A Location-Based Game
to visualize spatial tactics

February 2014

Simona Sofronie

Hasselt University, Belgium - Department of Arts & Architecture
“In this living dialogue, the teacher or the student asks questions, and the search for the answer forms the emerging knowledge. In such a way, through discussion itself, knowledge is born. It is true that the teacher brings something of this knowledge to the meeting, but when this knowledge comes alive at the moment of their shared study, there is not one who knows more or another who knows less. This is because their meeting is an entwined knowing.”

Orit Sen-Gupta, 2012
# Table of Contents

**Introduction**

## PART 1. GUIDING PRINCIPLES FOR A GAME

1. **Public participation in urban design**
   - 1.1 Relevance of public participation in urban design practice
   - 1.2 Understanding the concept
   - 1.3 A broad-spectrum trajectory of a spatial participatory process
   - 1.4 Procedural approaches and the planning theories behind
   - 1.5 Participation as an attitude
   - 1.6 Participation- an operational framework
     - 1.6.1 Spatial policies
     - 1.6.2 Instruments
     - 1.6.3 Everyday knowledge
   - 1.7 Conclusion: The need for innovative participatory tools

2. **The environmental image and the dialectic nature of human phenomena**
   - 2.1 Relevance of the topic
   - 2.2 Why ‘environmental image’ and not ‘cognitive map’
   - 2.3 The components of the environmental image
   - 2.4 Theoretical framework of the environmental image: a three-fold approach
     - 2.4.1 INPUT mode: the construction of the environmental image
     - 2.4.2 OUTPUT mode: assessment techniques of the environmental image
     - 2.4.2.1 ICT-aided assessment techniques
   - 2.5 Integration
   - 2.6 Awareness
   - 2.7 The dialectic between realism, materialism, presence and constructivism, imagined dimension, interpretation
   - 2.8 The environment- an arena for action
   - 2.9 Tension – tactics and strategies
2.10 Conclusions: a set of guiding principles

3. **Games and Technology**

3.1 Games

3.1.1 Why choose a game?
3.1.2 Benefits and challenges
3.1.3 Choosing the right type of game

3.2 Technology

3.2.1 Ubicomp and architectural and urban design
3.2.2 Control in participation
3.2.3 Implications of integrating ubicomp in daily life

**Conclusions PART 1**

**PART 2. GAME EXPERIMENTS**

**Introduction**

4. **The Game Design**

4.1. Background for design

4.1.1. Step I- a location-based game as an ethnographic tool

4.1.1.1 Conceptual features
4.1.1.2 Implementation of the concept
4.1.1.3 Data set
4.1.1.4 Data analysis

4.1.2 C-Mine experiment

4.2. The game *Cure for the Campus*

4.2.1 Learning from previous experiments
4.2.2 Phases of the game design process

4.2.2.1 Temporality and spatiality
4.2.2.2 Socio-spatial analysis

Conclusions PART 2

**Conclusions**

**References**

**Appendices**

**List of figures**

**Acknowledgements**
Introduction

Problem statement- challenges of participation
Given the fact that spatial interventions have not only a spatial but also a social impact, a participatory turn in urbanism, appearing as early as the 1960’s, has promoted urban design as a community-led process. This shift in perspective acknowledges future users as experts in the use of space, based on personal experiences. Within this new frame of practice, a double success is traceable. When urban planners and policy makers are able to gain insight into the “genius loci” knowledge provided by the very users of the space, such a knowledge enhancement may lead to the design of more tailor-made interventions addressing the specific way of living of communities.

Concerning the users, such an encounter may increase spatial awareness, leading to a more responsible attitude regarding their living environment. Such a raise in awareness, for instance, may help people to perceive the environment from a different perspective, and to observe things they did not pay attention to before, hereby discovering unknown aspects of their familiar environment. This may increase the capacity of these people to participate in spatial planning processes, using a process that empowers people with regard to their environment, by gaining perceived control and participation in urban design.

Over many years of urban planning practice, however, a certain difficulty of cooperation towards an exchange of knowledge between the users and the designers has often been noticed. While coming from “different universes of discourse” (Rapoport, 1970), these two types of actors are not sharing similar mind-frames allowing them to communicate about the environment and its related issues, in understandable terms for one another. From an anthropological perspective, urban designers may prove to have difficulties to understand everyday use, ordinary language and everyday perceptions. Also, their very early preconceptions of the design solution, a strong professional ability, may establish an obstacle, as they function as interpreters to what the users try to communicate (Granath, 2001). For the users, on the other hand, it is difficult to conceptualize their concerns, wishes, values, daily routines, etc., to articulate and communicate them to spatial experts in understandable terms that can further lead to design solutions to provide benefits for the whole community, not only on individual level. Sometimes it is also hard for users without architectural training to understand the suggested designs
Various methods employed in previous scientific research have successfully tackled one of the above-mentioned three goals. For instance, traditional methods of inquiry, such as open-ended interviews, have proved useful in providing valuable information regarding genius loci knowledge. However, the strength of this research consists in developing an instrument able to achieve the three objectives simultaneously. As such, the three objectives are regarded as interrelated. Gaining insight into the way people use space, may transform the way the spatial expert looks at their environment, causing them to ask different questions, or to look for different information, etc. The fact that people will become more aware of their environment and their behaviour in space, may eventually have an impact on the way they conceive and use their surroundings, and therefore on the amount and type of information they can provide the spatial experts with. In this way, this tool could elicit more complete information regarding the spatial tactics applied within a specific area. Simultaneously, when this exchange of knowledge is perceived as an enjoyable process, this may motivate participants to commit themselves to a long-term process with steady enthusiasm.

Research questions
In line with the three-fold goal, this research will make an attempt to answer the following four central research questions:
1. How to design a tool able to collect information valuable for designers, in the perspective of a future intervention within the given spatial context?
2. How to design a tool able to enhance the awareness of the users regarding the spatial environment and the behaviour in space of others, as well as their own?
3. How to design a tool to motivate and engage participants to use it enthusiastically?
4. Is it possible to design a tool able to achieve all the above tasks simultaneously?

In addition to these central questions, additional sub-questions will be raised as well. The following questions convey the most important issues that this dissertation will deal with in the next chapters.

What kind of information should be collected, in order to prove useful for the designers?
How to measure the raise in awareness?
What kind of procedures could stimulate players’ capacity to observe and interact with the environment?
What methods have the potential to assist an entertaining tool?
Is this technological approach necessary? What is the added value of this technological approach?
How to deal with the very extensive and diverse type of data emerging from such an experiment?

Methodology

The environmental image and the dialectic nature of human phenomena

At the outset, in order to develop a participatory tool for urban planning able to attain the three-fold objective previously defined, it seems useful to gradually give players insight into the perspectives of all actors involved in the process. For this reason, it is considered that the most valuable approach employed by the tool would be the assessment of players’ environmental images - the way they perceive, conceive and use their environment. By understanding the processes of construction, activation and retrieval of the environmental image, it is argued that it becomes possible to come to terms with the substantial differences that are manifested between the way designers and users make sense of and express themselves in relation to the environment.

The elements of the environmental image have been identified by Lynch (1960) and Appleyard (1969) as the distinctiveness of the physical form, the structure of spatial relations, function and meaning. These elements show that people’s environmental images convey much more than merely the physical structure that they remember - and which constitutes the subject of interest of most cognitive studies on mental maps. The elements that people remember, as well as the level of accuracy associated to them depends highly on the meanings that people confer to their experiences in and of places. For this reason, this dissertation proposes an integrated three-fold approach investigating the environmental image from an ecological, cognitive and phenomenological perspective. This may prove valuable for delivering a holistic understanding of the complex procedures that intervene during the process of spatial knowledge acquisition, leading eventually to choices of spatial use.

Making sense of the world implies a double process. There is always a combination of presence (attained through plain observation through sensory perception) and interpretation (attained through attachment of meaning to all environmental experiences) which guides people’s understanding of and behavior in space. First, we take in the information through all senses. This may manifest as a conscious process, achieved through “presence” - being aware of one’s perceptions - or an unconscious process - as it is the case with the more subtle sense of smell, for instance. Then we immediately attach meaning to what we have perceived. Attachment of meaning usually surpasses presence, because the moments of presence usually last for a very short period, while interpretative moments may be extensive. The more we let our mind scatter in interpretation, the further away we posit ourselves from conscious observation of the present moment and space, in this way leading to a divergence of awareness. Moreover, interpretation is producing tension due to the differences between the present state of the world and the way we would like it to be. Such tension is created at the intersection between the strategies imposed by the system (the rules and regulations that citizens are supposed to follow for a proper functioning of the social and spatial environment) and the tactics (de Certeau, 2011) that people employ (creating one’s own way), as a resistance of the individual system of interpretation to other systems (as defined by another individual or a culture) that do not overlap the individual needs and desires.

From here, one can speak of the dialectic nature of human phenomena,
which are simultaneously both performed (through an action that involves presence) and imagined (as interpretation of these actions). What people say they believe and what people say they do are often contradicted by their behavior. This is a disparity which, time and again, has made the subject of interest of a large body of scientific literature. Many sociologists, psychologists, and anthropologists have focused their research on this very human inconsistency between what people say, what people say they have to do and what they actually do.

In order to study the dialectic nature of social reality, this dissertation puts forth a methodological approach that takes into account two different perspectives: the realism and the constructivism perspective, or what Alasuutari (1996) calls the “factist” and the “specimen” perspective. Within qualitative research, the factist (or realism) perspective aims to discover the actual behavior of the participants, by continuously verifying to what extent the collected data correspond to reality. In this case, it has been noticed that (participant) observation can provide more reliable data than interviews, where the interpretations of the researcher or the participant introduce potential sources of error. The specimen (or constructivist) perspective, on the other hand, is interested in understanding the social construction of reality, by examining participants’ confessions in interviews not as neutral realities, but as subjective realities negotiating meaning in relation to an individual reference frame. As such, interviews depict different ways of how phenomena are approached by different individuals. Both approaches—of plain observation (factist perspective) versus interpretation (specimen perspective)—are equally valid and valuable on their own, while they provide a different range of reliability and validity of the research findings. It is not necessary to employ one to the detriment of the other, as these two approaches have the ability to reinforce each other—in the same way as presence and interpretation do—providing a more refined picture of the complex reality which is being studied.

In line with these observations, the dissertation proposes to design a tool to facilitate an exchange of knowledge between users and designers, derived also from active observation, rather than interpretation alone. Such an approach implies that sheer observation of the affordances of the environment, as well as of people's spatial tactics when dealing with their surroundings, represents the starting point from which all actions prompted by this tool should be developed. When knowledge emerges from active observation, it is argued, it provides the advantage of a smooth tuning to the various systems of interpretation, by grounding the arguments and opening up the perspectives of the actors involved in the spatial participatory process, towards a more constructive and efficient conversation.

This step-wise approach—achieved through a literature review of various disciplines such as cognitive and ecological psychology, phenomenology, and sociology—represents the research method which assists a translation of the findings of the theoretical framework into guiding principles for designing the tool. Games have the potential to meet these guidelines.

**A game as a participatory tool in urban design**

In order to answer the research questions, this dissertation proposes to design a game as a participatory tool in urban design, and then further test its ability to simultaneously achieve the three-fold goal.

Many definitions for games have been provided in specialized literature. However, the one that brings games closest to the urban design practice defines games as “a problem-solving activity, approached with a playful attitude” (Schell, 2008). Games have the potential to frame (sometimes even serious) problems in a fun and engaging way, by using a system of game mechanics, i.e. creating an artificial conflict driven by an emotional outcome (Juul, 2005), sustained by immersive narrative, surprise elements, etc.

For this reason they have been lately employed in many fields as educational tools, under the name of “game-based learning” or “serious games.” A wide range of applications of such games has been used for military training (Squire, 2006; Squire et al., 2005; Squire & Jenkins, 2003), language teaching (Johnson et al, 2005) health care, cultural heritage (Anderson et al., 2009), policy and management issues, urban planning and public participation (Krek, 2008; Poplin, 2011), and transition management. Regarding the relation between games and architecture, more and more scholars (Walz et al. 2005, Oosterhuis, 2006, de Lange, 2009, Bories et al., 2007, Walz, 2010) consider that games and architecture have the power to reinforce each other in various ways. So far, however, there are scarce references in literature that attempt to visualize the relation between these two disciplines. From a game perspective, it is worth mentioning Walz's (2010) attempt to develop typologies of game- and play-spaces, by architecturally framing play and games as “human practices in space and of
space”, while Ejsing Duun’s dissertation (2011) conveys an in-depth exploration of the role that the actual physical location plays in location-based games. From an architectural perspective, however, research investigating the benefits of employing games in architectural processes is very much in a latent stage. Some suggestions (Walz, 2010) point towards teaching architectural students to consider games as “dynamic, innovative, and challenging architectural outlets that can be design results or components of the design process”, since games may be employed to offer feedback to architects regarding the functionalities of physical space (Walz et al, 2005). Practical examples of games employed in architectural design and spatial planning (i.e. Baas op Zuid by BBVH architects; Play the city, Play Noord, Play Oosterwold, by The Responsive City) sometimes fall short to justify the true potential of the link between games and architecture. Frequently, the problem with “serious games” is that they score low on the “fun” dimension (Guardiola, 2011, Quick, 2012) - since, in their very nature, the focus is on the educational aspect (Poplin, 2012), to which some elements of game mechanics (such as points) are additionally attached, in order to disguise the lesson of a game. With regards to this particular type of “serious game” for architectural and urban design, players are usually given a strictly prescriptive form of decision-making (i.e. choosing from option a, b, c), which seems to convey a stage of dogmatic participation. Further elaboration on this topic can be found in the “Games” chapter.

From here the challenge is to investigate the benefits of using games in participatory spatial practices, to the extent that they are able to elicit “serious” information - assessed as valuable for players - while, at the same time, also being fun to play.

A confrontation of the set of guiding principles with various existing game types further points to the most suitable type of game to address the research objective. As a result, the pervasive type of games, in general, and the location-based game, in particular, represents the preferred type of game to serve the purpose of this research. Pervasive games, and specifically location-based games, differ from the well-known type of computer games in the fact that they imply physicality of actions, by employing physical spaces as a playground, and not, for example, a computer-screen. Such physicality is assisted through employment of mobile and media technology. The final challenge posed by this doctoral research consists in actually designing, implementing and assessing this game for a specific context. This represents the case study for which the tool has been designed, while largely relying on qualitative methods. This tool is then evaluated in terms of the research objectives, using performed data (observation of spatial tactics), by following the factist perspective (Alasuutari, 1996), as well as stated data (spatial expert’s and users’ testimonies), using the specimen perspective (Alasuutari, 1996).

**Contribution**

Proceeding along the lines of the proposed methodology, this dissertation aims to bring a contribution on multiple levels.

At the outset, it intends to design a tool as a mediator between the users – as experts in the use of their environment and the services it provides- and the designers- as experts in formal aspects of the design (i.e. typologies, structure, aesthetics, manufacturing, legal aspects, etc). To achieve a fruitful outcome, the challenge consists in establishing a common language, in order to install a kind of interdisciplinary dialogue between the two types of actors involved in the participatory process.

As professionals, designers are the ones that have to obtain a minimal set of professional competence to read everyday socio-spatial practices. By designing a tool able to map spatial tactics- in this way eliciting valuable information about the way people use, perceive and conceive their surroundings- it is argued that everyday knowledge (Soenen, 2009) could be analyzed and used within spatial participatory processes by developing a socio-spatial vocabulary grounded both in the everyday practices and the spatial structure of the environment that accommodates them.

The users, from their side, through the everyday use of a space, have developed everyday competences, which can be recognized in their own right, and which frame the so-valuable genius loci knowledge. However, everyday use may lead to routine behavior, which produces habituation to environmental stimuli, and so space becomes ‘the very decor of people’s life, and not more than an apparently unnoticed and unimportant background’ (Hannes et al., 2006, p.8). In order to promote a re-discovery of the familiar environment from a fresh perspective, the tool asks participants to start by spending time observing various aspects of the present moment and place (human behavior, physical structures, sun orientation, etc), before creating impressions and going into actions. In this way it is possible to inject a larger quantity of presence into the creation of meaning, which may lead to knowledge that can open up perspectives, providing people with the ability to see things differently, from a standpoint grounded in the substantial reality where the collective performance occurs.

Such an approach enhances an equal intercultural dialogue between design-
ers and users, as it creates opportunities for awareness-raising on the sides of both the designers and users. This change in awareness will be beneficial for the individual and the society- leading to a more self-aware environmental and social performance-, as well as for the designer- who would be able to “read” everyday socio-spatial practices, derived from a reflective understanding of the grounds of their being. The fundamental contribution of this dissertation is that the format of a serious game holds the promise to bridge different universes of discourse, due to its engaging aspect. By designing a game as an instrument within a more general participatory approach, it may be possible to map spatial tactics and raise awareness in a playful and engaging way. This represents one of the biggest challenges and contributions of this research, both in the field of participatory urban design and also in the field of game design. Striking the right balance between playfulness and seriousness is a very difficult task. When this is properly accomplished, it holds the remarkable potential to frame a serious spatial planning problem within a genuine play experience able to confer participants the motivation to willingly and eagerly get involved with it. This may have a positive impact on the feedback delivered by the players revealing their spatial tactics, as well as on the potential of a long-term involvement with the participatory process itself. Moreover, this may be assisted by the employment of social and locative technologies within the game. Functioning as a platform for interaction within the game, this technological enhancement can assist the production and collection of data, while at the same time it may give rise to the establishment of new types of relations among the players themselves or between the players and the physical environment. As such, technology could be the starting point for creating new experiences within the living environment, experiences that would emerge from observation of the existing affordances of space, rather than from sheer subjectively-defined interpretations. In this direction, this dissertation considers the potential of technological assets, investigating whether organically employing already-existing technologies would enhance people's sensory relation with the urban environment, instead of alienating them even further from the material reality.

Structure of the thesis
This dissertation follows a structure comprised of two basic sections: first a theoretical one, and second, a section illustrating the experiments. These two basic sections will unfold over five chapters. The first chapter is dedicated to the field of participation in urbanism, pointing to the successes and failures of the participatory approach in spatial practices. Here appears the necessity to understand everyday practices, in order to attain just and successful participation processes. The second chapter investigates the process of formation and retrieval of the environmental image, in order to steer understanding of the way people develop spatial tactics when dealing with their everyday surroundings. Assessment of the environmental images may assist the difficult task of creating a common language between people coming from different universes of discourse, as it is the case with designers and users. A translation of the findings of this chapter materializes into a set of guiding principles to be pursued when designing the conceptual framework of the desired tool, taking the shape of a game. The third chapter illustrates the relation between games and urban design, by pointing to the benefits and challenges that arise through their collaboration. Moreover, the principles identified in the previous chapter lead to the conclusion that a location-based game would be the most appropriate type of game to address the three-fold research objective. Given the role that locative and media technology plays within this particular type of game, a discussion is spurred concerning the benefits and shortcomings of its employment. The purpose here is to create an aware attitude regarding the implications of such a technologically-driven approach, by understanding the benefits but also the challenges and shortcomings of how the use of such technologies affects the way people use and experience their environment. Since the goal is to contribute not only with a theoretical framework but mostly with an operational framework, this dissertation explores the theoretical findings through the actual design of a location-based game meant to understand some aspects of spatial tactics that people employ when dealing with their living environment. Thus, in the fourth chapter, the challenge to investigate the potential benefits of using games in urban planning practices will be confronted by actually designing, implementing and assessing the game. A discussion of the results drawn from the experiments, as well as their limitations and the potential for future research will follow. The end result of this dissertation is, thus, an operational framework consisting of a set of guiding principles and a model for a serious location-based game. The model comprises a number of steps – spatial observation, participant observation, hypothesis formulation, interviews, narrative construction, action and rules formulation, an iterative process of play and congenial stage for conversation, assessment. All of these steps are equally important, as is the order of these steps. Guidelines regarding the use of technology within this model are further provided.
The last chapter summarizes and discusses the impact and limitations of the major findings, identifying the main contributions of the thesis on a theoretical and design level. A critical outlook is given of the role of locative and media technology in the design and implementation of such a tool. The thesis concludes with a discussion on further research, pointing to the difficulties of designing tools to facilitate participatory spatial practices and the possible ways to deal with the multifaceted outcomes.
PART 1. GUIDING PRINCIPLES FOR A GAME
1. Public Participation in Urban Design

1.1 Relevance of public participation in urban design practice

Spatial projects are never exclusively physical, but always reveal a double objective of being a combination of spatial and social development. Thus, it seems pertinent to consider social awareness, and from there the need for public participation, as a valuable asset in spatial practices. Public participation implies involving those who are affected by a decision in the decision-making process, by providing participants the information they need in order to engage themselves in a meaningful way, and by communicating to participants how their input affects the decision (IAP2, 2013). Therefore skilful results in spatial participatory processes require an intensive exchange of information between all actors involved in the process: the designers, as spatial experts, and the users, as experts in the use of space. Getting a clear understanding of each other’s discourse can afford a certain level of acceptance of public participation in urban design, having as the main objective an improvement of the spatial, as well as the social quality of the built and natural environment.

