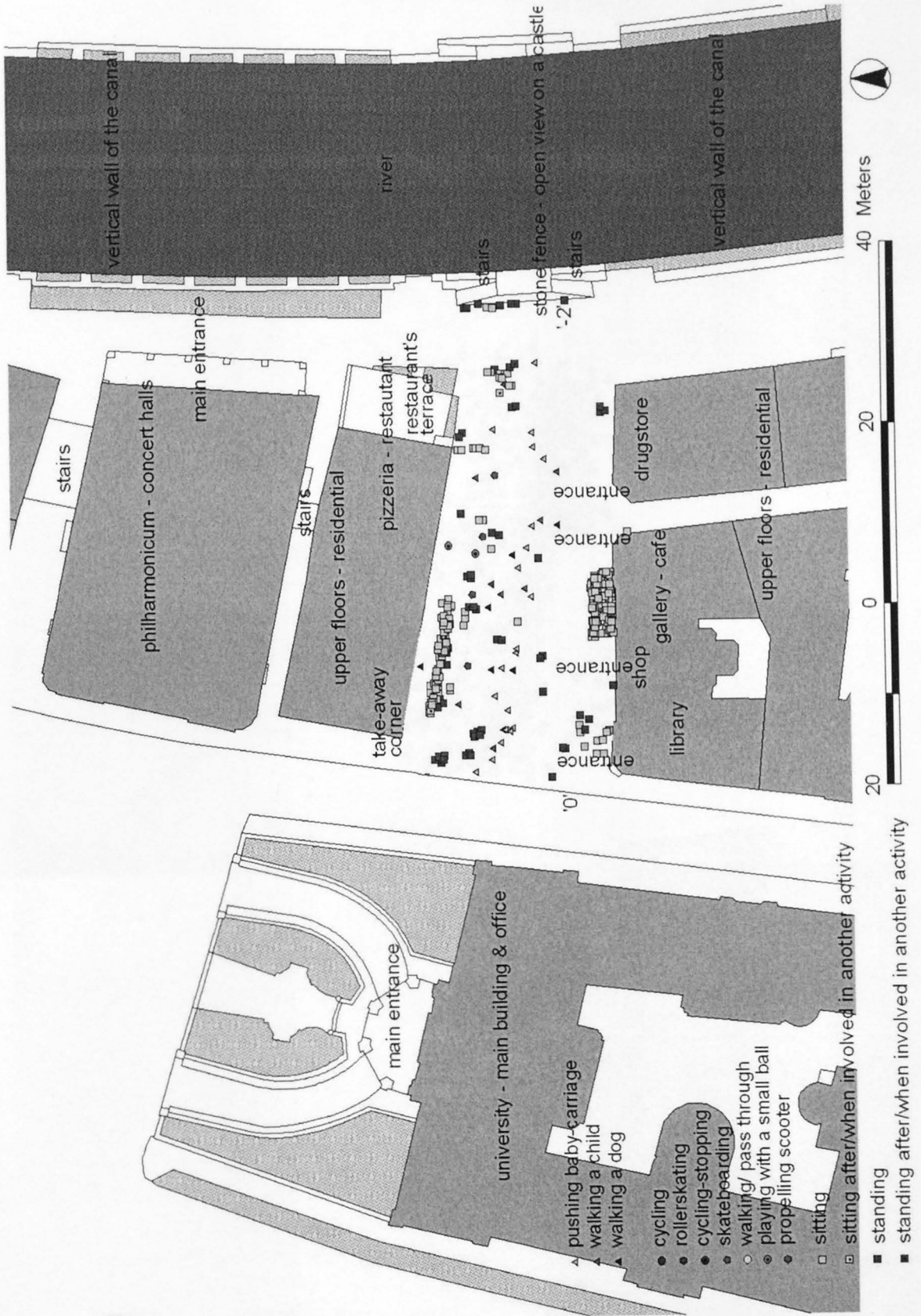
Assembly behavioural pattern of passive use, recorded over the entire observation period



Appendix C.8

Additional material to question 5 in Part 3: PLACE DESIGN

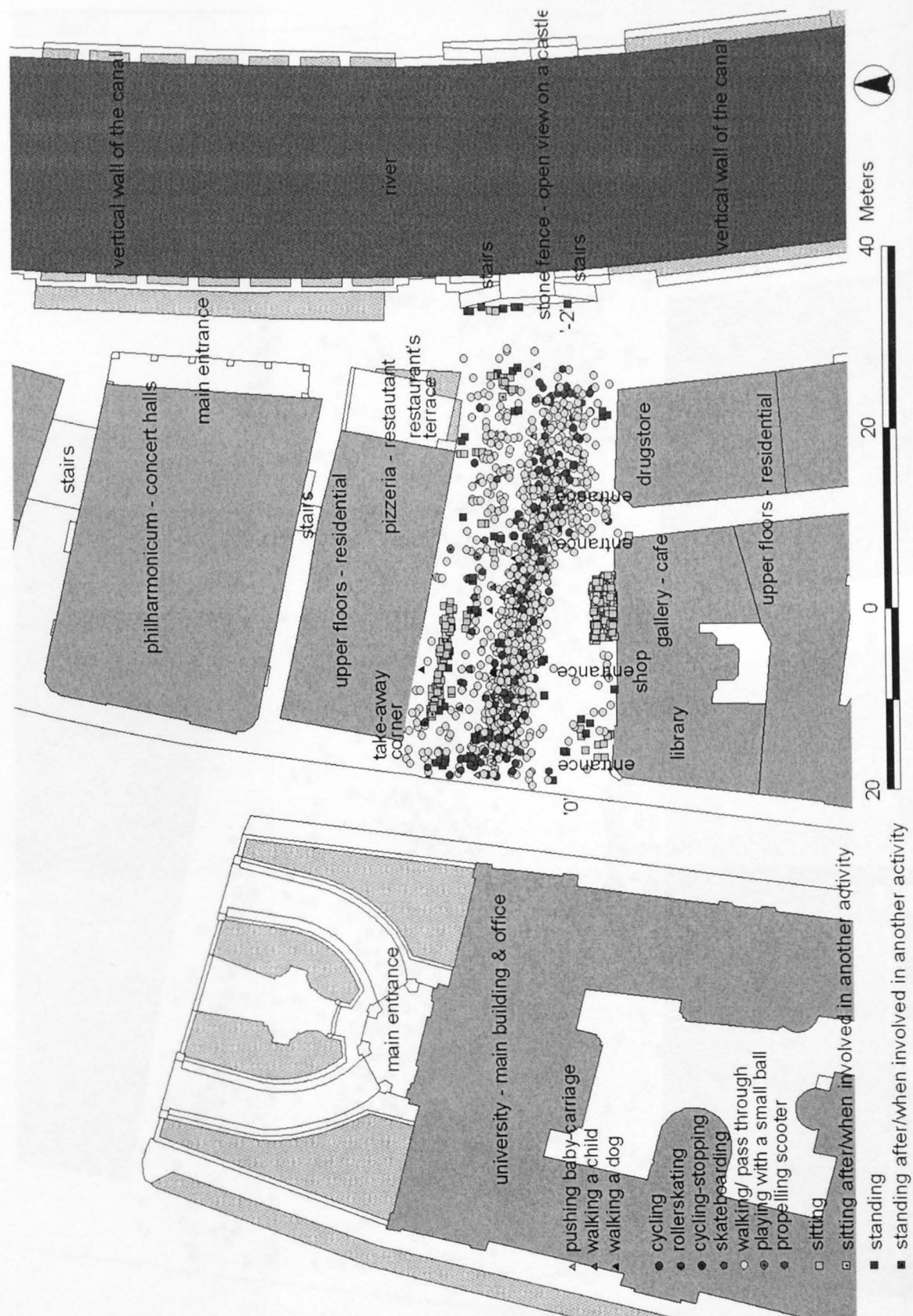
Assembly behavioural pattern of passive use and intermittent occupancies, recorded over the entire observation period



Appendix C.8

Additional material to question 5 in Part 3: PLACE DESIGN

Assembly behavioural pattern of all: passive use, intermittent occupancies as well as long-time active engagement, recorded over the entire observation period



Appendix C.8

Additional material to question 5 in Part 3: PLACE DESIGN

Zoomed-in assembly behavioural pattern of all: passive use, intermittent occupancies as well as long-time active engagement, recorded over the entire observation period



Appendix C.9

Workshop questionnaire for Part 4

Reference number:

Group: MLA, UD, MA1, MA2, MA3, MA5, professional-A, professional-LA, professional-UD

6. For which of the places involved in task 4 do you think you have best predicted the most likely patterns of uses?

site 1: square	site 2: park

7. Please, indicate the degree to which you think the following aspects of a public space influence and determine its use.

1 = very much, 2 = pretty much, 3 = medium, 4 = little, 5 = have not/none at all

1 st column	2 nd column				
objective	range				
	1	2	3	4	5
design layout itself: aesthetic & artistic value					
maintenance & amenities (café, shade, seats)					
other people					
place's size, shape and its 3D spatial structure					
planting/vegetation					
program					
quality of equipment					
quality of surfacing materials: soft/hard					
quantity of equipment					
spatial context/location					
spatial sub-divisions, level changes					
visual complexity					
other:					

Thank you very much!

PART 1 ?

3. How well do you think you can predict how people will use a place you have designed?

Please, mark one of the blank boxes below.

very well	pretty well	medium	little	not at all

PART 1 ?

Could you please check if you have selected a relevant group of people on the top of the inquiry page, if not yet, please do it now, and return the working sheet.

thanks

PART 2 ?

PART 2 ?

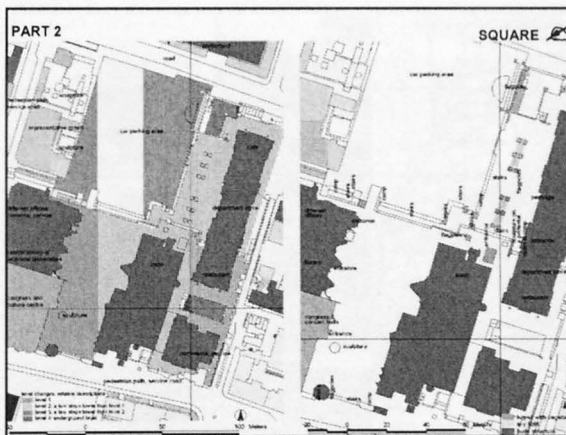
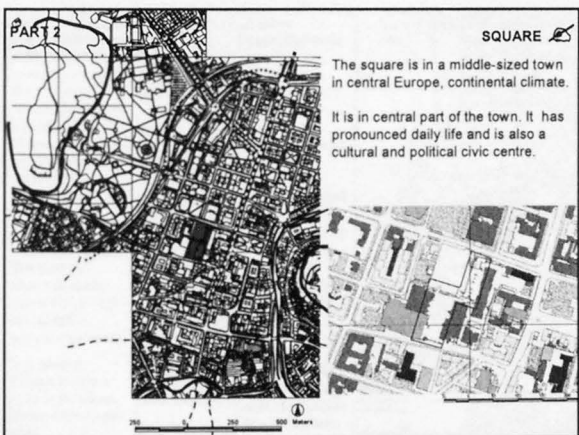
THEME
 URBAN LANDSCAPE DESIGN

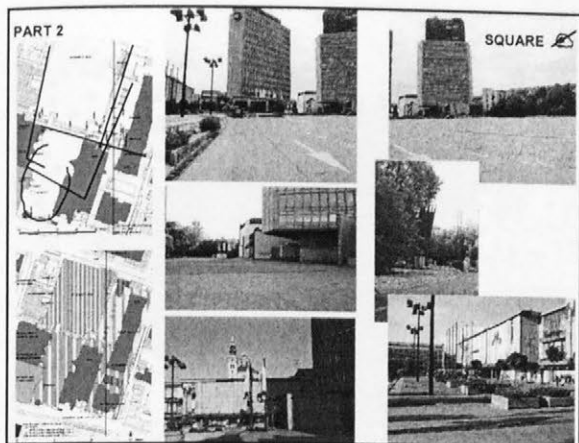
PUBLIC OPEN SPACE
 PUBLIC SPACE
 ↓ ↓
 PEOPLE PLACE

ISSUE
 PLACE PEOPLE ✓ SQUARE, PARK
 PEOPLE ?

COURSE
 INTRODUCTION OF A SQUARE
 TASK: CARRYING OUT
 INTRODUCTION OF A PARK
 TASK: CARRYING OUT

NOTE
 Please select the group, you belong, each time you start a new part of the workshop and put your reference number on any additional paper you are going to use during the workshop.





PART 2 SQUARE

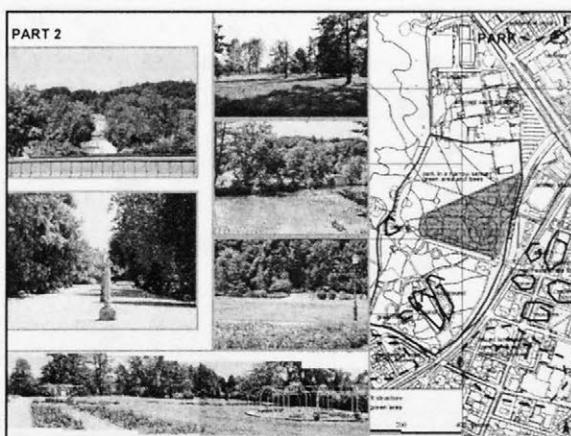
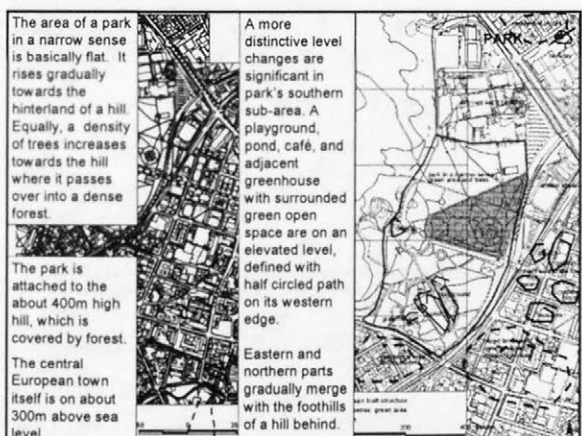
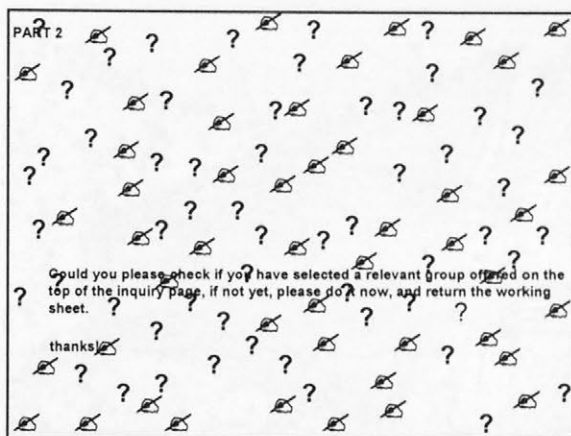
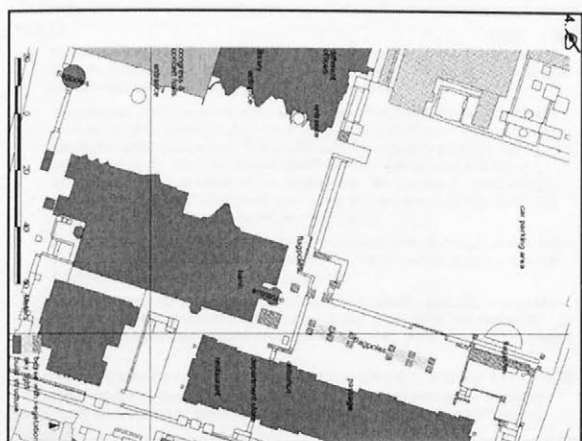
4. Please map out where you think any use of the place shown on the map is likely to happen on a warm, sunny spring afternoon. Please follow your own initial responses and ideas about the likely users.

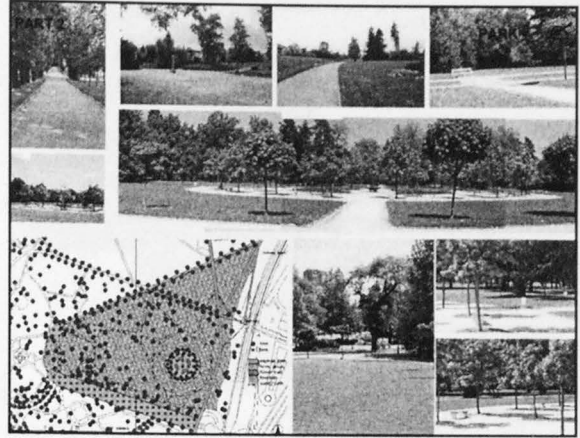
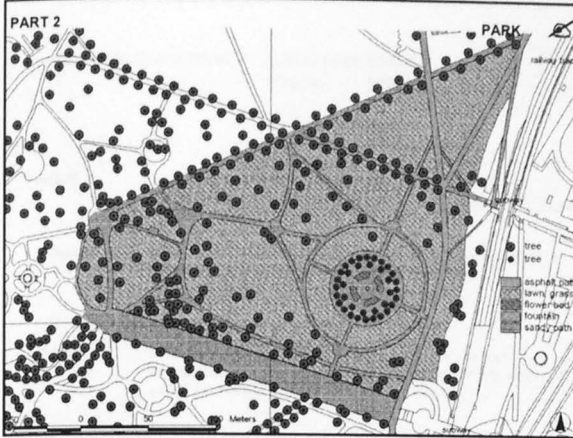
You can use simple symbols such as bold dots for individual users, a group of such symbols for small groups up to three people, a small area of enclosed line (circle) for small groups up to five people, and any shape of enclosed line for bigger groups, for example. Please distinguish between passive and active activities, for example sitting versus jogging, too. You can either simply legibly describe the activity or distinguish them using different graphical expression, for example different coloured, dashed line and the like.

There is a list of optional graphical symbols available. If using it, please define each symbol you decide to use and put the reference number of your workshop material in the left upper corner of that list, too.

There is also a range of likely activities, which usually take place in public space, available. It is preferable to use your own imagination and search for options about possible or likely occupancies. However, if the list is wanted, please ask.

Please take the layout of the place printed on the paper with this symbol 4. in the left upper corner and map out where you think any use of the place shown on the map is likely to happen on a warm, sunny spring afternoon.





PART 2 **PARK**

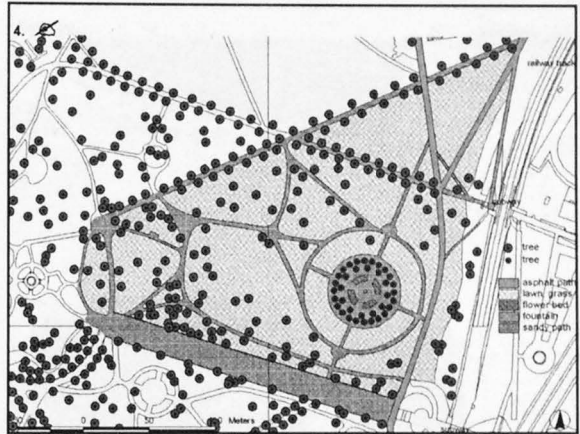
4. Please map out where you think any use of the place shown on the map is likely to happen on a warm, sunny spring afternoon. Please follow your own initial responses and ideas about the likely users.

You can use simple symbols such as bold dots for individual users, a group of such symbols for small groups up to three people, a small area of enclosed line (circle) for small groups up to five people, and any shape of enclosed line for bigger groups, for example. Please distinguish between passive and active activities, for example sitting versus jogging, too. You can either simply legibly describe the activity or distinguish them using different graphical expression, for example different coloured, dashed line and the like.

There is a list of optional graphical symbols available. If using it, please define each symbol you decide to use and put the reference number of your workshop material in the left upper corner of that list, too.

There is also a range of likely activities, which usually take place in public space, available. It is preferable to use your own imagination and search for options about possible or likely occupancies. However, if the list is wanted, please ask.

Please take the layout of the place printed on the paper with this symbol 4. in the left upper corner and map out where you think any use of the place shown on the map is likely to happen on a warm, sunny spring afternoon.



PART 2

Could you please check if you have selected a relevant group offered on the top of the inquiry page, if not yet, please do now, and return the working sheet.

thanks

PART 3

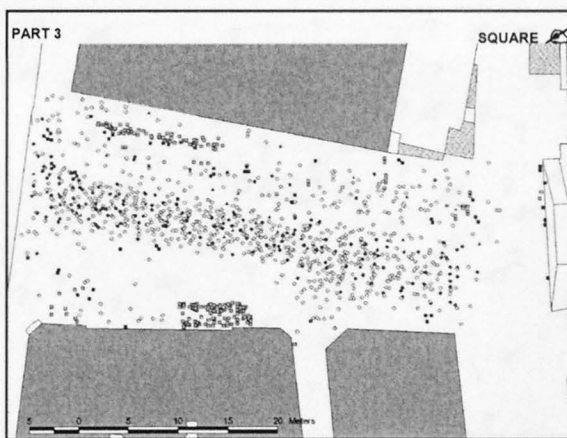
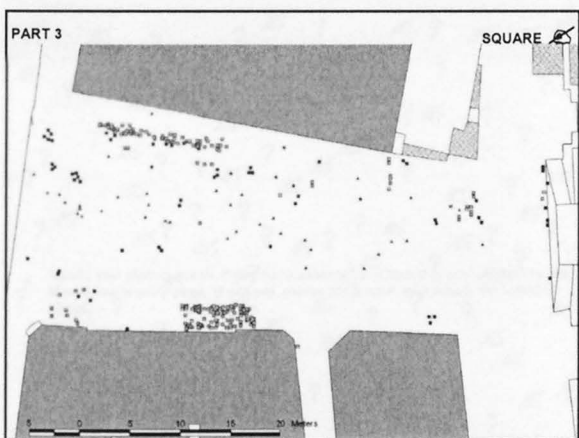
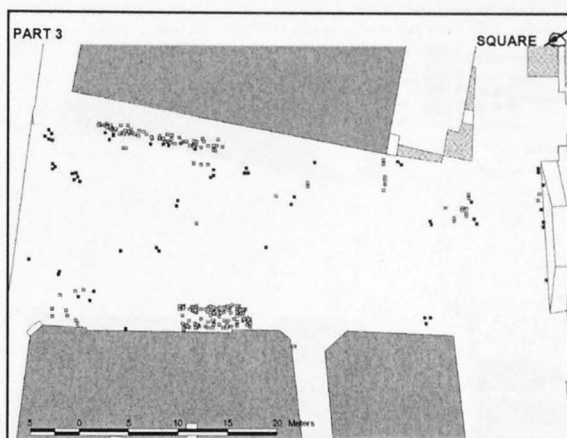
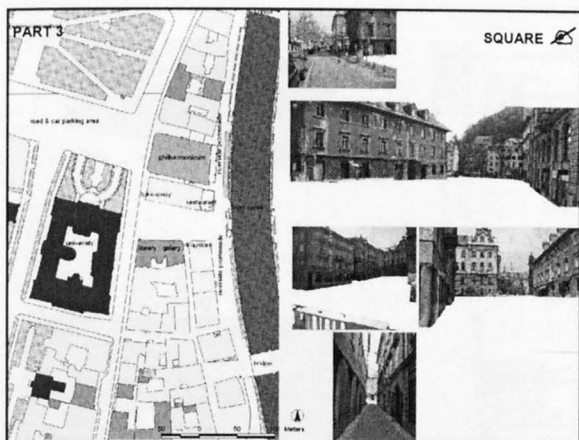
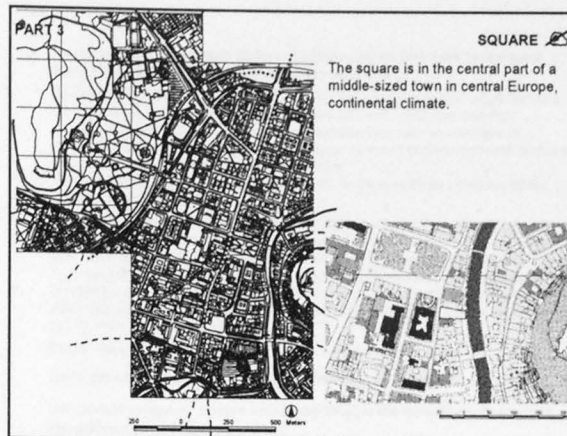
PART 3
THEME
 URBAN LANDSCAPE DESIGN

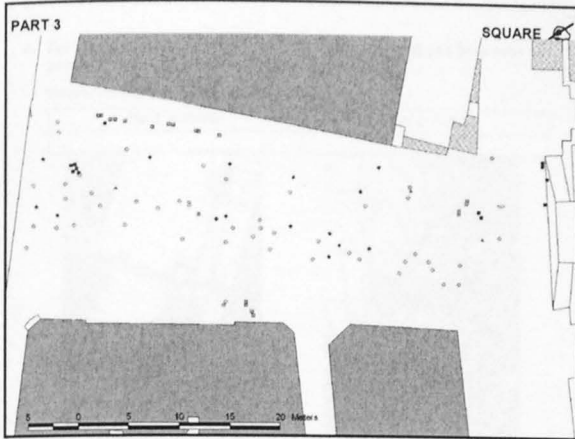
PUBLIC OPEN SPACE
 PUBLIC SPACE
 ↓ ↓
 PEOPLE PLACE

ISSUE
 PLACE ?
 PEOPLE ✓ PATTERNS OF USERS

COURSE
 INTRODUCTION OF SPATIAL CONTEXT OF A SQUARE AND
 RECORDED PATTERNS OF USE(R)S WITHIN IT
 TASK: CARRYING OUT

NOTE
 Please select the group, you belong, each time you start a new part
 of the workshop and put your reference number on any additional
 paper you are going to use during the workshop.





PART 3 **SQUARE**

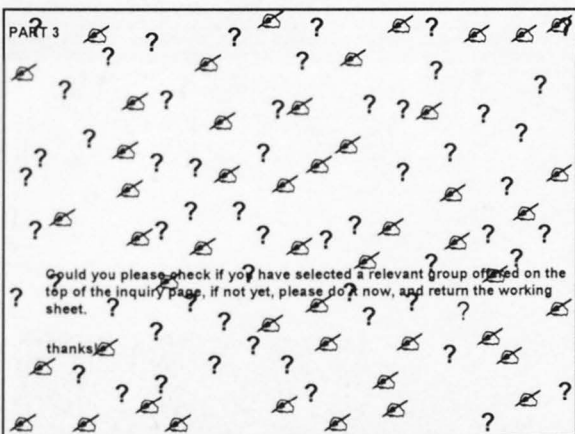
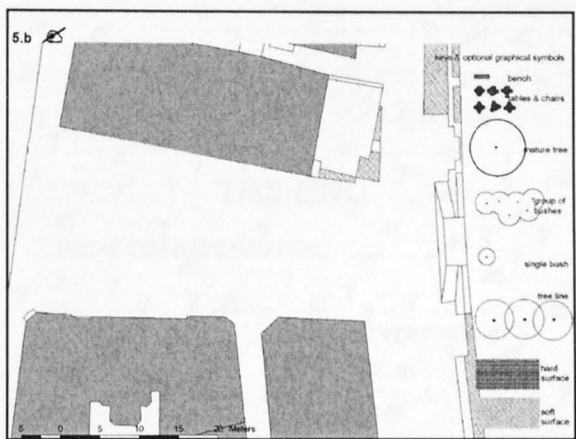
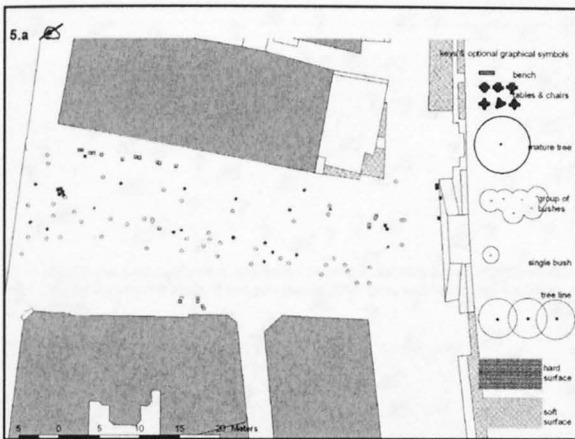
5. Please layout a conceptual design of a place which you think is the most likely to support the patterns of activities as follow .

The conceptual design means the indication of the general spatial properties and characteristics. It distinguishes between hard and soft areas, low and high vegetation or built structures, shows main articulations such as changes in elevations (stairs, platforms, ramps), and appearance of vertical elements such as columns, walls, hedges and trees, for example.

The scale itself enables you to indicate street furniture such as benches, tables, lights, bike holders, and the like, too.

The maps of the distribution of passive activities such as sitting, standing and lying, noticed during a couple of weeks of observation at different day and week times and under different weather conditions, and the range of all different uses which happened during this time serve as an overall impression and comprehensive information about the use of a place. The single map gives you an impression about dynamic of spatial occupancy of 10 minutes on a warm, sunny, not windy, spring afternoon once during the week.

Please take all the available information into account, use the layout of a place printed on the paper with this symbol 5.a or 5.b and layout a conceptual design of a place which you think is the most likely to support the patterns of activities as shown.



PART 4 ?

6. For which of the places involved in task 4 do you think you have best predicted the most likely patterns of uses ?

Please, mark one of the blank boxes below.

Site 1: SQUARE	Site 2: PARK

PART 4 ?

7. Please, indicate the degree to which you think the following aspects of a public space influence and determine its use?

Please, mark the relevance of different aspects of urban landscape design from 1 to 5

1 = very much, 2 = pretty much, 3 = medium, 4 = little, 5 = have not/none at all

1 st column	2 nd column
objective	range
	1 2 3 4 5
design layout itself: aesthetic & artistic value	
maintenance & amenities (café, shade, seats)	
other people	
place's size, shape and its 3D spatial structure	
planting/vegetation	
program	
quality of equipment	
quality of surfacing materials: soft/hard	
quantity of equipment	
spatial context/location	
spatial sub-divisions, level changes	
visual complexity	
other:	

PART 4 ?

Could you please check if you have selected a relevant group offered on the top of the inquiry page, if not yet, please do it now, and return the working sheet.

thanks

THE END

... I HOPE YOU HAVE HAD FUN... ..

THANK YOU VERY MUCH!

Appendix D.1

Conference Centre Square, Edinburgh

No. of people involved in activity per day all all all all all all all all all all all all all all male female all %

May-02 2nd 3rd 4th 5th 9th 10th 11th 15th 17th 19th 20th 22nd 23rd

Cycling	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	2	0.4
Jogging	0	0	0	0	1	0	1	0	0	0	0	0	2	4	0	4	0.7
Sitting	0	0	0	0	0	0	0	0	0	0	0	3	4	2	5	7	1.3
Pushing a pram	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0.2
Sitting around a table	7	0	0	0	0	0	0	0	0	0	0	11	8	10	18	3.2	
Sitting on a bench	11	1	0	0	0	6	3	0	2	0	2	0	16	20	21	41	7.3
Skateboarding	0	0	0	1	0	0	0	0	0	2	0	0	0	3	0	3	0.5
Standing	5	6	3	0	0	4	0	2	12	0	1	0	38	39	32	71	12.7
Walking - pass through	11	12	2	8	7	61	12	66	47	2	10	8	30	153	123	276	49.3
Bmx acrobatics	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.4
Walking in/out	31	16	0	3	12	0	1	0	0	1	0	12	59	65	70	135	24.1

560 100.0

No. of different activities undertaken	7	4	2	4	3	3	4	2	3	3	3	4	7
Weather	M	P	M	G	P	P	G	P	P	P	P	G	G
Time of a day/week	a	m	a	ea	la	ea	m	la	ea	la	a	m	ea

key

- G - good M - moderate P - poor
- m - morning, 10am-12pm
- ea - early afternoon, 12-2pm
- a - afternoon, 2-4pm
- la - late afternoon, 4-7pm
- week-day/ weekend/ holiday

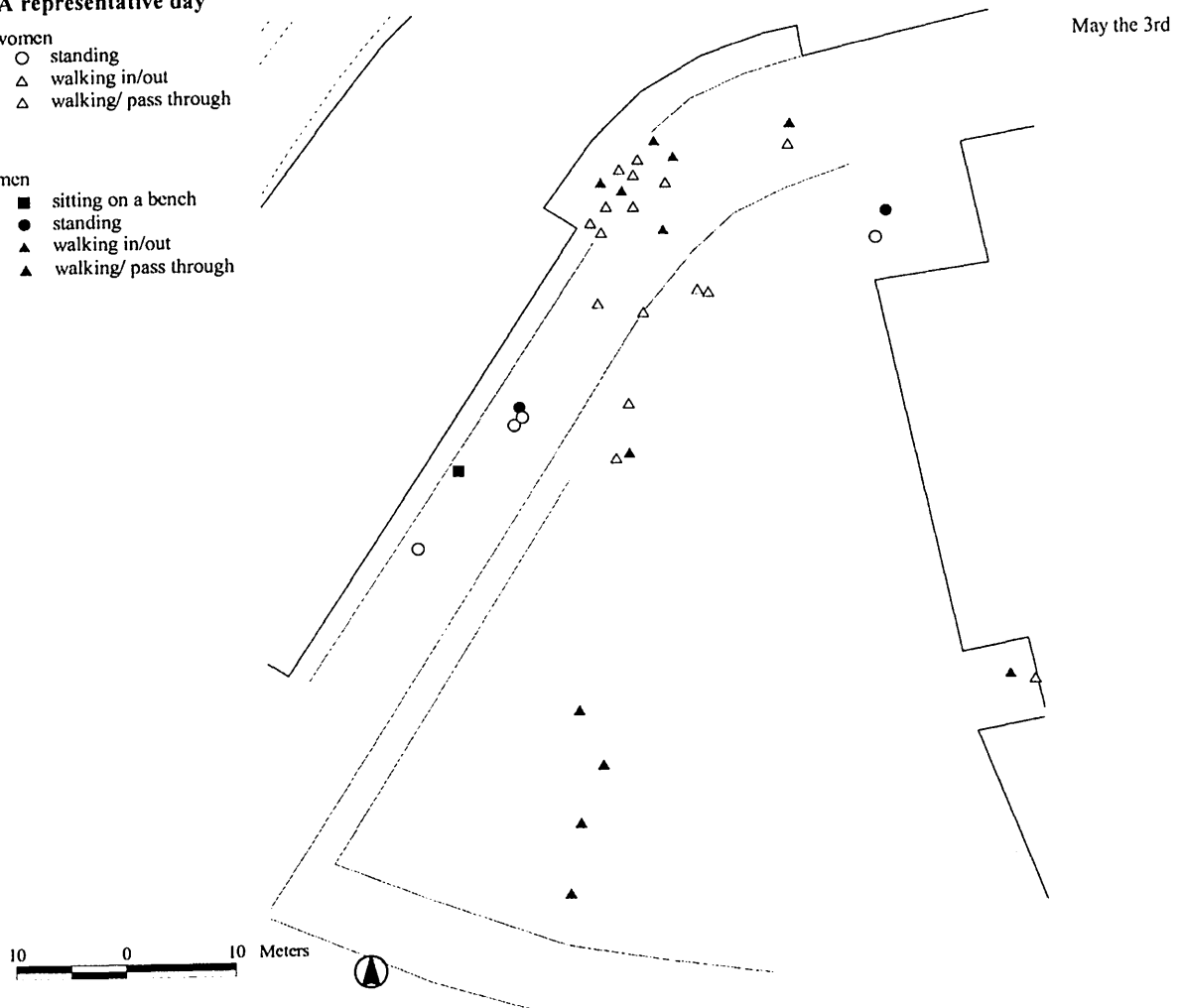
A representative day

women

- standing
- △ walking in/out
- △ walking/ pass through

men

- sitting on a bench
- standing
- ▲ walking in/out
- ▲ walking/ pass through



Appendix D.2

Festival Square, Edinburgh

No. of people involved in activity per day

	all	all	all	all	all	all	all	all	all	all	all	all	all	all	male	female	all	%
	May-02	2rd	3rd	4th	5th	8th	10th	11th	15th	17th	19th	20th	22nd	23rd				
Cycling	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	2	0.2
Jogging	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	3	0.3
Roller-skating	0	0	7	0	0	0	0	0	0	0	0	2	0	0	9	0	9	1.0
Sitting	0	3	0	0	1	7	0	0	0	0	0	1	1	7	6	13	1.5	
Sitting on a bench	2	0	0	4	0	0	6	3	6	0	1	2	4	17	11	28	3.2	
Skateboarding - sitting	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0.1	
Skateboarding	0	2	8	3	0	0	4	1	0	5	0	0	0	0	23	0	23	2.6
Standing	3	16	11	0	8	8	4	2	12	0	4	3	14	52	33	85	9.7	
Standing - talking	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0.3	
Talking - walking a dog	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.1	
Walking a child	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	2	0.2	
Walking a dog	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.1	
Walking - pass through	60	64	86	7	99	69	47	68	61	24	11	25	65	388	298	686	78.5	
Bmx - acrobatics	0	0	9	2	0	0	0	0	0	0	0	0	0	11	0	11	1.3	
Bmx - standing	0	0	0	6	0	0	0	0	0	0	0	0	0	6	0	6	0.7	

874 100.0

No. of different activities undertaken	4	4	5	7	3	3	4	5	3	2	4	4	5				
Weather	G	P	M	G	P	P	G	P	P	P	P	G	G				
Time of a day/week	a	m	a	ea	la	ca	m	la	ca	la	a	m	ca				

key

- G - good M - moderate P - poor
- m - morning, 10am-12pm
- ea - early afternoon, 12-2pm
- a - afternoon, 2-4pm
- la - late afternoon, 4-7pm
- week-day/ weekend/ holiday

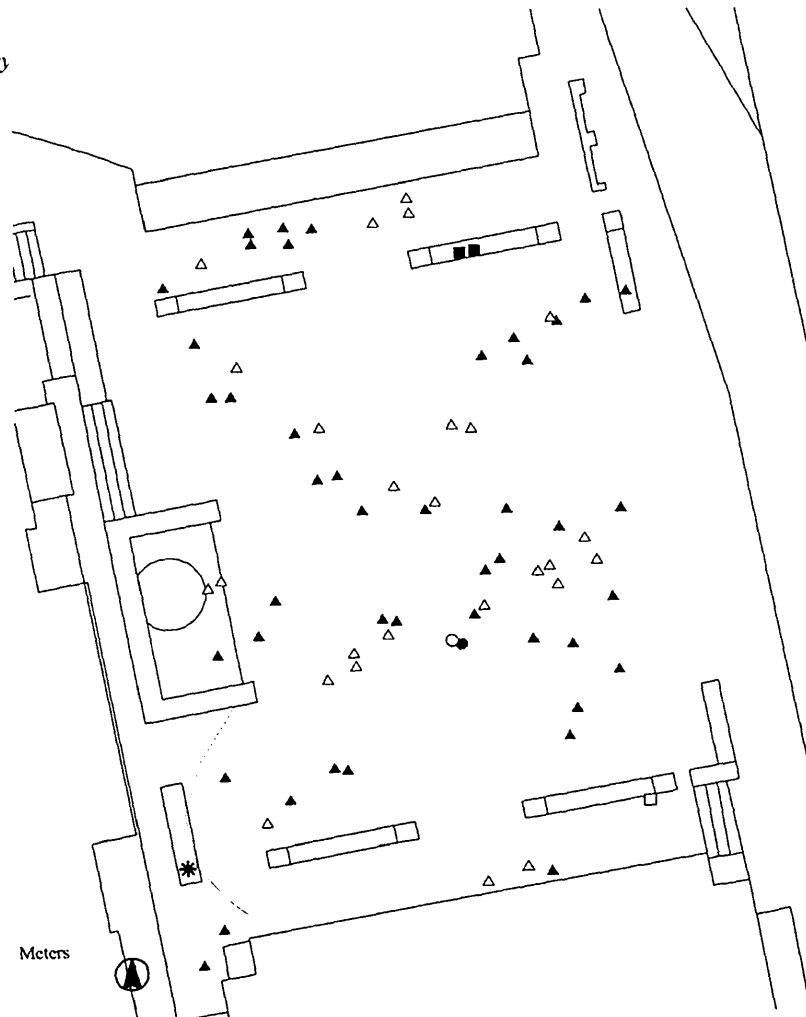
A representative day

women

- sitting on a bench
- standing
- △ walking/ pass through

men

- ▲ cycling
- sitting on a bench
- * skateboarding
- standing
- ▲ walking/ pass through



May the 15th

10 0 10 Meters

Appendix D.3 Usher Hall Square, Edinburgh

No. of people involved in activity per day all all all all all all all all all all all all all male female all %
 May-02 2nd 3rd 4th 5th 7th 11th 14th 17th 19th 20th 22nd 23rd

	0	0	0	0	0	1	2	0	0	0	0	0	3	0	3	0.2	
Cycling	0	0	0	0	0	1	2	0	0	0	0	0	0	3	0	3	0.2
Jogging	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.1	
Pushing a pram	4	0	0	0	0	1	0	0	0	0	0	0	3	2	5	0.4	
Sitting around a table	0	0	16	9	0	0	0	0	0	0	0	3	11	17	28	2.2	
Sitting on a bench	6	16	4	18	0	1	3	6	0	10	1	7	44	28	72	5.6	
Skateboarding	0	0	5	0	0	0	0	0	2	0	0	0	7	0	7	0.5	
Standing	2	10	3	12	3	3	35	20	4	1	1	0	50	44	94	7.3	
Standing - talking	2	0	0	0	0	0	0	0	0	2	0	2	2	2	4	0.3	
Walking a child	1	2	0	4	1	1	0	0	0	0	1	0	4	6	10	0.8	
Walking a dog	2	0	0	0	1	0	0	0	0	0	0	0	3	0	3	0.2	
Walking - pass through	70	114	227	71	58	42	109	110	26	98	27	105	544	513	1057	82.2	
Standing with a pram	0	1	0	0	0	0	0	0	0	0	0	1	0	2	2	0.2	
																1286	100.0

No. of different activities undertaken 7 5 5 5 4 6 4 3 3 3 4 4
 Weather G M M G P G P P P P G G
 Time of a day/week a ea a ea m m la ea la a m ea

key

G - good M - moderate P - poor
 m - morning, 10am-12pm
 ea - early afternoon, 12-2pm
 a - afternoon, 2-4pm
 la - late afternoon, 4-7pm
 week-day/ weekend/ holiday

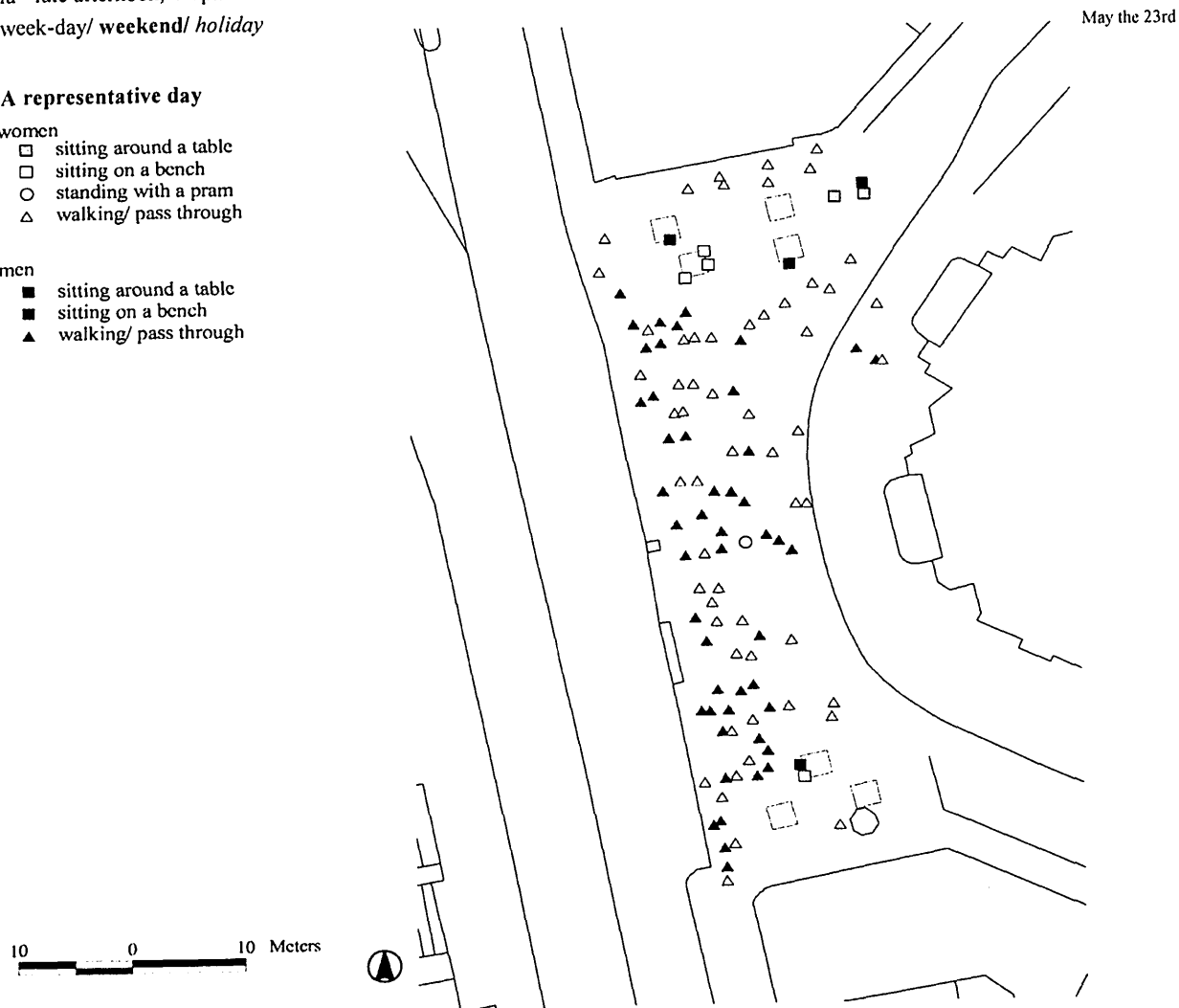
A representative day

women

- sitting around a table
- sitting on a bench
- standing with a pram
- △ walking/ pass through

men

- sitting around a table
- sitting on a bench
- ▲ walking/ pass through



Appendix D.4

Grassmarket, Edinburgh

No. of people involved in activity per day

	all	all	all	all	all	all	all	all	all	all	all	male	female	all	%
	May-02														
	2nd	3rd	4th	7th	9th	10th	14th	20th	21st	22nd					
Cycling	0	0	2	0	1	0	0	0	0	0	0	3	0	3	0.2
Pushing a pram	1	0	0	2	1	0	0	0	0	0	0	2	2	4	0.3
Sitting	0	0	0	0	0	3	0	2	10	0	8	7	15	1.1	
Sitting on a bench	6	6	5	1	2	0	2	8	8	7	35	10	45	3.3	
Sitting around a table	31	0	31	0	0	24	4	17	71	3	98	83	181	13.3	
Skateboarding	0	2	0	0	0	0	0	0	0	0	2	0	2	0.1	
Standing	16	7	0	2	3	0	3	13	9	6	41	18	59	4.3	
Standing - talking	2	0	0	0	0	0	0	0	0	0	2	0	2	0.1	
Walking a child	3	0	0	1	1	0	0	0	0	0	3	2	5	0.4	
Walking a dog	2	0	0	0	0	0	0	0	0	0	2	0	2	0.1	
Walking - pass through	125	60	109	101	105	150	114	161	56	57	573	465	1038	76.5	
Walking - come/go	0	1	0	0	0	0	0	0	0	0	1	0	1	0.1	

1357 100.0

No. of different activities undertaken	7	5	4	5	6	3	4	5	5	4
Weather	G	M	M	P	P	P	P	P	G	G
Time of a day/week	a	m	a	ea	la	ea	la	a	ea	m

key

- G - good M - moderate P - poor
- m - morning, 10am-12pm
- ea - early afternoon, 12-2pm
- a - afternoon, 2-4pm
- la - late afternoon, 4-7pm
- week-day/ weekend/ holiday

A representative day

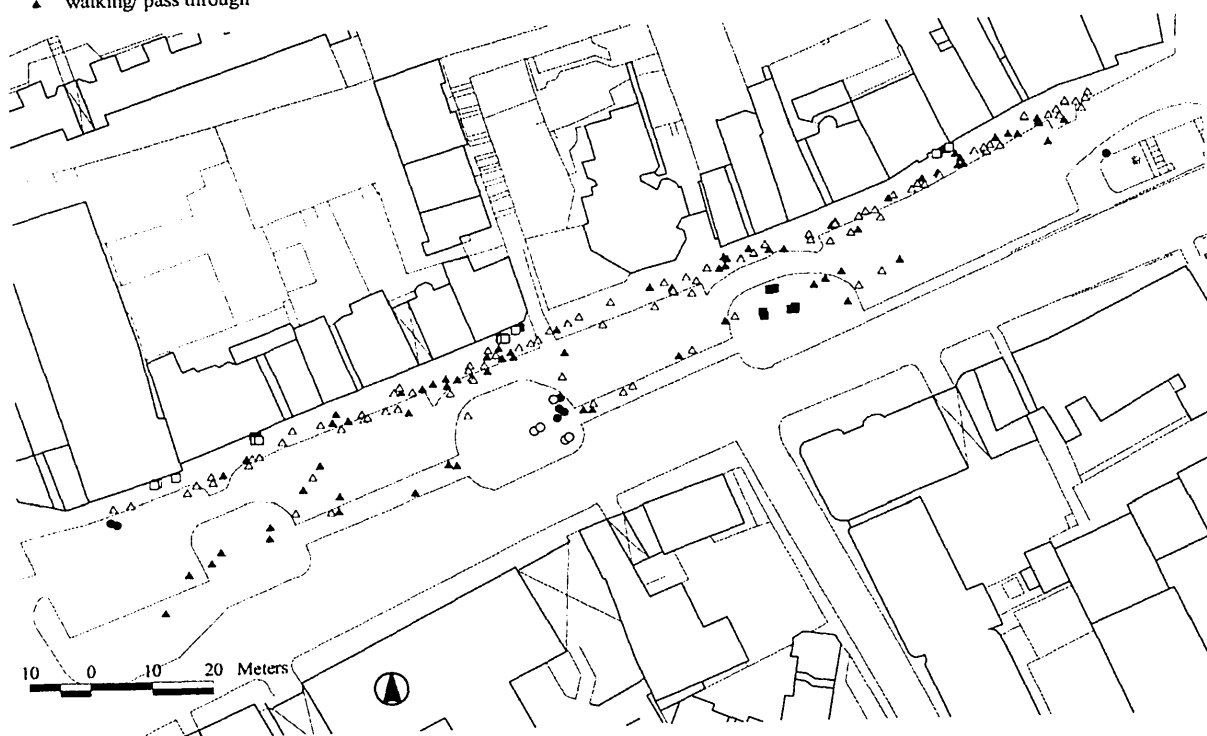
May the 20th

women

- sitting around a table
- standing
- △ walking/ pass through

men

- sitting
- sitting on a bench
- sitting around a table
- standing
- ▲ walking/ pass through