Over the past few decades an increasing demand has been traced for participatory practices within the field of urban planning. Such a demand is spurred a/o by the increasing (apparent) self-reliance of individual citizens (Santens, 2006) and the growing complexity of urban planning processes caused a/o by the large number of players involved in an urban project. Furthermore, the increasingly poor treatment of people using city space is perfectly justifying the greater than ever focus on the human dimension in city planning and the need for quality in the public realm (Gehl, 2002). It became widely acknowledged that public participation in urban design practice is the only modality to create and maintain built environments that satisfy both individual and community needs.

The increased use of participatory approach in urban design practice has been pointed to the benefits of public participation (Community planning, 2011) which have been traced on multiple levels, in regard to both professional and also social achievements. Some of the most important benefits will be listed below.

At the outset, public participation can deliver valuable additional resources. It is usually the case that official authorities do not have the means to solve all problems in an area, and so the involvement of residents may bring essential additional support, especially toward the purpose of meeting their needs and fulfilling their expectations.

Furthermore, it has been noticed that participation can enhance effectiveness of the complex decision-making process that usually characterizes any spatial planning issue. The users are the best source of local knowledge about their surroundings, therefore involving them in the decision making process can lead to taking better decisions. The design proposals are though more likely to be in tune with users’ needs, as they are being tested and refined before implementation, resulting in more appropriate design solutions. The resultant design entails a responsive environment, which can be more easily altered in order to serve people’s changing demands. The participatory approach can also deliver speedier development, because all actors involved may gain a better understanding of the options realistically available, in this way encouraging positive thinking, and leading to prevention of time-wasting conflicts.

In this process of working closely with the users, the designers have the
opportunity to gain insight into the genius loci knowledge, into the everyday practices of the communities they seek to design for. This generates professional education, having as result their ability to justify their design choices based on a sound understanding of the specific ways of living of communities.

From the side of the users, the process of bringing together people sharing the same goals, towards collaborating and achieving things together is building up a strong sense of community. Moreover, instead of being treated as merely passive consumers, citizens are given the opportunity to take an active role in the creation and management of their surroundings. This enhances their confidence, capabilities, skills and ability to cooperate, empowering them to tackle challenges, both individually and collectively.

Time and again it has been noticed that people are delighted to be involved in the shaping of their surroundings, therefore public participation is also satisfying the public demand, by offering lay-people the opportunity for their voice to be heard.

Furthermore, community involvement in spatial planning is consistent with people’s right to participate in the decisions affecting their lives. Therefore, public participation provides democratic credibility, in line with the trend towards democratization of all aspects of society.

From a financial perspective, public participation may reach easier-fundraising, since many grant-making organizations prefer, or even require, this approach before delivering financial assistance. Moreover, public participation can be considered an enhancer of sustainability. As people feel more attached to the environment that they have helped create, they may maintain it better, reducing the chances of vandalism, abandon and subsequent need for costly repair.

Last but not least, public participation is increasingly turning into a statutory requirement; therefore community involvement becomes a compliance with legislation.

In order to attain such benefits, public participation needs to be introduced by means of a well-constructed operational framework. This chapter will make an attempt to outline an operational framework of participation in the actual context of urban design, with the aim to elaborate on the available participatory tools and instruments, which are fundamental to a quality design outcome and a smoother design process. An overview of such practices will be further pointing to the main hypothesis of this dissertation, namely that the original objective of participation -an improvement in spatial and social quality- can be achieved by providing the appropriate tools to facilitate insightful conversations among the actors involved in the spatial participatory process: the designers and the users.

1.2 Understanding the concept

At the outset, understanding the concept of participation in itself seems to be a difficult task. This concept has proven to be a challenging term that many times established a starting point for a variety of debates regarding its meaning in relation to multiple dimensions. Within the frame of various disciplines, paradigms, or situations, literature on participation encompasses so many different understandings, that it seems common-sense to anticipate that any endeavor to outline the concept of participation will be saluted with a series of critical attitudes regarding one or another issue. This situation reveals the difficulty of coming to terms with what exactly participation means, and from here, to create tools to support participation in various contexts.

First references to participation emerge in the 1960s, when, under the concept of participatory democracy, participation had been proclaimed as a re-
of the participatory project. It is possible that, even within the same project, participation goals will change from time to time and from issue to issue. Moreover, due to participants’ different backgrounds, it is likely that the goals will be perceived differently. For this reason it is advisable to identify these differences in expectations and perception at the outset, in order to make clear from the start the realistic goals — what the objective is for involving citizens and to prevent people from becoming disenchanted later on in the process. Some examples of goals and objectives for participation may include generation of ideas, identification of attitudes, dissemination of information, solving some identified conflict, measuring opinions, reviewing a proposal, providing a forum to express general feelings (Socrates, 2009).

Once the overall goals have been identified, the participatory process usually entails some specific steps, going through development towards implementation and finally reaching evaluation. Along this trajectory, some possible steps may include: identification of individuals or groups to engage in the participatory process; deciding at exactly which step of the process the participants should be involved; allocating responsibilities; articulating objectives in relation to all participants involved; identifying and matching alternative participatory methods and tools to objectives in terms of available resources; selecting an appropriate method to achieve specific objectives; implementing the chosen methodologies; evaluating the implemented methodologies to see to what extent they were able to attain their objectives (Socrates, 2009).

This represents merely a broad-spectrum trajectory, and it is not intended by any means to be a normative one. A participatory process can follow a more open or closed protocol, since any of these steps can be missing, some of these steps in themselves can be a participatory process, or some new steps can be

discovery of the traditional democratic philosophy (Olsen, 1982). As its central feature, participatory democracy promotes a collective decision-making, highly decentralized throughout all sectors of society, so that all individuals learn participatory skills and can effectively participate in various ways in the making of all decisions that affect them (Sanoff, 2008).

Within this general frame of participatory democracy, the intention was to directly involve the public in the issues regarding their environment, with the result of an increased sense of social responsibility. While being the first among the design disciplines to embrace participation (Albrecht, 1988), urban planning approached public participation as a means to promote social causes, towards creating a more human environment. Urban spaces, though, rendered perfect stages for participatory actions allowing for its consolidation, while at the same time enabling urban space to play its mediating role.

1.3 A broad-spectrum trajectory of a spatial participatory process

Spatial development represents a crucial domain for participation, since it addresses a complex condition generating multiple impacts on multiple parties. The trajectory of the participatory process will be different for each situation, since each place needs a careful consideration of its own participatory strategy in order to suit local conditions and needs. Due to the ever-changing nature of the socio-spatial parameters, the participatory approach needs to embrace flexibility in order to be able to respond to new challenges and opportunities. It is unlikely to outline a blueprint of an overall strategy to operate in all circumstances. However, some particular steps of the spatial participatory processes (Socrates, 2009) may be identified at large delineating a broad-spectrum trajectory, as follows.

At the outset, it is usually necessary to determine the goals and objectives
added or can replace the ones mentioned above; the order of the steps can differ, or a whole sequence of steps may be repeated for as many times the specific situation is asking for. Eventually the result of the participatory process is not an end-product in itself, since it should be continuously managed, re-evaluated and adapted to the ever changing needs of the population.

The way various methodologies are constructed and applied in a participatory trajectory can be rendered differently from one case study to another, following different procedural approaches.

### 1.4 Procedural approaches and the planning theories behind

Various paradigms have emerged with regard to spatial participatory practices. Advocacy planning, progressive planning, transactive planning, mediation or collaborative planning are just a few examples of different procedural approaches within spatial planning that hold public participation as a central tenet, while relating to it in different ways. They have emerged as a response to the synoptic or rational planning model (Banfield, 1955, 1959), which has been used for over twenty years as the most widely subscribed planning theory, and performing close to this day as a reference point for the justifications and methodological outlines given in the introduction to most plans (STIFTEL, 2000).

Synoptic planners tend to be highly trained technical specialists working for the government or as consultants to governmental agencies. Due to the sector-related focus of their technical expertise, it is very likely that they are less aware of other sectors, such as the social context of the planning projects they are engaged with. The stakeholder involvement in synoptic rational planning entails reviewing ready-made plans created in relatively isolated environments. Due to the minimal role the stakeholder is playing in this process, a good understanding of the problem at stake is difficult to reach, while an adversarial role-intrinsic in such a planning process—may generate conflicts and disenchantment.

The critique of synoptic rational planning gained wide circulation in the sixties, when Altshuler (1965) pointed to the fact that planners seldom achieved their objective scientific aspirations, as their claims for understanding were not endorsed by reality. Supporters of citizen input in planning processes criticised the often-futile nature of public participation (Arnstein, 1969). Planners have been criticised as being the servants of politically-connected development interests and that rarely they addressed meaningful policy choices (Kravitz, 1970; Goodman, 1971).

In an attempt to regain legitimacy, after the modernist failure promoting an alienating and sterile built environment, spatial planning started supporting the values, preferences and needs of people, by involving them in different ways and at different levels in the design process. As a potential solution to the frustrations of many planners to address the social and economical issues at hand, Davidoff’s (1965) proposal for distribution of planners into low-income minority neighbourhoods to represent the residents' interests on a city level, gave rise to the so-called advocacy planning movement. Advocacy planning acknowledges as a departure point the existence of many inequalities in the political and bargaining system, resulting in a large group of people to remain unrepresented in the process. Within this frame, the planner becomes ‘an advocate’ of one social group- usually underprivileged and seeking social change- either by directly advocating their cause or by encouraging them to become part of the process. Critics revealed the advocate planners’ tendency to be demographically different from the users they served (in terms of the size, the density, the distribution, the background, etc of the community where they come from), leading to advocacy...
planning to raise expectations impossible to be met in those communities.

The criticism of advocacy generated a trend of radical approaches to planning for the underprivileged, triggered by the inability of the current planning framework to respond to the needs of the poor. The progressive planning movement, initiated by Grabow & Heskin (1973) called for a systemic change including decentralization, ecological attentiveness, spontaneity and experimentation, by spawning equality, participation and legitimacy. Progressive planners promoted public ownership of land and job generating industries, worker-managed enterprises, tax reform, community organizations and leveraging of public resources through partnership with private organizations serving public purposes (STIFTEL, 2000), while other progressives performed outside the governmental field, doing opposition planning or organizing community self-help initiatives (Krumholz & Clavel, 1994; Friedmann, 1987).

New approaches emerged emphasizing planners’ facilitative role in the decision-making process. Social learning theories promoted planners’ role in bringing stakeholders together with the purpose of sharing information and helping social structures to learn from their experiences.

John Friedmann’s transactive planning encouraged the public to take an active role in the policy setting process, while the planner became a facilitator of information and feedback source. This approach considered that in order for plans to be implemented, the citizens and civic leaders, not the planners, should be at the core of planning. Mutual learning is though promoted, by bringing craftsmen and experts together, focusing on interpersonal dialogue, from where further actions are generated.

The critical approach introduced by the communicative planning theory (Forester, 1989) emerged as a unification of social learning theories and progressive planning theories. It asserted that through communicative strategies complementing the technical work of the planner, it is possible to inform citizens of the issues at stake, supply them with technical and political information and though encourage community-based planning actions. Forester’s philosophical proposal for consensus building was further employed within a more problem-oriented approach on the use of mediation in planning (Susskind & Ozawa, 1984). It was considered that planners could improve their effectiveness by learning the interpersonal skills of mediators, in terms of identifying interests (goals), crafting options (alternatives) and finding “fair” decision rules (criteria) (Healey, 1997; Innes, 1995).

Collaborative planning (Innes, 1996; Healey, 1997) is another method employing the communicative approach that brings all actors around a table, with the purpose to co-create solutions that reflect community needs and values. This approach empowers stakeholders, by transforming them into decision-makers, while helping planners achieve better outcomes by using local knowledge to inform projects.

More recently the above-mentioned approaches to participatory planning faced multicultural debates, which were triggered by a heightened awareness of ethical, racial and gender differences in society, and by the post-modern philosophers’ (such as Michel Foucault/pessimism regarding prospects for positive social change. As a solution to these concerns, planners plead for acknowledging diversity and differences, by meaningfully involving communities early in the planning processes and sharing power and theorizing activities with the stakeholders. For instance, new methods to help planners build arguments in support of their position on the issue being discussed introduce storytelling (Black, 2008; Polletta & Lee, 2006; Ryfe, 2006) as a more persuasive approach than the
quantitative argumentations usually employed by planners during deliberative discussions in groups.

As a response to the multicultural challenge, theories of social capital were developed in order to convey the complexity and effectiveness of social networks and community leadership. Although not fully applied in planning settings yet, their purpose is to move a community towards an operable response to new challenges (Briggs, 1997; Putnam, 1995).

The increasing attention for participation, within all policy domains, has though encouraged a professionalization of participation. However, it has been stressed (De Bie et al., 2012) that this increasing professionalization of participation is not neutral and that the choice for a particular participation method always reflects an approach towards participation. Professionalization shifts the focus towards participation methods. As a consequence, participatory practices turn into formalized and institutionalized settings, with particular methods and models, best practices and manuals, professionals and networks, etc. and as such lose their political impact (De Bie et al., 2012). Instead of seeing participation as a method, De Bie and De Visscher (2008) suggest to treat participation as an attitude. Following this approach, participatory practices are promoted as an evident part of everyday actions. For this to happen, it is necessary to develop open procedures and a multitude of instruments and approaches allowing everyone to integrate this in everyday actions. The concept will be explained in the next section.

1.5 Participation as an attitude

The concept of participation as an attitude is closely related to the so-called paradox of emancipation, characteristic for the discourse in social and educa-

utional sciences. The concept of emancipation, (or awareness-raising), has been tackled differently, following different paradigmatic traditions. The discussion triggering the various debates focused on the distribution of intelligence among human beings, and from there on the deficit approach, as follow.

The traditional framework- inspired by Freire’s (1972) literacy campaign for the oppressed- considered that intelligence, just like many other capabilities, are not equally distributed, and that humans, as students, need to be directed by the experts, as teachers, into a specific socio-political order. In the beginning of the nineties this modern ideal of general emancipation has been facing strong criticism due to the fact that it endorses that “liberation necessarily implies patronage”, as emancipation needs to be “directed by a patronizing vanguard of already liberated educators”, and so turning target-groups into “deficient objects” (Wildemeersch, 1992, p.159).

Instead of rejecting the emancipatory practices overall, this critique spawned dialogue about core concepts such as “emancipation” and “deficiency”. The deficit approach has been further linked to the rise of the neo-liberal discourse, introducing our societies as “knowledge societies”, and substituting “emancipation” with “empowerment”, emphasizing thus the individual responsibility and competence to adapt to the ever-changing knowledge society. Within this frame, participation was perceived as a new kind of moral-ethical practice, which was imposed rather than given as an opportunity (Tessier et al., 2004; Quaghebeur et al., 2004), having as a “price tag” the assumption of individual’s responsibility for all activities and possible failure (Lehmke, 2001).

Both the traditional and the neo-liberal approaches use as a premise the assumption of inequality -between student and educator, expert and lay-per-

son, etc.-, connected to the deficit approach. They are holding expectations that
such practices provide guidelines for how people’s minds and habits could be instrumentally changed, so that they can become better citizens, induced into a specific reading of the world (Ranciere, 2010). In conclusion, emancipation emerges as a paradox, as it results from a prescribed (the traditional framework) or imposed (the neo-liberal framework) trajectory into the only correct way to act and it often strengthens the deficit perspective, even when the raise in awareness is craven for.

Emerging as a critique to the above-mentioned approaches, the critical approach embraces a new conception of awareness-raising, departing from the presumption of “equality of intelligence” (Ranciere, 2009) among all people, while acknowledging “the competence of the incompetent” (Ranciere, 2006) as “the capacity of anybody at all to judge relations between individuals and the collectivity, present and future” (Ranciere, 2006, p.83). People are treated not as “presupposed passive participants but both distant spectators and active interpreters” (Wildemeersch, 2014), being able to engage intelligibly in all matters concerning their lives. Within this frame, equality and emancipation are not the outcome, but an assumption with which the participatory process begins (Wildemeersch, 2014). As long as the student (the citizen, the resident, the lay person, etc) is considered to still be in need of enlightenment, it is not possible for a participatory practice to promote an equal dialogue between all partners involved. A raise in awareness should be addressed on both sides- of the student and the educator. For this to happen, it is necessary that the competence, intelligence and emancipation of the student to be used as a starting point, and not as an outcome. Simultaneously, the educator is not considered to be anymore “the expert” who knows the only true answer; instead she presents in relevant ways the issues that she finds important and invites participants to develop personal viewpoints on the subject matter. Moreover, acceptance of educator’s limitations creates the opportunity for the student to demonstrate her own competence.

Within this frame, the outcome of the participatory process is unpredictable, as it does not bring clear answers, nor straightforward solutions. It is rather following the dialectic nature of social phenomena. Situations of uncertainty and ambivalence require examination of unprecedented solutions, changing the classical hierarchies between educator-student, expert and lay-person, “since all of them are somehow ignorant about possible solutions” (Wildemeersch, 2014, p.11).

In order to deal with the paradox of emancipation, the approach proposed by Wildemeersch (2014), based on the assumption of equality of intelligence and the continuous reflection and dialogue between all parties involved in the process, introduces the concept of participation as an attitude. This concept proposes to no longer see participation as a method, but as an attitude in itself. The focus is no longer on the methods to achieve the only right way to participate, but on the multiple ways of being a participant of everyday practices (Biesta & Cowell, 2010). The theory of Soenen (2006, 2009, 2009a) on community building, based on ambivalence and diversity, regards participation as an open process in which multiple ways of commitment are possible. In this way it is possible to perceive a (spatial) project not as an endpoint but as a connecting node within a problem field (De Bie & De Visscher, 2008).

Tackling participation as an attitude allows various benefits, as it may bring answers to old challenges. At the outset, it allows relating to participation (assembling people in a debate) without posing the need of having an actual project. This represents a long-acknowledged scientific challenge in the field of participation. Most research focuses on this type of participatory practices-which are also
Public Participation in Urban Design

1.6 Participation – an operational framework

An attempt will be made next to outline an operational framework for participation in spatial processes. Given that participatory spatial processes position themselves extensively in the science of “doing”, of “acting”- of performing real actions, while involving real people in order to solve real life-problems-, such an operational framework needs to be addressed as the fundamental core of any participatory practice.

Towards an operationalized approach, it has been considered (Soenen, 2009) that spatial policies, instruments and everyday life and theory must be dynamically integrated in order to assist participatory spatial processes.

In the search for a skilful approach towards spatial participatory processes to simultaneously produce social and spatial quality environments, a wide range of actions and spatial projects have been put forth- encompassing a large network of actors, innovative concepts, and being sustained by consistent policies. Next, an attempt to identify the most appropriate tools able to nourish participation within spatial projects will be made by investigating the three essential features of an operational frame for participation: spatial policies, instruments and everyday practices. In this way an integrated operational framework for a constructive participatory practice can be outlined, by pointing to the strengths and limitations of these features that come into play within a spatial participatory process.

1.6.1 Spatial policies

Spatial policies differ tremendously from place to place, from government to government, since the spatial, social, political, economical, cultural contexts to which they apply are different. The following discussion regarding spatial policies will focus on the particular condition of Flanders, Belgium.
In Flanders, the notable increasing demand for participatory practices within the field of urban planning is acknowledged by several spatial policy documents. For instance, the Spatial Structure Plan for Flanders (Ministerie van de Vlaamse Gemeenschap, 1997), adopted by all provinces and almost all municipalities in Flanders, operationalizes the concept of strategic planning in terms of 1) a long-term vision of the spatial structure of a region, 2) short-term actions reacting to sudden opportunities or problems and 3) co-production, as involvement of citizens in the planning process. However, recommendations as to how to implement co-production are lacking from this Structure Plan.

The White Paper (Witboek Stedenbeleid, Boudry, 2003) introduces the concept of the urban debate, as the main forum that evaluates the interaction between the policy and the project itself, while Beleidsplan Ruimte Vlaanderen (Departement RWO, 2012) is actually organizing such an urban debate. The report of the Keulen commission, entitled Citizen Participation in Flemish Cities (Dezeure et al., 2009) is listing fifty recommendations for implementation of the participative democracy of the White Paper and the concept of co-production mentioned in the Structure Plan. In this report it is argued that professional management is needed not only of participatory processes, but also within these processes. This implies that participation represents more than debating paper projects, but the actual involvement in the realization and evaluation of such projects.

1.6.2 Instruments

One of the criteria to obtain support for urban projects assesses the range of instruments that a city plans to employ to actively involve the population and local actors in the preparation, execution and follow up of these projects. A large set of instruments have been put at work in the service of public participa-

tion all around the world and also within Flanders, in order to implement the above-mentioned policy documents. Some are traditional techniques, while others are emerging techniques assisting more in-depth opportunities for dialogue and collaboration (Socrates, 2009). These traditional and emerging techniques can be supported by analogue or digital tools. A brief description of some of the types of traditional and emerging techniques which have been employed with a certain level of success will be provided below, following the way they have been elaborated upon by Socrates (2009).