Appendix D.5 The Royal Mile, Edinburgh

No. of people involved in activity per day	all								male	female	all	%
	May-02	4th	9th	14th	15th	16th	17th	18th	18th			
Cycling	2	1	0	0	3	0	0	0	5	1	6	0.3
Playing	1	0	0	0	0	0	0	0	1	0	1	0.1
Pushing a pram	0	0	0	0	1	0	0	0	0	1	1	0.1
Sitting	4	0	0	0	0	0	0	0	4	0	4	0.2
Sitting on a bench	18	10	0	3	0	4	0	0	19	16	35	1.8
Sitting around a table	33	0	0	0	0	0	0	0	15	18	33	1.7
Standing	13	7	1	0	3	0	7	27	23	35	58	2.9
Walking a child	0	0	0	0	3	0	0	0	1	2	3	0.2
Walking - pass through	304	320	249	139	157	157	296	212	893	941	1834	92.3
Jumping	4	0	0	0	0	0	0	0	4	0	4	0.2
Standing - playing bag pipes	1	0	0	0	0	0	2	0	3	0	3	0.2
Markets	0	0	0	0	0	0	5	0	2	3	5	0.3
	1987										100.0	

No. of different activities undertaken	9	4	2	2	5	2	4	2
Weather	G	P	P	P	M	P	P	P
Time of a day/week	m	ea	la	ea	a	m	ea	a

key

- G - good M - moderate P - poor
- m - morning, 10am-12pm
- ea - early afternoon, 12-2pm
- a - afternoon, 2-4pm
- la - late afternoon, 4-7pm
- week-day/ weekend/ holiday

A representative day

women

- △ cycling
- pushing a pram
- standing
- ◊ walking a child
- △ walking/ passing through

men

- ▲ cycling
- standing
- walking a child
- ▲ walking/ pass through



May the 16th

Appendix D.6 Hunter Square, Edinburgh

No. of people involved in activity per day

	all	all	all	all	all	all	all	all	all	male	female	all	%
	May-02												
	4th	6th	9th	15th	16th	17th	18th	18th					
Cycling	1	0	1	0	0	0	0	0	2	0	2	0.2	
Sitting	14	5	0	0	3	3	1	0	15	11	26	2.7	
Sitting on a bench	7	13	2	4	1	3	1	6	21	16	37	3.9	
Sitting around a table	17	0	0	0	0	0	0	0	12	5	17	1.8	
Skateboarding	0	4	0	0	0	0	0	0	4	0	4	0.4	
Standing	11	4	10	3	6	0	8	14	31	25	56	5.9	
Walking a child	0	0	0	0	3	0	0	0	2	1	3	0.3	
Walking - pass through	131	161	108	83	67	58	57	137	398	404	802	84.4	
Standing with a pram	1	0	1	0	0	0	0	0	1	1	2	0.2	
Sitting on a bench with a pram	1	0	0	0	0	0	0	0	1	0	1	0.1	
	950											100.0	

No. of different activities undertaken	8	5	5	3	5	3	4	3
Weather	G	G	P	P	M	P	P	P
Time of a day/week	m	ea	a	ea	a	m	ea	la

key

G - good M - moderate P - poor

m - morning, 10am-12pm

ea - early afternoon, 12-2pm

a - afternoon, 2-4pm

la - late afternoon, 4-7pm

week-day/ weekend/ holiday

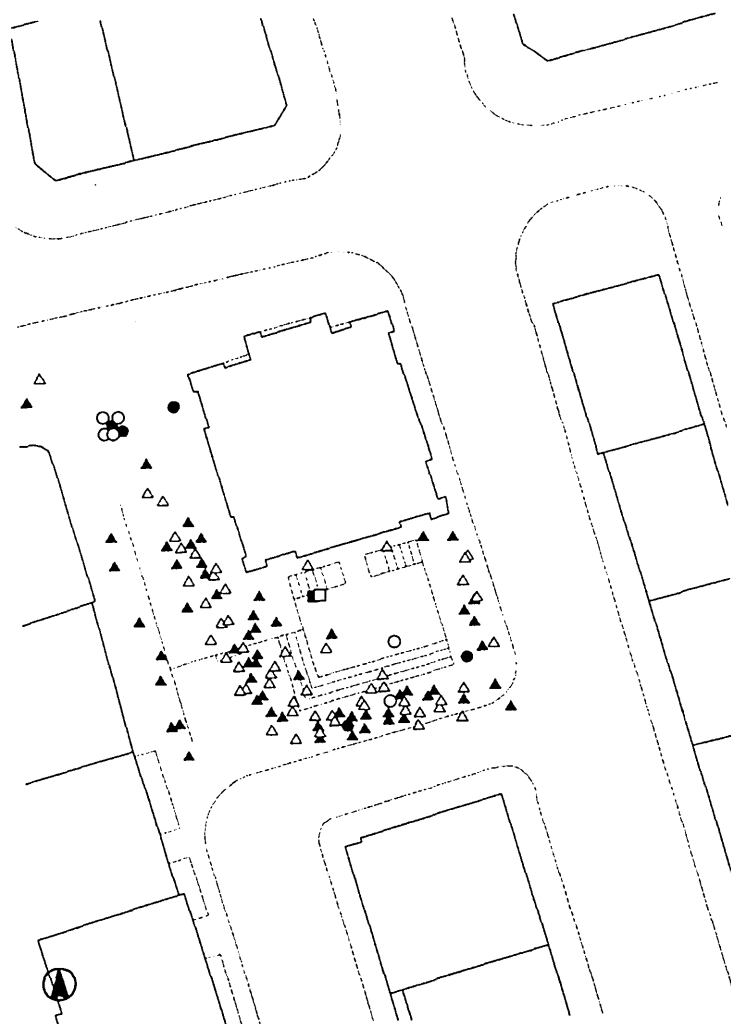
A representative day

women

- sitting on a bench
- standing
- △ walking/ pass through

men

- ▲ cycling
- sitting on a bench
- standing
- standing/ playing bag-pippes
- ▲ walking/ pass through



May the 9th

Appendix D.7 Bristo Square, Edinburgh

No. of people involved in activity per day

	all	all	all	all	all	all	all	all	all	all	all	all	male	female	all	%
	May-02															
	2nd	5th	6th	8th	9th	15th	16th	17th	18th	19th	23rd					
Cycling	4	0	0	0	2	0	0	0	0	0	0	5	1	6	0.5	
Pushing a parm	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0.1	
Roller-skating	0	14	4	0	0	0	0	6	0	2	5	31	0	31	2.6	
Sitting	0	48	17	8	0	0	15	17	1	9	14	80	49	129	10.9	
Skateboarding - sitting	0	4	3	2	0	0	0	7	0	0	0	16	0	16	1.3	
Skateboarding	0	23	12	13	0	0	0	11	0	5	19	83	0	83	7.0	
Standing	6	0	22	4	2	3	5	3	2	0	4	31	20	51	4.3	
Skateboarding - standing	0	8	0	0	0	0	0	0	0	0	3	11	0	11	0.9	
Walking a child	0	0	2	0	0	0	0	0	0	0	0	0	2	2	0.2	
Walking - pass through	112	14	183	80	138	81	51	67	34	18	65	445	398	843	71.0	
Propelling scooter	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0.1	
Roller-skating - sitting	0	11	0	0	0	0	0	3	0	0	0	14	0	14	1.2	

1188 100.0

No. of different activities undertaken	3	8	7	6	3	2	3	7	3	4	5					
Weather	P	G	G	G	P	P	M	P	P	P	G					
Time of a day/week	la	a	ea	a	m	m	ea	a	ea	m	a					

key

- G - good M - moderate P - poor
- m - morning, 10am-12pm
- ea - early afternoon, 12-2pm
- a - afternoon, 2-4pm
- la - late afternoon, 4-7pm
- week-day/ weekend/ holiday

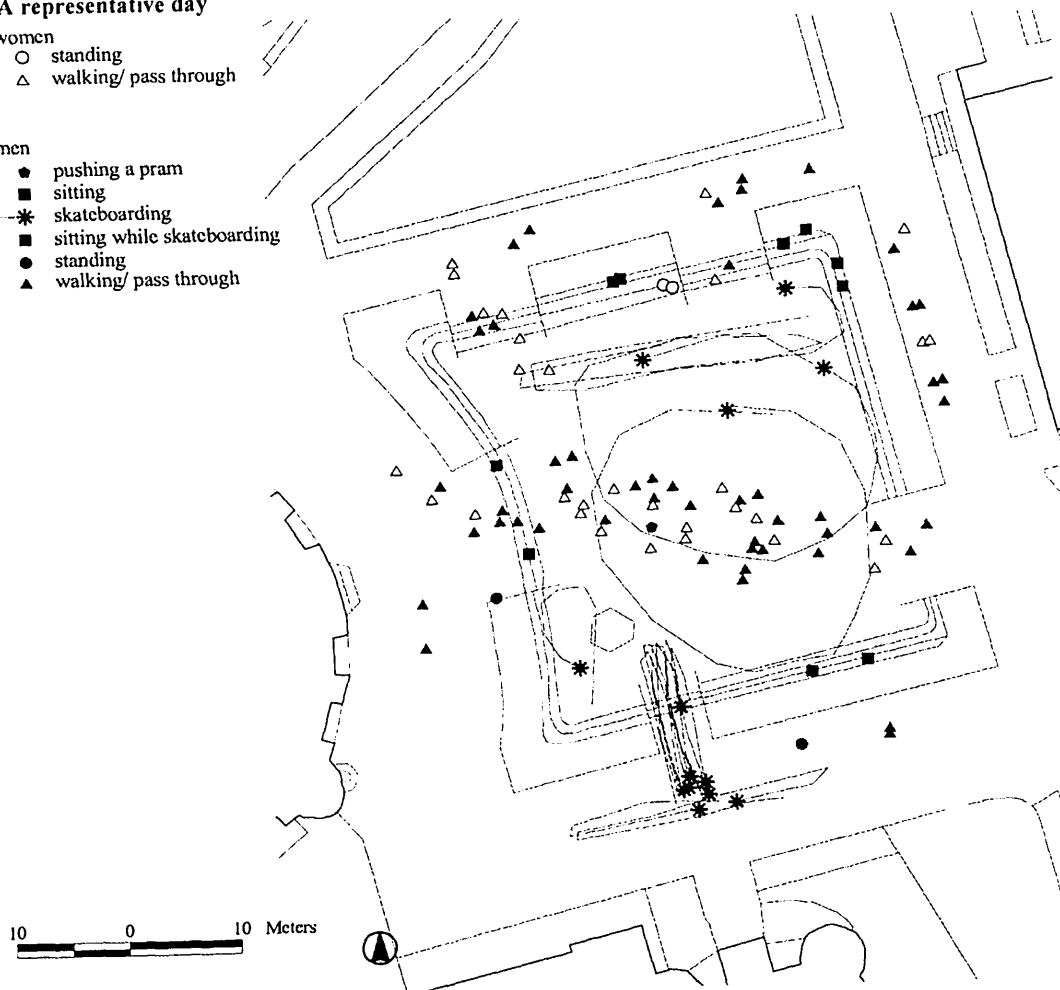
A representative day

women

- standing
- △ walking/ pass through

men

- pushing a pram
- sitting
- * skateboarding
- sitting while skateboarding
- standing
- ▲ walking/ pass through



May the 8th

Appendix D.8

Trg Republike, Ljubljana

No. of people involved in activity per day

	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	male	female	all	%
	May-03																		
	5th	6th	7th	10th	12th	13th	14th	15th	16th	17th	18th	19th	23rd	24th					
Cycling	5	10	12	0	7	7	4	2	0	0	5	7	3	7	43	26	69	6.9	
Playing	0	0	0	0	0	0	9	0	0	0	0	0	0	0	9	0	9	0.9	
Playing with a ball	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5	0	5	0.5	
Roller-skating	0	0	0	0	1	0	0	0	0	0	0	1	1	0	3	0	3	0.3	
Sitting	5	4	5	0	43	6	2	8	35	0	0	9	2	1	60	60	120	12.0	
Skateboarding - sitting	3	4	3	0	4	4	0	3	0	0	3	2	12	3	41	0	41	4.1	
Skateboarding	3	1	5	0	0	6	0	6	0	0	4	7	9	7	48	0	48	4.8	
Standing	6	12	5	7	16	16	43	4	8	1	0	10	3	1	86	46	132	13.2	
Skateboarding - standing	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0.1	
Walking a child	0	0	1	0	0	0	0	0	4	0	3	0	0	0	2	6	8	0.8	
Walking a dog	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	2	0.2	
Walking - pass through	24	59	71	22	77	42	86	11	35	56	13	27	17	13	275	278	553	55.4	
Bmx - acrobatics	1	1	0	0	0	0	0	0	0	0	2	0	0	0	4	0	4	0.4	
Propelling scooter	0	1	0	0	0	0	0	1	0	0	0	0	0	1	3	0	3	0.3	

998 100.0

No. of different activities undertaken	7	8	7	2	8	7	5	8	4	2	5	7	7	7
Weather	G	G	G	P	G	G	P	G	G	G	G	G	G	G
Time of a day/week	la	ea	a	m	m	a	ea	la	m	ea	a	la	la	la

key

- G - good M - moderate P - poor
- m - morning, 10am-12pm
- ea - early afternoon, 12-2pm
- a - afternoon, 2-4pm
- la - late afternoon, 4-7pm
- week-day/ weekend/ holiday

A representative day

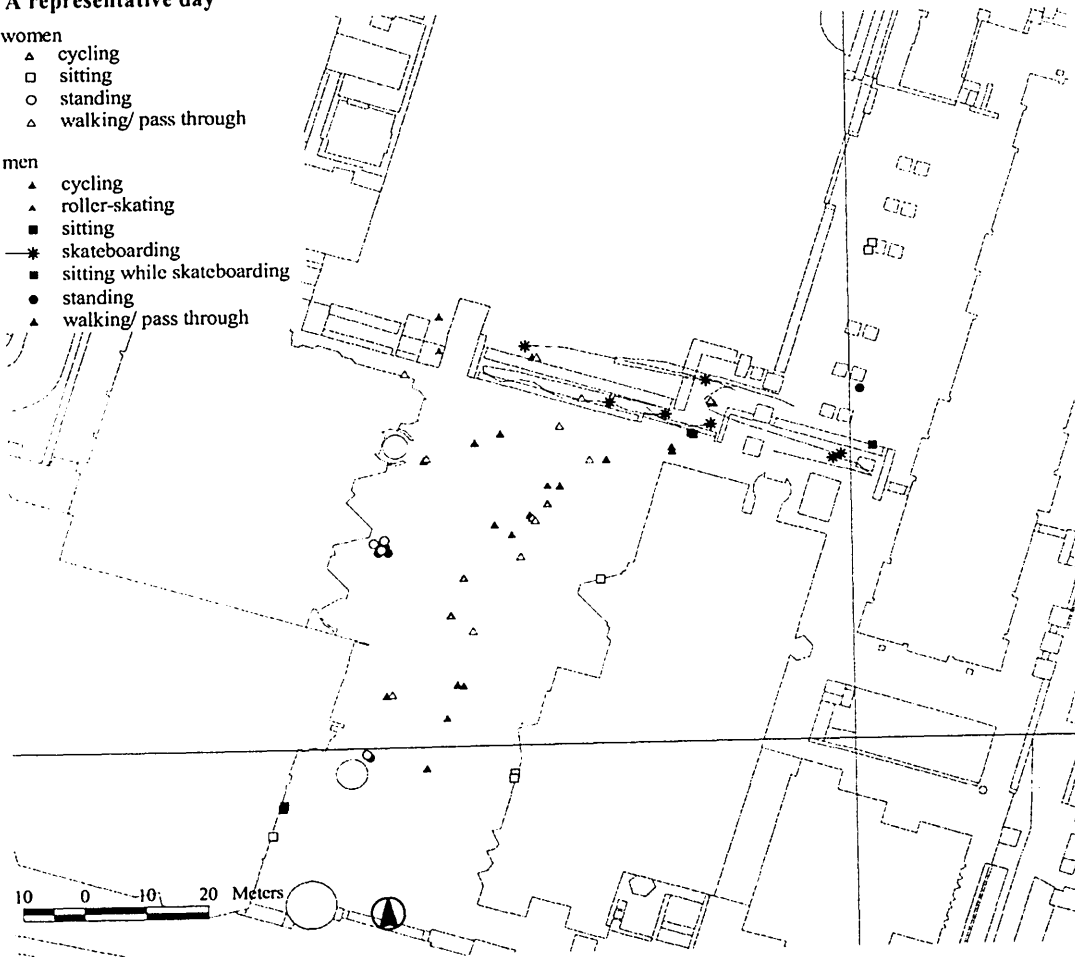
May the 19th

women

- ▲ cycling
- sitting
- standing
- △ walking/ pass through

men

- ▲ cycling
- ▲ roller-skating
- sitting
- * skateboarding
- sitting while skateboarding
- standing
- ▲ walking/ pass through



Appendix D.9

Plečnikov Trg, Ljubljana

No. of people involved in activity per day all all all all all all all all all male female all %

May-03 12th 13th 14th 15th 16th 17th 18th 18th

	12th	13th	14th	15th	16th	17th	18th	18th	male	female	all	%
Cycling	7	3	5	8	2	5	10	5	27	18	45	5.0
Playing	0	0	4	0	0	1	0	0	4	1	5	0.6
Pushing a pram	2	0	0	0	0	0	1	0	1	2	3	0.3
Roller-skating	1	0	2	5	0	0	1	4	4	9	13	1.5
Sitting	1	5	4	0	45	1	0	0	35	21	56	6.3
Sitting on a bench	0	2	0	0	3	1	0	0	4	2	6	0.7
Sitting around a table	27	32	18	6	52	14	0	0	71	78	149	16.7
Skateboarding	0	0	0	0	0	0	0	4	4		4	0.4
Standing	3	2	5	3	63	12	0	0	41	47	88	9.8
Standing - talking	0	12	0	0	2	0	0	0	6	8	14	1.6
Walking a child	0	0	0	3	0	1	1	0	2	3	5	0.6
Walking - pass through	126	58	79	80	75	23	42	22	226	279	505	56.5
Pushing a pram + walking a child	0	0	0	0	0	1	0	0	0	1	1	0.1

894 100.0

No. of different activities undertaken	8	5	7	6	6	9	5	4
Weather	G	G	P	G	G	G	G	G
Time of a day/week	m	a	ea	la	m	m	a	la

key

G - good M - moderate P - poor

m - morning, 10am-12pm

ea - early afternoon, 12-2pm

a - afternoon, 2-4pm

la - late afternoon, 4-7pm

week-day/ weekend/ holiday

women

△ cycling

□ sitting

□ sitting around a table

○ standing

△ walking/ pass through

men

▲ cycling

● stopping while cycling

■ sitting

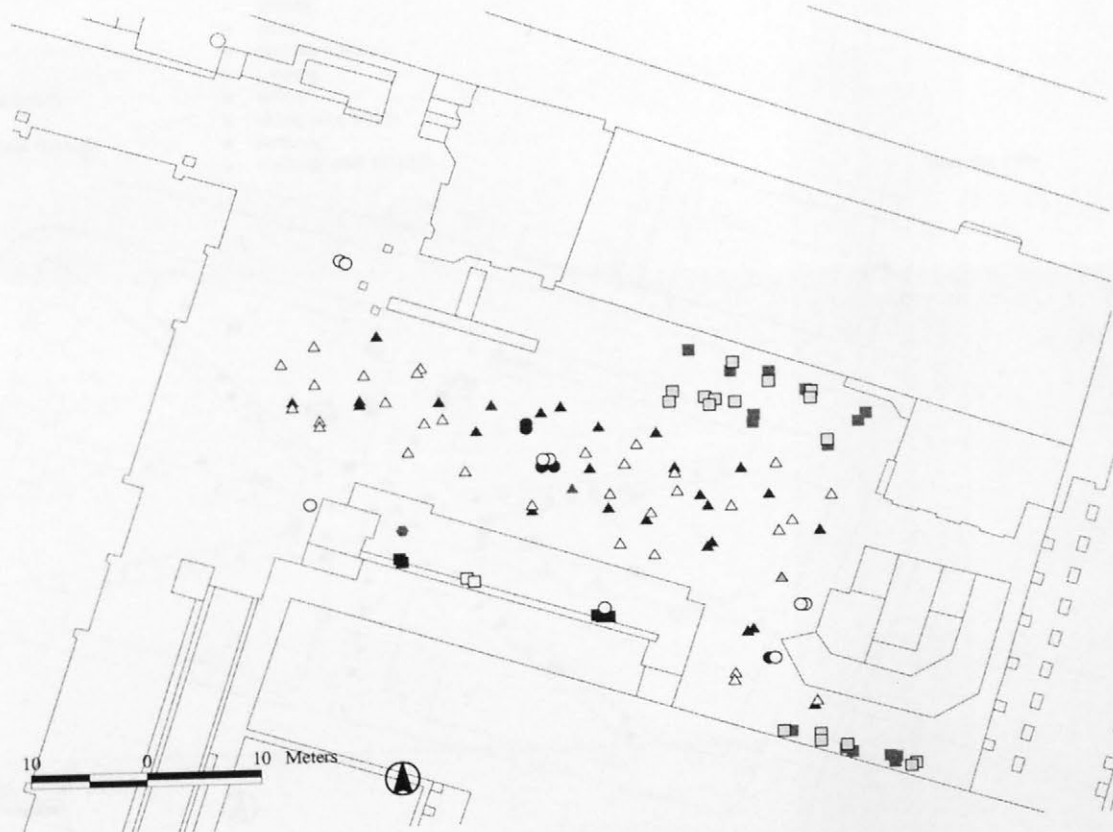
■ sitting around a table

● standing

▲ walking/ pass through

A representative day

May the 13th



Appendix D.10

Kongresni Trg, Ljubljana

No. of people involved in activity/ day all all all all all all all all all all all all all all all male female all %

	May-03															male	female	all	%
	5th	6th	7th	8th	12th	13th	14th	15th	17th	18th	19th	23rd	23rd	25th	25th				
Cycling	26	24	6	19	12	9	7	5	3	5	11	7	4	1	0	79	60	139	7.2
Lying down	2	0	0	0	4	0	0	0	0	0	3	0	0	0	0	6	3	9	0.5
Playing	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	1	3	0.2
Pushing a pram	5	5	2	0	0	0	0	3	3	1	1	0	0	0	3	4	19	23	1.2
Roller-skating	0	5	0	3	0	0	0	1	1	9	0	0	0	1	0	11	9	20	1.0
Sitting	17	13	33	0	8	3	2	4	0	0	23	0	10	0	4	60	57	117	6.1
Sitting on a bench	0	26	27	28	31	26	0	30	21	27	19	7	36	18	8	140	164	304	15.7
Sitting around a table	10	0	17	0	25	0	0	0	0	0	0	0	23	0	0	33	42	75	3.9
Standing	36	13	66	8	30	4	6	9	11	0	6	0	1	0	0	91	99	190	9.8
Standing - talking	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	4	0.2
Walking a child	0	4	0	2	0	0	3	4	2	6	0	1	0	0	0	8	14	22	1.1
Walking a dog	2	0	0	1	0	0	0	0	2	0	0	0	0	0	0	4	1	5	0.3
Walking - pass through	139	110	83	83	64	46	84	59	47	55	78	68	29	42	28	500	515	1015	52.6
Standing with a pram	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.1
Running	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	2	3	0.2
Sitting with a dog	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0.1

1931 100.0

No. of different activities undertaken	8	8	8	7	8	5	5	9	9	6	8	4	6	4	4				
Weather	G	G	G	M	G	G	P	G	G	G	G	G	G	G	G				
Time of a day/week	m	a	ea	la	ea	m	la	a	m	la	a	m	a	ea	a				

key

G - good M - moderate P - poor

m - morning, 10am-12pm

ea - early afternoon, 12-2pm

a - afternoon, 2-4pm

la - late afternoon, 4-7pm

week-day/ weekend/ holiday

A representative day

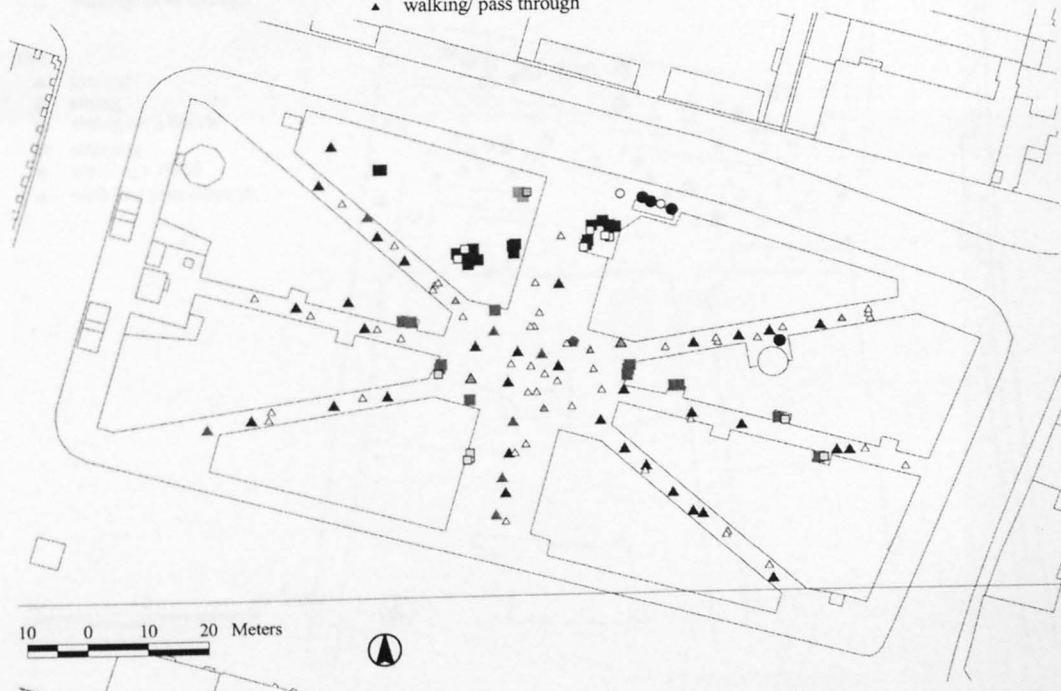
women

- ▲ cycling
- lying
- ▲ running
- sitting
- sitting on a bench
- standing
- ▲ walking/ pass through

men

- ▲ cycling
- lying
- pushing a pram
- ▲ running
- sitting
- sitting on a bench
- standing
- ▲ walking/ pass through

May the 19th



Appendix D.12 Mestni Trg, Ljubljana

No. of people involved in activity per day all all all all all all all all all all all male female all %

May-03 6th 7th 9th 13th 14th 15th 16th 17th 18th 19th 25th

	6th	7th	9th	13th	14th	15th	16th	17th	18th	19th	25th	male	female	all	%
Cycling	13	9	9	3	2	11	4	4	3	8	6	38	34	72	7.6
Playing	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0.1
Pushing a pram	0	0	0	0	0	0	1	7	0	0	1	4	5	9	1.0
Roller-skating	0	0	0	0	0	0	0	5	0	0	0	2	3	5	0.5
Sitting	1	0	0	0	0	0	0	0	0	3	1	2	3	5	0.5
Sitting on a bench	0	0	0	2	0	5	0	0	0	0	2	4	5	9	1.0
Sitting around a table	16	22	0	18	0	0	0	32	10	12	12	63	59	122	12.9
Standing	8	8	12	4	15	10	8	0	0	5	2	44	28	72	7.6
Motor-cycling	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0.1
Walking a child	0	1	0	3	0	1	0	13	1	0	0	8	11	19	2.0
Walking - pass through	127	93	41	23	35	60	35	121	26	39	29	296	333	629	66.6
Running	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0.1

945 100.0

No. of different activities undertaken	5	6	3	6	3	5	4	6	4	6	8				
Weather	G	G	P	M	P	P	G	G	G	G	G				
Time of a day/week	m	ea	a	la	a	la	m	m	la	a	ea				

key

G - good M - moderate P - poor

m - morning, 10am-12pm

ea - early afternoon, 12-2pm

a - afternoon, 2-4pm

la - late afternoon, 4-7pm

week-day/ **weekend/ holiday**

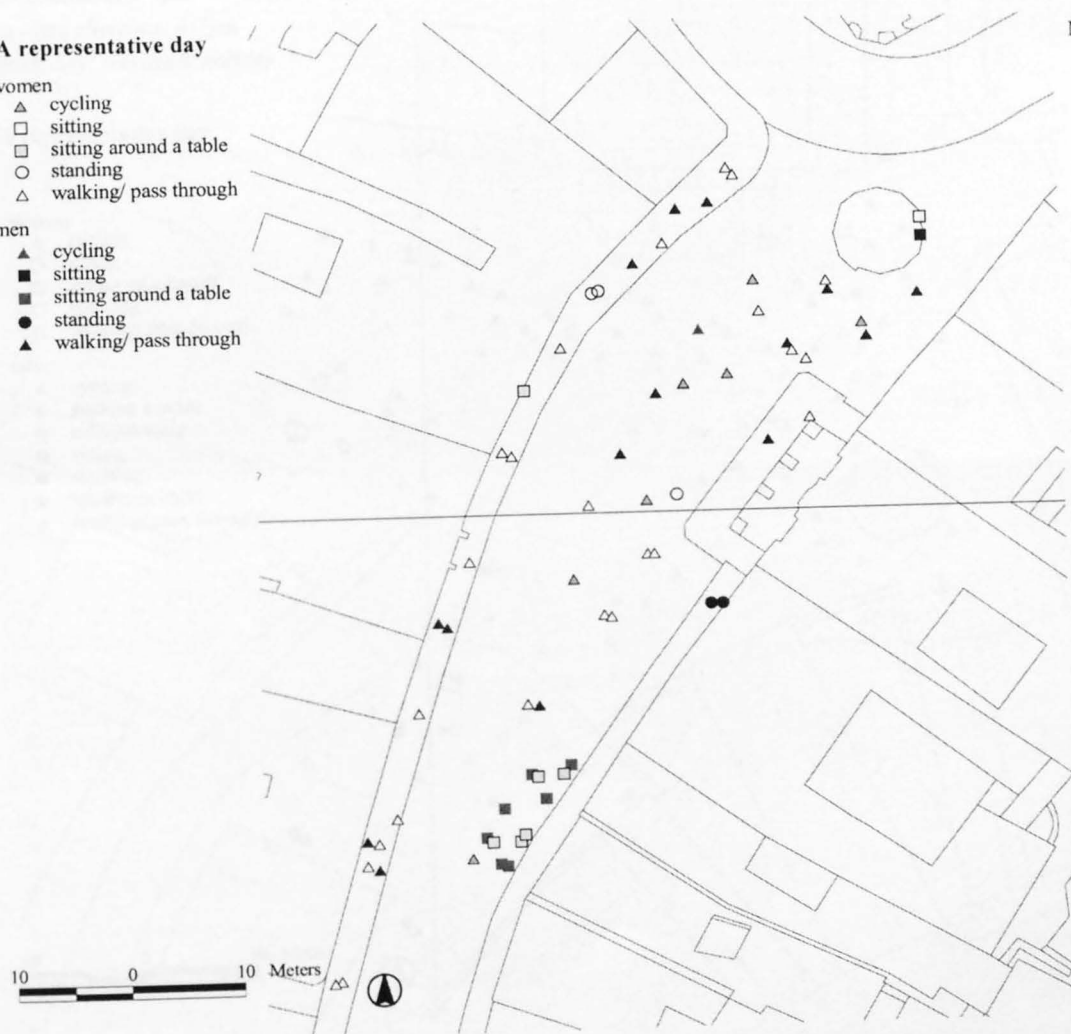
A representative day

women

- △ cycling
- sitting
- sitting around a table
- standing
- △ walking/ pass through

men

- ▲ cycling
- sitting
- sitting around a table
- standing
- ▲ walking/ pass through



Appendix D.13

Prešernov Trg, Ljubljana

No. of people involved in activity per day all all all all all all all all all all all male female all %
May-03 5th 9th 12th 13th 14th 16th 17th 17th 18th 19th 25th

	38	35	50	20	10	15	39	8	9	18	4	127	119	246	11.6
Cycling	0	0	0	0	0	1	0	1	0	0	0	1	1	2	0.1
Lying	7	1	7	1	1	6	0	3	1	1	0	11	17	28	1.3
Pushing a pram	0	1	0	2	3	5	0	1	7	2	1	14	8	22	1.0
Roller-skating	40	36	37	12	5	23	7	4	8	13	8	116	77	193	9.1
Sitting	7	9	3	3	1	11	8	9	10	6	4	32	39	71	3.4
Sitting on a bench	27	17	10	19	22	38	29	0	8	12	12	99	95	194	9.2
Standing	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0.0
Motor-cycling	0	0	0	0	0	0	7	0	0	0	0	2	9	9	0.4
Standing - talking	0	2	0	0	1	0	21	6	1	0	1	13	19	32	1.5
Walking a child	2	0	0	0	0	1	1	0	1	0	1	4	2	6	0.3
Walking a dog	166	219	169	101	107	109	150	52	52	160	26	630	681	1311	61.9
Walking - pass through	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0.0
Bmx	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.0
Standing with a pram	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0.0
Pushing a pram + walking a child	0	0	0	0	0	0	0	2	0	0	0	1	1	2	0.1

2119 100.0

No. of different activities undertaken 7 8 6 7 8 10 7 9 9 7 10
Weather G M G M P G G G G G G
Time of a day/week ea a ea la a m m a la la ea

key

G - good M - moderate P - poor

m - morning, 10am-12pm

ea - early afternoon, 12-2pm

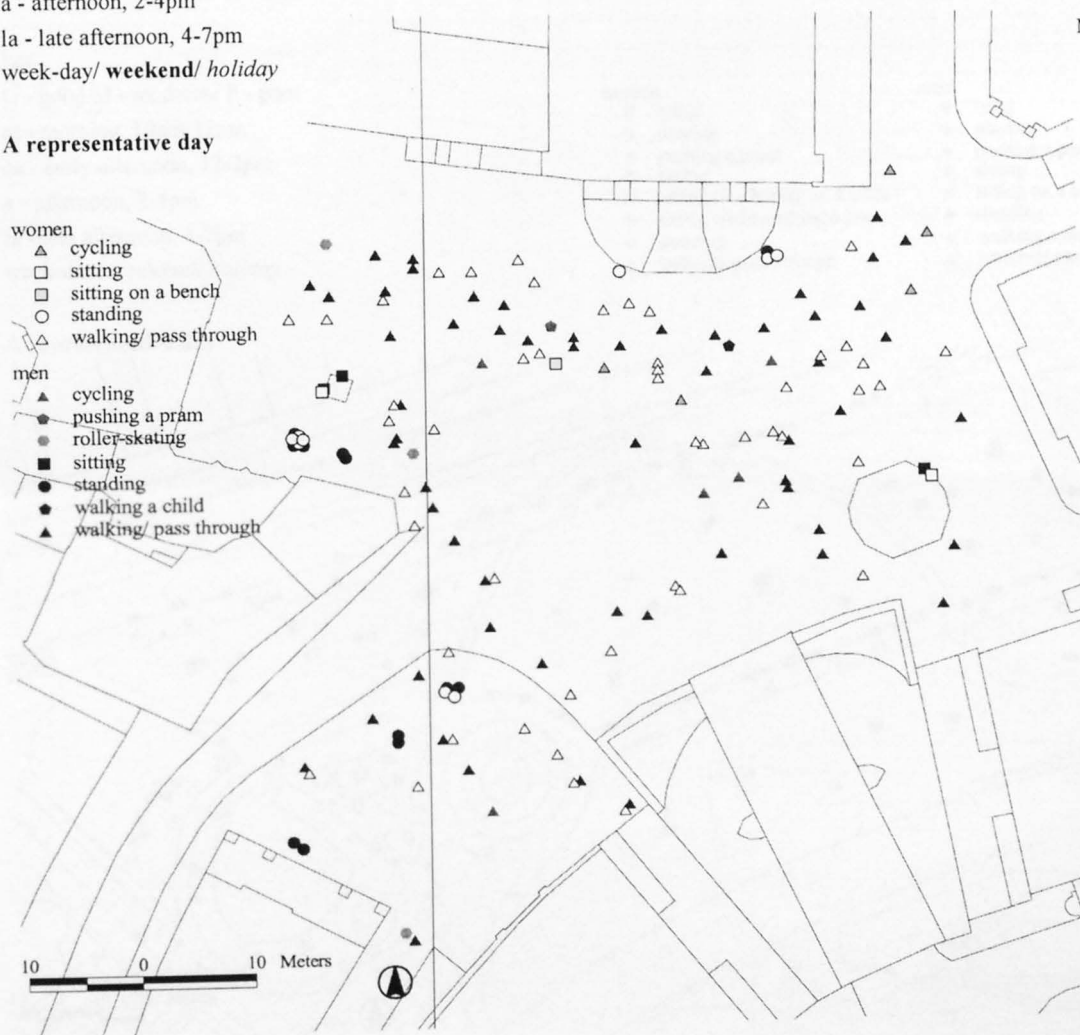
a - afternoon, 2-4pm

la - late afternoon, 4-7pm

week-day/ weekend/ holiday

A representative day

- women
 △ cycling
 □ sitting
 □ sitting on a bench
 ○ standing
 △ walking/ pass through
- men
 ▲ cycling
 ● pushing a pram
 ● roller-skating
 ■ sitting
 ● standing
 ● walking a child
 ▲ walking/ pass through



Appendix D.14

Princes Street Gardens, Edinburgh

No. of people involved in activity per day all all all all all all all all all all all all all all male female all %

	May-02	3rd	4th	5th	5th	6th	8th	9th	10th	16th	17th	18th	19th	20th	21th				
Lying down		0	5	4	10	8	0	0	0	9	0	0	0	0	2	26	12	38	1.2
Lying on a bench		0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.0
Playing		0	13	2	7	8	0	0	0	0	1	0	0	0	2	22	11	33	1.0
Playing-running		0	9	0	0	0	0	0	0	0	0	0	0	0	0	3	6	9	0.3
Playing football		0	0	8	0	4	0	4	0	0	0	0	0	0	0	16	0	16	0.5
Pushing in a playground (no fence)		10	0	0	0	0	0	0	2	7	0	0	0	0	0	13	6	19	0.6
Pushing a pram		0	4	1	2	0	1	0	3	2	0	0	0	0	0	4	9	13	0.4
Roller-skating		0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0.0
Sitting		33	250	39	156	85	10	0	0	70	4	0	5	0	49	372	329	701	21.5
Sitting on a bench		140	346	98	133	153	13	16	7	72	12	12	20	11	87	564	556	1120	34.4
Skateboarding		0	0	0	0	3	0	0	0	0	1	0	0	0	0	4	0	4	0.1
Standing		5	1	0	2	38	0	0	17	1	0	0	0	0	18	47	35	82	2.5
Standing - talking		0	0	0	1	0	0	0	0	2	0	0	0	4	0	6	1	7	0.2
Walking a child		2	0	0	2	0	0	0	3	0	0	0	0	0	1	6	2	8	0.2
Walking a dog		0	0	0	0	0	0	0	0	1	1	0	1	0	1	4	0	4	0.1
Walking - pass through		235	204	19	88	35	6	14	116	73	47	100	82	64	70	609	544	1153	35.4
Climbing		8	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	8	0.2
Rollong down		0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0.0
Sitting around a table		0	0	0	0	0	0	0	2	17	7	0	0	0	0	12	14	26	0.8
Jumping		0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0.0
Sitting with a pram		1	3	0	0	0	0	0	0	1	0	0	0	0	3	1	7	8	0.2
Sitting with a dog		0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0.0

3254 100.0

No. of different activities undertaken	8	9	8	9	9	4	3	9	10	7	2	4	3	9
Weather	M	G	G	G	P	P	P	M	M	M	P	P	P	M
Time of a day/week	ea	ea	m	ea	a	la	a	m	a	m	a	la	m	ea

key

G - good M - moderate P - poor
 m - morning, 10am-12pm
 ea - early afternoon, 12-2pm
 a - afternoon, 2-4pm
 la - late afternoon, 4-7pm
 week-day/ weekend/ holiday

- | | |
|-----------------------------------|-----------------------------------|
| women | men |
| □ lying | ■ lying |
| * playing | * playing |
| ● pushing a pram | ● pushing a pram |
| ○ sitting | ■ sitting |
| □ sitting on a bench/ ar. a table | ■ sitting on a bench/ ar. a table |
| ○ sitting while pushing a pram | ● standing |
| ○ standing | ● walking a dog |
| △ walking/ pass through | ▲ walking/ pass through |

A representative day

May the 16th



Appendix D.15

The Meadows Park, Edinburgh

No. of people involved in activity per day all all all all all all all all all all all all all all all all male female all %

	May-02	2nd	3rd	4th	5th	6th	8th	10th	11th	15th	16th	17th	18th	18th	19th	20th	23rd				
Cycling	13	20	0	4	8	7	2	4	0	3	7	5	10	8	28	0	75	44	119	4.3	
Jogging	3	6	7	14	14	2	5	13	2	5	8	7	17	4	3	0	58	52	110	4.0	
Lying down	0	0	2	0	0	2	0	9	0	1	0	0	0	0	0	3	12	5	17	0.6	
Playing with a ball	0	0	14	5	0	2	0	0	0	0	0	0	0	0	0	0	14	7	21	0.8	
Playing cricket	0	0	0	0	0	19	0	0	0	0	0	0	0	16	6	0	35	6	41	1.5	
Playing football	26	100	41	0	15	60	37	35	0	0	34	3	34	176	0	0	545	16	561	20.3	
Playing frizbee	0	8	7	0	6	2	4	0	0	0	0	0	0	9	0	4	34	6	40	1.4	
Playing golf	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	3	0.1	
Pushing a pram	0	1	0	1	1	3	1	0	0	0	0	0	0	0	0	0	0	7	7	0.3	
Sitting	1	11	56	14	7	9	13	19	0	4	0	0	0	24	0	6	81	83	164	5.9	
Sitting on a bench	0	12	12	10	9	8	5	6	1	4	0	0	0	1	0	7	41	34	75	2.7	
Skateboarding	0	0	6	0	1	0	0	0	0	0	0	0	0	0	0	0	7	0	7	0.3	
Standing	0	0	2	1	0	12	3	2	0	0	0	1	6	0	0	0	18	9	27	1.0	
Performing street theatre	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	11	6	17	0.6	
Standing - talking	0	6	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	5	8	0.3	
Stopping/talking -walking a dog	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	1	3	4	0.1	
Walking a child	1	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	3	4	7	0.3	
Walking a dog	2	1	1	2	1	3	2	2	1	1	15	3	0	0	3	4	25	16	41	1.5	
Walking - pass through	48	139	65	52	129	98	63	101	126	36	107	53	96	138	186	36	774	699	1473	53.2	
Bmx acrobatics	0	0	3	0	1	0	0	0	0	0	0	0	0	2	0	0	6	0	6	0.2	
Climbing	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5	0	5	0.2	
Playing baseball	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.1	
Flying a kite	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.1	
Running	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0.1	
Sitting on a bench with a dog	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0.0	
Walking faster	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.1	
Pushing a pram + walking a child	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0	
Roller-skating	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	4	0.1	
Sitting on a bench with a pram	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0.0	

2768 100.0

No. of different activities undertaken	7	11	15	10	13	16	13	9	4	10	5	6	6	11	4	6				
Weather	P	G	G	G	P	G	P	M	P	G	P	P	P	P	P	G				
Time of a day/week	la	a	la	m	ea	a	la	ea	m	ea	a	ea	a	a	m	ea				

key

G - good M - moderate P - poor
 m - morning, 10am-12pm
 ea - early afternoon, 12-2pm
 a - afternoon, 2-4pm
 la - late afternoon, 4-7pm
 week-day/ weekend/ holiday

women

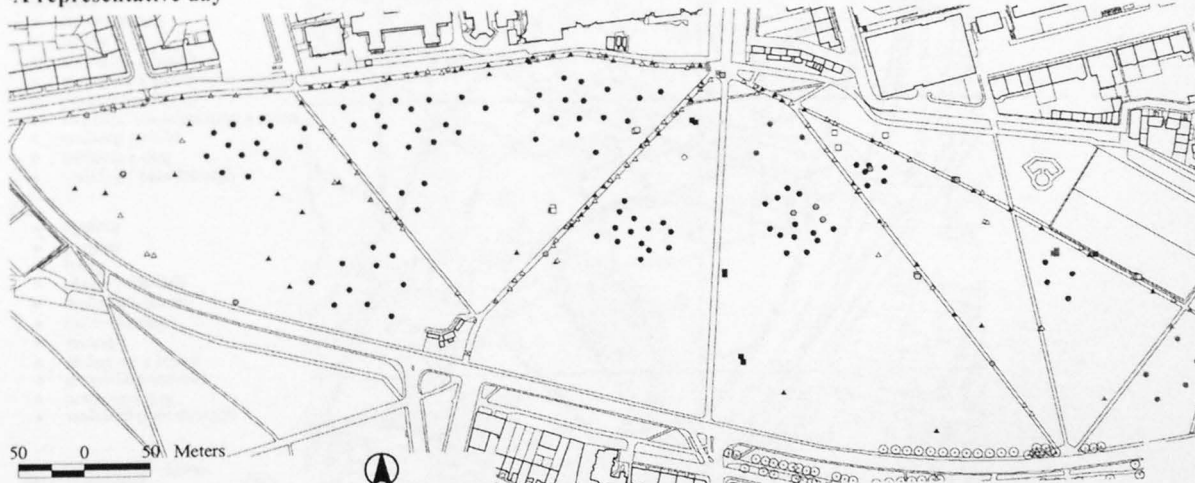
- ▲ cycling
- jogging
- playing football
- pushing a pram
- sitting
- sitting on a bench
- standing
- walking a dog
- ▲ walking / pass through

men

- ▲ cycling
- jogging
- playing football
- playing frizbee
- roller-skating
- sitting
- sitting on a bench
- standing
- ▲ walking/ pass through

A representative day

May the 3rd



Appendix D.16

Tivoli Park, Ljubljana

No. of people involved in activity per day

	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	all	male	female	all	%
	May-03																													
	5th	6th	6th	7th	10th	12th	13th	14th	14th	15th	16th	16th	16th	17th	17th	18th	18th	19th	24th	25th	25th									
Cycling	54	11	7	0	42	22	34	27	7	15	26	2	7	11	0	8	3	25	0	27	2	187	143	330	9.1					
Jogging	0	0	0	0	0	1	6	1	0	6	1	0	1	3	0	4	0	35	2	2	2	34	30	64	1.8					
Lying down	9	0	6	10	1	0	2	0	0	2	2	5	7	11	5	13	15	6	3	3	15	67	48	115	3.2					
Lying on a bench	0	4	0	0	0	2	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	8	2	10	0.3					
Playing	1	0	0	1	1	0	0	0	0	6	0	21	1	4	0	0	3	0	1	2	0	22	19	41	1.1					
Playing with a ball	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	2	8	0.2					
Playing volleyball	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Playing football	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	3	0	0	3	3	0	0	21	4	25	0.7				
Playing frisbee	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	4	5	0	2	0	0	12	2	14	0.4					
Playing badminton	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	1	2	0.1					
Pushing a pram	4	3	3	2	9	5	16	3	1	4	15	0	5	13	20	5	5	1	2	4	2	39	83	122	3.4					
Roller-skating	2	1	0	6	4	1	15	0	0	7	0	0	5	1	5	10	35	34	0	2	0	53	75	128	3.5					
Sitting	68	0	47	47	5	28	6	0	0	12	11	10	35	15	12	30	59	30	16	2	26	199	260	459	12.7					
Sitting on a bench	33	31	44	41	26	4	18	4	2	44	43	15	37	10	25	6	34	32	10	9	17	204	281	485	13.4					
Sitting on the tree	0	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	5	5	0.1					
Skateboarding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0.0					
Standing	2	1	4	0	3	2	0	0	1	12	23	1	6	4	0	1	2	5	2	7	51	27	78	2.2						
Sitting around a table	11	0	54	33	3	12	17	0	0	12	43	52	21	48	0	51	33	0	25	42	226	231	457	12.6						
Walking a child	1	0	1	2	19	1	36	0	0	10	10	0	1	12	68	17	3	2	1	10	3	79	118	197	5.5					
Walking a dog	6	1	3	0	9	2	17	6	1	13	10	0	5	16	0	6	8	23	1	7	4	67	71	138	3.8					
Walking - pass through	57	21	30	22	71	48	60	75	23	42	95	8	26	33	2	70	42	59	27	41	33	422	463	885	24.5					
Bmx acrobatics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.0					
Climbing	0	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	2	4	3	7	0.2					
Running	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0.1					
Propelling scooter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	2	3	0.1					
Pushing a pram + walking a child	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0.1					
Sitting on a bench with a pram	0	0	0	2	0	0	1	1	0	0	0	0	2	0	0	1	1	0	0	0	0	8	8	8	0.2					
Sitting while roller-skating	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	3	0.1					
Weel-chair	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	0.1					
Fishing	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4	0	4	0.1						
Sitting with a pram	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	1	0	0	0	0	4	4	4	0.1					
Excercising	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	6	0	6	0.2						
Sitting with a dog	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	0.0					

3614 100.0

No. of different activities undertaken: 13 8 12 10 16 13 14 7 6 16 14 11 16 16 8 14 17 15 13 14 13
 Weather: G G G G M G M P P G G G G G G G G G G
 Time of a day/week: ea ea la a m m a ea a la ea a la ea la a la la la m a

key

- G - good M - moderate P - poor
- m - morning, 10am-12pm
- ea - early afternoon, 12-2pm
- a - afternoon, 2-4pm
- la - late afternoon, 4-7pm
- week-day/ weekend/ holiday