Some of the most known examples of traditional techniques convey public meetings, open houses, advisory committees, task forces, target briefings, focus groups, bilateral meetings, public hearings, surveys, toll-free phone line and interviews.

Public meetings are sessions open to anyone interested in a publicized subject of consultation. They usually start with a technical overview of the situation and process, and then allow participants to speak up their concerns or to ask questions from the experts. They are useful for distribution of information, but offer limited opportunities for one-to-one dialogue and participation.

Open house communicates information through a series of displays, while experts may provide explanations. Participants are asked to register their opinion before leaving, and information handouts can be available.

Advisory committees, also known as task forces, select specific groups to represent a sample of interests, and ask them to prioritize, review, make recommendations, develop alternatives, evaluate, assist, etc. Advisory groups are usually initiatives on long-term, while task-forces have short life span.

Target briefings are explicitly designed for specific target groups (such as ministers, municipal officials, media or specific interest groups), benefiting from
private or individually-tailored presentations.

Focus groups are small groups of up to ten people, sharing common demographics (e.g. youngsters) or interests, discussing a specific topic and having a moderator to lead the discussion of facts, explore participants’ feelings, values, interests, concerns, etc. It has been used successfully to test differences, consensus and deliberate between groups. A detailed record of the event is kept for future design work.

Bilateral meetings usually facilitated within a high level of conflict, when the sponsoring agency meets directly with the users to receive feedback or discuss certain subjects of interest.

Public hearing is a forum where users can make formal statements about the subject matter. Oral statements are usually accompanied by written briefs. When a panel is representing the sponsoring agency asking questions of the presenter, generally a final report is submitted with findings and recommendations.

Surveys are used to collect information, solicit opinions, and build a profile of the groups or individuals involved, by providing information to the public in order to focus participants’ attention on specific issues.

All traditional consultations produce some sort of publication, describing the process, defining the problem, issue or situation, suggesting options or asking for feedback.

On a more individual level, toll-free phone line and interviews are also traditional techniques. Toll-free phone line provides an impersonal opportunity for the public to give personalised feedback, provide ideas or identify issues. A staff member may answer the phone, or a taped message provides the opportunity to record comments.

Interviews are individual discussions with the public or representatives of interest groups that allow covering a wide range of information compared to questionnaires, and thus identifying new issues or concerns not previously considered.

In terms of emerging techniques, some examples are the open space technology, future search conferences, public policy dialogue, appreciative inquiry, or design workshops. In open space technology participants sitting in a circle organise breakout sessions, led and reported by self-selected individuals. It is a good technique to set strategic direction, plan or initiate a project and develop standards, criteria or regulations.

Future search conferences are workshops gathering forty to eighty people over a period of two to three days to join forces towards visualizing a desired common vision for the future. It places emphasis on self-managed, small-group discussions.

Public policy dialogue implies an in-depth collaboration with a large range of stakeholders (often including the sponsor) in a committee or workshop format, usually meant to achieve consensus on diverse views, interests or values.

Appreciative inquiry puts emphasis on the positive aspects of a situation, in terms of strength, opportunities, resources, capabilities, and builds on these positive aspects, instead of listing and dwelling problems and challenges.

Design workshops focus on generating design ideas for development, by involving designers- providing technical expertise, facilitation and design skills-, the community and other key stakeholders- providing information on their expectations and values, and also offering critical feedback on initial design proposals. In these workshops various tools may be used, such as an interactive display (a display on urban issues that visualizes opinions by voting, post-its or physically altering the display), elevation montages (elevations of buildings lining a street
or an open space triggering community discussions) or an interactive model (a kit of simple blocks of various sizes illustrating the volumes of different urban entities).

Analogue and digital tools have been employed to serve these traditional and emerging techniques. Digital tools have been used increasingly in the last years in the practice of ICT-assisted participatory planning. They represent an alternative to the traditional linear and hierarchical knowledge production methods, while they assist lay-people to provide valuable local knowledge, rooted in long-time experience of their living environment. In line with the constructivist approach that this dissertation is employing, the process of understanding is actually a process of constructing an understanding. Cities are not just simply entities that people occupy and need guidance through. The spaces where people live are constructed every moment with every conversation they have, every space they inhabit, every structure they erect and every step they take (Haque, 2011). Given that people have their own constructive processes, built on their heterogeneous perceptual frameworks (as it will be shown in the next chapter), tools are necessary to follow the social knowledge production at its inception, and from there to allow to share it, to discuss about it and even to alter it. By employing constructivist learning and production principles embedded in the ways how they enable social knowledge construction (Pak & Verbeke, 2012), these digital tools perform well as a medium to facilitate dialogue and learning, and also communicative action.

Different approaches of these tools have been distinguished (Wallin et al, 2010), as follows. Some of these tools perform as databases, collecting experienced-based data for research purposes and also for planners’, e.g. softGIS (collect and analyzes inhabitants’ experiences of the living environment), Tell a Story (a mobile phone application for collecting location-based stories), fix my street (an online platform allowing to report, view or discuss local problems), Civic Crowd or Change by Us (online platform allowing people to map and share interesting projects and ideas).

A wide range of techniques convey tools for conversation- meant to enhance participation of different stakeholders in planning and community processes. Some examples are WebMapMedia (a web mapping application for contextualized discussions), various online forums (such as OPUS), MyCityLab in Brussels (a location-based community platform, designed to empower people to collaboratively find ideas for local issues), Neighborhood, SeeClickFix and Verbeterdebuurt (a platform to share ideas and insights to improve one’s neighbourhood), YiMBY (an acronym for Yes in My Back Yard; a network where people can make demands for interventions they want to be put in their area), Brickstarter (a platform making use of social media and mobile applications to perform as an interface between citizens and institutions, by enabling people to articulate and progress sustainable ideas about their community), Open Plans (an open-source platform which provides advice on technology, transportation and city-planning, while it helps citizens to get the responsive government they should expect, and scale up small discussions to city-wide change), Bristol rising (a platform to revitalize downtown Bristol through ‘crowdsourced placemaking’, by enabling people to meet and communicate with others, to submit, vote and campaign for ideas they like), Aloitekanava (an initiative channel which enables young citizens to participate in municipal decision-making online and to give suggestions to improve their immediate surroundings), Indre by lokaludvalg (an inner city local committee web application with the purpose to strengthen local democracy by being a link and ensuring dialogue between the citizens of
Copenhagen and the politicians in the city council, in all matters of particular importance to the city).

On the other hand, some of these tools and platforms allow people to co-develop (potentially useful in a/o design workshops) and customize them for participation in urban planning. Some examples of such tools are Shared Design Whiteboard (Shadow) (a collaborative drawing tool), “Lighter quicker cheaper” (an approach taking incremental steps using low-costs experiments, and tapping into local talents to deliver small-scale projects in a variety of environments, transforming public spaces into treasured community places), or Spacehive (a crowd-funding platform for neighbourhood improvements).

Whether traditional, emergent or digital, the role that these instruments play is always changing, since the actors, and the spatial, social and institutional context are always changing, from one case to the other, and even within the same project. For instance, five different types of spatial participation have been noticed by Wallays (2012), with regard to the different contexts in which participation may occur: participation as a source of inspiration (when designing a project in advance, before the site being populated), participation as a source of information (confrontation of personal needs of the locals), participation as a design tool, participation as a design guideline of the existing context, and participation as a tool of social control.

The instruments employed in these different types of participation contexts may be single-purpose or multi-purpose, some may demand no skills at all while others require specialized training to handle. Since participation needs to always be tackled differently, customized to the emerging situation of each context, certain difficulties emerge regarding the employment of these instruments. First, it has been noticed that it is difficult to predict the impact of an instrument on a participatory process. Second, these instruments might be used differently, by different actors for different purposes. A relevant example is that of the concept of the participation ladder ( Arnstein, 1969), which outlines participation as a process on eight steps: manipulation, therapy, informing, consultation, placation, partnership, delegated power and citizen control. Again and again scholars have shown that in reality participatory processes are actually not linear, as different steps may actually occur at the same time – for instance, informing and consulting people (Collins & Ison, 2006). So, the same instrument can have multiple effects. And third, the changing nature of the particular institutional frame and the socio-economic context for which an instrument is created demands a continuous update of the instrument itself to the emerging context.

Given the above-mentioned considerations, it is advisable to think of participatory instruments as continuously flexible social assets and to assess all different facets and events that outline the participatory process, in order to be able to select the appropriate approach. For this to happen, certain knowledge must be detained regarding everyday life and theory (Soenen, 2009).

1.6.3 Everyday knowledge

Since spatial projects always reveal a double objective, being a combination of spatial and social incentives, the value of the participatory approach is undeniably expanding beyond the attainment of an effective and appropriate design outcome. Tackling participation from a social perspective can bring valuable insight into understanding and situating the elusive concept of participation into a more concrete human-centred practice.

Starting from this social imprint it is interesting to understand how participation constructs itself through everyday connections between people, instruments and spatial contexts. As Soenen (2009a) points out in her doctoral
dissertation, it seems pertinent to come to terms with the knowledge of everyday practices, which may disclose important aspects of the relation between space and human behaviour in space. Such understanding is absolutely necessary to develop skilful participatory tools.

Soenen(2009a) notices that the complex, non-linear connections between humans and the material environment have proved, time and again, difficult to be grasped by planners and of non-interest for social scientists. From one side, designers and spatial experts have shown no or an extremely scarce history of integrating everyday knowledge within urban spatial theories (for an exception see, for instance, Gehl, 2002, 2010). On the side of social sciences, the notion of space (Boomkens, 2006) has been ignored over the last hundred years, as more interest has been shown for the notion of time- in terms of change and processes. Research on the relation between space and behaviour has been clearly marked by the pioneering works of Goffman (2008), Jacobs (1989) and Whyte (2001), which have delivered valuable inspiration and have influenced the upcoming literature that emerge from the nineties onwards. Special attention starts to be granted to spatial concepts, with focus on urbanism and public space. Some of the most noteworthy contributions have been delivered by de Certeau (2011) on the concept of spatial tactics, by Sorkin (1996) and Davis (2006) on the loss of public space, and more recently by Lofland (1998) on a/o interactional and aesthetic pleasures of public life. These limited literature references with regard to the integration of everyday knowledge within spatial contexts show a lack of investment, in terms of time and resources, in producing and using in-depth everyday knowledge within spatial interventions and spatial policies.

Searching for the various everyday aspects harnessing the social dimension and taking them seriously in consideration whenever approaching a participatory spatial design task, this dissertation argues, is fundamental in developing effective and appropriate urban design solutions.

While this operational framework of participation is comprised of three essential features (spatial policies, instruments and knowledge of everyday practices), for the purpose of this dissertation (the design of a participatory tool to operate as a mediator between the different universes of discourse of the designers and the users) the emphasis falls only on the instruments and the understanding of everyday practices, following the assumption that the wide-adaptability of the tool to be developed through this research, can be suitable for any spatial policy.

1.7 Conclusion: The need for innovative participatory tools

The participatory approach in the actual context of urban planning seems to be an intricate process entailing at the outset a clear understanding of the different universes of discourse (Rapoport, 1970) of the different actors involved. For such an exchange of information between designers and users to take place, this dissertation proposes to approach participation not merely as a method running in a formalised and institutionalized setting, following a prescriptive manual delivering the best model of practice, but as an attitude (Wildemeersch, 2014) in itself, becoming an evident part of people’s everyday life.

This approach employs as a premise the assumption of “the equality of intelligence” (Ranciere, 2009) of all people, in order to eliminate the so-often deficit approach of traditional participatory practices. A raise in awareness on both the sides of the student (the lay-person, the citizen, the resident) as well on the side of the educator (the designer, the policy-maker, the spatial expert) is addressed so that an equal intercultural dialogue can occur.

Approaching participation as an attitude demands a whole range of instru-
ments, an open policy and the acceptance of conflicts. An operational framework for participatory practices is thus proposed to assist the implementation of this approach, in terms of spatial policies, instruments and everyday practices. Given the purpose of this dissertation (designing a participatory tool for urban practices), however, the focus will be only the instruments and the knowledge of everyday practices, following the assumption that an open participatory tool can be applied within the frame of any spatial policy.

Participation does not convey a linear process with predictable outcomes; therefore there is no given recipe for successful spatial participatory processes. No participatory process can automatically ensure success; however, it is likely that the participatory approach itself may minimize failure (Socrates, 2009). Participatory tools and most crucially, the ways they are being used in the participatory trajectory, play an essential role in channelling the efforts in the right direction, so that the participatory project to reach its objective.

For the purpose of this dissertation- the development of an operational framework for a participatory tool- the outline of the various existing instruments shares light on the challenges of different procedural approaches, as well as on the importance of integrating everyday knowledge for attaining a skilful participatory spatial practice. The knowledge of everyday practices has many times proven to be difficult to grasp and integrate in spatial interventions and policies. Time and time again it has proven extremely difficult to come to terms with the different mind-frames of the various actors involved in participatory processes. Substantial differences exist between the ways the designers and the users “read” and make sense of the environment. At the same time, very different types of expression are used by these two groups of actors to externalize their intentions, desires, impressions, etc. Designers possess an expertise which is not usually found among lay-people. They are being trained to assess an environment in visual terms, regarding its perceivable physical structure and aesthetic values. This may prove a strong professional advantage, but within the frame of participation, it may also establish an obstacle in making themselves understood by other people who do not share the same spatial training. From the side of the users, the dialectic nature of human phenomena conveys an inconsistency between the way people actually perform in space, and the way they imagine their interaction with the environment. Naturally users assess an environment in terms of emotional and functional values, and many times it is difficult for them to conceptualize and articulate the reasons for their preferences, as these may have emerged unconsciously, sometimes even irrationally, but, nevertheless, humanly valid.

Given this difficulty of understanding the social and, implicitly, the psychological dimensions that come into play within the complex machinery of participatory networks, the necessity arises to develop a tool able to provide in-depth knowledge of the everyday practices distinguished within a given spatial context. From here, the goal of this dissertation is to manage to design a tool to uncover some aspects of spatial tactics that people employ when dealing with their environment. Spatial tactics are defined as the way that people adjust their behaviour to spatial and social settings (De Certeau, 2011). Existing tools to map tactics draw heavily on the ethnographic technique of participant observation (Soenen, 2009). This is indeed a very valuable method to observe patterns of behaviour, to inform about the appropriate areas of investigation, to discern how the actions of people correspond to their words and to develop a trust-worthy relationship with others that motivates people to share their lives with the researcher (Gle– sne& Peshkin, 1992). However, this methodology is hardly ever used by spatial
experts, since it is very time-extensive and above all, since it requires knowledge from a different field- the métier of integrating everyday socio-spatial practices (Soenen, 2009) within architecture and spatial and urban planning.

For designing a tool to visualize spatial tactics, in order to make them explicit to the spatial experts but also to the users themselves, it is important, at the outset, to understand the way people perceive, conceive and use their environment, namely to assess their environmental images.

The next chapter will thoroughly deal with this concept, by providing a theoretical framework of the environmental image in relation to the dialectic nature of human phenomena, which are both performed in reality and imagined in human mind. In order to develop a holistic approach, the internal information processing of storing, structuring and retrieving information will be examined from a cognitive, sensory and phenomenological perspective. This may prove a valuable approach for integrating different kinds of knowledge (e.g. what people say, what people say they should do, and what they actually do), originated from different actors- with different types and levels of expertise-, involved in the participatory discourse, in this way facilitating improved communication and contact within spatial participatory processes.

2. The environmental image and the dialectic nature of human phenomena

2.1 The relevance of the topic

In order to act effectively in the environment, to locate themselves or other objects in space, to get to various destinations, to communicate spatial knowledge or to interpret navigational instructions, people need mental representations of space, the so-called environmental images. To understand the importance of delivering a theoretical framework of the environmental image, von Foerster's (1973) statement has been pointed as relevant:

“The discovery we all have to make for ourselves is the following postulate: the environment as we perceive it is our invention.”

While the question of an objective reality remains tantalising and unanswerable, even meaningless (Tuan, 1974), one thing seems to be clear: people are incapable of accurately, objectively and completely perceiving reality. The way the environment is understood and represented in people's mind is to a large extent a consequence of their interaction with elements in the physical environment (Piaget, 1954; Werner, 1957). As a result of this interaction, people develop a mental structure, the so-called environmental image, encompassing "memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behaviour and experience related to the physical environment" (Proshansky et al., 1983, p.59). In this way past experiences shape people's interpretation of the environment and from here, their behaviour, their habits, and the ethical and social codes they adapt to.
Environmental images differ from one person to another, as people attend differently to specific types of information and also process differently relevant information. The way people process environmental information is influenced by individual and group differences which may comprise developmental differences, “personality” factors, ethnic or cultural factors. A large number of studies in literature are discussing these types of differences in environmental cognition (a literature far too broad to cite, but see the classical Downs & Stea, 1973; Moore, 1979; Moore, 1973; Hall, 1966, Tajfel, 1969; Tuan, 1974). However, these differences in the environmental images support the core idea of “equality of intelligence” (Ranciere, 1991) on which the participatory approach employed by this dissertation—“participation as an attitude”—is founded.

Even though people are so unpredictably different by means of individual attributes defining their environmental images, one of their most important common points is their search for space, which develops according to their similar needs for appropriation of space and for living in groups (de Bethune, 2012). Hence, these environmental images can substantially influence the way that cities develop and are used (Lynch, 1960). Attaining a thorough understanding of the way that people construct and update their environmental images may prove helpful to establish successful spatial participatory processes.

Despite the fact that people are “delighted to participate in the affairs that affect their lives” (Kaplan, 1980), collaboration among various actors involved in participatory spatial processes is not always easy to achieve. Two issues have been identified as relevant in this direction: first, it is necessary that people are able to externalize their environmental image- to articulate for themselves, as well as for the others, the reasons that trigger their choices; second, they should be able to verbally cooperate with each other, to engage in conversations by means of ex-

changing their environmental images. Sennett (2012) contends that cooperation is a craft, and the foundations for skilful cooperation lie in learning to listen well and discuss rather than debate.

In line with the first stipulation, and as the initial statement points out (“the discovery that we all have to make for ourselves”), becoming aware of our way of making sense of the world, of our environmental image construction, represents the first step in a reconciliation of values, needs and desires towards a more self-aware performance and participation in a process of improving the quality of the spatial surroundings. This, however, is not an easy task, due to the dialectic nature of the human phenomena. A large body of scientific literature studying social reality has pointed time and again to the inconsistencies between what people say they believe and what people say they do, which are often contradicted by their actual behaviour. Understanding the different nuances of the dialectic nature of the human phenomena may eventually prove beneficial when integrating this knowledge in conversations between designers and users.

When verbally cooperating with each other, as the second condition demands, when the need arises to exchange knowledge, impressions, values, etc regarding the environment, an encounter between subjectively-created environmental images may generate contradictions on the different interpretations that people attach to their surroundings. This happens especially when the ‘owners’ of the environmental images are coming from very different social and cultural backgrounds, and not sharing the same domain of expertise- as it is usually the case with designers and users. Exchange of knowledge among these very different “universes of discourse” (Rapoport, 1970) in order to facilitate productive and beneficial results, not leading to conflicts alone, may prove an intricate task. Difficulties might appear because people each have their own way of expressing
themselves, and it is difficult to change the way according to circumstances.

Whenever people exchange environmental images, there are two dangers involved:

You hear the statement as some kind of echo of yourself. You are actually listening to your own opinion. If it agrees with your opinion you may accept it, but if it does not, you will reject it or you may not even really hear it. The other danger is to (...) not understand the statement in its true sense, (simply because it does not come from the same universe of discourse like yours). You will easily be caught by something which is involved in your subjective opinion, or by some particular way the statement is expressed. (Suzuki, 2010)

These intricacies have established a long tradition of difficulties within spatial participatory processes, as mentioned in the previous section.

To overcome this situation this dissertation proposes to design a participatory tool to facilitate an exchange of knowledge, an exchange of content among environmental images, that is emerging also from presence (attained through observation through sensory perception), rather than only from interpretation. Knowledge derived through plain observation- as it is the case with the perspective of realism-, collects data that correspond to a large extent with reality. Following the methodological approach of the factist perspective (Alasuutari, 1996) it is possible to obtain objective, accurate information about the actual behaviour and attitudes of individuals in space. I will argue that, when knowledge emerges from an active observation of the affordances of the environment- of what is really there-, rather than interpretation alone, it presents the advantage of grounding the arguments and at the same time opening up individual perspectives towards a more constructive spatial participatory practice.

When, on the other hand, knowledge follows the meaning component, pursued through a specimen perspective (Alasuutari, 1996), it is possible to come to terms with the personalized stories that people create by attaching subjectively-defined meanings to the material reality. This view on knowledge, depicting the social construction of reality, belongs to the perspective of constructivism.

The two approaches- of realism and constructivism- have the ability to reinforce each other, as they provide knowledge that accounts for all aspects of social reality within different spatial circumstances. The dialectic nature of the social phenomena provide evidence of the mutual dependency of these two approaches, in terms of presence and interpretation, since all social phenomena are simultaneously both performed (as a tangible action taking place in reality) and imagined (as a mental image taking place in the psyche of the individual).

In order to explain the necessity of taking into account both approaches when studying social phenomena, I will first examine, from a cognitive, sensory and phenomenological perspective, the way the environmental image is constructed and activated, by pointing to various assessment techniques employed in these disciplines. I will relate these internal processes of construction and extraction of the mental image to the methodological approach of presence (realism) and interpretation (constructivism), as they have been introduced in the work of Alasuutari (1996) with the factist perspective, and respectively, the specimen perspective, in relation to the ethnographic research technique of participant observation. To finally draw attention to the consequences that these correlations produce in real world practices: the spatial tactics (De Certeau, 2011) that people employ when dealing with their environment. Spatial tactics are the actions triggered by the needs and desires driven by people’s interpretation of the world and comprising their environmental image. These tactics are created as a response to the rules and regulations imposed upon the individual by the
external strategic system (cultural, social, economic, etc.).

Being able to understand some aspects of people’s spatial tactics can help urban planners and policy makers to get insight into the “genius loci” knowledge, into the desires, aspirations and plans of people about their environment, having as result the design of more tailor-made interventions addressing the specific way of living of communities. Moreover, becoming aware of their own tactics as well as the tactics of others in space, people can achieve more spatial awareness, as such encouraging capacity building, by gaining perceived control and participation in urban design.

2.2 Why ‘environmental image’ and not ‘cognitive map’

The urban environment is a very large and complex setting, difficult for people to understand and read as a whole. Therefore, in order to understand and adapt to its surroundings, to act effectively in space, the human mind adopts a mechanism of constructing simplified versions of reality (Walmsley, 1988), by integrating local experiences over time. There have been a variety of metaphors to describe these simplified versions of spatial reality. Some referred to “cognitive maps” (Tolman, 1948) or “cognitive images” (Downs & Stea, 1973), some to “schemas” (Tversky, 1972), “mental maps” (Gould & White, 1974), “map in the head” (Stein, 1982), “mental collage” (Tversky, 1993), “cognitive atlas” (Kuipers, 1982; Hirtle, 1998), “inter-representation network” (Portugali, 1996b), “spatial mental model” (Tversky, 1991; 1992) while other alternative expressions can be “environmental image” (Lynch, 1960, Appleyard, 1969), “existential space” (Norberg Schulz, 1971) or “lived space” (Minkowski, 1933; Bollnow, 1967).

Studies in academic psychology, cognition and behaviour, which are directly concerned with the nature of the cognitive representation, with how information is stored, structured and retrieved in terms of physical entities, distances, etc., the “what”, employ the notion of “map”. From a different approach, studies of environmental and ecological psychology, which aim to understand the reasons behind the logic of construction of the cognitive map – the “why”, use as a common thread the notion of “image”. The environmental image (sometimes, in short, referred to as mental image) is thus studied as “an internalized, digested mental distillation of the ‘essence’ of a city ‘soaked in meaning’ and compiles the layering of all sensate inputs” (Carrera, 1998, p. 9).

Since the interest of this dissertation consists in incorporating the understanding of aspects of the dialectic nature of the human phenomena in the conversation between designers and users – therefore understanding not only how people perform in space, but also how they imagine their performance, incorporating thus impressions on affect, meaning, function or symbolism–, ‘environmental image’ will be chosen as the topic of concern and investigated as such.

2.3 The components of the environmental image

In order to provide insight into the concept of environmental image, it may prove helpful to identify those subjectively-defined components that influence the formation of the image.

While focusing on the study of the urban environment, Lynch (1960) argues that any city can be decomposed into a number of spatial components – paths, edges, districts, landmarks and nodes. Thus, he defines a set of characteristics of the physical structure of urban space that may influence individuals in their process of internally representing the city in a consistent way. The identification of these characteristics, he argues, depends on some specific features referred to as the components of the environmental image: identity (distinctiveness of the
form of physical elements), structure (the spatial relation of the object to the observer and to other objects), and also meaning (the social and cultural values attached to the city elements). The first two components (analyzed systematically by Lynch in his study on mental maps exercises) refer to physical qualities of the urban environment, which may be revealed while proceeding from a perspective of realism, or what Alasuutari (1996) calls a “factist perspective”, that is a methodology collecting data that correspond to the external reality. The last component relates to a more emotional aspect that may be studied following a perspective on constructivism, or what Alasuutari (1996) calls a “specimen perspective”. In this way it is possible to understand how people build up their personal world of meaning, the social construction of reality. In the creation of the environmental image the social and emotional meaning seem to be as equal important component as the identity and structure components, since it is due to these meanings that certain aspects of the environment become highlighted by the mind of the observer and receive special attention, while others pass completely unnoticed.

All these three components coexist and it is impossible for an individual to oversee them separately. In order to deepen understanding of the environmental image, I will propose next a theoretical framework of the environmental image that pursues an ecologic, cognitive and phenomenological approach. Such a three-fold approach can share light, from both a perspective of realism and constructivism, on different aspects playing some part in the process of environmental knowledge acquisition.

2.4 Theoretical framework of the environmental image – a three-fold approach

The theoretical framework of the environmental image integrates three fundamental paradigms: the ecological, the cognitive, and the phenomenological. The cognitive approach accounts for a more empirical methodology following the perspective of realism, the phenomenological approach relies heavily on interpretation based on a constructivist perspective, while the ecological approach is combining the two perspectives, in order to provide information corresponding to the exact time and space, whereas assessing it by means of subjective interpretations.

This three-fold approach will inform on the concept of environmental image in terms of input (construction) and output (retrieval) strategies. Understanding of these strategies may help to gain insight into the dialectic nature of the human phenomena, providing explanations on the disparity between the performed behaviour in space and the imagined reasons of its being- i.e. the environmental image expressed through spatial preferences, habits, tactics, etc. This information can be further used to facilitate a constructive dialogue between people coming from different universes of discourse, as it is the case with designers and users.

2.4.1 INPUT mode: the construction of the environmental image

For the creation of the environmental image, a variety of features intertwine in the mediation of acquisition of spatial knowledge. This knowledge may come from direct empirical sources- i.e. from the interaction with the environment-, or from indirect, conceptual ones- pictures, maps, language, etc. - and it is constructed around a subjectively-defined reference frame and perspective (Tversky, 2003). Whilst the knowledge of researchers, planners, etc. of a specific case mostly originates from imagined, abstract sources- theories, imagination,
visual inspiration, training, etc., the knowledge of inhabitants is mainly constructed from their direct intrinsic experiences performed within the setting, to which they attach personal interpretations.

When information comes from direct contact with the environment, through the senses, the ecological approach introduced by Gibson (1979) provides the explanation of the process. People’s interaction with the environment consists in a continuous loop of perceiving and acting (Gibson, 1966; Neisser, 1976), having as result the acquisition of environmental information through direct experience of the settings. Sensory perception can be regarded as the most straightforward way to elicit the information embedded in the environment. This approach is referred to as perception-in-action, since action is a critical facet of the perceptual process (Gibson, 1979). Hence perception is considered as being ‘active, not passive, (...) exploratory, not merely receptive’ (Gibson, 1958, p. 43). Senses are examined as perceptual systems (Gibson, 1966); they are contextual, and therefore they cannot be considered outside of an environment (Lucas, 2007). In this direction, the ecological approach proves valuable, as it stresses the necessity of exploration in real world situations.

However, the environment is a very large and complex setting, and its entire layout cannot be perceived from one single location (Kaplan & Kaplan, 1982; Thomson, 1987; Weisman, 1981). Cognitive operations are therefore necessary to assist sensory perception. The cognitive approach is investigating how knowledge is stored, structured and retrieved (Leary et al., 2003), in an attempt to establish what people remember about places and how accurate the spatial layout is remembered. Conform to the traditional theories of cognition, following a positivist approach, when people investigate the environment and acquire knowledge about it, they are going through an internal information processing.
This as a pervasive process which starts early in childhood (Piaget et al., 1956), and gradually develops to adulthood, following a similar developmental pattern. In this direction, Siegel and White’s model (Siegel & White, 1975) of developing cognitive maps from landmark over route to survey knowledge is the dominant framework. A progressive change in human capacity to understand space and spatial relations can thus be observed. This capacity, combined with actual experiences of everyday life in large-scale environments, generates different types of knowledge with different levels of detail and integration. As people gain familiarity with their surroundings, their cognitive structure suffers orderly and predictable transformations.

As a result of these transformations, the spatial knowledge that people gather is related to their personal reference points, to those places that carry an emotional meaning for each individual—the so-called “anchor points” (Golledge, 1978). Anchor point theory (Golledge, 1978) suggests that cognitive structure about the local region is built around these anchor-points, first delineated by someone’s home, and then expanding to the workplace, school, grocery shop, etc. As information accumulates, spread effects in the vicinity of primary nodes and paths allow the development of simple spatial concepts, like neighborhood (Golledge & Stimson, 1997, p. 254).

It may be concluded that the environment becomes known as a collection of parts hierarchically organized. People create their own subjectively-defined distortions of reality, using different encoding strategies, related to the various meanings conferred to places. A constructivist perspective, as delivered by the phenomenological approach, it is thus required in order to understand the strategies of meaning attachment. Phenomenology considers that people are active in the creation of meaning and that a great part of being human is linked to

Figure 3: Anchor point theory by R. Golledge (1978)
the perception of our surroundings, the experience of place (Pile, 2013). Since people tend to map their surroundings with memories of past events, which they remember or look forward to happen, Ingold (2002, p.219-220) considers that “places do not have locations, but histories”, just as environmental images are “not so much representations of space as condensed histories”.

The dialectic concepts of space and place and the place-defining attributes (i.e. place identity, place attachment, sense of place, etc) may appear as fuzzy notions to understand as an outside observer. Phenomenology asserts them as strong social and emotional constructs, developed over a long period of time, and founded on the interactions between people and the physical setting, their activities and the meanings conferred to places (Relph, 1976). While a place may comprise one unique meaning – identity-, simultaneously, it may hold as many different meanings as there are people using it (Relph, 1976; Meining, 1979). The different meanings (aesthetic, economic, scientific, ceremonial, spiritual, etc) gathered by a place constitute its genius loci, the guardian spirit of a place (Norberg-Schulz, 1979).

An important concept to be mentioned here is also that of the “anthropological place” (Augé,1995, Low, Bourdieu,), which refers to a place with identity, social relationships and history, a place that evolves organically through its relationship to its users. Augé considers that anthropological place is “formed by individual identities, through complicity of language, local references, the unformulated rules of living know-how” (Augé, 1995, p.101). Within this frame, social relations develop as a result of the cultural context characterizing a particular place. Therefore in order to understand place it is necessary to understand the cultural hierarchies determined by the mechanisms established between the individual identity and the spatial component.

Following the phenomenological approach, a dual interactional process between the individual and the environment is revealed: people confer meaning to the environment and then, become attached to the meanings themselves; thus, they are progressively identifying themselves with their surroundings. This process of identification is bonded to environmental settings but not solely to the physical aspect of space. The interpersonal, community and cultural relationships that occur in these places support and trigger, at least in equal manner, people’s attachment to their surroundings. Thus, it seems that places that encourage social interaction have an enhanced ability to promote a strong place attachment, very important for the well-being of individuals.

The proposal to study the impact of the socio-spatial environment on the creation of the individual environmental image from an ecological, cognitive

Figure 4: Environmental image construction
and phenomenological approach affords the disclosure of the most significant features that mediate the input strategies of construction of the environmental image. They stress the importance of regarding the individual and her environmental image as a “complex unitary system” (Ittelson, 1978, p. 197), which collects, selects and interprets elements of the environment based on a subjectively-defined reference frame and perspective (Tversky, 2003). From here the disparity between internal reality (the environmental image) and external reality (the material environment) becomes better graspable and traceable in the conversations between people coming from different universes of discourse, as it is the case with designers and users.

2.4.2 OUTPUT mode: assessment techniques of the environmental image

The output strategies of retrieving information back from the environmental image will outline existing assessment techniques of the environmental image, as they have been developed within an ecological, cognitive and phenomenological approach. Moreover, an overview will be provided of alternative tools which have been lately employed for similar purposes and which are supported by various location- and media- technologies.

In line with the ecological approach, assessment techniques dealing with sensory perception are always performed in the very settings under investigation. Some techniques resemble sensorial descriptions of case studies. Illustrative in this sense is the Sensory Notation project (Lucas, 2009). A notation for the sensory experience of the urban space is tested along a route (by taking readings at each traffic intersection or at specific time intervals) and in fixed places (e.g. a square), using a matrix of senses (visual, aural, olfactory/gustatory, tactile, thermal, kinaesthetic), a word to describe each sense and mapping their overlapping, priority and temporality— as persistent, repetitive, singular, rhythmic or intermittent phenomena. This type of techniques are following a double methodological approach: they are assessing the information that the respondent gathers from the environment through the senses at the moment itself— proceeding from a perspective of realism-, information to which some subjective interpretations

![Image](image_url)
are eventually attached- proceeding from a constructivist perspective. From here appears the evident difficulty of separating the two modes of operation - plain observation and interpretation-, employed for assessing sensory perceptions.

In a different fashion, assessment techniques employed by cognitive sciences are interested to identify what the human brain is mapping when exposed to environmental stimuli and how relevant is this information. Toward this scope, these techniques are usually proceeding from an empiric perspective of realism. Assessment is usually performed in laboratory circumstances and elaborated along the lines of expert-generated concepts.

Some techniques are established as graphic tests, (e.g. sketch maps, cloze procedure, spatial cued response), some are asking for various aspects of the route knowledge (e.g. route-based techniques), while some are used to explore configurational knowledge (e.g. uni-to-multidimensional tests, reconstruction or recognition tests). These techniques have been measuring the accuracy of individuals' spatial knowledge, revealed as a direct function of time and utility, which increases with the amount of previous experience (Evans et al, 1981; Garling et al, 1982). The topic of utility has been investigated by techniques in behavioural studies, which are examining the functional uses of knowledge, based on decision-making processes (i.e. preferences for places, travel behaviour, planning of residential areas, etc). On the other hand, assessment techniques of semantic networks (e.g. semantic proximity, open-ended interviews, free-card sorting) investigate to what extend verbal organization are matching spatial knowledge organization.

For the purpose of this dissertation an interesting finding exposes different results of the same tasks completed in different contexts- “on the field” and “in the head”, showing that “the way we think we see the world is in many re-

Figure 6: The cognitive approach
Figure 7: The phenomenological approach

PHENOMENOLOGY

“How does the meaning of the world reveal itself to us through our actions in it?” (Heidegger)

PLACE

SPACE (concrete/physical setting) + CHARACTER (sense of place)

GENIUS LOCI

ORIENTATION + IDENTIFICATION

“Dwell” (belonging to a place) (Norberg Schulp)

Assessment Techniques

Qualitative "case studies" descriptions in details & intimate knowledge about how place works in particular settings

hypothesis testing / predictive models / "cause-and-effect" relations

place/ sense of place / place identity

holistic concepts

In terms of verbal assessment (for instance, in free-card sorting), it has been stressed (Kaplan, 1997) the disadvantages of employing concepts generated by experts (that may not be part of participants’ knowledge structure), resulting in a distanced understanding of their environmental image, while ignoring participants' own view on the subject matter. Instead, by asking participants to identify those concepts that they find important in explaining their view of a particular domain, it is possible to discover feelings and relationships that participants were previously unaware of and to express satisfaction with how well the response reflects their view of the topic (Kearney & Kaplan, 1997, p.600). This finding may be traced along the lines of Ranciere’s "competence of the intervened expert", departing from the presupposition of the "equality of intelligence", and acknowledging the same kind of intelligence among many different types of people, "from the ignoranters, spelling our signs, to the scientist who constructs hypotheses" (Ranciere, 2009, p.10). As Kaplan observes, when gaining professional expertise, “we become blinded. We see differently and we are not aware of the differences. [...] The solution lies in recognizing that confidence in one’s judgment must be balanced by other perspectives.” (Kaplan, 1991, p.22).

The individual differences in spatial knowledge exposed through previously mentioned assessment techniques seem to occur due to the qualitative and quantitative differences in one’s competence, departing from the presupposition of the “equality of intelligence”, and acknowledging the same kind of intelligence among many different types of people, “from the ignoranters, spelling our signs, to the scientist who constructs hypotheses” (Ranciere, 2009, p.10). As Kaplan observes, when gaining professional expertise, “we become blinded. We see differently and we are not aware of the differences. [...] The solution lies in recognizing that confidence in one’s judgment must be balanced by other perspectives.” (Kaplan, 1991, p.22).

In terms of verbal assessment (for instance, in free-card sorting), it has been stressed (Kaplan, 1997) the disadvantages of employing concepts generated by experts (that may not be part of participants’ knowledge structure), resulting in a distanced understanding of their environmental image, while ignoring participants' own view on the subject matter. Instead, by asking participants to identify those concepts that they find important in explaining their view of a particular domain, it is possible to discover feelings and relationships that participants were previously unaware of and to express satisfaction with how well the response reflects their view of the topic (Kearney & Kaplan, 1997, p.600). This finding may be traced along the lines of Ranciere’s "competence of the intervened expert", departing from the presupposition of the "equality of intelligence", and acknowledging the same kind of intelligence among many different types of people, “from the ignoranters, spelling our signs, to the scientist who constructs hypotheses" (Ranciere, 2009, p.10). As Kaplan observes, when gaining professional expertise, “we become blinded. We see differently and we are not aware of the differences. [...] The solution lies in recognizing that confidence in one’s judgment must be balanced by other perspectives.” (Kaplan, 1991, p.22).

The individual differences in spatial knowledge exposed through previously mentioned assessment techniques seem to occur due to the qualitative and quantitative differences in one’s competence, departing from the presupposition of the “equality of intelligence”, and acknowledging the same kind of intelligence among many different types of people, “from the ignoranters, spelling our signs, to the scientist who constructs hypotheses” (Ranciere, 2009, p.10). As Kaplan observes, when gaining professional expertise, “we become blinded. We see differently and we are not aware of the differences. [...] The solution lies in recognizing that confidence in one’s judgment must be balanced by other perspectives.” (Kaplan, 1991, p.22).
proceeding from a constructivist perspective develop as qualitative “case study” descriptions (i.e. ethnographic studies), rich in details and intimate knowledge about how place works in particular settings for its inhabitants. They do not make any effort to build predictive models via general laws of human behaviour (Seamon, 1982), as the positivistic approach does; instead they study concepts such as place-attachment and sense-of-place as embedded in the context from where they have emerged, which is always varying, from one setting to the other. In order to understand the relation between behaviour and the spatial environment, it seems pertinent to discover these subjectively-defined realities on the field-by means of ethnographic techniques-, and proceeding from a specimen perspective (Alasuutari, 1996) from the stories of the locals, from the meaning they confer to the setting, and their personal experiences that define living in that particular place.

In light of these observations, assessment of the environmental image seems to require a double approach: observing people's everyday performances in space, in order to collect data corresponding to reality, thus proceeding from a factist perspective of realism; and also discovering the subjective reality that people create for themselves through meaning attachment, proceeding from a specimen perspective of constructivism. The combination of these two different methodological approaches have the ability to reveal the dialectic nature of the human phenomena- which are simultaneously both performed and imagined-, by comparison of the data collected through observation of actual, performed behaviour (the factist perspective) with participants’ appraisal about their environmental image (the specimen perspective). The knowledge arising through this process may help overcome intricacies of dialogue about spatial issues and behaviour in space, intricacies that are especially generated among individuals coming from different universes of discourse (i.e. designers and users).

### 2.4.2.1 ICT-aided assessment techniques

During the last decade, a large range of tools assisted by mobile and media technologies have been created to map experienced-based data linked to the physical environment. Most of the times, these tools take the shape of applications for GPS-enabled smartphones, hosted by a web-based platform. As such, they perform as mobile platforms for visualization of and conversation about local topics of interest, as they have the ability to empower lay-people to explore, discover, share and discuss personal stories, impressions and local insights about their living environment. They cover a wide range of themes: from very specific ones (such as rating street walkability - Walkonomics, mapping noise – NoiseTube, sharing information about shops – Lococom, sharing alternative paths and routes- Routemakr, in order to navigate the city in unexpected ways- WalkSpace and Serendipitor, translating recorded walks into movies - Walk the Edit, mapping happiness – Mappiness, mapping memories - The Matter of Memory, mapping thoughts – Echoer, sharing opinions about the neighborhood through pictures- Lomap , or cards – Flock, overlapping history levels – HistoryPin, etc.) to more complex themes (such as allowing to create and share locative experiences across multiple media – 7 Scenes, Transmedia Storytelling and Treasuremapper, providing various geocoding services – Geoloqi, creating community consultation platform that expands public participation – PlaceSpeak, integrating various sensors to record embodied emotional experiences inviting for reflection and allowing users to glue together their own stories – Affective Diaries).