A representative day

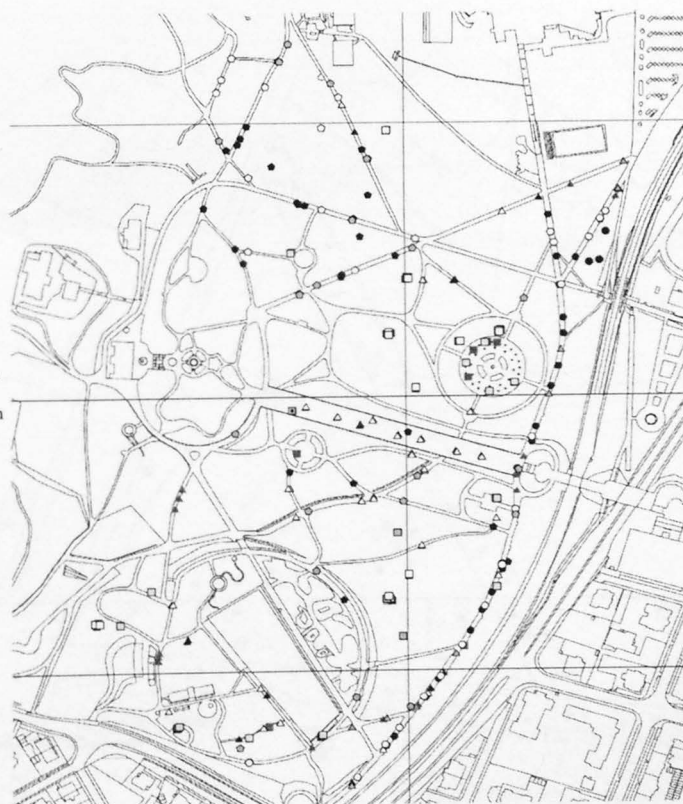
women

- ▲ cycling
- jogging
- lying
- roller-skating
- sitting
- ▣ sitting on a bench
- ▤ sitting on a bench with a pram
- propelling scooter
- stopping while pushing a pram
- walking a child
- walking a dog
- ▲ walking / pass through

men

- ▲ cycling
- jogging
- lying
- playing football
- pushing a pram
- roller-skating
- sitting
- ▣ sitting on a bench
- propelling scooter
- walking a dog
- ▲ walking/ pass through

50 0 50 Meters



May the 19th

Appendix D.17 Argentinski Park, Ljubljana

No. of people involved in activity per day all all all all all all all all all all all male female all %

	May-03											male	female	all	%
	6th	8th	9th	12th	13th	14th	16th	16th	17th	25th					
Cycling	7	4	8	4	3	3	10	11	2	1	29	24	53	7.9	
Playing	0	4	0	0	1	5	0	4	0	1	9	6	15	2.2	
Playing with a ball	0	0	0	0	0	3	0	0	0	0	3	0	3	0.4	
Playing football	16	0	18	0	0	0	0	8	0	0	40	2	42	6.3	
Playing in a playground (no fence)	0	4	4	0	0	10	0	0	7	4	10	19	29	4.3	
Pushing a pram	5	4	3	0	1	0	0	3	0	0	4	12	16	2.4	
Roller-skating	3	2	0	0	0	0	0	0	0	0	5	0	5	0.7	
Sitting	6	0	3	3	1	2	0	3	0	0	12	6	18	2.7	
Sitting on a bench	7	5	4	0	3	0	1	2	8	2	18	14	32	4.8	
Standing	4	0	0	0	2	1	0	0	0	0	6	1	7	1.0	
Stopping/talking - pushing a pram	0	0	2	0	0	0	0	0	0	0	0	2	2	0.3	
Stopping/talking - walking a dog	0	0	2	0	0	0	0	0	0	0	1	1	2	0.3	
Walking a child	0	0	5	0	1	0	1	0	0	0	3	4	7	1.0	
Walking a dog	3	2	1	0	0	1	2	0	2	1	7	5	12	1.8	
Walking - pass through	47	39	56	16	58	30	80	81	10	4	184	237	421	62.8	
Walking - come/go	0	0	0	0	0	1	0	0	0	0	0	1	1	0.1	
Pushing a pram + walking a child	0	0	0	0	0	0	1	0	0	0	0	1	1	0.1	
Sitting on a bench with a pram	0	1	1	0	0	0	0	1	0	1	1	3	4	0.6	
												670	100.0		

No. of different activities undertaken	9	9	10	3	8	9	6	8	5	7
Weather	G	M	M	G	G	M	G	G	G	G
Time of a day/week	ea	la	a	m	m	ea	m	a	a	ea

key

G - good M - moderate P - poor
 m - morning, 10am-12pm
 ea - early afternoon, 12-2pm
 a - afternoon, 2-4pm
 la - late afternoon, 4-7pm
 week-day/ **weekend/ holiday**

women

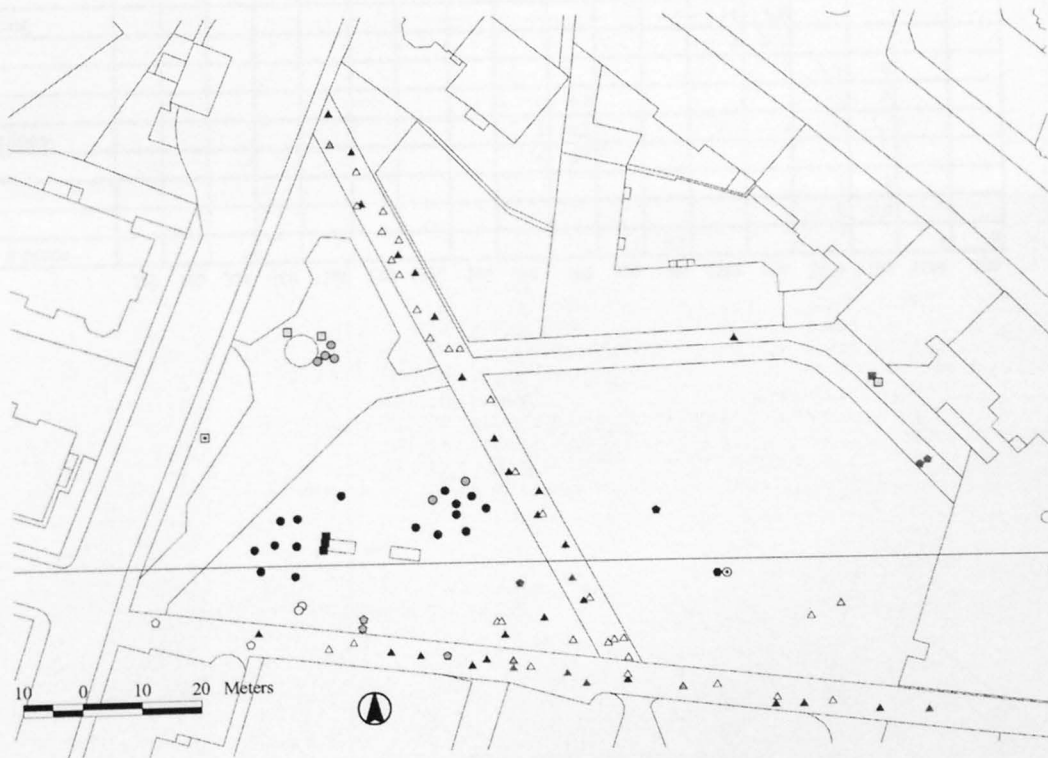
- ▲ cycling
- playing football
- pushing a pram
- sitting on a bench
- ▣ sitting with a pram
- playing
- stopping while pushing a pram
- stopping while walking a dog
- walking a child
- △ walking/ pass through

men

- ▲ cycling
- playing football
- sitting
- sitting on a bench
- stopping while walking a dog
- walking a child
- walking a dog
- ▲ walking/ pass through

A representative day

May the 9th



Appendix D.18

Edinburgh: all places

No. of people involved in activity per day	conf.c. sq.		festival sq.		usher h. sq.		grassmarket		the royal mule		hunter sq.		bristo sq.		princes st. g.		the meadows		
	all	%	all	%	all	%	all	%	all	%	all	%	all	%	all	%	all	%	
Cycling	2	0.4	2	0.2	3	0.2	3	0.2	6	0.3	2	0.2	6	0.5			119	4.3	
Jogging	4	0.7	3	0.3	1	0.1											110	4	
Lying down																			
Lying on a bench																38	1.2	17	0.6
Playing									1	0.1						1	0		
Playing in a playground (no fence)																42	1.3		
Playing with a ball																19	0.6		
Playing cricket																		21	0.8
Playing football																		41	1.5
Playing frisbee																16	0.5	561	20.3
Playing golf																		40	1.4
Pushing a pram	1	0.2			5	0.4	4	0.3	1	0.1		1	0.1	13	0.4	7	0.3		
Sitting	7	1.3	13	1.5			15	1.1	4	0.2	26	2.7	129	10.9	701	21.5	164	5.9	
Sitting around a table	18	3.2			28	2.2	181	13.3			17	1.8			26	0.8			
Sitting on a bench	41	7.3	28	3.2	72	5.6	45	3.3	35	1.8	37	3.9			1120	34.4	75	2.7	
Skateboarding	3	0.5	23	2.6	7	0.5	2	0.1	33	1.7	4	0.4	83	7	4	0.1	7	0.3	
Sitting while skateboarding			1	0.1									16	1.3					
Standing	71	12.7	85	9.7	94	7.3	59	4.3	58	2.9	56	5.9	51	4.3	82	2.5	27	1	
Standing while skateboarding													11	0.9					
Performing street theatre																		17	0.6
Standing with a pram					2	0.2					2	0.2							
Standing - talking			3	0.3	4	0.3	2	0.1							7	0.2	8	0.3	
Stopping/talking -walking a dog			1	0.1													4	0.1	
Walking a child			2	0.2	10	0.8	5	0.4	3	0.2	3	0.3	2	0.2	8	0.2	7	0.3	
Walking a dog			1	0.1	3	0.2	2	0.1							4	0.1	41	1.5	
Walking - pass through	276	49.3	686	78.5	1057	82.2	1038	76.5	1834	92.3	802	84.4	843	71	1153	35.4	1473	53.2	
Walking in/out, come/go	135	24.1					1	0.1											
Bmx acrobatics	2	0.4	11	1.3														6	0.2
Standing while bmx-cycling			6	0.7															
Climbing															8	0.2	5	0.2	
Playing baseball																		2	0.1
Flying a kite																		2	0.1
Running																		2	0.1
Sitting on a bench with a dog																		1	0
Walking faster																		2	0.1
Pushing a pram + walking a child																		1	0
Roller-skating			9	1									31	2.6	1	0	4	0.1	
Sitting while roller-skating													14	1.2					
Propelling scooter													1	0.1					
Rolling down															1	0			
Jumping									4	0.2					1	0			
Standing - playing bag pipes									3	0.2									
Markets									5	0.3									
Sitting with a dog															1	0			
Sitting with a pram															8	0.2			
Sitting on a bench with a pram											1	0.1						1	0
	360	100	874	100	1286	100	1357	100	1987	100	950	100	1188	100	3254	100	2768	100	

Appendix D.19

Ljubljana: all places

No. of people involved in activity per day	trg republike		plecnikov trg		kongresni trg		dvorni trg		mestni trg		presemov trg		tivolj		argentski park	
	all	%	all	%	all	%	all	%	all	%	all	%	all	%	all	%
Cycling	69	6.9	45	5	139	7.2	105	8.7	72	7.6	246	11.6	330	9.1	53	7.9
Jogging													64	1.8		
Lying down					9	0.5					2	0.1	115	3.2		
Lying on a bench													10	0.3		
Playing	9	0.9	5	0.6	3	0.2			1	0.1			41	1.1	15	2.2
Playing in a playground (no fence)															29	4.3
Playing with a ball	5	0.5					2	0.2					8	0.2	3	0.4
Playing volleyball													5	0.1		
Playing football													25	0.7	42	6.3
Playing frisbee													14	0.4		
Playing badminton													2	0.1		
Pushing a pram			3	0.3	23	1.2	20	1.7	9	1	28	1.3	122	3.4	16	2.4
Sitting	120	12	56	603	117	6.1	45	3.7	5	0.5	193	9.1	459	12.7	18	2.7
Sitting around a table			149	16.7	75	3.9	100	8.3	122	12.9			457	12.6		
Sitting on a bench			6	0.7	304	15.7	60	5	9	1	71	3.4	485	13.4	32	4.8
Sitting on the tree													5	0.1		
Skateboarding	48	4.8	4	0.4			5	0.4					1	0		
Sitting while skateboarding	41	4.1														
Standing	132	13.2	88	908	190	9.8	51	4.2	72	7.6	194	9.2	78	2.2	7	1
Standing while skateboarding	1	0.3														
Stopping/talking - pushing a pram															2	0.3
Standing with a pram					1	0.1					1	0				
Standing - talking			14	1.6	4	0.2	13	1.1			9	0.4				
Stopping/talking -walking a dog															2	0.3
Walking a child	8	0.8	5	0.6	22	1.1	9	0.7	19	2	32	1.5	197	5.5	7	1
Walking a dog	2	0.2			5	0.3	6	0.5			6	0.3	138	3.8	12	1.8
Walking - pass through	553	55.4	505	56.5	1015	52.6	733	60.6	629	66.6	1311	61.9	885	24.5	421	63
Walking in/out, come/go															1	0.1
Bmx acrobatics	4	0.4									1	0	1	0		
Climbing													7	0.2		
Running					3	0.2	1	0.1	1	0.1			2	0.1		
Pushing a pram + walking a child			1	0.1			1	0.1			2	0.1	2	0.1	1	0.1
Roller-skating	3	0.3	13	1.5	20	1	51	4.2	5	0.5	22	1	128	3.5	5	0.7
Sitting while roller-skating							2	0.2					3	0.1		
Propelling scooter	3	0.3					1	0.1					3	0.1		
Excercising													6	0.2		
Fishing													4	0.1		
Motor-cycling									1	0.1	1	0				
Using a wheel-chair													4	0.1		
Sitting with a dog					1	0.1	1	0.1					1	0		
Sitting with a pram							3	0.2					4	0.1		
Sitting on a bench with a pram													8	0.2	4	0.6
	998	100	894	100	1931	100	1209	100	945	100	2119	100	3614	100	670	100

Appendix E.1

Summary data for questions of 1, 2 and 7 the workshops

1. How much attention do you pay to any of the selected objectives when you design urban parks or public space?

a. Please mark each of them in the second column with one of the ranges between 1 and 5.

b. Please, range the objectives in the third column in order from very important to less important, according to your beliefs. Use 1 as the most important and the gradation of ascending numbers towards the least important objective.

<i>scale</i>	very much		pretty much		medium		little		none at all		Q 1.a		Q 1.b	
	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>mean</i>	<i>rank</i>	<i>mean</i>	<i>rank</i>
<i>objectives</i>														
client's preferences	10	28	15	43	9	26	1	3	-	-	2.0	5	3.3	4
construction ease	2	6	5	14	21	60	7	20	-	-	2.9	7	5.8	7
costs	6	17	10	28	10	28	9	26	-	-	2.6	6	4.9	6
design layout: 'art'	21	60	10	28	3	9	1	3	-	-	1.5	2	2.8	1
design layout: 'ecology'	15	43	15	43	4	11	1	3	-	-	1.7	3	3.2	3
design layout: 'context'	20	57	12	34	3	9	-	-	-	-	1.5	1	3.0	2
future users	12	34	13	37	7	20	3	9	-	-	2.0	4	4.4	5

2. In practice, in relation to recent designs you have worked on, which aspect have been most important to the client/commissioning body in determining the final scheme.

<i>scale</i>	very much		pretty much		medium		little		none at all		no answer		Q 2	
	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>mean</i>	<i>rank</i>
<i>objectives</i>														
client's preferences	9	64	3	21	1	7	-	-	1	7	-	-	1.6	2
construction ease	1	8	5	38	5	38	1	8	-	-	1	8	2.3	3
costs	9	64	5	36	-	-	-	-	-	-	-	-	1.4	1
design layout: 'art'	-	-	7	50	5	36	2	14	-	-	-	-	2.6	5
design layout: 'ecology'	-	-	3	21	7	50	2	14	2	14	-	-	3.2	7
design layout: 'context'	1	7	1	7	5	36	5	36	1	7	1	7	3.0	6
future users	3	21	5	36	1	7	5	36	-	-	-	-	2.6	4

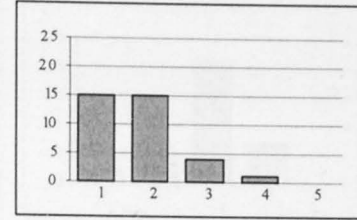
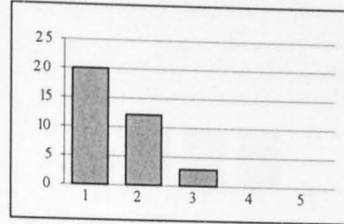
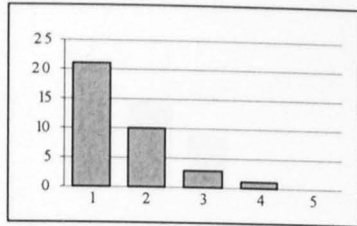
7. Please, indicate the degree to which you think the following aspects of a public space influence and determine its use.

<i>scale</i>	very much		pretty much		medium		little		none at all		no answer		Q 7	
	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>%</i>	<i>mean</i>	<i>rank</i>
<i>objectives</i>														
design layout: 'art'	8	23	12	34	9	26	4	11	-	-	2	6	2.3	5
maintenance & amenities	15	43	13	37	6	17	1	3	-	-	-	-	1.8	2
other people	8	23	18	51	9	26	-	-	-	-	-	-	2.0	4
place: size, shape & 3D	11	31	13	37	10	29	-	-	-	-	1	3	2.0	3
planting/vegetation	2	6	9	26	21	60	3	8	-	-	-	-	2.7	9
program	11	31	5	14	12	34	5	14	-	-	2	6	2.3	7
quality of equipment	2	6	7	20	18	51	7	20	1	3	-	-	2.9	11
quality of surface	2	6	15	43	15	43	3	9	-	-	-	-	2.5	8
quantity of equipment	-	-	11	31	11	31	12	34	1	3	-	-	3.1	12
spatial context/location	22	63	10	28	3	9	-	-	-	-	-	-	1.5	1
spatial sub-divisions	6	17	16	46	9	26	4	11	-	-	-	-	2.3	6
visual complexity	1	3	11	31	17	49	4	11	1	3	1	3	2.8	10

Appendix E.1.1

Frequencies concerning aspects of design in a narrow sense

Question 1.a: Designers' opinion about the importance of 'design' objectives concerning design.

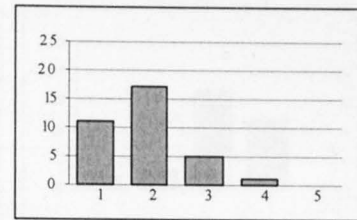
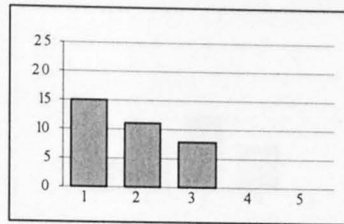
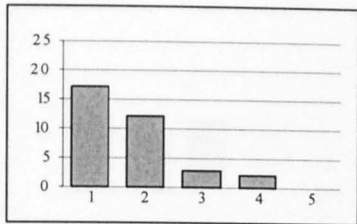


Question 1a: aesthetic and artistic value

responsive to broader site context

physical characteristics and processes

Question 1.b: Designers' opinion about the priority order of 'design' objectives concerning design.

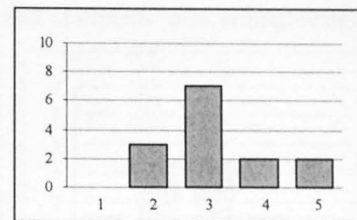
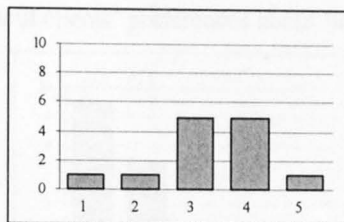
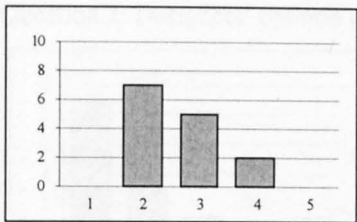


Question 1b: aesthetic and artistic value

responsive to broader site context

physical characteristics and processes

Question 2: Designers' opinion about clients' preferences about 'design' objectives concerning design.

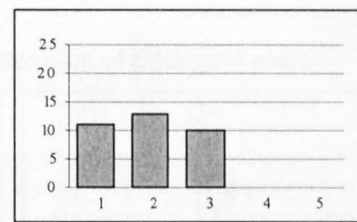
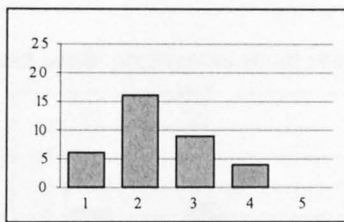
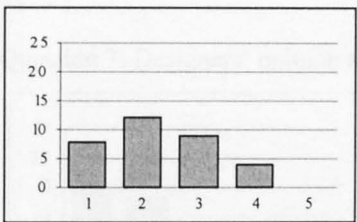


Question 2: aesthetic and artistic value

responsive to broader site context

physical characteristics and processes

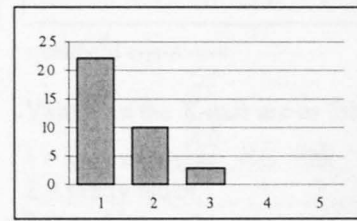
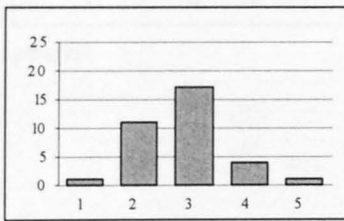
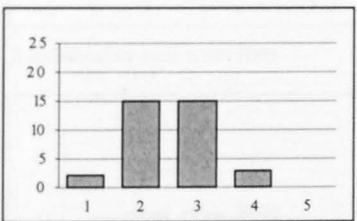
Question 7: Designers' opinion about users' preferences about 'design' objectives concerning design.



Question 7: aesthetic and artistic value

sub-divisions and level changes

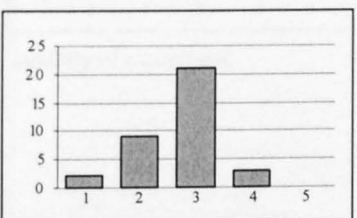
size shape and 3D structure



Question 7: quality of surface

visual complexity

spatial context and location



Question 7: planting and vegetation

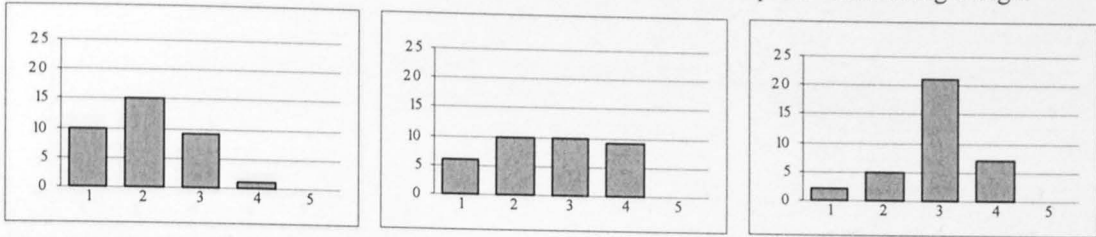
Values on the X-axis are as follows:

- 1 = very much
- 2 = pretty much
- 3 = medium
- 4 = little
- 5 = none at all

Appendix E.1.2

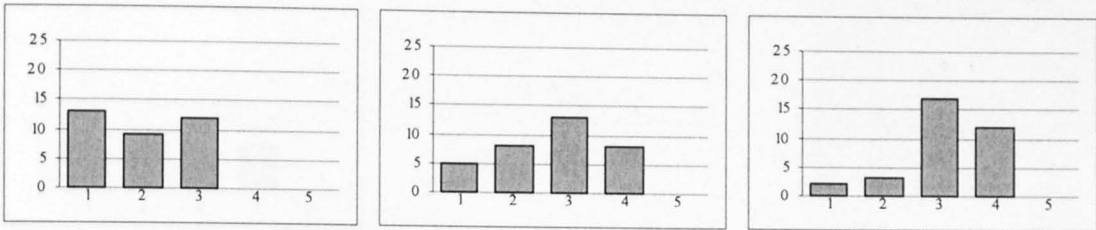
Frequencies concerning technical aspects and site provision of design

Question 1.a: Designers' opinion about the importance of 'technical aspects' concerning design.



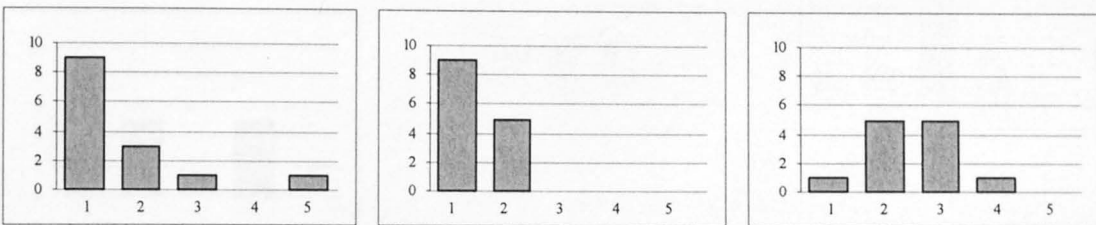
Question 1a: client's preferences costs construction ease

Question 1.b: Designers' opinion about the priority order of 'technical aspects' concerning design.



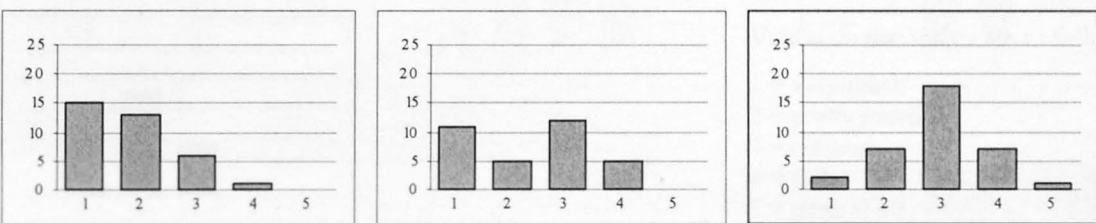
Question 1b: client's preferences costs construction ease

Question 2: Designers' opinion about clients' preferences about 'technical aspects' concerning design.