What the majority of these tools have in common is that they employ physical locations and the meanings related to these locations as catalysts for
conversations within social networks.

From the bulk of existing ICT-aided tools, two classical projects have been selected as evocative for their potential to elicit exploration of the latent meanings that places trigger for their inhabitants.

The first project Urban Tapestries (Jungnickel & Proboscis, 2004) has been developed as an interactive location-based wireless application system which stimulates people’s creative thinking about the familiar environment by enabling them to annotate their surroundings with their meaningful experiences and to share them with other locals.

Using mobile phones or PDAs, people go to meaningful locations of their desire, and “plant” there their own location-based recordings – using text, drawing, images, film or sound - in this way building their own layers of histories, experiences and events around the city. These layers of stories embedded in specific locations are basically recordings of the meaningful moments in the life of the

Figure 8: Urban Tapestries project

locals tied to physical features of that particular place. By making the locative recordings accessible to everyone, Urban Tapestries performed as a platform for sharing aspects of environmental images, in this way making people more aware about how other locals are approaching the same places they are familiar with, and simultaneously engaging in social interaction.

Another inspiring project is the Bio Mapping project developed by Christian Nold (2009) as an ongoing project tested over the last decade over thousands of people all over the world. It employs a methodology to visualize people’s reactions to their environment consisting of a portable and wearable device - a simple indicator of emotional arousal, as in a lie-detector, which records the participant’s galvanic skin response, in conjunction with their geographical location determined by a GPS device. Participants, equipped with this device, are exploring their local area, while the bio-sensor measures changes in the sweat level of their finger, and the GPS keeps track of the exact location that these measurements take place. At the end of the journey, a map is created, indicating the levels of physiological arousal of the respondent, along the track. While observing their own bio-sensorial activity, people are reacting to data by explicitating their emotions linked to the places where they had been. In this way a new layer of personal reactions, observations, histories emerges over the layer of the city, highlighting the issues that people feel strongly about.

This tool functions as “a total inversion of the lie-detector, which supposes that the body tells the truth, while we lie with our spoken words” (Nold, 2009, p.5). In this case, though, the visualization of people’s unconscious recordings of their body data brings to surface true and meaningful experiences of their lives: “precarious traffic crossings, encounters with friends, meeting people they fancied, or the nervousness of walking past the house of an ex-partner.” (Nold, 2009, p.5)
The double methodological approach employed by the artist proceeds along a perspective of realism (given through objective biometric data and geographical position) combined with a constructivist perspective- the subjective story, resulting in “a new kind of psychogeography” (Nold, 2009, p.5). Moreover, the constructivist specimen perspective is enhanced during this process with data collected through the perspective of realism, since the participant is allowed to contemplate on her actions – in this case, her emotional arousal- while observing the whole process from a critical distance. This performance leads to what Stephen Boyd Davis describes as “reflection-on-action” (Boyd Davis, 2009, p.48), using a distinction made by Schon (1983).

The Biomapping tool provides thus a successful method to elicit latent, unconscious knowledge, in the process of visualization of those transformations of our physical body of which we are not aware most of the time.

By making use of various locative and media technologies, these tools prove valuable for their potential to uncover an ‘anthropology of ourselves’- organically created collective memories that “trace and embellish different kinds of relationships across places, time and communities” (Lane, 2008: 5). Compared to the previously mentioned traditional assessment techniques from the field of ecology, cognitive sciences and phenomenology, the advantages they present consist in eliciting people’s environmental images on the exact location where they occur, without imposing upon respondents concepts pre-defined by the researcher, and employing revolutionary sensor data to uncover meanings of unconscious reactions (e.g. high pulse rate related to the location of one’s first kiss). In this way the dialectic nature of the human phenomena can be studied while proceeding from a double perspective: a factist perspective of realism, providing data corresponding to reality regarding the performed activity (for instance, the physical location, or biometric data) and a specimen perspective of constructivism, describing the imagined activity constructed through attachment of subjectively-defined meanings.

In addition, they create a platform for data to be shared among participants, in this way facilitating an exchange of local knowledge within these emerging social networks. It may be concluded that by augmenting assessment techniques with convenient locative and media technologies remarkable results may be achieved towards the purpose of eliciting spatial knowledge and sharing it and engaging individuals in discussion about it. These examples will be further employed as a trigger to arouse inspiration and to emphasize the need for developing an innovative technique to assess environmental images.

2.5 Integration

By analyzing the mental process of spatial knowledge acquisition, it has been revealed that during translation from the realm of reality into that of the
mind, substantial reality is distorted. As Metzinger (2010) notices, our mental model of the environment is established as “a low-dimensional projection of the unconceivably richer physical reality surrounding and sustaining us”.

This is due to the fact that only a “highly filtered set of impressions” (Gould et al., 1974, p.29) is selected to enter the pervasive internal information processing. The result is the schematized environmental image, materialized as a complex synthesis of cognitive, sensory, and phenomenological traits.

Acknowledging the embodied cognition discourse, environmental image assessment illustrates how cognition is grounded in “the physical features, innate abilities, practical activity, and environment of thinking agents” (Anderson, 2003, p.126). Human cognition being deeply rooted in sensorimotor processes, the mind must always be considered in the context of its relationship to a physical body that interacts with the world (Wilson, 2002, p.625).

Acting in the familiar environment, however, most of the time does not entail present-aware participation of the individual. Although any type of interaction with the environment implies a physical relation between the body and the space, the effect of this interaction does not necessarily generate conscious sensory perception; it rather produces a set of impressions- a personalized system of interpretation of the world.

The way people perceptually experience, cognitively process, and meaningfully attach themselves to the environment reveals a common issue: awareness. All these processes are supported and accelerated by the degree of awareness achieved by the observer. The next section will elaborate on the topic of awareness, or more specific, on what anthropologist Spradley (1980) would call “explicit awareness”, referring to the conscious recollection of things and facts, either spontaneously or as a result of direct questioning.

2.6 Awareness

In line with the core idea on which our model of “participation as an attitude” is founded- the idea of “equality of intelligence” (Ranciere, 1991)-, it is necessary to address the topic of awareness both in relation to the designers and the users, in order to aim for an equal intercultural dialogue.

Regarding the designers their training as spatial experts affords them an enhanced ability to observe and analytically analyze particular features of the physical environment. On the other hand, designers may prove to have difficulties to understand everyday exchanges between people (as social scientists do), and from here to integrate a social dimension in their work.

A raise in awareness on the side of the designers implies thus obtaining a minimal set of professional competences to assist them in reading everyday socio-spatial practices, by means of a reflective understanding of the grounds of their being. Through such an enhance of awareness designers may gain valuable insight into the genius loci knowledge, into the behaviour of people in space, leading them to look for different information and to start asking different question, and eventually attaining the ability to provide explanations for the design choices they make based on understanding of the specific ways of living of communities.

Regarding the users, the claim is frequently made that they show little awareness of their surroundings. They experience the environment in an almost unconscious way, paying little or even no attention to the settings around them. An evocative experiment conducted by Kronenfeld et al. (1972) illustrates how people are not explicitly aware of small details in life. Respondents leaving different restaurants have been asked about the music playing in the restaurant and the outfit of the waiters and waitresses. Despite the fact that the restaurants did
not have waiters, but only waitresses, the respondents agreed much more about the waiters’ outfit than about the waitresses. Moreover, respondents elaborated more on the kind of music in restaurants that did not have music than the ones that did have music. In the light of this experiment it was speculated that, while missing real memories about things they’ve seen or heard, informants apply cultural norms for what must have been there- “what goes with what” (D’Andrade, 1973).

Such a deficit of explicit awareness is traceable for humans in relation to almost every detail of the so- complex ordinary life, except perhaps for the elements that one has been trained to observe through expertise in some particular domain (for instance, architects paying attention to the details of the spatial setting or social scientists paying attention to everyday social behaviour).

This may prove as an obstacle in spatial participatory processes, when participants are required to articulate their knowledge about their living environment, so they can bring strong arguments to motivate their aspirations, needs and desires. This dissertation argues that three factors are mainly responsible for people’s deficit of explicit spatial awareness. They will be outlined as follows.

At the outset, restricted environmental awareness is due to the fact that our sensory organs, as well as our brain capacity of storing things in memory – the so-called channel capacity (Mandler, 1975) - are limited. Therefore we never perceive anything fully or comprehend anything completely, since a filtering mechanism is employed to mediate the process of perception, and thus, our images are strongly affected by the information we receive through our filters (Gould, 1974).

Apart from limited channel capacity, it has been noticed that people are also not aware of their knowledge structure. The process of perception is essentially becoming aware of the data provided through the senses. However, the process through which people are ‘seeing’ and ‘reading’ an environment is hardly accessible to consciousness, because many times people are not aware of the incoming sensory information, and they don’t even have labels for much that is experienced (Kaplan, 1991). As explained by Kaplan’s SESAME theory, people possess unconscious information that can be activated by unexpected associations of perceptual features that have occurred together in the environment (Kearney& Kaplan, 1997) - i.e. scent can ignite memories of places, events, etc. The 3CM methodology (Kearney& Kaplan, 1997), derived from this theory, assist people in discovering unconscious information during the process of externalizing it.

In addition to this deficiency of awareness, prompted by unconscious information and by our limited sensory and brain capacity, another phenomenon seems to disturb our fragile sense of awareness. It was observed that habitual adaptation, or habituation, to the same environmental stimuli - understood as a
response decrement with frequently repeated or constantly applied stimulation (Harris, 1943) - , diminishes people’s conscious experience of their surroundings. It is argued that urban habituation is produced by routine behavior. Primary, it has been noticed that people tend to use their environmental image in a very efficient way, especially for navigational purposes. After decoding an adequate amount of information, sufficient to orient themselves in the city, and to perform their basic daily requirements, people stop paying attention to the environment, they stop ‘reading’ the environment. Movement is always goal-directed, as people move between places with the purpose of getting somewhere (Sheller & Urry, 2006). Thus, once the orientation function is fully accomplished, there is minimal or no motivation for further exploration. From now on, people experience their environment in a passive way, like with their eyes shut (Downs & Stea, 1973). In this way, urban spaces are used as circulation spaces. People ignore the space they routinely traverse towards various destinations, space becoming ‘the very decor of people’s life, and not more than an apparently unnoticed and unimportant background’ (Hannes et al., 2006, p.8). When habitual adaptation emerges, the spatial learning process has completed. Hence, habituation can be considered one of the most pervasive phenomena experienced by people and, perhaps, the most serious issue that generates their decrease in environmental awareness. This is accomplished by constant exposure to the stimuli produced by the urban realm as well as by limiting our conscious perception to a goal-directed routine.

In conclusion, three aspects have been identified to confine human capacity of explicit awareness: the limited brain and sensory capacity, the presence of unconscious information in the mind, and habituation to the same environmental stimuli. These aspects are obviously related to the condition of being human.

However, through means of instruments employing augmented technologies (such as the Biomapping project) it may be possible to overcome to some extent the loss of environmental awareness. In the following section it will be argued that the relation between presence and interpretation is the key feature that must be revisited in order to naturally resuscitate human capacity of explicit awareness.

2.7 The dialectic between realism, materialism, presence and constructivism, imagined dimension, interpretation

The discussion on the relation between presence and interpretation will be elaborated around the development of the study of human behavior in space, as it has been conducted following two different approaches: that of materialism and constructivism.

Initially fieldwork started from expeditions, which delivered detailed descriptions of what is really there. The researcher employed plain observation as a methodology to describe the socio-spatial environment from an objective perspective. This presented the risk of generating criticism toward comparing this methodology to a naïve empiricism approach. It was though emphasized the need to study the emotional component of the interactions between humans, and between the human and the spatial context. Studies on social behavior started to focus extensively on structures of feelings, to the extent of going completely into interpretation, imagination and the immaterial dimension of the social relations. A strong criticism was generated also towards this approach, which was giving too much attention to interpretation, while completely neglecting materiality.

As a result, many discussions have emerged pointing to the need of taking both perspectives, of realism and constructivism, into account. It was though finally acknowledged the mutual dependency of these two perspectives giving rise
The fact VAT first established human phenomena, through employment of both observation and interpretation. Alasuutari (1996) refers to these two different approaches as to the factist and specimen perspective. The factist perspective relates to the presence dimension, with the purpose of delivering accurate data corresponding to a large extent to reality. The specimen perspective is interested to discover the social construction of reality, the meanings that people attach to everyday facts through interpretation.

Following this double approach it is possible to study the dialectic nature of human phenomena, in order to understand how conflicts are actually performed in reality, but also how they are imagined in people's minds. A very human inconsistency has been noticed in terms of what people say, what people say they should do, and what they actually do. Understanding these differences can provide valuable and more accurate explanations of, for instance, human behavior in space—regarding preferences, habits, tactics, etc.

As illustrated in the previous section on the deficit of explicit awareness, it is usual for people who are experts in some particular domain to employ observation in order to make sense of particular aspects of the world which they have been trained to analyze (for instance, architects inspecting aspects of the spatial environment). On the other hand, people who are not experts in that particular domain use interpretation as the fundamental way to relate to it (for instance, the lay-users of space construe reality through meaning), which give rise to the disparity between performed and imagined behavior.

Anthropologists, however, must combine both approaches, and they do so when employing the ethnographic technique of participant observation. This implies observing and recording information about people's lives on the field by first establishing a relationship based on trust and respect (so that informants feel comfortable with researcher's presence and eventually go about their business as usual). In doing participant observation the researcher becomes the instrument for both data collection and data analysis, and for that she must prove able to extract herself from cultural immersion, so that she can intellectualize the collected data, put it into perspective and write about it convincingly (Bernard, 1995). This is a difficult task to attain, since no human being can ever be completely objective. Within this process there is always a combination of presence (in observation) and interpretation (regarding the participant). Although impossible to bring in one well-balanced phenomenal structure, presence and interpretation are mutually dependent, since the production of one always occurs in the detriment of the other (Gumbrecht, 2004). Emergence of meaning, obviously, diminishes the moments of presence, as interpretation always asks for attention to be pulled away from the material reality towards conceptual analysis. Simultaneously, the starting point of any lived experience lies in a—usually undetected and long forgotten—presence moment, which has initially triggered the whole experience. Having such an ephemeral lifespan within our dominant meaning culture, presence phenomena become “presence effects”, as they are “necessarily surrounded by, wrapped into, and perhaps even mediated by clouds and cushions of meaning” (Gumbrecht, 2004, p.1). Presence and meaning, thus, “always appear together and always in tension” (Gumbrecht, 2004, p.105). Tension represents an interesting topic to be further investigated in relation to action, since action seems to be a catalyst of tension.

### 2.8 The environment— an arena for action

As Lynch (1960) observed, people largely use their environmental image to interpret information and to guide their actions. Therefore it seems challeng-
ing to investigate the relation between presence and interpretation- and the tension it produces-, in the course of action, given that action represents the central mode of environmental experience. This dissertation argues that action must hold both a presence and a meaning component.

The environment is frequently considered an “arena for action” (Ittelson, 1978, p. 204), which implies that action is always situated in a physical circumstance -the body in space-, allowing us to perceive things as they are. Nevertheless, this assumes our own impression of how we would like things to be, and from here, behaving towards this purpose. The tension that arises between the desire to be somewhere and actually being there creates an effect of distance, which is the instigator of the permanent tension between presence and interpretation (Gumbrecht, 2004). Action, obviously, accentuates this tension.

2.9 Tension – tactics and strategies

While following the “meaning” component of action, Ittelson (1978, p. 201) states that “experience of the environment is never passive”, since people always act within their specific goals. Their patterns of exploration, developed from interpretation, affect the actions they undertake, in a continuous loop of cause and effect. Thus, by attaching meaning, people constantly create the situation within which they have their experience (Ittelson, 1978). Most likely, this is the moment when tension occurs, since tension will never appear in moments of sheer presence, but actually emerges as a result of meaning attachment, as a defence of one’s perspective.

Tension is produced from the resistance offered by the individual system of interpretation to other systems of interpretation (individually- or culturally-defined) or even to the present moment observation. More precisely, the individual system of interpretation may display tension when interacting with another individual system of interpretation - as it is the process of agreeing with or adopting someone else’s perspective, during a conversation. But also, individual systems of interpretation constantly display tension while interacting with the system of interpretation of the society- the system of regulations and ethical, moral, religious, aesthetic, etc. values defined by a particular culture.

It seems that people possess a natural tendency to combat tension, by employing individualized tactics of coping with their living environment. This observation relates to the concept of tactics and strategies developed by de Certeau (2011). As defined within this frame, strategies are formulated by an authority and imposed upon the individual as a stable and complex operational set of regulations meant to keep the system running properly. When an individual acts consistent with these rules, her behavior is strategic. However, whenever tension intervenes between the imposed strategies of the system and the needs and desires of the individual, and becomes manifested consciously or unconsciously, this tension is reflected back in people’s actions- in the form of tactics. Tactics are being produced as a self-designed logic and approach that takes advantage of the gaps within a given strategic system, for one’s own sake. For this reason, de Certeau (2011, xix) refers to tactics as “victories of the ‘weak’ over the ‘strong’”. Ittelson (1978) observes that these actions are meant to change the person-environment system, with the intention of changing or maintaining the nature of the ongoing environmental experience. Despite the produced tension, individuals tend to perceive this transformation “as their main vocation” (Gumbrecht, 2004, p. 82), driven by their interpretation of the world.

Tension -sometimes referred to as frustration (Jenkins, 2006), or friction (Huygbrecht, 2011)-, has been defined as “the ‘rubbing of’ people on each other
(...), when people, who hold different backgrounds, understandings and experiences, meet on the bus or in the street and exchange opinions, stories or maybe just gestures and glances (Jensen & Lenskiold, 2004). These authors consider tension a positive feature, playing a creative role in participatory processes, while producing “a repository of energy that in turn will alter and drive social and cultural phenomena forward in often unpredictable ways” (Jensen & Lenskiold, 2004).

In conclusion, tension appears as an inner resistance to all external stimuli which do not identify with one’s system-of-interpreting the world. Since life without meaning is considered “literally dead to the world” (Arendt, 1998, p. 176), because functioning in the society always implies identification with a self- and culturally-defined frame of meanings, this tension becomes a necessary prerequisite for living in society. From here, the aim is to make explicit tensions in human existence and to understand how people deal with such tensions by developing individual spatial tactics.

Along these lines of thought, it seems obvious that in our daily life, the dimension of meaning is dominant. This dimension seems best graspable through understanding of some aspects of the spatial tactics that people employ when dealing with their environment, by proceeding from a double approach: from a factist perspective of realism, in order to understand actual behaviour in space and from a specimen perspective of constructivism, in order to uncover the meanings people attach to their experiences.

Living in this dominant meaning-culture produces an ever-growing distance between us and the world, up to the point of an absolute loss of contact with our bodies and with the substantial reality around them, eventually leading to an increasing loss of explicit environmental awareness. For this reason, a
plea is made for acknowledging presence as the most beneficial and objective mode for acquiring spatial knowledge. While the main actor on the stage of our daily experiences is the 'mental noise' produced by the continuous process of interpretation, present moments have the potential to provide a tension-free state of existence, by observing things as they are. Observing from a quiet place in the mind what is happening before us, as an ongoing double movement of unconcealment and withdrawal from acting (Gumbrecht, 2004), presupposes the capacity of letting things be - defined by Heidegger (1966) as "Gelassenheit", that capacity to abandon any conceptual manipulation or interpretation of the world. In this way, presence arises as redemption from the permanent obligation to move and to change (Gumbrecht, 2004, p.138), to follow the dynamic of society. While moving away from this never-ending cycle of action and interpretation, the desire of re-connecting with what Tversky (2003) calls "the space of the body" and "the space around the body" may finally arise through calm observation. Only then, this tension, usually produced through action, can be appeased.

Although presence can be ideally achieved through plain observation, this dissertation argues that it can also enhance every single act that we pursue, by maintaining explicit awareness in regard to our bodies and the surroundings. The more frequent our moments of explicit awareness, the more rooted our actions become. Thus, such actions arise eventually from knowledge revealed through sheer observation of the material reality, instead of being produced in an act of world interpretation. These presence moments have the ability to make people see things differently from ordinary, from a standpoint where tensions are at ease because all cultural and personal dimensions are absent, a standpoint grounded in the substantial reality where the performance occurs. As Bernard (1995, p.152) notices, humans are not able to read themselves from their experiences, however, it is possible to become aware of one's own experiences, opinions or values, in this way attaining objective, accurate knowledge “by transcending our biases”.

***

As a result of explaining the dialectic nature of human phenomena through the lens of construction, activation and retrieval of the environmental image, an approach can be finally outlined for an operational framework for a tool to facilitate collaboration among all actors involved in spatial participatory processes. In reaching constructive discussions, it is necessary for participants to empathize with the situation of each other, by taking the point of view of their addressee, in order to understand the reference (Nova, 2005). This has proven many times to be a very difficult task, since each individual views the environment from a different perspective, and, especially when participants do not share similar domains of expertise with one another. In order to facilitate a smooth tuning to the various individual or cultural systems of interpretation involved in the participatory process, it is necessary to proceed from a double approach: from a perspective of realism – the factist perspective (Alasuutari, 1996) - employing observation in order to collect data corresponding to reality, and also from a constructivist perspective - the specimen perspective (Alasuutari, 1996) -, employing interpretation in order to understand social reality through the meaning dimension. The necessity of this double approach is imposed by the disparity between the performed and imagined human behaviour in space. With regard to the spatial layer of the intervention, by applying sheer observation, it is possible to map the affordances of the physical environment, of what is really there, apart from one's imagined desires and expectations of how space should perform. As regards the social layer, observation of performed human behaviour in space entails observa-
tion of tension, through identification of individual spatial tactics - followed by their acceptance and recognition as valid, derived from an understanding of the grounds of their being.

Following this double approach, this dissertation argues, everyday knowledge can be analyzed and used within spatial participatory processes by developing a socio-spatial vocabulary grounded both in the everyday practices (performed and imagined) and the spatial structure of the environment that accommodates them.

2.10 Conclusions: a set of guiding principles

The theoretical framework of the environmental image and the assessment techniques it entails mould a set of guiding principles to be pursued when defining an operational model for a tool to facilitate participatory spatial practices. These principles will be outlined next.

1. Observation of the affordances of the environment and of spatial tactics as a trigger for action.

Observation of the present moment and space is suggested to be used as a starting point for all actions. Participants' daily activity behaviour must be observed, mapped and analyzed, in order to understand the meanings attached to the environment, revealed by people's actions in it.

2. Context is crucial.

Assessment must follow the normal ecology of the organism and the environment, delineated by the interaction body -mind -environment. The context is crucial in assessment, since active exploration of the environment bring information about the physical aspect, but also more subtle information, perceived through the complete spectrum of sensory modalities.

3. No manipulation.

It is essential that assessment is not manipulative, imposing expert-generated concepts, but allows for emergent concepts defined by participants.

4. Encourage ambiguity.

The tool should encourage ambiguity. While participants are actively experiencing the environment, unexpected associations of perceptual features may activate unconscious information in the brain (Kearney & Kaplan, 1997). Ideally, the assessment should help participants in exploring their knowledge structure while externalizing it.

5. Unexpected action.

While assisting a sense of presence, habituation may be combated by means of some unexpected action that would challenge routine behaviour and simultaneously rouse our fragile capacity for awareness, making participants see their daily environments from a different perspective.

A better understanding of the way people cope with their surroundings through performed and imagined actions (the dialectic nature of human phenomena), can raise awareness about the environment, by improving the person-environment relation, and subsequently provide solutions for cooperation in spatial participatory processes. The solution proposed by the theoretical framework of the environmental image - a triangulation of ecological, cognitive and phenomenological paradigms, in light of a double perspective of realism and constructivism, is intended to achieve a translation of the findings into guiding principles for an operational framework for designing the tool. In the next chapter this set of principles will be augmented with research coming from other relevant disciplines, such as game design and information and communication.
3. Games and Technology

3.1 Games

Following a search for innovative tools to support spatial participatory processes, the previous chapters have revealed the necessity of developing an operational framework for a participatory tool for specific urban design practices. Such a tool is meant to perform as a facilitator, bringing in conversation all actors involved in the urban planning process. In order to enable an exchange of knowledge between people who are not sharing similar domains of expertise, literature review conveyed in the previous chapters determined that such a tool should be able to convey understanding of some aspects of people's tactics of dealing with their surroundings. Existing tools to map tactics draw heavily on ethnographic participant observation (Soenen, 2006). This is indeed an effective method to elicit valuable information about everyday socio-spatial practices, however, it is not exactly the darling of spatial experts, because it is time-extensive and primarily, because it requires a social scientist's approach to make sense of the data. Moreover, participant observation is a scientific qualitative method to derive information, but it does not ensue in a participatory method by itself.

The solution suggested by this dissertation, on the other hand, comes from the field of game design. The proposed tool takes the shape of a game, designed by pursuing a set of principles transpiring the previously illustrated findings of the theoretical framework of the environmental image.
3.1.1 Why choose a game?

Games have always been considered great tools to solve societal issues (McGonigal, 2010), as they have the potential to engage and empower people from various backgrounds with regard to serious concerns affecting their daily life. In an elaborate attempt to define games, Schell (2008) managed to reduce all different aspects that frame a game, into this simple definition: “A game is a problem-solving activity, approached with a playful attitude”. Following this definition of games, a relation between games and architectural and urban design may start to seem sensible. Both games and architecture are actually dealing with problem-solving activities. The difference, obviously, consists in the fact that architecture undertakes such tasks with extreme seriousness, pursuing a systematic approach created and supported almost exclusively by spatial experts, while games tackle this with a playful attitude, allowing everyone to be a player.

It has been considered (Walz, 2010, Walz et al., 2005, de Lange, 2009, Bories et al., 2007) that the disciplines of architecture and of game design have the power to reinforce each other in various ways. Their relation, although tacit, have always generated intriguing topics for consideration.

![Diagram](image)

**Figure 12:** The relation between games and architecture

3.1.2 Benefits and challenges

When choosing a game, in general, to perform as a participatory tool in spatial planning processes several benefits as well as difficulties can be noticed. The most straightforward benefit, obviously, consists in establishment of the participatory approach that is one of the most valuable dimensions of a spatial participatory process and something that games are so good at. A participatory approach is based on sociological concepts entailing aspects of interaction, communication and cooperation (Vrachliotis, 2007, p. 341). It implies that participants are required to engage and become actively involved in different kinds of interaction- with other people, with objects, places, etc. From a first glance, it seems obvious that games can be considered ideal tools to spur participation for several good reasons. At the outset, they have the ability to offer players the genuine motivation to engage and immerse into a problem-solving task. The concept of motivation is crucial in games, as it represents the trigger for all players’ action. It implies much more emotions, than “fun” alone (Ejsing-Duun, 2011). By framing a serious problem, such as an urban planning issue, in terms of an objective to be completed in a game, the participant is offered a completely different standpoint than in a participatory planning practice. When playing a game, an artificial conflict is created, in which the player enters willfully, driven by an “emotional outcome” (Juul, 2005). In the case of competitive games (ludus), it is the desire to win that drives players’ action, while in other games (paidia), it is the explorative dimension of the game that brings the motivation of play. The game— as a system of internally generated meaning, defined by rules and a clear goal towards an unpredictable outcome, perhaps supported by an immersive narrative, surprise elements, etc., -provides the challenge necessary to motivate the player to engage in solving the problem.
Games can prove successful tools to be used in participatory planning processes also because they guarantee active participation of the players. By being performative in nature (Arvidsson & Sandvik, 2007; Copier, 2005), games demand action from the player. As Ermi & Mäyrä (2005) put it, the purpose of playing games is the action itself. Players’ actions in a game are directly related to the outcome of the game, meaning they are directed towards the problem-solving.

The problem-solving activity that the game puts forth may require a certain level of collaboration to be established among players, in the sense that they need to coordinate their individual actions and interact with each other, toward reaching the goal. This capacity of the player, generated throughout the game, to engage into social interactions with the purpose of succeeding to solve the problem at stake, by means of distributed creativity (Sawyer & DeZutter, 2009), enforces even more the participatory process. As McGonigal (2007, p.237) observes, games encourage “collective magical thinking”, as players are tuning their individual systems of interpretation, and adopting collective environmental images.

Nevertheless, certain difficulties may arise when the problem-solving corresponds to a serious problem, which requires attaining an effective and serious outcome. As Schell noticed in his definition of games, a characteristic of games is that the task is approached with a playful attitude. The challenge which arises when dealing with games aiming to solve serious problems (like spatial planning issues, for instance) consists in striking the right balance between the amount of playfulness and seriousness, in order not to kill the game element and at the same time to trigger access into valuable output. Although difficult to bring together in the same experience, playfulness and seriousness need not be mutually exclusive (Guardiola, 2011). The relatively new category of “serious games” within the field of game design is confronted many times with this kind of challenge. The limitations of serious games will be briefly outlined below.

Some definitions of serious games illustrate them as games designed to do more than just entertainment (Michael & Chen, 2006). Their ambition is to “use entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives” (Zyda, 2005). Examples of serious games cover a wide range of applications, from military training (Squire, 2006; Squire et al., 2005; Squire & Jenkins, 2003), to language learning (Johnson et al, 2005) health care, cultural heritage (Anderson et al., 2009), policy and management issues, urban planning and public participation (Krek, 2008; Poplin, 2011), and transition management.

Most of the times, these games are designed as virtual environments having as a primary interest to educate or train (Poplin, 2012). Some scholars of serious games argue that these games are distinct in terms of entertainment, since the entertainment found in fun games does not apply to serious games. Following this line, serious games are considered to be composed of unique characteristics that cannot be informed by what we know about fun games. This is precisely the issue with serious games nowadays. By declaring themselves unique and unrelated to fun games, they might miss the fun component in the game experience, while promoting learning alone. The player, however, regardless of the type of game she plays, will always look for entertainment (Quick, 2012). From here, it seems beneficial for serious games to consider the successful designs in fun games in order to match the entertainment goals of players.

Some examples of serious games employed in architectural design and spatial planning are Metropolis, Metro/Apex, by Richard Duke; The Harbour Game
by Havnen på Spil; Baas op Zuid; by BBVH architects; Play the city, Play Noord, Play Oosterwold, by The Responsive City, SCAPE (Podleschny, 2008; Polson & Morgan, 2010), NextCampus (Poplin, 2012, Kulus, et al., 2009), ASPIs (Papageorgiou, 2012, Wortley, 2012). While employing a game-based learning (GBL) approach, these games fall short to justify the true potential of the link between games and architecture.

For instance, the online serious game NextCampus (Poplin, 2012; Kulus, et al., 2009) focusing on issues in the Campus of the University of Hamburg, developed two virtual environments- the actual one, and a new proposed location, with the goal to find the most satisfactory urban planning solution for the campus, by educating players about the current situation of the campus and the possible consequences of actions reflected by financial loss or gain and stakeholders’ satisfaction (calculated by the computational model of the game). The focus here, as in most serious games is on “educating” players into the possibilities envisioned by the designers. There is no choice of constructing a personal version of reality, since this is unique and offered beforehand, and the only good solution is to be discovered by choosing the correct (pre-defined) strategy (between a-complete move, b-demolition and new construction with partial reconstruction, and c-renovation). In this direction, the game NextCampus embraces a traditional approach to participatory actions, as explained in the Participation chapter, relying on the presupposition of the inequality of intelligence of the student (the player) and the educator (the designer). By playing the game, the player is educated into the only correct methodology provided by the patronizing liberated educator- the planner or the game designer who designed the game choices. Ranciere’s critique on the “pedagogical” view of some artists on the way their works of art are expected to influence the viewers, fits well this example: “This logic posits that what the viewer sees (...) is a set of signs formed according to an artist’s intention. By recognizing these signs, the spectator is supposedly induced into a specific reading of the world around us, leading, in turn to the feeling of a certain proximity or distance, and ultimately to the spectator’s intervening into the situation staged by the author” (Ranciere, 2010, p. 136).

Furthermore, the remarks emerging from the interviews with experts (Poplin, 2012) raised questions regarding how realistic can be the calculations of the consequences of the game action and most important, if the results of such a game can be considered serious opinions of the players (i.e. demolition of the majority of the campus buildings), and therefore useful, actual intents or just playful possibilities.

As it is the case also with this game, frequently the problem with serious games is that the “game” dimension remains completely forgotten, while the “serious” dimension conveys a stage of deceptive participation. While being presented with a series of nicely-rendered scenarios created beforehand by spatial experts, to choose from, players are given the illusion of being involved in the decision-making process. In reality, they are nothing but disempowered players in a “staged” process which aims to justify designers’ choices (Latour, 2005). Following this approach, a certain difficulty arises in terms of designing for fun and also in terms of being “open” tools for participation. It seems though pertinent that there is a need for different types of serious games, fitting a larger array of pedagogic approaches.

In conclusion, achieving specific serious goals in fun serious games is indeed a unique area worth of further exploration (Quick, 2012). Following this difficulty, it seems pertinent to state that whilst sometimes considered “architecture’s final frontier” (Wiltshire, 2007), games may become, actually, archi-
There, for the purpose of this dissertation, the pervasive type of game seems to be the most appealing. Within pervasive games, social presence (iPerG position paper, 2004) represents a highly valuable feature, which shares understanding on the way the social layer relates to the physical layer. The social presence component of pervasive games renders “how the environment makes those present visible to each other, what kind of mutual impact it facilitates among those present and what kind of interaction modes it provides” (Benford et al., 2005, p.27). In this way, understanding about people’s spatial tactics is facilitated, by observance of the socio-spatial practices emerging within the game context.

The second principle demands a real, physical context for a playground, arguing that the game should follow the normal ecology of the body and the environment. Along this line, it seems that the emphasis should fall heavily on the physicality of the game, which needs to be played in a real environment. This is especially the case with location-based games (LBG), a subset of pervasive games, where players have stronger connections with the physical environment, since their location is crucial to the game-play. Attention being drawn on the relation between the player and the physical space, it seems that LBG is the type of game that fits best our criteria. LBGs use the city as a playground, while making use of portable digital technologies to interface between the physical and digital space (de Lange, 2009). De Souza e Silva (2009, p.20) observes that while computer and video games have long neglected the impact of the real, physical spaces, LBGs emerged as “reminders of the central role that games play in understanding phenomena around embodiment and mobility”. The embodied experiences generated by LBGs create an enhance awareness of one owns body in space, leading to prolonged moments of presence (Gumbrecht, 2004). These presence moments are triggered by the impact of the surroundings on player’s sensory perception, as well as by the way the player’s body relates to the external

3.1.3 Choosing the right type of game

At the outset, the most appropriate type of game, able to attain the predetermined research objectives, must be selected from the very wide range of game-types delivered by the game industry, for which too many classifications, which do not necessarily assert to one another, have been provided in literature so far. A confrontation of how this game can implement the earlier prescribed principles will be useful in order to establish the right type of game. The principles will be employed as further guidelines to select those particular features of games that can prove valuable for this mission, as follows.

In line with the first principle, the game should follow the daily activity behaviour of players, in order to understand their spatial tactics. This criterion points straightforward to the particular type of games called pervasive games. Pervasive games are blurring the boundaries between game and reality, as the game experience is interwoven within the everyday life (iPerG position paper, 2004). The metaphorical “magic circle” of play – a voluntary structure enclosed within strict boundaries of time and space that functions as a protective frame between the player and the real world, and which was considered to be mandatory for games (Huizinga, 2003; Salen & Zimmerman, 2004; Apter, 1991) -, it can be expended, in pervasive games, spatially, temporally or socially (Montolla et al., 2009). For this reason, pervasive games have a higher potential to reveal aspects of the environment and of how people relate to their environment, which may prove to be of great interest for the designers, as well for the users of space. Therefore, for the purpose of this dissertation, the pervasive type of game seems

tecture’s most challenging frontier. This dissertation puts forth this challenge by designing a fun game able to solve serious spatial planning problems.
environment and which kind of associations can emerge from there. LBGs acknowledge our bodily experience as pivotal for our understanding of the world (Merleau-Ponty, 2002). By using their bodies, players move from one location to the other and also they interact with the specific affordances of these locations. At the same time, it has been noticed that in LBGs it is the location itself that performs, influencing the experience of the player (Kristiansen, 2009).

Furthermore, in terms of the relation between LBG and spatiality, LBGs are categorized in three types: site-specific, when the game is based on specific locations; site-adaptable, when the content of the game is adapted to generic elements found in most places; location-free, when the local expands the global, by localizing local elements and sharing them worldwide (Ejsing-Duun, 2011). From these categories, it seems that the most appropriate type of game able to address the three-fold goal introduced previously is a site-specific LBG, since the location of the game is highly relevant. This implies that the physical, social and cultural properties of the space are integrated into the game (Reid, 2008). Only then may the game provide insight into spatial tactics.

For a more comprehensive outline of LBGs, the features comprising the general structure of an LBG, as it has been identified in Ejsing-Duun’s (2011) doctoral dissertation, will be provided next. They are conveyed by rules, framing, fiction and authenticity, and uncertainty and ambiguity, and will be presented below.

**Rules** are regarded in terms of the two types of rules that Frasca (2001) defined as related to Cailliois’s (2001) classification of games into ludus (competitive) and paideia (play). Therefore the game rules will be articulated in terms of ludic rules and paideiac rules, where ludic rules define the focus of the goal, giving the players a purpose for running, while paideiac rules regulate the behavior of players, in terms of exploring possibilities of how to act in order to accomplish a task.

**Frames** are the boundaries between what is and is not part of the game. With LBGs – and pervasive games, in general- these boundaries are blurred. Instead of separating play from actions in real life, the players actually connect these worlds through play.

The tension between fiction and authenticity, in LBGs, is concerned with the connotation of content and events, and the actual outcome of in-game actions. When the game is about experiencing a story, instead of imagining a fictional world, locations are augmented. Spatial augmentation (Sandvik, 2008) can be done through “narrativization”- place becomes the scene of the performance of “true” stories; “fictionalization” –the place as a setting for fictions; or “mixed reality”-the place has a double role, being an actual location in the physical environment and also the space of a story. Regarding the meaning of actions within a game, they can be indexical- authentic actions-, iconic- similar real-world actions and game-world actions, e.g. casting spells by gesticulating-, or symbolic- real and game actions are linked through contract or conventions, i.e. picking up coins in virtual and real world simultaneously.

The uncertainty, of what belongs to the game world and what belongs to the ordinary world (de Lange, 2009a) and ambiguity, in terms of context, relationships or information, (Gaver et al., 2003) have the role to challenge participants to create their own meanings regarding to objects, places or events in the game, setting-up a stage for an unlimited range of actions.

These four features comprising the general structure of LBGs will render useful in assisting the application of the other principles and also the three-fold research objective, as follows.
Through their embodied dimension, LBGs have the potential to make the players more attentive and explorative to the environment, as players are “searching for and experimenting with the hidden affordances of everyday objects and places” (McGonigal, 2007, p.236). The identity of places is, thus, not given to be discovered but instead, it is created through the game play. This comes in line with the third principle, which stresses the importance of not imposing concepts pre-defined by the designer, but instead allow for emerging meanings generated by the player. When a game is outlined by too many pre-defined concepts, it becomes too serious, resembling more a staged process rather than a fun and exciting game. Ejsing-Duun (2011) observes that in LBGs locations are not unambiguously conveying what designers want them to, but instead, players need to interact with the location to uncover the meaning of an element through game play.

The fourth principle of the game relates to ambiguity, which is a central element of locative play (Benford et al., 2003; Benford et al., 2006; Dansey, 2008; Gaver et al., 2003; Mäyrä & Lankoski, 2009), and one of the four elements in the structure of an LBG, as illustrated above. It allows conveying the game-master’s perspective, while enabling players to find their own interpretations, coloured by their specific socio-cultural backgrounds (Gaver et al., 2003). The topic of ambiguity will be further elaborated in the next chapter.

The fifth principle calls for completion of unexpected actions, in order to challenge routine behaviour and simultaneously rouse players’ awareness, by making them see their daily environment from a different perspective. Games, in general, provide player with a frame to produce meaning through their actions (Gordon, 2009). In LBGs, by acting upon the physical environment, players confer meaning to it, transforming spaces into places. In this way, they appropri-
ness and seriousness is necessary in order for the game to achieve its purpose in a fun and engaging way. This balance can be attained by careful design of successful and appropriate game mechanics, in line with the features delineating the structure of LBGs. They would be able to assist immersion in the game play through fun experiences.

Following the set of five guiding principles assembled from the theoretical framework of the environmental image, it has been established that an LBG is, indeed, the most appropriate type of game, with the potential to support participatory processes addressing spatial planning issues by uncovering spatial tactics. LBG is a type of pervasive game that positions the player in the real-world environment, and by means of a mobile device, it promotes a “doubled perception” of space, enabling simultaneous access to both physical and digital spaces (de Souza e Silva & Sutko, 2011). On the one hand, players’ interaction with physical locations and their movement in-between locations determines the outcome of the game. The embodied experience generated by the LBG may help increase players’ understanding of the spatial and social functioning of the location where the game is played.

On the other hand, these experiences- triggered by the interaction of the player with the spatial and social setting- are augmented by the use of locative technologies and social media, to the extent of creating a new digital layer over the existing physical layer. As such, this digital layer provides a platform for new types of connections to emerge and develop in congruence with already existing ones.

Since technology is a recurring topic throughout all the previous chapters of this dissertation and an essential feature of the specific type of game chosen for our model (the LBG), it seems pertinent that special attention should be dedicated to a discussion that aims to frame the integration of technology within the operational model proposed for the tool to be designed.