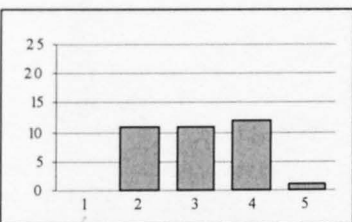


Question 2: client's preferences costs construction ease

Question 7: Designers' opinion about users' preferences about site provision of a designed place.



Question 7: maintenance and amenities program quality of equipment



Question 7: quantity of equipment

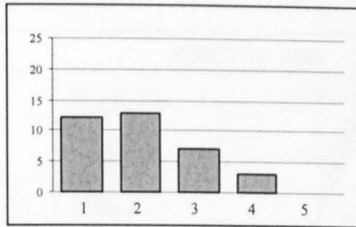
Values on the X-axis are as follows:

- 1 = very much
- 2 = pretty much
- 3 = medium
- 4 = little
- 5 = none at all

Appendix E.1.3

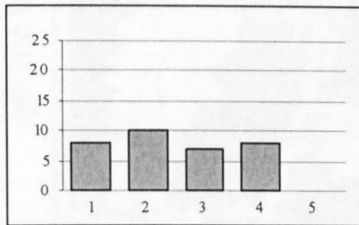
Frequencies concerning aspects of users in places

Question 1.a: Designers' opinion about the importance of users when they design.



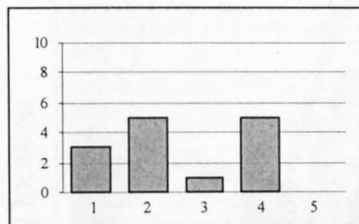
Question 1a: future users

Question 1.b: Designers' opinion about the priority order of concerns about users when they design.



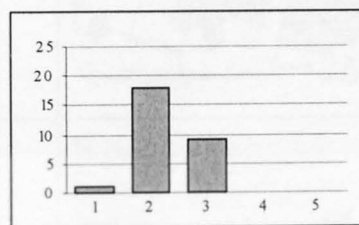
Question 1b: future users

Question 2: Designers' opinion about clients' preferences about concerns about users in design.



Question 2: future users

Question 7: Designers' opinion about users' point of view on the presence of users in places.



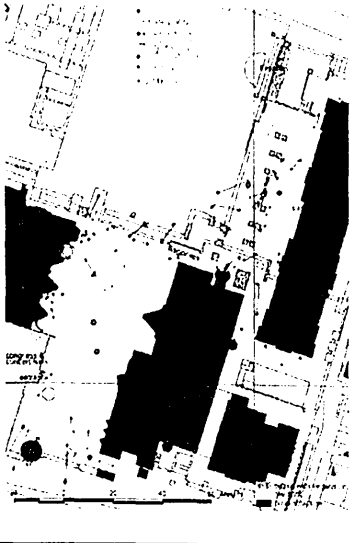
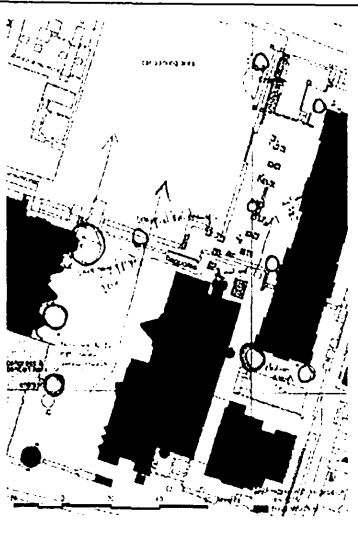
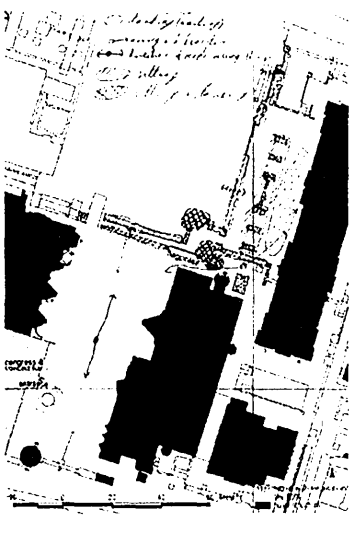
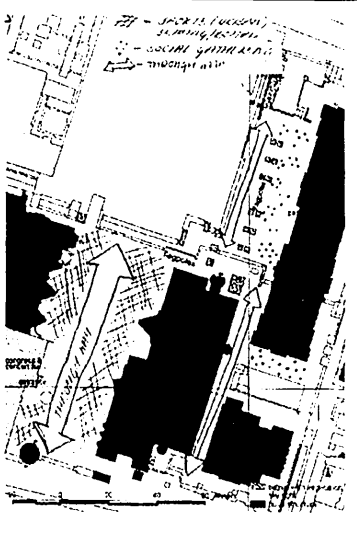
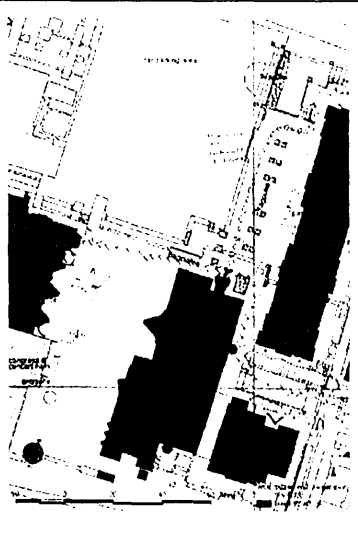


Values on the X-axis are as follows:

- 1 = very much
- 2 = pretty much
- 3 = medium
- 4 = little
- 5 = none at all

Question 7: other people

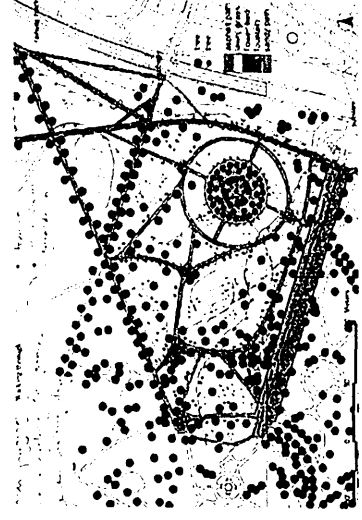
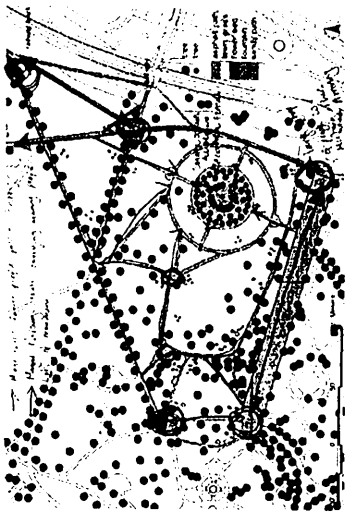
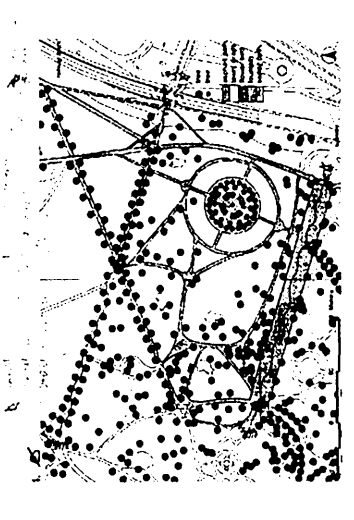
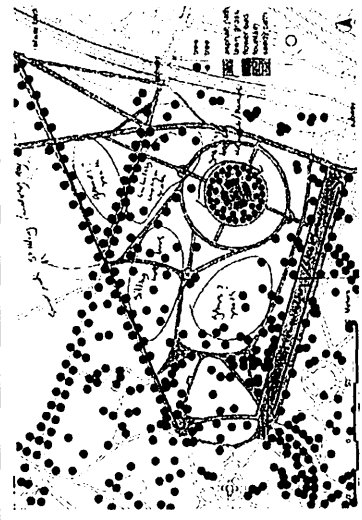
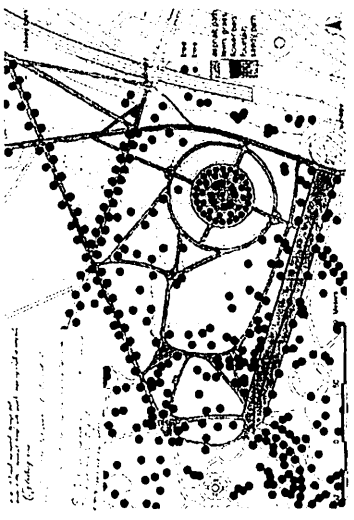
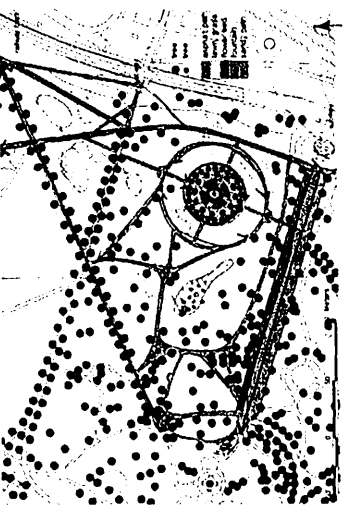
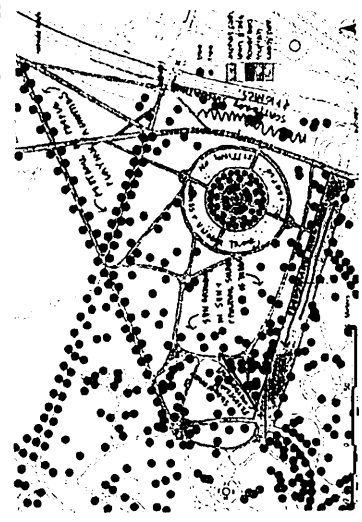
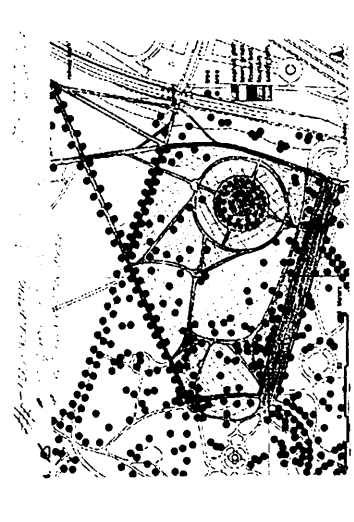
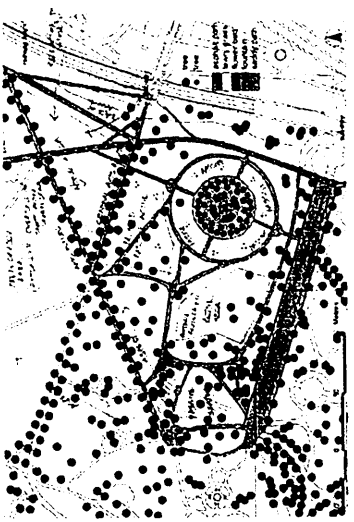
Appendix E.2

Examples of drawings concerning accuracy in use selection as well as in depiction of its location for the case of Part 2: SQUARE

	specific use	general use	no use
specific location		NO EXAMPLE	
general location			
no location		NO EXAMPLE	

Appendix E.3

Examples of drawings concerning accuracy in use selection as well as in depiction of its location for the case of Part 2: PARK

	specific use	general use	no use
specific location			
general location			
no location			

Appendix E.4

Summary data for observed (observation and behavioural mapping) and suggested (worksgop) activities in Trg Republike, Ljubljana.

<i>Part of the square</i> <i>Time of a day/week</i>	Part A			Part B			Part C		
	Week-day afternoons	All afternoons	All days	Week-day afternoons	All afternoons	All days	Week-day afternoons	All afternoons	All days
<i>Activity</i>									
walking	8	11	14	8	11	14	8	11	14
sitting	4	4	5	7	9	11	3	3	5
standing	7	8	11	3	3	4	5	6	6
stopping	2	2	3	1	1	2	1	1	1
picknicking									
sitting around a table									
jogging									
cycling	8	10	11	8	10	11	8	10	11
Roller-skating	2	2	3	2	2	3	1	1	2
skateboarding	1	1	1	7	9	9			
walking a dog	1	1	2						
lying down									
playing with a ball									1
playing				1	1	1	1	1	1
bmX acrobatics	1	2	2	1	2	2			
propelling scooter		1	1	1	1	1			
walking a child	1	2	3			1		1	1

Frequencies of recorded uses (number of days each of them was noticed) in Trg Republike.

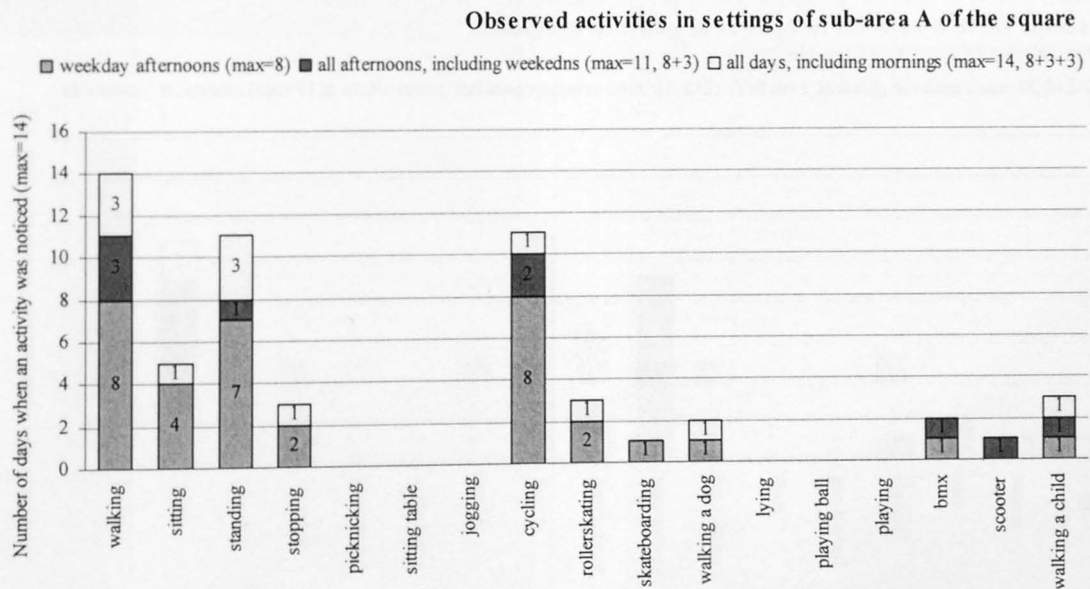
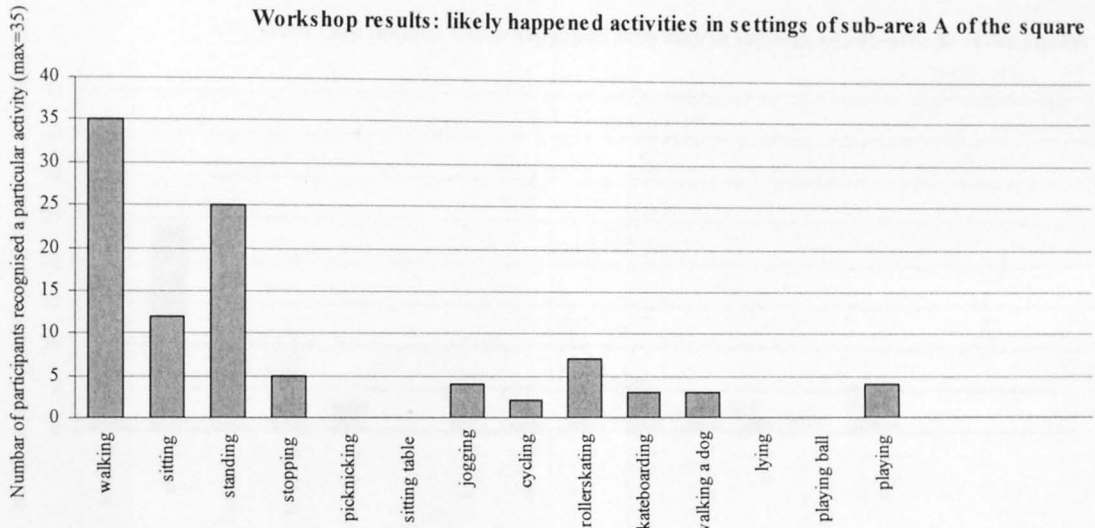
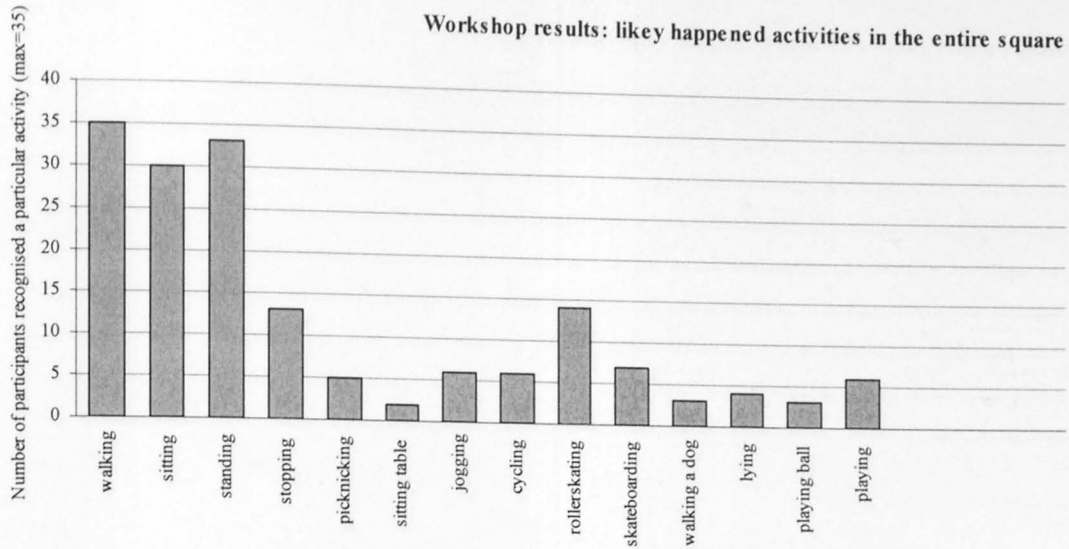
<i>Part of the square</i> <i>Time of a day/week</i>	Part A			Part B			Part C		
	Week-day afternoons	All afternoons*	All days	Week-day afternoons	All afternoons	All days	Week-day afternoons	All afternoons	All days
<i>Activity</i>									
walking		35			35			35	
sitting		12			24			27	
standing		25			16			20	
stopping		5			3			10	
picknicking					3			4	
sitting around a table								2	
jogging		4			2			3	
cycling		2			1			1	
Roller-skating		7			7			5	
skateboarding		3			5			4	
walking a dog		3			3			3	
lying down					1			2	
playing with a ball									
playing		4			1			1	
bmX acrobatics									
propelling scooter									
walking a child									

Intensity of designers' suggestions (number of participants outlining the same activity) in Trg Republike.

* A question 4 asks about likely uses on a nice afternoon. See Appendix C.2.

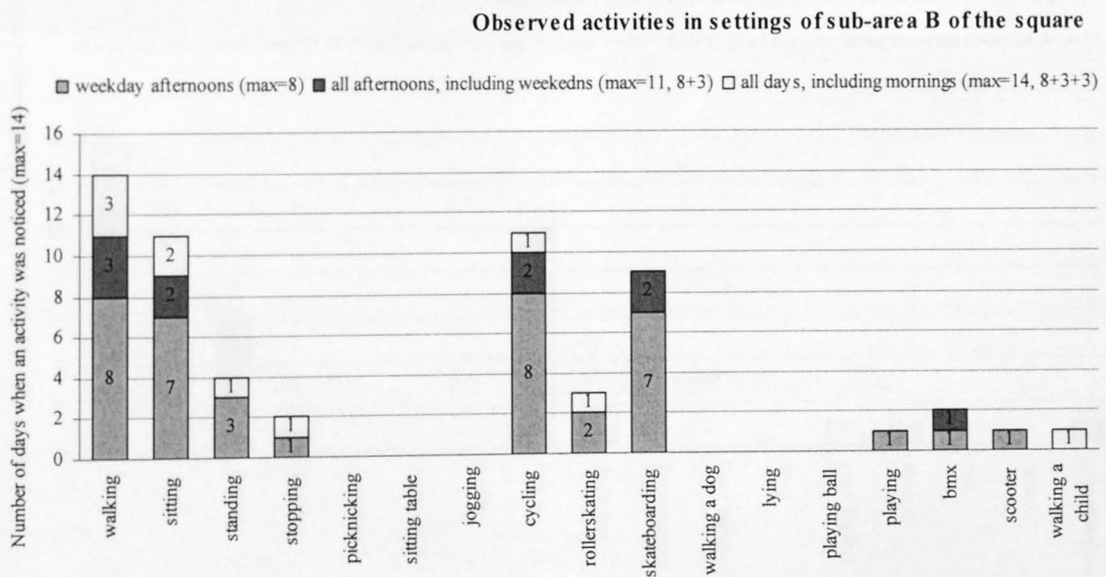
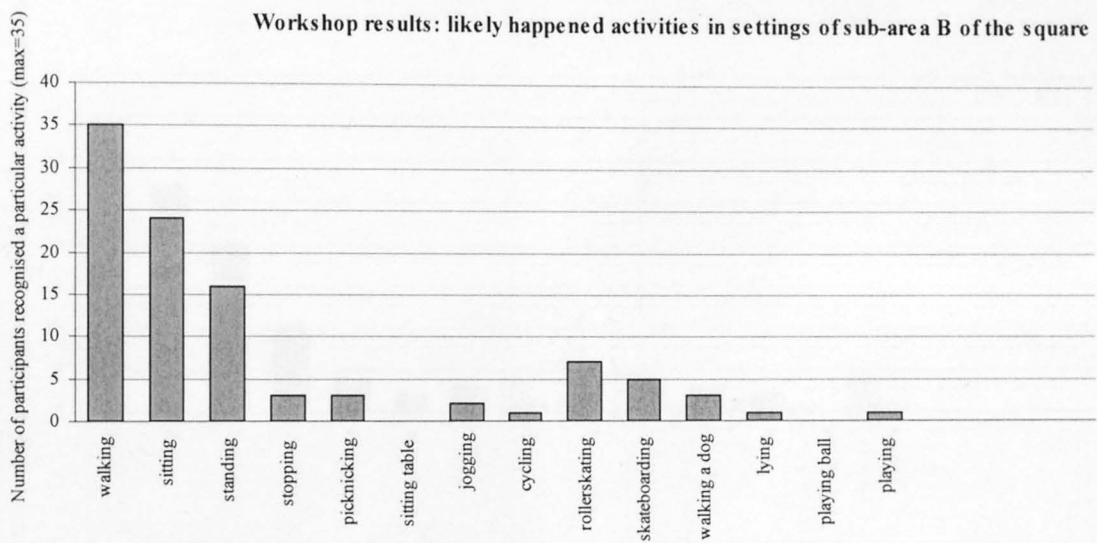
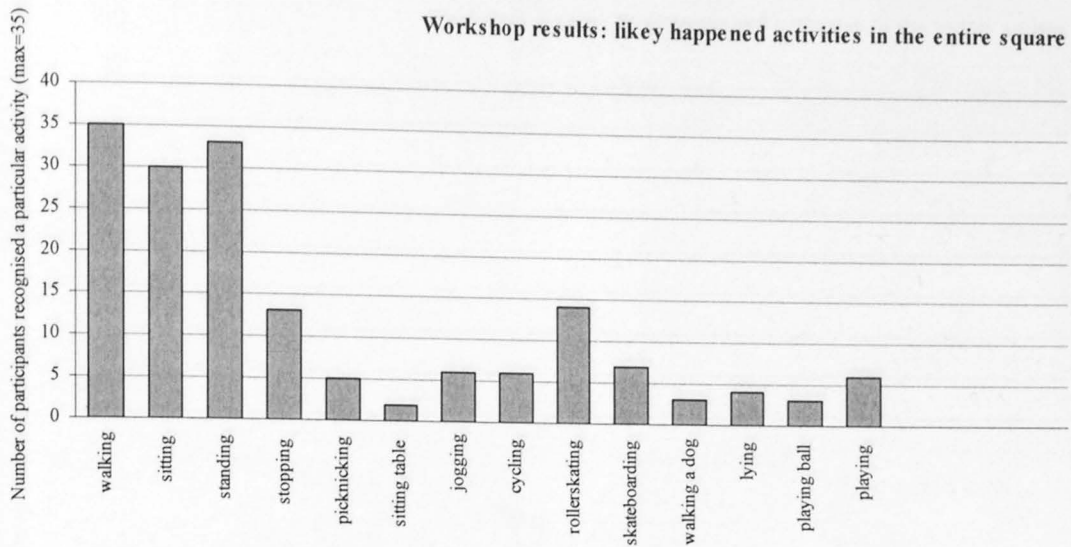
Appendix E.4.1

Summary data for observed (observation and behavioural mapping) and suggested (worksgop) activities in Trg Republike, Ljubljana, sub - area A.