### 3.2 Technology

As previously illustrated, technology-added tools have enriched practices within all fields that have been mentioned in this dissertation and many more. This observation comes in line with the emergence of ubiquitous computing (often referred to as ubicomp) described as “a set of processes where information technology has been thoroughly integrated into everyday objects and activities to such an extent that the user is often oblivious to doing so” (Nold & Kranenburg, 2008, p.7).

The overview, delivered in previous chapters, of the technology-aided tools employed in participatory spatial planning processes, for assessment of people’s environmental images, as well as in some types of games, is pointing to the potential benefits that such technical reinforcement may provide to the topics under investigation. While acknowledging its advantages, it seems pertinent to delineate the complex implications of integration of ubicomp in everyday life, in order to understand how people respond to, adopt, understand and appropriate these technical conditions.

#### 3.2.1 Ubicomp and architectural and urban design

At the outset, it is perhaps interesting to outline the various ways in which architecture and urban design are employing the potential of ubiquitous computing in order to create environments that interact with people in different, personalized ways. Basically two different types of approaches can be distinguished: presenting information to the lay-person by means of technical tools integrated
through architecture into the environment, and extracting information from the social and spatial environment, and eventually making use of it in various ways.

The first approach, and probably the most straightforward approach employed in urban spaces, is that of integrating location-based information in these spaces in order to direct people towards desired-end points (tourist attractions, services, etc). Such interventions take the shape, for instance, of interactive informative panels in public spaces. Most of the times these are used for marketing purposes, but of course, their potential is unlimited. This approach becomes actually interesting when these tools start being used for more diverse purposes, such as the community’s social benefit.

The second approach towards creating interacting, personalized environments is mostly by integrating sensors in both indoor and outdoor spaces. By using ubiquitous sensing, environments become “smart” - as they are monitoring various aspects of people’s life (such as people’s level of comfort) and through continuous feedback from these sensors, they are able to adjust themselves to the situation. However, whenever designing such interactive personalized environments, something that should always be taken in consideration is their limitations. As Greenfield (2010) noticed, even though referred to as “smart”, such systems are still far from being able to produce inferences about behavior nearly as accurate as those made by a person in a split of a second. Therefore what is crucial in designing such environments is the conversation between the system and the user. Through this conversation, the system should always allow the user to return to a default state, where it is possible to adjust the system following own judgment. This leads the discussion to the intricate issue of control - who is in control when such systems are being used? The topic of control will be elaborated next in regard both to urban design and ubiquitous computing.

3.2.2 Control in participation

Perhaps the most significant correspondence between the two fields resides in their approach on the issue of control, since, due to their potential, they are both dealing with an urge of controlling the environment to which they are applied to. So the question that arises is who is in control? Control within urban design practices resonates with top-down planning strategies of, for instance, the orthodox modernism or the Panopticon model, while urban-computing platforms (encompassing ubiquitous multi-channel embedded sensors, data-mining tools, etc.) may be used to institute social control by means of i.e. redefining surveillance, privacy, strategies for digitally-enhanced lifestyle consumerism, etc.

From here, the topic of participation is naturally emerging as a relevant topic to contend with within both fields, and, especially interesting for the purpose of this dissertation, at their juncture point. The question comes as to what degree will people using these technologies in spatial environments will be empowered to share, participate and create (Shepard, 2007).

Eric Paulos in his project “Participatory Urbanism” defines participatory urbanism as the “open authoring, sharing and remixing of new or existing urban technologies marked by, requiring or involving participation, especially affording the opportunity for individual citizen participation, sharing and voice”. However, affording the opportunity for participation does not necessarily imply transforming people into actual participants. This is exactly the issue with this project (and the definition it delivers), and also with many ICT-aided participatory spatial tools mentioned in the first chapter of this dissertation. Passive users, posing a lurking behaviour, represent the biggest threat. Adam Greenfield (Greenfield & Shepard, 2007) observes that turning people into mobile
data-gathering tools does not transform them into participants or even citizens. The mere presence in a participatory process is not enough, since participation implies “choice, agency and action” (Greenfield & Shepard, 2007, p.43). And while in his opinion urban computing doesn’t offer “a panacea for broken communities, or for our failure to create vibrant, vital, viable communities”, he goes on to say that by merely creating active, reactive or even interactive structures is not enough; transactional exchanges are the real challenge, where each party involved in the interaction provides and receives something valuable. Transactional structures imply creating functioning systems useful also for the people, not only for the system. From here, the discussion expands onward to focus on co-creation and the role that real people play in this context.

This is indeed the great challenge in architectural practices, where architectural engineering firms fall short to provide the relevant expertise at the human interface level, since their background consists in operating in completely different contexts, within systems designed for reasonably motivated and expert users, operating within sharply circumscribed parameters (Greenfield & Shepard, 2007). The matter of co-design with stakeholders with another expertise, coming from different universes of discourse, is very much still an obscure practice.

In terms of technological development, this represents a shift from the ‘Internet of Things’- a vision of a world where every object is accessible through digital and analogue ways (Nold & Kranenburg, 2008) - to the ‘Internet of People’, providing and assisting a network of relationships in which “people are not just in the loop, but its main locus and scale reference” (Nold & Kranenburg, 2008, p.17). The tools to meet these expectations hardly even exist. Kranenburg (Nold & Kranenburg, 2008) observes how only a few sensor dashboards are accessible to people and that almost none of the existing projects led to creation of actual products. This happened because an agreement was not able to be reached regarding the intellectual property of such tools and the timing for such business model was not good. Nold goes on to say that these tools are “missing the messiness of the world and (...) lacked the involvement of people who might actually use this stuff” (Nold & Kranenburg, 2008, p.17). From here, the biggest challenge of this dissertation is to manage to design a tool to do justice to its purpose- in this context, the spatial interventions, while at the same time, to render value also for the people using it.

Just because a participatory project makes use of ICT, it doesn’t necessarily mean that it is appealing for people. Many times people feel intimidated by the complexities of using technology, and for a good reason. While it may prove useful for some specific types of tasks- such as the creation of a database of individual meanings and experiences and visualization of this information, for other tasks its implementation only complicates the context (for instance, it seems that online conversations do not have the potential to reach the same level of emotional engagement and reward like face to face conversations). In order to choose the most appropriate formula, it is necessary to be able to discern between the real practical and valuable implementations of technology and the services used just for the sake of ICT-use. For this to happen, a combination of online and offline, digital and analogue performance must be allowed and opted for, by selecting what is truly relevant for each task, consistent with the given context, and taking into consideration that this context itself is subject to change.

3.2.3 Implications of integrating ubiqucomp in daily life

From here, it seems interesting to observe the implications of the employment of ubiquitous technologies, how this is affecting the way people use
and experience the environment. The discussion follows several perspectives that mould a debate in terms of attention (or awareness or presence- as it was introduced in the previous chapters) and distractions.

Under the condition of information processing through mobile devices, it has been noticed that a significant change occurs in people’s behaviour in space. Their attention is shifted from the present moment and place towards a virtual environment (e.g. a webpage, a chat screen, a game interface) where a stronger stimuli, usually visual or audio, exists (an advertisement, a person communicating with them, etc), thus moving beyond a “psychogeography of the attractions of the terrain” to a “schizogeography of nodes and networks” (Shepard, 2007). “Man’s almost infinite appetite for distractions” (Huxley, 2010, p.35) seems to be continuously nurtured by the countless applications of ubiquitous technologies. The way people physically address space while using mobile devices- smartphones, iPods, pads, etc., is a clear indicator of a retreat from the external reality, a denial or abandonment, as Greenfield (Greenfield & Shepard, 2007) calls it, from the physical environment. The extensive use of mobile technologies nowadays, Amber Case (2010) notices, turns us into cyborgs. People deliberately (or is it really so?) choose to spend more time staring at their smart-phone screens rather than experiencing the world and people around them. As such, urban mobile computing creates a conflict with architecture, by undermining its traditional authoritarian role as the technology of place-making. Formal beauty and traditional humanist concerns with proportion, texture, etc. fade into the background when space becomes amenable to networked use (Greenfield & Shepard, 2007). This perspective, thus, emphasises how these new communication modalities and technologies may seem somehow destructive of public space, public sphere, or a sense of solidarity among people living in the city (Shepard, 2007).

Nevertheless, a different perspective posits how new forms of “publics” are created through means of these technologies, since online social media (Facebook, Twitter, etc) has replaced the street – as the preferred public social place (Shepard, 2007)- at least for the younger generations. Nevertheless, the effect of social network use on interpersonal connectivity has long been questioned (Sproull & Kiesler, 1992; Uslaner, 200; Kraut et al., 1998, 2002). It has been noticed that online social networking do not necessarily involve socializing with strangers (Kraut et al., 1999; Weiser, 2001; Rigby, 2008, Ramirez, 2012), as most of the times the online network coincides with the already-established group of acquaintances that people have in offline environments. Some other studies argue that social networking on the internet may lead to all sorts of social diseases (Das & Sahoo, 2011), such as social isolation, because while people spend increasing amounts of time on social networks, they tend to engage in less face-to-face interaction (Sigman, 2008, Greenfield, 2009).

From a different viewpoint, it is argued that the intensive use of this technology opens up new types of practice from which architecture can benefit. As people pay less attention to their environment due to extensive use of mobile devices, these technologies may have the potential to reveal which aspects of the built environment are truly relevant and which need to be completely re-imagined (Greenfield & Shepard, 2007). For instance, Augmented Reality (AR) applications for mobile devices, which are enhancing the physical environment with digital information (e.g. photos, renderings of three-dimensional models, etc), might prove helpful in assisting lay-people to understand “the language” spoken by spatial experts. Again the problem arrives, as Slavin (2011) and Haque (2011) pointed out, that AR technologies presume that reality is fixed and that people are passive observers in need of explanations to understand it better. The
great danger with AR is that, at the outset, it is based on the assumption that people see the same thing—what they manifestly don’t, since the process of understanding reality is constructed on our own heterogeneous perceptual frameworks. AR applications are designed so that the user is sitting inside simply waiting for information to come in, and such an approach has concomitant repercussions on what this means for our own agency (or lack thereof) in the world (Haque, 2011).

Taking in consideration all these various arguments, posing partial truths of conflicting perspectives, it seems difficult to reach a balanced approach between presence, as an enhanced attention to the physical and social features of the environment, and the immersion into the screen of our mobile devices. However, the best we can do is becoming aware of the existence of the both sides of the coin, and assert them as a valuable starting point for the design of an innovative tool, aiming for a grounded, meaningful and networked experience to begin our story with. Since the tools become available to use, it is only up to the user how she chooses to use them. The fundamental principle that must be stressed is that these tools should include choice, allowing the user with the free choice of the prospect of use.

Under these circumstances the integration of locative and social media within the operational model of the game requires careful consideration and validation of the advantages and limitations of such an approach. Certainly, when employed within a specific purpose (educational—rather than marketing-driven), locative technologies can prove useful in enhancing people’s capacity for observation through sensory perception of the affordances of their surroundings, by immersion into more frequent and extended presence moments. Acknowledging the value of locative technologies while making use of them with this aim out-

lines the seventh principle.

Moreover social media is a valuable tool to be used with the purpose of supporting different types of knowledge exchange. This can provide the outlines of the eighth principle. Despite its sometimes contested qualities of “extracting” users from the present moment and space, social media may assist a different type of social interaction. Such an online interaction may overcome the limitations of the social contact occurring in the present moment and place, by connecting people who are physically away, and maintaining an ongoing conversation over a long period of time (through the chat history, for instance).

Set of guiding principles

1. OBSERVE affordances of the environment and spatial tactics as a trigger for action
2. CONTEXT is crucial
3. NO MANIPULATION
4. Encourage AMBIGUITY
5. Unexpected action
6. Good balance between fun and seriousness
7. Use of LOCATIVE MEDIA in combination with a specific task
8. Use of SOCIAL MEDIA for different types of knowledge exchange

Figure 13: The set of guiding principles
As a result of integrating locative and media technologies within a game meant to function as a tool for spatial participatory processes, a situated exchange of knowledge is promoted. When this exchange takes place on the location itself, assisted by locative media, it presents the advantage of facilitating observation and analysis of the physical and social setting as it is, and not from remembrance of places in the light of own interpretations. On the other hand, online conversations (through social media) and face-to-face conversations make possible for planners to learn from the users of the space, and vice-versa, thus improving not only the relationship between these two communities of practice, but also facilitating a collective understanding and development of urban environments.

In the next chapter the potential that such a technology-added approach within game design holds will be demonstrated by actually designing, implementing and assessing this spatial participatory tool, in the shape of a location-based game.

Conclusions PART 1

In this section, a theoretical framework of the topics revealed as essential for this dissertation has been illustrated. These topics have been addressed through an interdisciplinary literature review, involving fields such as public participation in urban design, ecological and cognitive psychology, phenomenology, sociology, and game design, as well as the integration of ICT-aided tools in these fields.

At the outset, a paradigmatic shift was suggested that would consider participation as an attitude, and not merely as a method. This shift is meant to promote participation on many levels, more than just a process that takes place only in the moment when an intervention is required following a prescribed overall-applicable methodology, but rather as an ongoing process bringing people together with the purpose of discussing about issues that may eventually develop into pragmatic socio-spatial interventions. These discussions are constructed on the assumption of the equality of intelligence (Rancière, 2009), allowing for an equal intercultural dialogue between the designers and the users.

Such an approach requires the support of various participatory attitudes and instruments, in line with the multitude of actors, circumstances, contexts, etc, which delineate a participatory track. From here the need arises for an operational framework for participation in spatial processes, dynamically integrating effective spatial policies, instruments and also knowledge of everyday practices.

For the purpose of this dissertation (the design of a participatory tool in urban design practices), the emphasis will fall only on the instruments and the integra-
tion of understanding of everyday practices into these instruments, following the assumption that an open instrument can be applied within any frame of spatial policies.

The first research objective of this dissertation has established the collection of everyday knowledge on spatial behaviour- which may prove valuable for the spatial expert with the scope of integrating it further within spatial interventions- as a significant task to be pursued by a successful participatory tool. However, producing and using in-depth everyday knowledge appears to be an intricate task. The difficulty arises in the moment of the exchange of knowledge between the actors involved in the participatory process. This is mostly due to the fact that they all have developed different ways of perceiving and conceiving the environment, based on their different expertise and the different meanings they attach to it, through use. In order to be able to grasp and cope with such differences in frame of mind, it seemed pertinent to develop a thorough understanding of the dualistic nature of human phenomena- of how behaviour is actually performed in reality and differently imagined in people’s minds-, by investigating the way people store, structure and retrieve environmental knowledge, by assessing their environmental image.

The aspects that define the environmental image consist not only in the brain capacity of remembering precise locations, the physical form or physical relation of city elements- which represent the topic of interest of cognitive studies of the “mental map”- but also how the recollection of such information is influenced by sensory perception as well as by the emotional impact of places and the experiences lived in these places, on people. For this reason this dissertation proposes an integration of the cognitive, ecological and phenomenological perspective in order to deliver a holistic understanding of the concept of the environmental image.

The input strategies of construction of the environmental image, as well as the output strategies of retrieving stored information –assessed through various assessment techniques, sometimes employing ICT - are illustrated from the perspective of the three paradigmatic traditions. They stress the importance of assessing the individual (and her environmental image) as a complex system, which is grounded within the social, cultural and spatial context it acts upon, and which makes sense of the environment based on a highly subjective perspective. For this to happen, a double approach seems to be necessary, following a factist perspective of realism- understanding facts corresponding to a large extent to reality- and also a specimen perspective of constructivism- understanding the social reality created by people through meaning attachment.

The theoretical framework of the environmental image posits the issue of awareness as particularly relevant, since all processes involved in the acquisition and recollection of environmental knowledge are supported and accelerated by the degree of awareness attained by the observer. Divergence of awareness produces distortions and leads further to individual differences- as noticed through environmental image assessment-, which become so obvious especially among users and designers, creating difficulties in communication. It is argued, thus, that through an increase in awareness for both the designer and the user it is possible to attend a more constructive and equal dialogue, and from there an exchange of knowledge, between the two parties involved in the participatory process.

In line with the second research objective an approach promoting moments of presence attained through observation instead of interpretation, as a starting point of all actions, is proposed as a strategy to contend with the di-
vengence of environmental awareness. It has been noticed that a certain ten-
sion arises when creating individual realities through meaning construction, as
people are always acting with specific goals in mind. These individual goals may
eventually lead to tension produced from resistance to other systems (defined by
culture or another individual) that don’t overlap the individual needs and aspira-
tions. People combat this tension by employing individualized tactics of coping
with their environment and other systems imposed on them. Understanding
some aspects of the spatial tactics that people employ when dealing with their
surroundings may deliver in-depth knowledge about everyday practices, about
the way people use, perceive and conceive the environment. This may eventually
lead to a valuable exchange of knowledge among the designers and users of space.
When such knowledge emerges through active observation of people’s tactics or
the affordances of the environment, rather than only interpretation based on a
subjectively-defined perspective, it is argued, it may grant the advantage of a
fine-tuning of various systems of interpretations by grounding the arguments
and opening-up the perspectives of the actors involved in the spatial participa-
tory process, towards a more constructive and efficient cooperation.

This approach promoting observation entails a double track: from the one
side, it refers to observation on the part of the player while acting in the game, as
a trigger for all actions; moreover, observation, on the part of the researcher, of
players’ choices of action during the experiment can prove useful to understand
their tactics, and from there, in the interviews and conversations after.

A set of guiding principles for a game

Along the lines of the first two research objectives, a translation of the
findings of the theoretical framework of the environmental image delivers a set
of five guiding principles for the design of the tool to be developed within the
frame of this research. In accordance with these principles, the design of this tool
should observe everyday spatial tactics (the first principle), in the context where
they are performed (the second principle), without imposing pre-defined topics
that don’t belong to participants’ mind frame (the third principle), and while
encouraging spontaneity through ambiguity (the fourth principle), which may,
eventually, give rise to unexpected behaviour (the fifth principle) - in this way
rousing participants’ capacity for awareness. By pursuing these principles the
tool should be able to attain its first two objectives: to collect valuable informa-
tion regarding spatial tactics without interference or manipulation (the first, sec-
ond and third principle) and to enhance awareness regarding the environment
and behaviour in space (the first, second, fourth and fifth principle).

In line with the third research objective, the tool needs to perform these
two functions in a fun and engaging way. For this reason, and also for their abil-
ity to address all the above principles, games have been introduced as a potential
design solution. By investigating the relation between games and urban design
and pointing to the various ways in which the two fields can reinforce each other,
the conviction appears that games can successfully perform as participatory tools
for spatial processes. Games have the potential to frame a serious (design) prob-
lem in terms of an entertaining game-mission, in this way approaching it with a
playful attitude. This grants the advantage of having participants engaged with
this process in a deliberate and enthusiastic way.

In order to design such a game, a confrontation of the above principles
with the very wide range of game-types has been used to identify the most appro-
 priate type of game. In this way it was established that a location-based game- a
subcategory of pervasive games- is the type of game with the highest potential to
collect information regarding spatial tactics on the specific location where they
are performed, and simultaneously to raise awareness about the environment and behaviour in space, by making players perceive their surroundings from a different standpoint than they usually do. When a good balance is struck between the elements of the game addressing playfulness and seriousness (the sixth principle), such a game could eventually achieve its purposes in a fun and engaging way. By employing mobile devices with locative and social-networking abilities, the game is expanding the physical playground with a digital layer introducing new types of socio-spatial relationships. Locative media, in combination with specific tasks for locative actions, may rouse awareness of the environment in specific places (the seventh principle), while social media may assist a different type of knowledge exchange (the eighth principle). All these convictions, taking the shape of a set of eight principles, will be further confronted in the second part of this dissertation with the actual design of a location-based game.
Introduction

The previous section of this dissertation (Part 1) elaborated on a theoretical framework from which the design of a tool to facilitate participatory processes addressing spatial planning issues is meant to emerge.

With the aim to simultaneously achieve its three-fold research objective, this tool intends to perform as a mediator, facilitating an exchange of knowledge based on genuine understanding of two types of actors involved in the participatory process, namely the designers and the users of space. Such an exchange of knowledge implies a double track: valuable information needs to be collected for the designer regarding spatial behaviour, while, at the same time, enhancing users’ understanding about their environment, about behaviour of others, as well as their own behaviour in space, through addition of new perspectives. Furthermore, being able to perform these functions in a playful and engaging way steers the design of this tool in the direction of a serious but also entertaining game.

Within the theoretical framework conveyed in Part 1 of this dissertation, a set of principles has been put forth in terms of a strategic, conceptual and methodological approach - regarding the assessment of the environmental image- (the first five principles), while some other principles relate to the game aspect (the sixth principle) and the technological-driven approach (the seventh and eighth principles) assisting the implementation of the game.