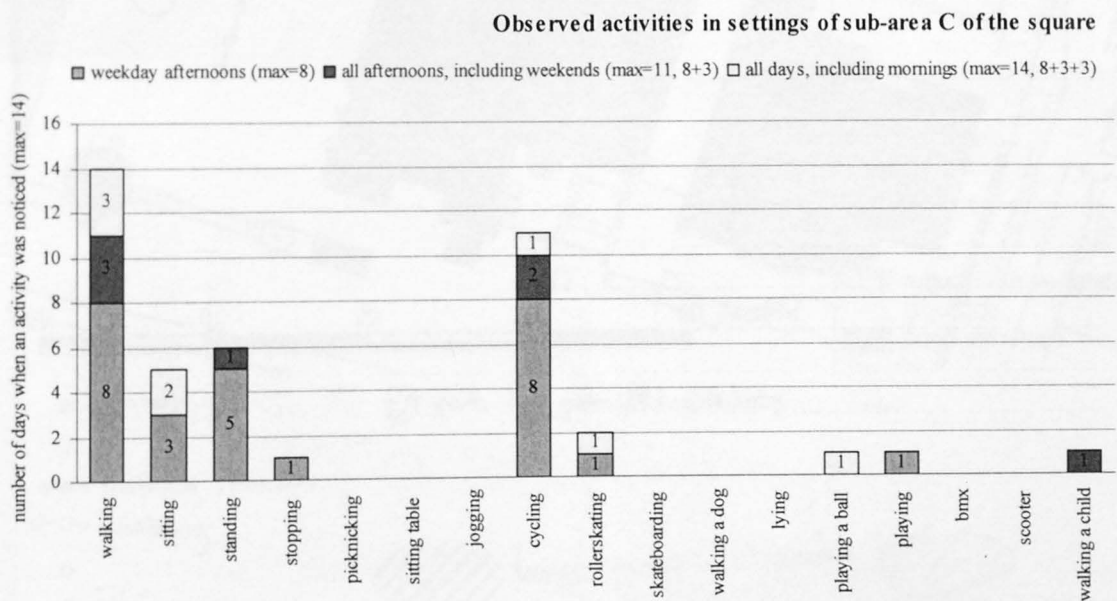
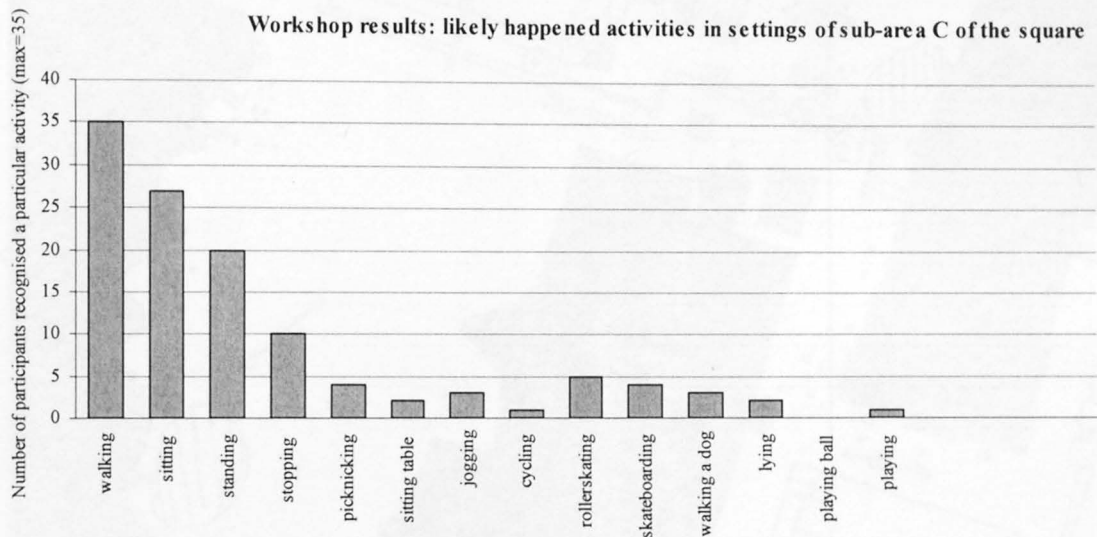
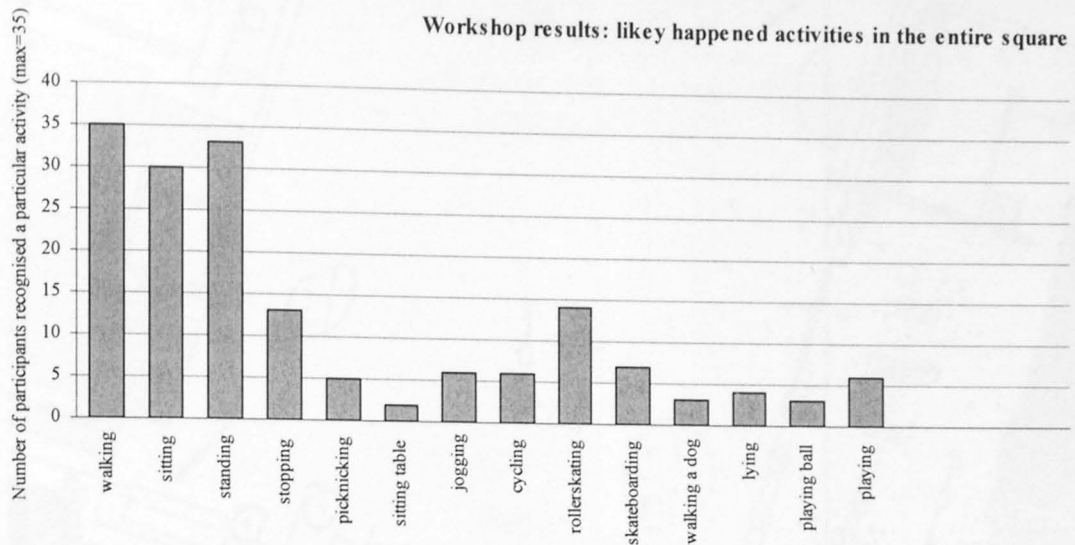
Appendix E.4.2

Summary data for observed (observation and behavioural mapping) and suggested (worksgop) activities in Trg Republike, Ljubljana, sub - area B.

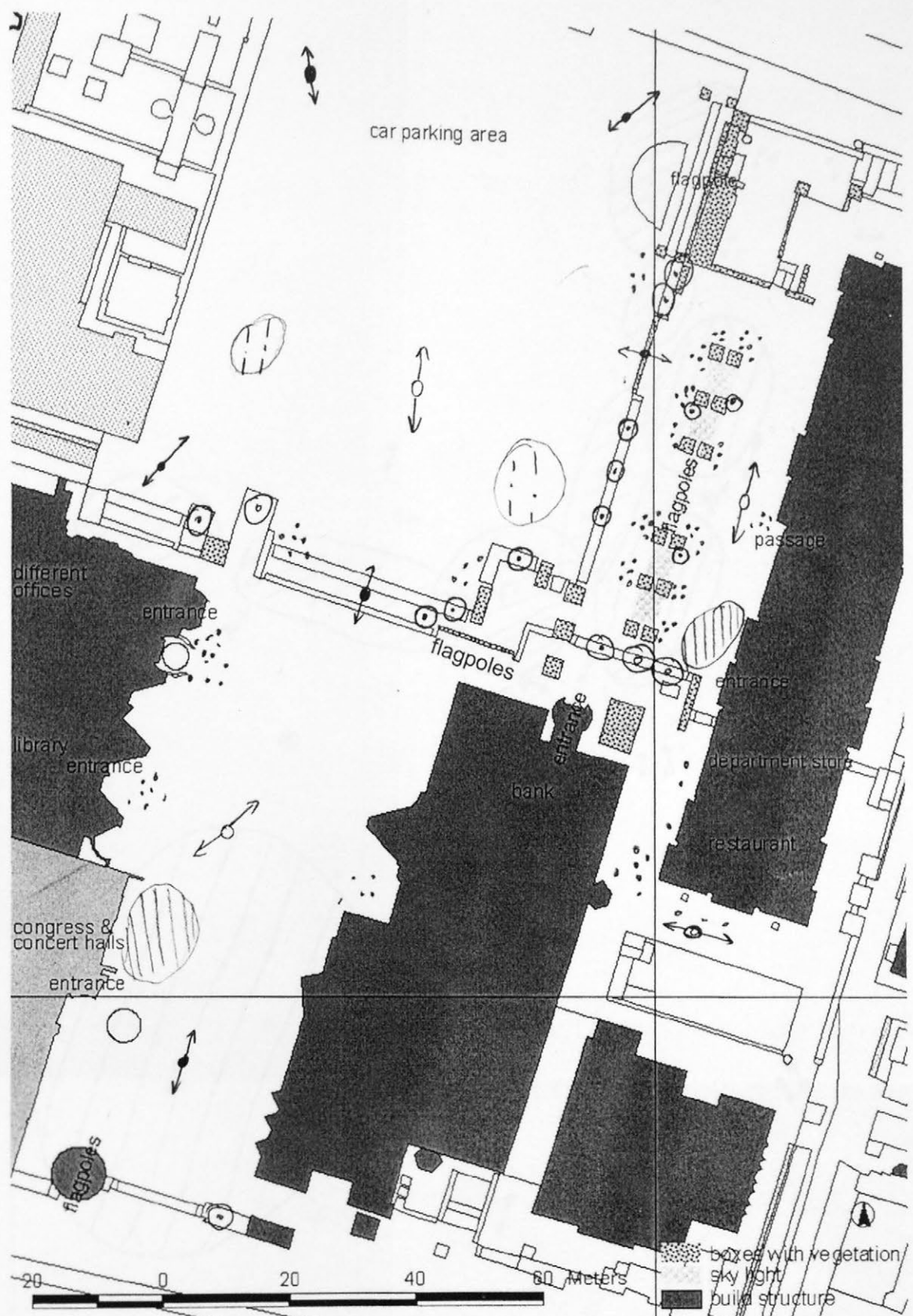


Appendix E.4.3

Summary data for observed (observation and behavioural mapping) and suggested (workshop) activities in Trg Republike, Ljubljana, sub - area C.

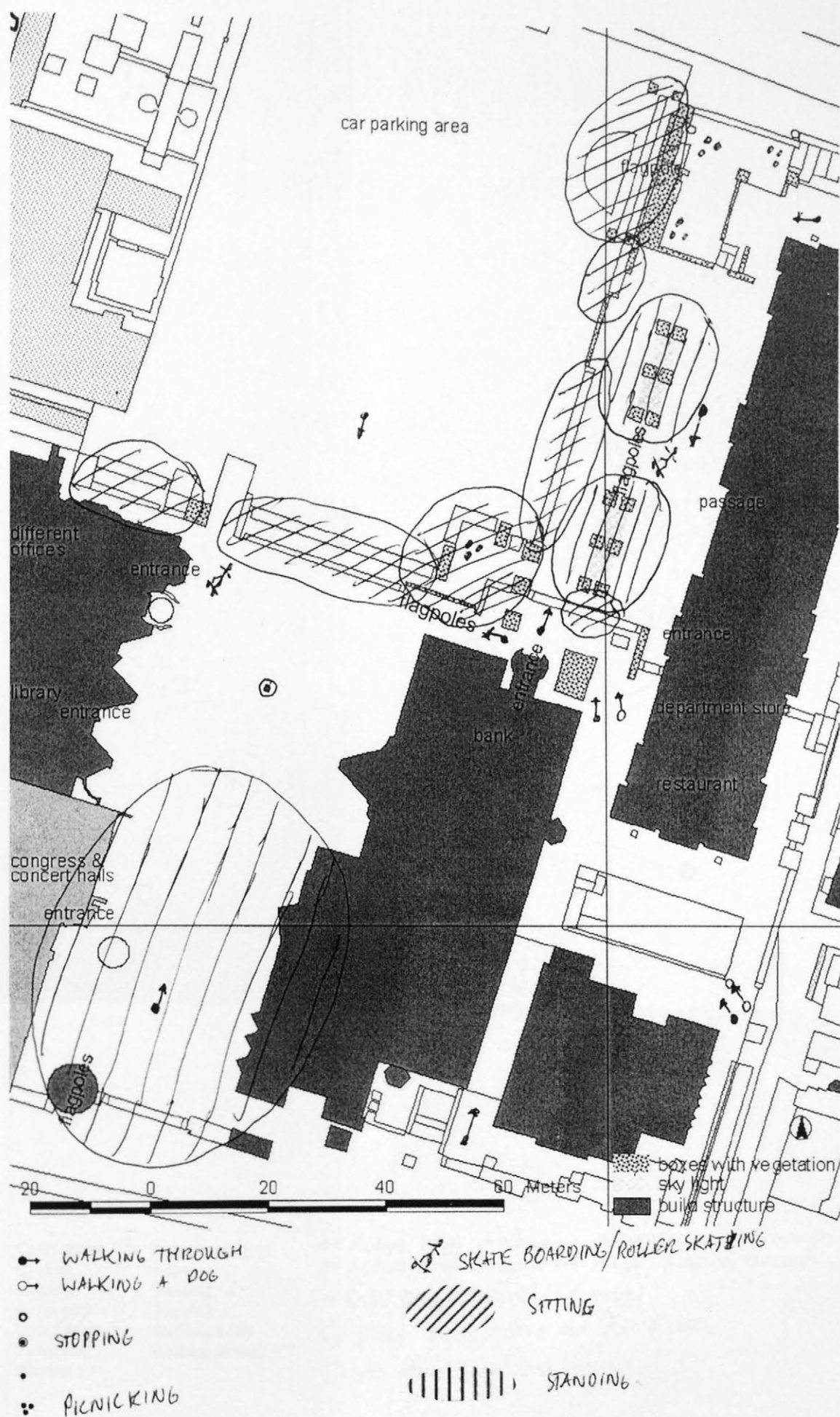


Appendix F.1

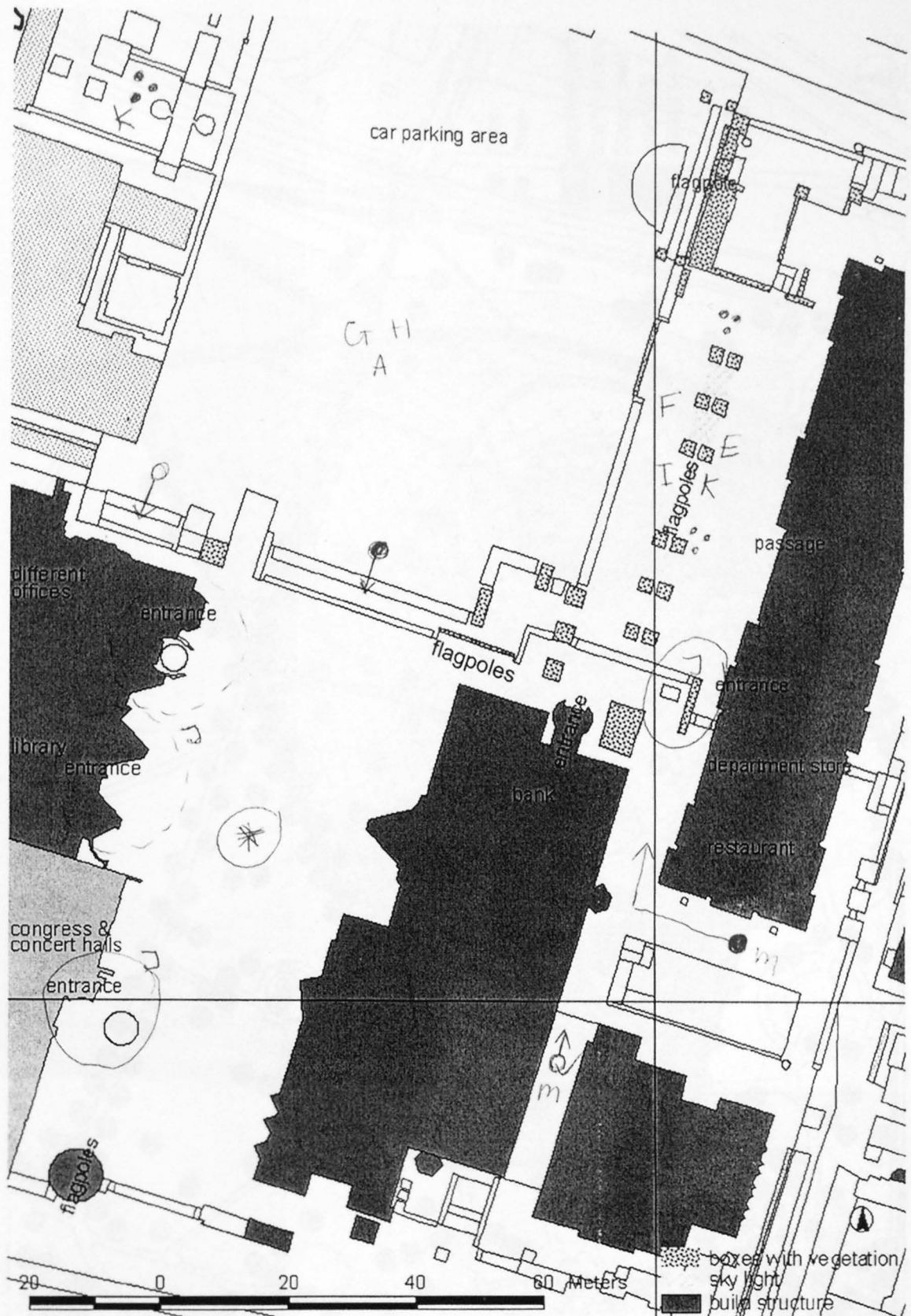


- standing
-
- ↔ walking through
- ↔ walking
-
- sitting
- ⊙ sports -hall games/Roller skating
-
- ▨ large groups stopping
- ⊙

Appendix F.2



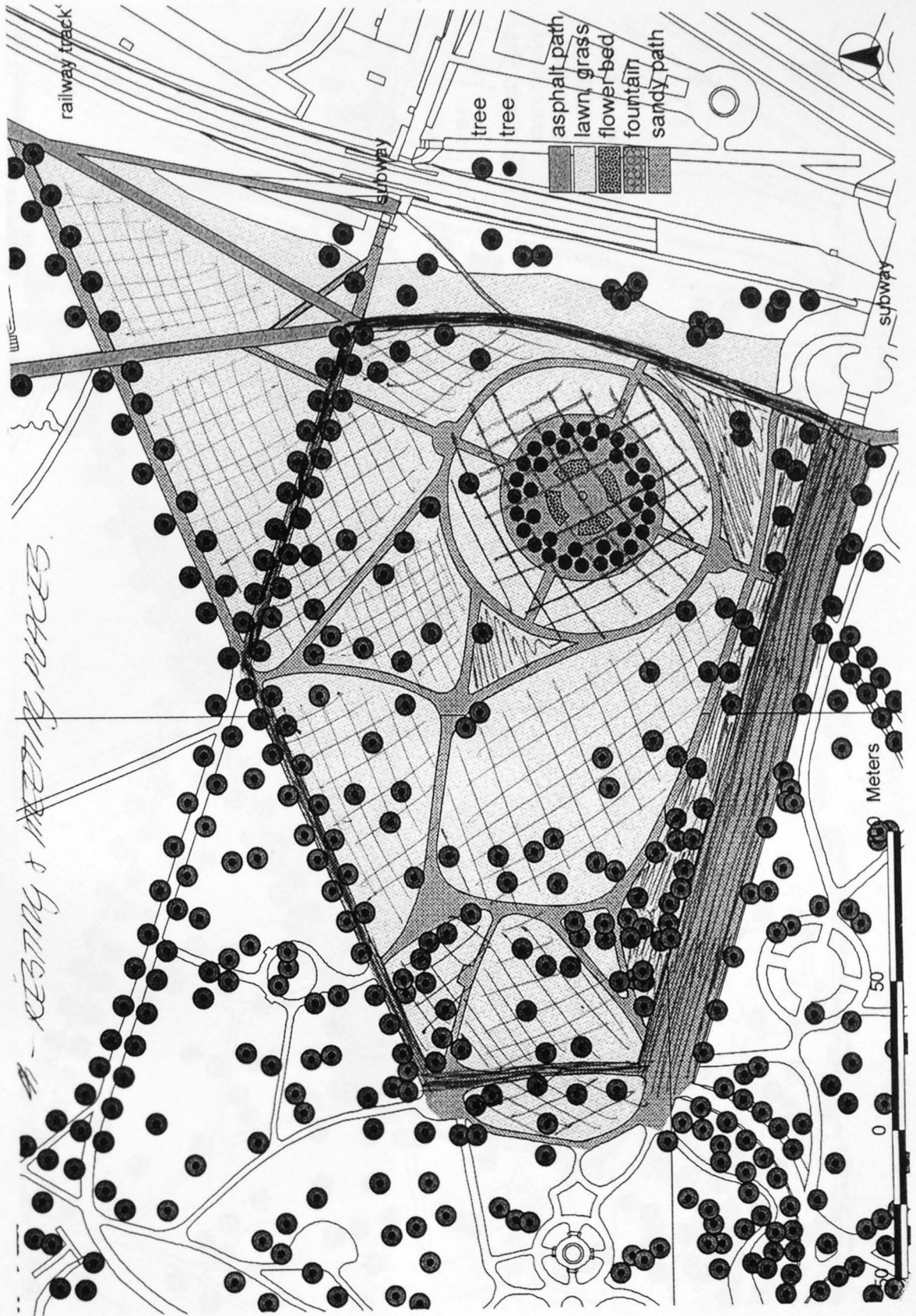
Appendix F.3



Court games A
 Cycling B
 Jogging C
 Lawn games D
 Lying down E
 Picnicking F
 Playing G
 Roller-skating H
 Sitting I
 Standing J
 Stopping K
 Walking a dog L
 Walking through M

- Active large amount of people passing through.
- Active small amount of people passing through.
- Small Group/passive. (3-5 people)
- Busy area/passive and active use.
- As above but less busy.

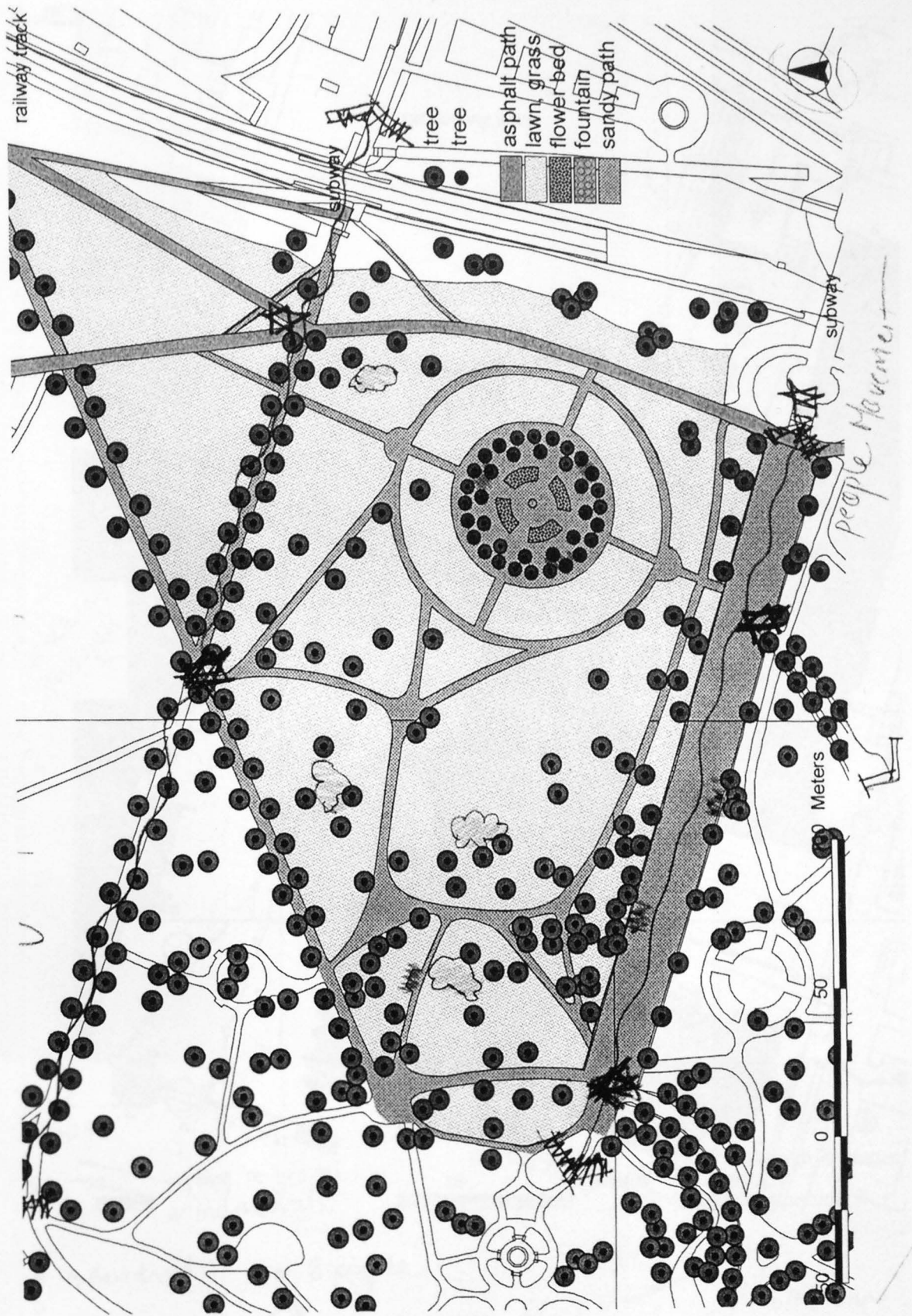
Appendix F.4



RESTING & MEETING PLACES

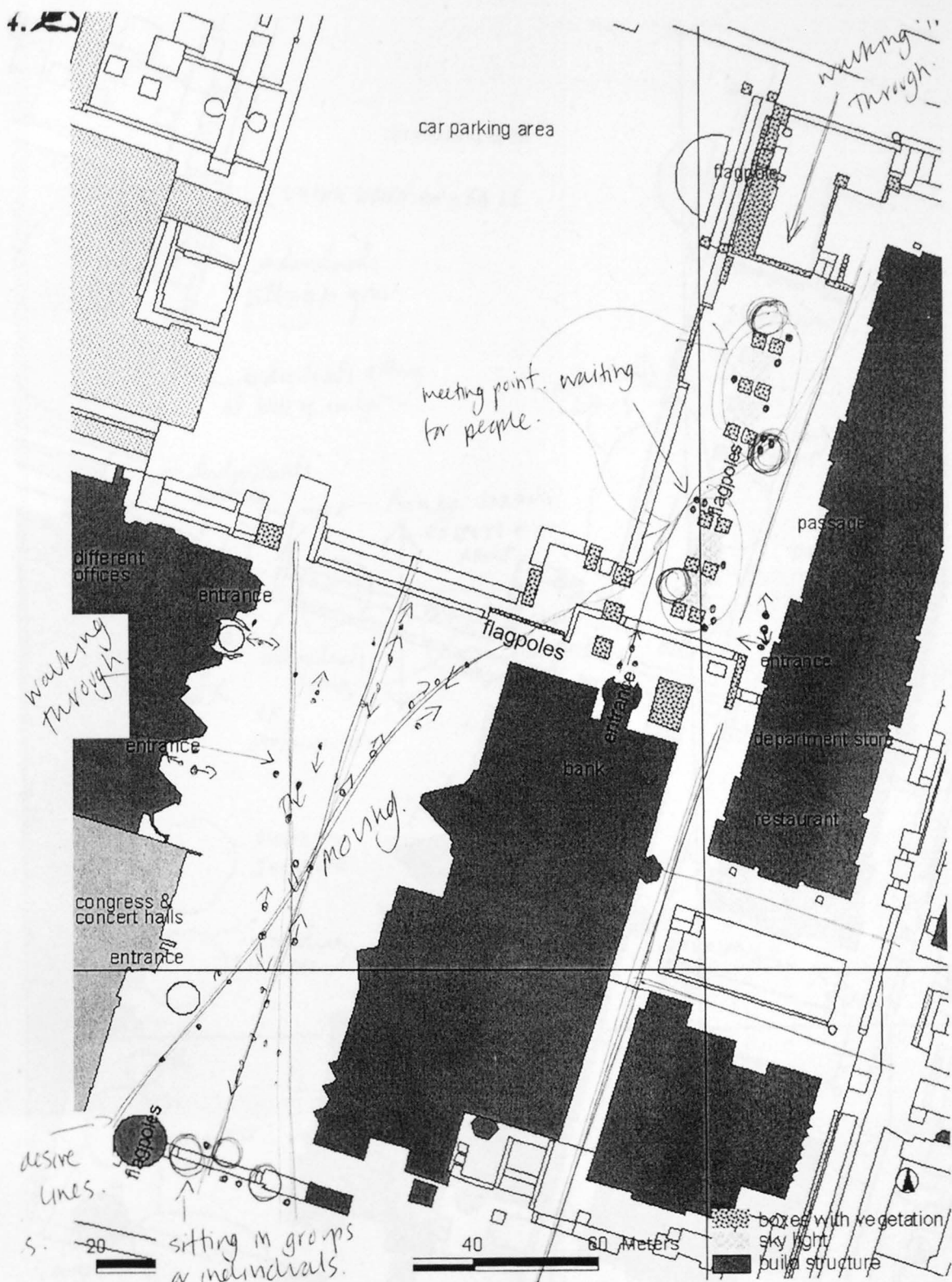
- PERAMBULATING # - SPORTS # - SOCIALISING
 # - LONG WALKS & EXERCISE (CYCLING ETC) # - MEETING

Appendix F.5



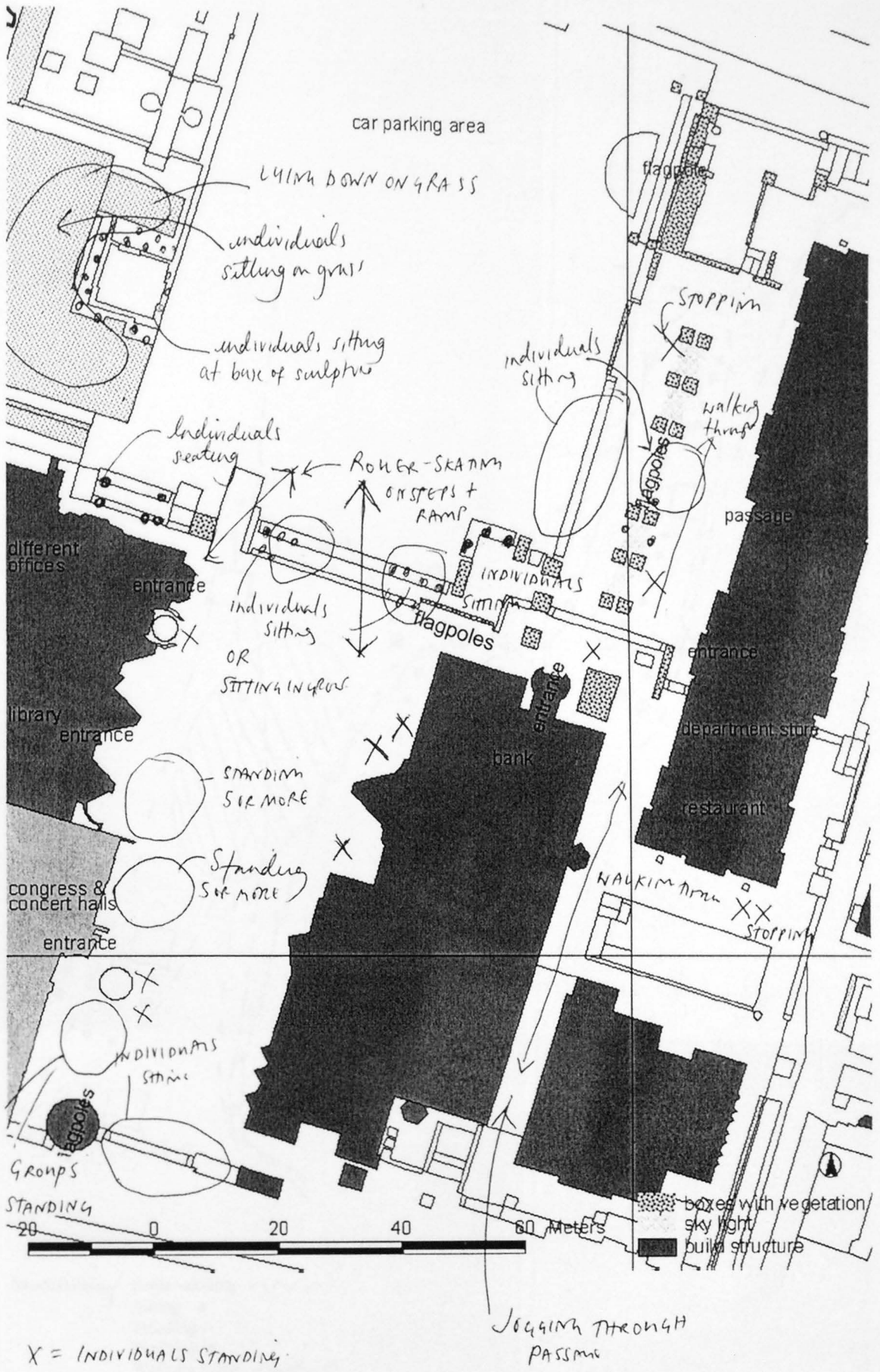
☆ small gatherings @ Major path intersecha
 ■ small groups and turf @ edges.
 ■ small groups on paths / fountain
 ~~~~~ people movement

Appendix F.6

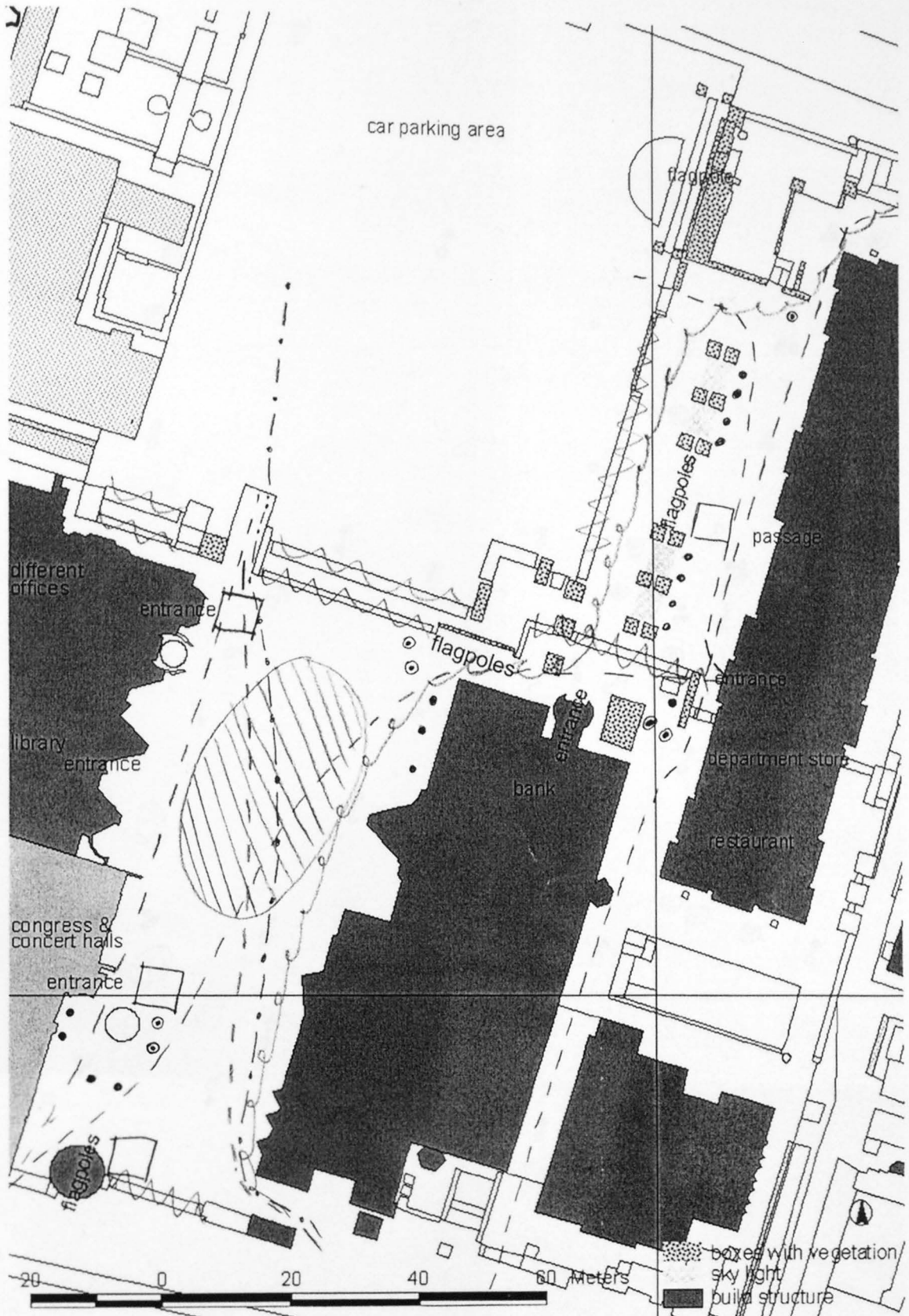


- individual
- 2 people
- many person
- ⊙ groups of people. (3+)
- desire line

Appendix F.7



Appendix F.8

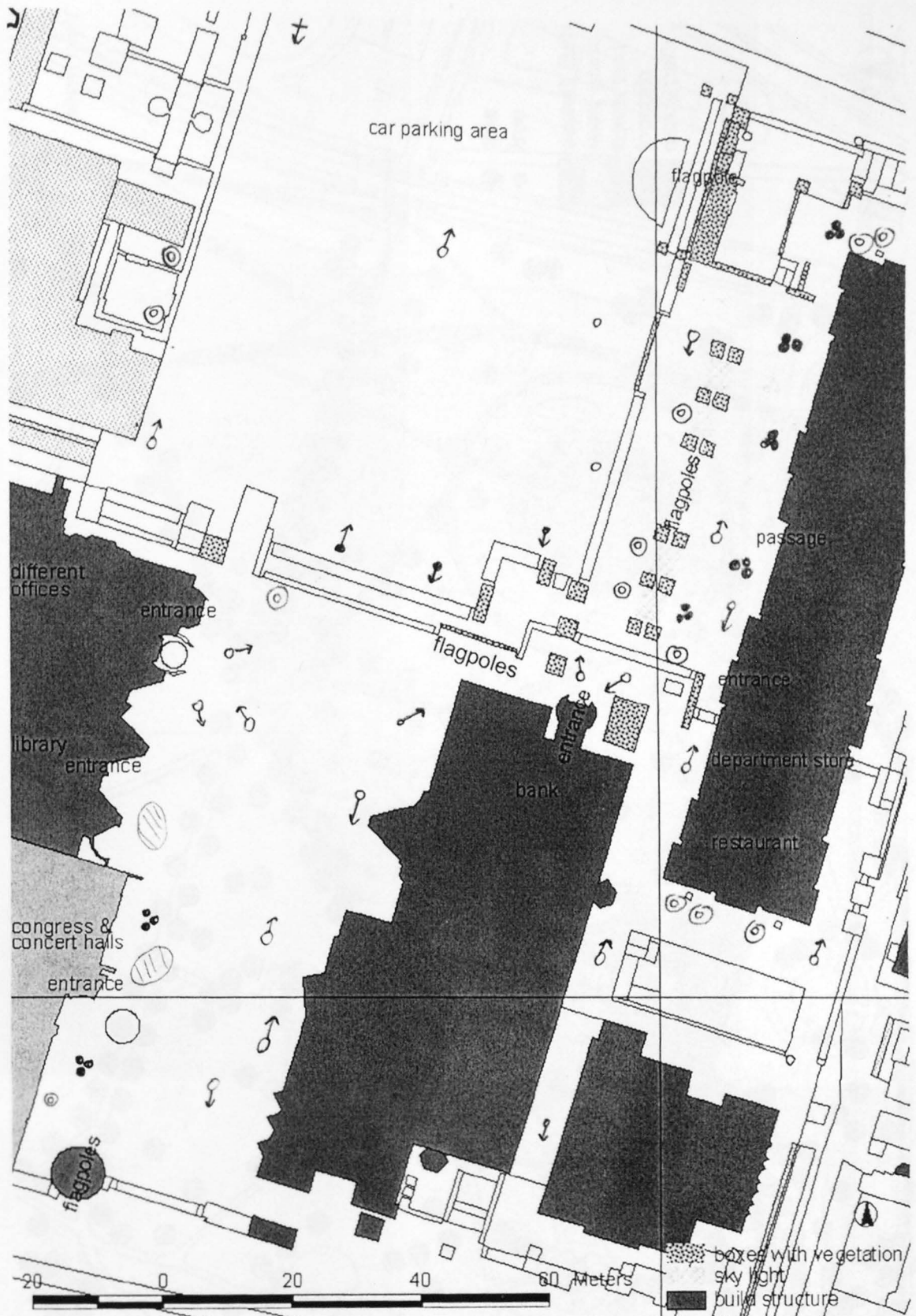


- Skateboarding / Roller-skating *wavy line*
- Sitting •
- Standing ●
- Stopping ⊙
- Walking a dog *wavy line*
- Walking through *dashed line*
- Court games *hatched oval*
- Cycling *dotted line*

□ groups gathering.

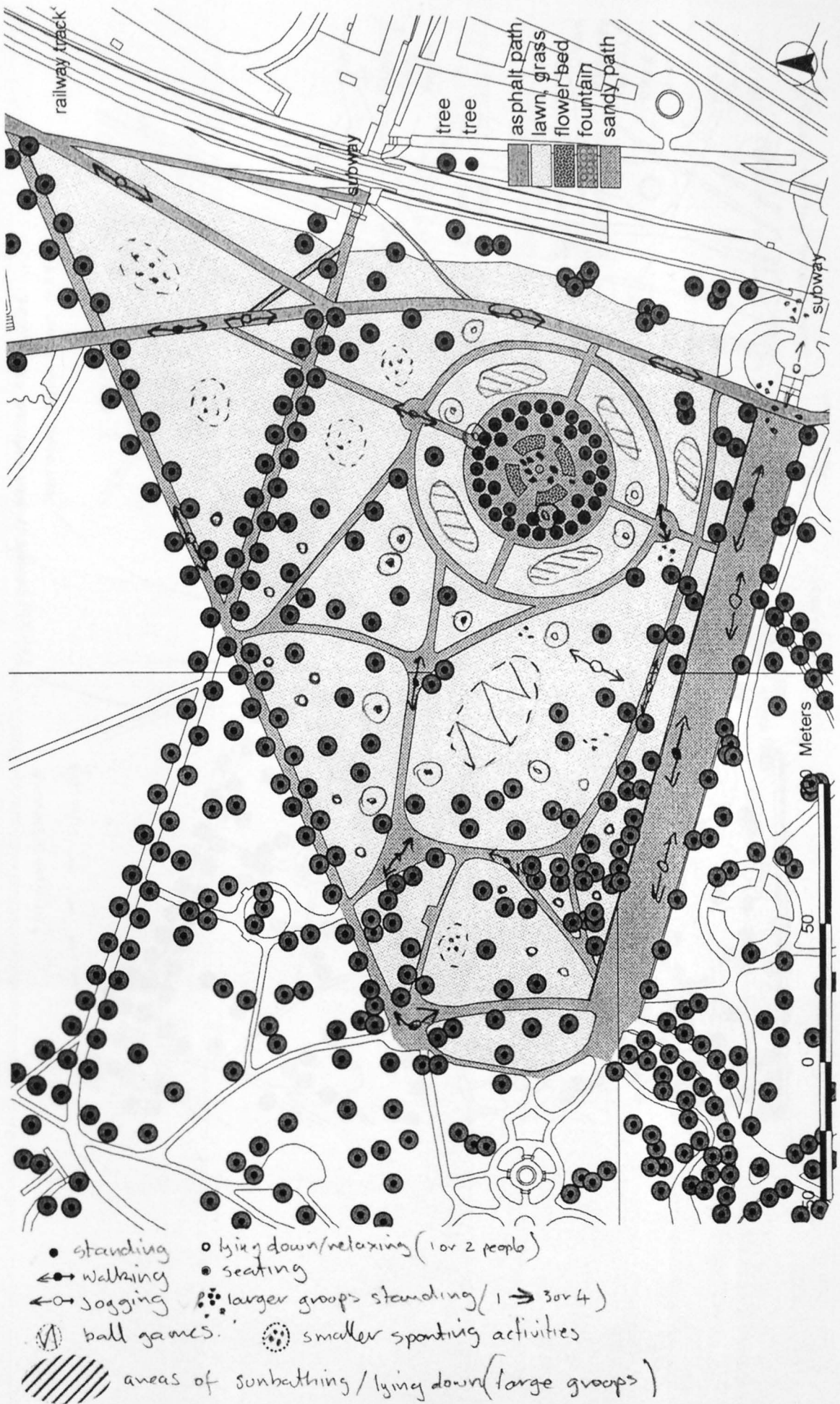
*wavy line* walking a dog

Appendix F.9

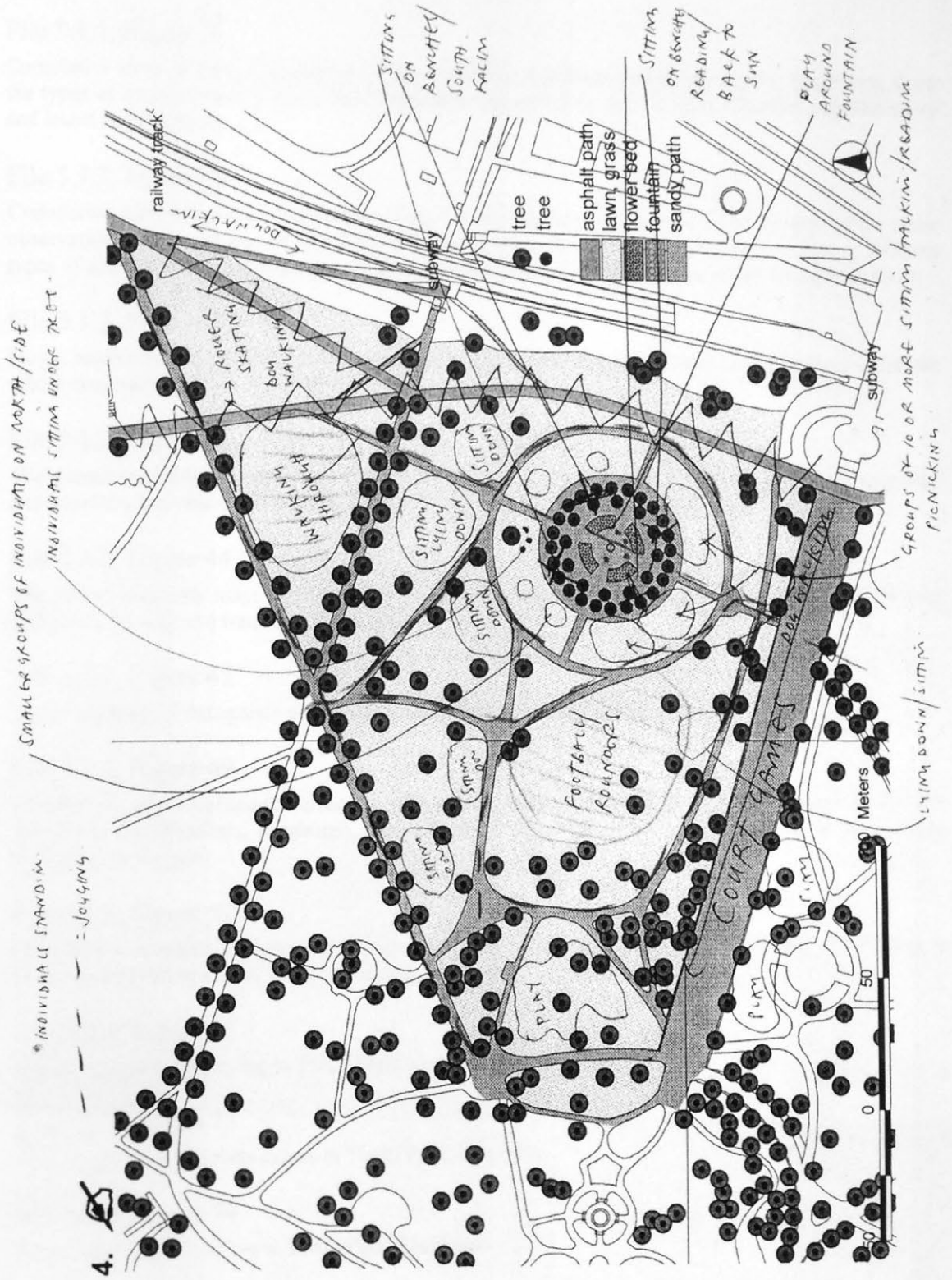


- ➡ ROLLER SKATING / SKATEBOARDING
- ➡ CYCLING THROUGH
- ⊙ WALKING THROUGH
- ⊙ SITTING / LUNCH
- ⊙ GROUP
- ⊙ TOURISTS / RECREATION / SHOPPING

Appendix F.10



Appendix F.11



## CD Table of contents

### File 5.1.1, Figure 26

Cumulative maps of spatial occupancy in Trg Republike, Ljubljana and Bristo Square, Edinburgh, show the types of activities and areas of their cumulative intensities as well as some effective, supplementary and latent environments

### File 5.1.2, Figure 34

Cumulative assembly maps of occupancy stratified with regard to age groups on all the days of the entire observation in the north part of East Princes Street Gardens, Edinburgh, showing participation in different types of activities, such as long-stay, passive and active, as well as active in transition through the place.

### File 5.1.2, Figures 37-38

Large, medium-sized and small groups involved in any active long-stay activity on all the days within the whole observation period in the Meadows, Edinburgh.

### File 5.1.2, Figure 41

The overall assembly map of a part of east Princes Street Gardens, Edinburgh showing different long-stay and transitory activities, classified by gender.

### File 5.1.2, Figure 44

The overall assembly maps of all the days in the entire observation period in Tivoli, Ljubljana, showing different long-stay and transitory activities.

### File 5.1.3, Figure 47

The overall spatial occupancy in the Meadows, Edinburgh, stratified by gender.

### File 5.1.3, Figure 49

Patterns of spatial occupancy arranged with regard to the participation of users engaged in any one activity in the Meadows, Edinburgh, showing where activities with similar intensities of participation took place in the park.

### File 5.1.3, Figure 52

Cumulative intensity of temporal-spatial occupancy, from low to high degrees and from being in transition to prolonged stay in the Meadows, Edinburgh.

### File 5.2.2, Figure 72

Areas suggested for playing in Tivoli Park, Ljubljana.

### File 5.2.2, Figure 73

Areas suggested for sports games in Tivoli Park, Ljubljana.

### File 5.2.2, Figure 74

Areas suggested for sitting in Tivoli Park, Ljubljana.

### File 5.2.2, Figure 75

Areas suggested for lying down in Tivoli Park, Ljubljana.

## Instruction:

Insert the CD, select the appropriate folder and double click on file's name of a chosen figure.