In terms of strategic approach, a first principle suggests that using observation (of things as they really are- for instance “This is a dark place”), instead of interpretation (of facts through an ego-centric perspective- for instance “This is a nice place because I hang out with my friends here”), as the starting point of all actions performed during the game, has the power to enhance people’s capacity of awareness, through an extension of the moments of presence. In this way the local knowledge, produced and accumulated over time through spatial tactics and interpretation of these tactics through own lenses, can be further on augmented with new perspectives provided by sheer observation- through conscious sensory perception. Such new perspectives may bring expanded understanding regarding the reasons of existence of one’s preferences or aversions of places, and further on, it may lead to their deeper conceptualization or reconsideration. Knowledge arising from sheer observation (Gumbrecht, 2004), it is argued, may assist the observers to ground their arguments into the material reality (by attaining an enhanced level of awareness regarding the affordances of the physical structure). This may have as a potential result an improved understanding of other systems of interpretation, by opening-up perspectives and by taking into account also the point of view of other expertise (by observing, for instance, others’ behaviour in space). Observation of spatial tactics can be performed by the respondent, and used as a trigger for action, while it can also be employed by the researcher – observing respondents’ tactics of action within the experiment-, in order to use this knowledge further into interviews and conversations with them.

Following the ecological approach introduced in the theoretical framework (Part 1), a second principle puts forth the conviction that assessment of people’s spatial tactics should be pursued in the very spatial context where these tactics are performed. In this way it is possible to take into account all possible implications of the interaction body-mind-environment, as well as the relation
between the social and spatial layers observable on the location itself.

On a conceptual level, a third principle addresses the importance of not imposing concepts pre-defined by the researcher as categories to be followed within the game (since such categories may not even be part of participants’ mental image), but rather to allow players to come up with the issues that they find relevant, and from there to let conversation emerge further. A fourth principle suggests that by encouraging ambiguity the tool could be able to increase awareness, by activating unconscious information in participants’ mind through unexpected associations of perceptual features (Kearney &Kaplan, 1997). Moreover, engaging participants into performing unexpected actions could result in perceiving the environment from a different perspective, which, the fifth principle posits, would eventually have positive consequences on the raise in awareness.

Concerning the game aspect, a sixth principle puts emphasis on striking the right balance between seriousness and playfulness, by paying special attention to the design of successful game elements able to deliver a genuine fun and engaging experience.

In terms of technological approach, a seventh principle posits the ability of locative technology to rouse people’s awareness regarding the environment, whenever combined with a specific task for locative action. Moreover, a final principle addresses the impact of social media (i.e. social-networking sites) on the exchange of knowledge facilitated by this tool, in terms of benefits as well as challenges that such a technological-driven approach may deliver for social interaction purposes.

The intention is to test this set of principles in the empirical section of this dissertation (Part 2), through a confrontation of the principles with the ac-
4. The Game Design

This section will present the empirical and theoretical background of the design of the game and subsequently, will describe the creation process of the game Cure for the Campus.

To begin with, the background for the design of the game includes a pre-study of two other experiments that have been designed, implemented and tested before creating Cure for the Campus and which has influenced the final design.

The second part presents the process of creating the game Cure for the Campus, including the phases of development of the game concept, as they emerged from an elaboration of the research goals, and the implementation of the concept into the settings for which it was designed and played, the platform on which it is based, and the experience of the game itself.

4.1. Background for design

Pre-study: two preliminary experiments- STEP I and the C-Mine experiment

4.1.1. STEP I – a location-based game as an ethnographic tool

A preliminary phase of development of the research project envisaged the game as being comprised of two parts. STEP I was conceived as a preparatory step intended to facilitate the actual game, generally named STEP II. Within this frame, STEP I was designed to collect and share digitally coded location-based ethnographic and other, phenomenological, data to map participants’

Figure 14: Game concept STEP I and STEP II
personal relationships with the urban fabric of cities they inhabit, and their environmental images mirroring habitual characteristics of these relationships.

The purpose of STEP I was to understand the way inhabitants perceive and use their daily environment and to discover the meaning they confer to their daily experiences, by employing an innovative ethnographic tool to monitor their daily routines. Compared to traditional ethnographic methods, when for example the researcher literally shadows the respondent during a given period of time-, STEP I embraces a different approach. The researcher’s rapport with the respondent is minimized, as the recording of facts and impressions is performed as self-documentation through means of a digital diary. Compared to traditional methods of assessment of mental maps (i.e. sketch maps), this type of digitally mediated assessment has the potential to increase efficiency, by reducing the respondent’s anxiety, and to provide a more accurate picture of participants’ performance.

**Figure 15: Game session on location**

---

STEP I was setup as an experiment, disguised as a game, which operates in two distinctive, although interrelated sessions. The first session is running in the field- in line with the second principle-, entailing GPS tracking of habitual routes and making annotations along these routes. All data produced by participants is automatically uploaded to an online platform and participants are asked to share it with each other.

A second session of the experiment is running online. Behind the screen of their home computer, participants are required to make comments and rank the performance of others, by offering points for the best annotations of the day. Sharing and evaluating each others’ input aims at applying the third principle by triggering participants to employ inspirational means, which are not imposed by the researcher (for instance, annotations made by one participant may function as an inspiration for others, so that the next day they may be observing similar types of annotations, made through their own perspective).

**Figure 16: Game session online**
Both sessions are running on a daily basis for a period of one week. The score is daily updated, in order to inform players of the points gained during the day and to keep a record on the classification. At the end of the week, the participant whose annotations collected the most points wins. By introducing a point-system and a self-ranking mechanism, a game element is employed to confer the experiment a game-like experience, along the line of the sixth principle.

After this week, a series of individual open-ended interviews are conducted, during which participants are asked to detail their daily routine and to reflect on the deeper meanings of their experiences.

4.1.1.1 Conceptual features

For STEP I no spatial boundaries have been pre-defined. It was considered that in an era distinguished by intense mobility, spatial boundaries should not be imposed for a given city or neighbourhood. People may live in one city and they may work in a different one; but all these places are part of their mental image. For this reason, the only imposed canon was that participants’ home must be in the given spatial area under research, since home is considered the most important anchor point of the environmental image, around which spatial knowledge is hierarchically organized (Golledge, 1978).

In terms of the annotations, STEP I applied the third principle by following a non-manipulative approach, which did not impose any pre-defined categories to participants - or as little as possible - , leaving them a free choice of the annotations (the type, the content) to indicate along their daily tracks. The object of the endeavor was that participants themselves would identify those topics or issues that they found important in explaining their view about the living environment. Thus, only minimal guidance was provided. Within this frame, inspiration was delivered through a set of guiding but not prescriptive questions (Why do you mark this place? How do you feel about it? What is your previous experience related to it? What does this place mean to you? How do you use it?), and a fragment from George Perec (1997, p.50) encouraging participants to annotate “anything worthy of note going on. Do you know how to see what’s worthy of note? Is there anything that strikes you? Nothing strikes you. You don’t know how to see. You must write about it more slowly, almost stupidly. Force yourself to write down what is of no interest, what is most obvious, most common, most colourless.”

In this way, participants were required to identify aspects of the environment that have some particular meaning for them, by making explicit the significant social and spatial interactions outlining their urban experience. Obviously, these annotations are simple, superficial statements, but they have the potential to point at the tactics that respondents use, in a less aware manner, when they operate in the city. This attention for details, ordinary things, small gestures, small objects or no average clues is very characteristic for an ethnographic account, since ethnography is all about making the ordinary more bizarre and strange (see a/o Soenen, 2009, Jacobs, 1989).

By conducting individual open-ended interviews after the week of GPS tracking and annotations, the aim was to elicit the deeper meanings of the respondents’ relationship with the environment.

4.1.1.2 Implementation of the concept

At the outset, it was necessary to establish which technological approach would be most appropriate. Several options have been taken into consideration.
In the beginning the researcher herself has tested the concept in order to establish the most appropriate technical approach to be employed. For several days, a digital-diary- kit containing two devices- a Columbus V900 GPS data logger with an embedded voice recording function and a Sony camera- has been used to track GPS trails and to make visual and audio annotations in the city of Hasselt, Belgium, as well as in Amsterdam, the Netherlands. The produced data has been uploaded to and visualized on the online platform Everytrail. Everytrail is a web 2.0 platform (www.everytrail.com) which allows users to upload geotagged travel content- location coordinates linked to digital objects, such as photographs and also voice recordings- in order to create visual interactive map overlays as trip reports of their travel experiences.

During these initial testing it was noticed the difficulty to operate with separate technical devices on the field, and especially when other ordinary parameters would be at work- such as the usual time-pressure within a daily routine or unfriendly weather conditions. Also, when traveling by bike and especially by car, the on-field annotations require frequent and time-extensive stops. Therefore, it was concluded that ideally the experiment must run on an all-in-one tool- a smart-phone with the three functions embedded.

Another main constraint initially imposed on the realization of the game is that it is using only already-existing applications for smart-phones, since it does not aspire to create a new hands-on application for the emerging concept. In line with this constraint, it was considered essential to use an application that allows for an easy shift between different annotation-modes. Experiments have shown that Everytrail application performs rather well as a mapping tool and also as an online visualization platform, therefore it was decided to employ
Everytrail as a suitable option in STEP I.

Given this encounter, the concept of the STEP I has been further tested in experimental trials on groups of five participants using the Everytrail application running on their iPhones or Android phones. The criteria used to recruit participants relied heavily on the ownership of such a smart-phone. Selected participants of diverse age groups all shared an intellectual background, perhaps as a consequence of recruiting participants from the social network of the researcher.

The focus of the research was set for the town of Hasselt. Thus, participants were all residents of Hasselt, at the moment when the experiments took place, but their period of residency in town differed considerably among each other, from relatively newcomers (one until four years of residency), to long-term residents (eighteen years of residency).

For a period of one week, participants followed their normal daily routine, while having the Everytrail application running on their phones. The application was recording their routes through the city, while, at the same time, allowing the annotation of experiences along these routes, by means of photos, notes or videos. By the end of each day, participants were performing several operations on the online Everytrail platform, such as uploading or improving their content- by explaining their annotations or manually editing routes-, but also grading others’ input. Each day, each participant had a total of three points to assign to the three most appealing annotations of that day. Based on their grading, participants’ score was announced the next day, by noon, on the Everytrail platform and also through emails. The participant who accumulated the most points for his or her annotations, by the end of the week, became the winner.

Figure 18: Participants’ daily trips visualized on Everytrail platform
The game Design

All comprise the textual data hosted on the Everytrail online platform. Apart from this, individual open-ended interviews have been recorded using a voice-recorder and subsequently transcribed to facilitate analysis. The data has been analyzed in-depth using the Grounded Theory method (Glaser&Strauss, 1967). This methodology facilitates comparison of collected data, coding and sorting it, toward the purpose of identifying abstract core categories. The analysis of this data will be presented next.

4.1.1.4 Data analysis

STEP I experiment applied some of the principles previously defined in the theoretical framework. This approach allowed the researcher to observe participants’ everyday spatial tactics (first principle) in the spatial context where they emerge (second principle). At the same time, it encouraged participants to use observation of the environment as a starting point for making annotations (first principle) along daily routes (second principle), without imposing any pre-defined categories (third principle), while employing Everytrail as a platform for tracking, visualizing and sharing location-based information (seventh and eighth principle). In addition, the experiment introduced elements of game mechanics in order to test its ability to achieve a good balance between playfulness and seriousness (the sixth principle).

Several findings will be outlined below regarding the appliance of the principles.

In terms of the first principle, remarks can be made with regard to participants’ spatial tactics through analysis of the results from the Everytrail mapping week (GPS tracks and annotations) and the interview sessions that followed. One can notice that there is a clear discrepancy between what people

Figure 19: Data analysis using Grounded Theory methodology

The information collected in the first week went through in-depth thematic analysis, eliciting the meaningful topics revealed through assessment of participants’ experiences. These topics have been further used as guiding features in the individual open-ended interviews that followed. During the week following the experiment open-ended interviews have been conducted individually with each participant daily.

4.1.1.3 Data-set

While running STEP I for a period of one week, on five participants, a large amount of data have been collected through various sources. The most part of this data is visual, being comprised of visualizations of GPS tracks and photographs linked to locations along these tracks. This data is made available on the Everytrail platform as separate daily trips of each of the five participants. The visual data- GPS tracks and photos- have been analyzed in relation to the textual data, elucidating the context in which these annotations and routes have emerged.

Textual data supports the visual one. Annotations as textual notes linked to the GPS tracks, explanations of photos or choices for grading annotations,
say and what they do. All kind of contradictions have been noticed between participants’ declared values and beliefs regarding oneself and their actual behavior in space, revealed through their actions during the tracking week. For instance, when directly asked if they consider that the use of this application has improved their awareness or modify their mode of observing the environment, most of participants were firmly convinced that this didn’t happen (and some indicated that they always pay attention to everything around them).

However, their statements regarding various annotations they made – “…it was the first time that I noticed this…” or “I didn’t notice it before”- or even their overall performance, pointed to something different: “I noticed after a week that my route is always on this side of the city.”

In parallel, observation of participants’ behavior in the spatial context where they occurred (the second principle), during one week, confirmed the theories on cognitive maps (Golledge, 1978), attesting that people move along same, familiar routes and they usually choose to go to the same places in the city (for shopping, leisure, etc), which become personal anchors in their mental image. They choose for minimal diversity, explaining their routine choices as being the most efficient ones ("I always take this route, because it is the shortest one"). It was observed that efficiency is the foundation of all their actions in the city. This may also explain the reason why habitual adaptation occurs. People are interested in exploring a city only during the first contacts with it. However, when enough information has been added to one’s mental image about how to act in the most efficient way in the city, people's interest with the habitual environment starts to diminish dramatically.

Even though people's performance in the city becomes more relax with time ("Now in Hasselt I know the route so good, so I don’t have to look

<table>
<thead>
<tr>
<th>Year</th>
<th>Occupation</th>
<th>Status</th>
<th>Neighbors</th>
<th>Place</th>
<th>Mode of Transportation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Architecture student</td>
<td>single</td>
<td>2/1</td>
<td>East side</td>
<td>car</td>
<td>Aldi-foothike, Delhaize-car</td>
</tr>
<tr>
<td>1</td>
<td>Architecture student</td>
<td>single</td>
<td>1/1</td>
<td>North East</td>
<td>bus</td>
<td>Aldi-foothike, Carrefour, bus/car</td>
</tr>
<tr>
<td>13</td>
<td>Interior Design Academic</td>
<td>married</td>
<td>2/2</td>
<td>East side</td>
<td>car</td>
<td>Delhaize, Carrefour, Colhuys-car</td>
</tr>
<tr>
<td>6</td>
<td>consultant/owner company on future solutions</td>
<td>married</td>
<td>1/1</td>
<td>South</td>
<td>train</td>
<td>Delhaize, Colhuys-online, 't vitaminjuidje, butcher-foothike</td>
</tr>
<tr>
<td>6</td>
<td>Design Academic</td>
<td>engaged</td>
<td>2/2</td>
<td>East side</td>
<td>car</td>
<td>Colhuys-car, Carrefour-car, vegetable-store-foot</td>
</tr>
</tbody>
</table>

Figure 20: Participants' profiles
Figure 21: Themes of analysis: spatial and social issues
can provide a more relaxed coping with her surroundings (i.e. going only to certain areas of the city that “suits” one’s personality, during preferred times that would keep off traffic jams, according to preferred mode of transportation). Depending on the experienced degree of contentment, these actions seek either to change or to maintain the individual’s relation with the environment, in this way producing a progressive adaptation to the social, cultural and physical environment (i.e. adapting to an imposed dressing code policy, following natives’ habits in order not to be looked at weird- like for instance not wearing sneakers when going to specific places); or, on the contrary, a need for recognition of one’s own particularities as a different entity from the bulk (i.e. going only to some particular places, where certain type of people go, using the city in different ways than it was “prescribed”, at unusual times, etc.).

With regard to the different tensions produced among individuals and the imposed system of rules and regulations in urban space, an evocative example is that of the so-called “desire lines”. Desire lines are paths developed as the result of people’s choice for efficiency, being the most convenient- shortest, easy navigable- routes; they are not developed through spatial experts’ design, but from the erosion of users’ footfall. In this respect, an interesting spatial intervention, characteristic for the town of Hasselt, are the bicycle and pedestrian round-abouts, situated at every big crossroad or bridge (figure 22). They have been conceived to follow the same logic as the round-abouts for cars, but they have never been used as such, since bikers and pedestrians find their way freely, unconstrained by so many spatial canons like cars do. The tension produced by this imposed spatial situation is perceived consciously by newcomers in town: “It seems nice, when you pass it, I mean, the trees, the circle, but it’s not functional” (confession of a one year- resident of Hasselt). On the other hand,

Figure 22: The prescriptive design of roundabouts around”), movement remains almost always goal-directed (“I usually try to combine walking and to buy something”), which brings efficiency on the top of the priority list. In conclusion, while predictable movement in a familiar area confers relaxation and an efficient performance, it is the novelty that brings motivation for spatial exploration: “I think it will be more interesting when I will start to live over here, because I will have a new base to start and take different routes.”

Analysis of collected data showed how every individual has own different pattern of needs and activities, fundamentally regulated by personal goals and expectations. For a particular individual, with specific sets of goals and values, her experience with the environment produces specific actions (Ittelson, 1978). Through these actions, she tries to achieve a certain amount of comfort, which
long-term residents of Hasselt-who are also not using it as prescribed- seemed to have unconsciously adapted to this system: "I always take my own road. I don't look for indicated routes. I know you are either going left or right or straight, and then I don't watch the indications, I just follow the one I need. (...) Now this freedom gives you a lot of opportunity (...) I didn't even notice the fact that there was a... now as you said, I noticed that there was a direction that they tend to guide you into" (confession of an eight-year-resident of Hasselt).

It can be noticed, thus, that tension can manifest consciously, generating a critical attitude materialized through complain or a "loud" desire for change, or it can manifest unconsciously, when people are adapting to the system, by creating their own functional solution to an imposed (irrational) rule.

The data collected through STEP I allowed the researcher to observe many spatial tactics that people employ in their living environment (such as choosing specific places for specific activities due to specific reasons, taking specific routes, depending on the specific time of the day, dressing up in accordance with dress-code policies of specific places, etc), applying, thus, the first principle together with the second. However, these tactics remain very generic, as long as the analysis focuses on such a large spatial area, as it is the area of the town of Hasselt. Therefore, it was concluded that for future research, constraining the second principle, in terms of selection of a small site and implementation of the game concept within the specific conditions of this site, would be advisable.

Applying the first principle-observation as a starting point of actions (i.e. making annotations) - on the part of the participants, though, was more difficult to achieve. Despite the inspiring text of Perec (1197) and the instructions inviting participants to perform observation through sensory percep-

tion, minimal input has been documented in this direction. Most annotations were of places carrying a particular emotional meaning for participants, while only a few annotations have been triggered by extensive observations of the present moment and space (mostly from participants with spatial training, e.g. architecture students, or from one participant who had previously tested locative applications entailing sensory annotations). Even though annotations of sensory perceptions were scarce, all participants testified that this novel type of navigation along familiar routes (having the Everytrail application running and the task of making annotation in the back of their heads) has considerably increased their attention toward the environment. Therefore, a relation with the seventh principle may be suggested.

When applying the third principle within the STEP I experiment certain limitations have been revealed and will be presented next. While asking participants to share and rate each other's input, the aim was to encourage them to mutually inspire, instead of imposing specific types of categories. Following this approach, however, it was noticed that annotations of sensory perceptions were very limited, and did not inspire other participants to adopt them, as participants confessed that it didn't feel comfortable, because such annotations did not fit their mental structure. Moreover, by not asking participants to make specific annotations along their daily routes (therefore not imposing pre-defined concepts, as the third principle posits), it has been noticed a certain difficulty of framing a clear goal for actions for the participants to follow. This approach leaded some respondents to experience frustration, while some other respondents creatively took advantage of its openness and created their own game rules. Therefore it turns out that this principle is not entirely appropriate as such, and that it needs to be modified to become more specific. It seems
necassary to impose concepts on some levels ("the how")- the researcher has
the task to pose relevant questions so people can give interesting information
that they would not give in an ordinary conversation-, but not on others ("the
what")- the researcher does not impose her categories on the people studied, so
she doesn't interfere with "the what".

Ambiguity has been introduced in the game through ambiguous rules, in
this way applying the fourth principle. It has been noticed that while some re-
pondents became frustrated with the increased level of ambiguity of the rules,
some other respondents, especially the younger ones, proved to be creative
and used the ambiguity of the game rules as an advantage, by inventing their
own new rules within the game concept. Therefore, for future game design,
careful attention should be granted to the framing of the rules of the game, in
order to attain the right amount of pleasant ambiguity, triggering players’ curi-
osity and immersion in the game.

Testing of the fifth principle has been facilitated by the implementation
of the previous principle. So, performance of unexpected actions in the game
emerged due to the ambiguity of the game rules. For instance, one partici-
 pant’s picture of their house instigated another participant into discovering the
location of the house and making an annotation of it, in this way, creating his
own rules of the game: "I thought that it [recognizing places that others an-
notate] could be a mission of the game". In light of these observations, it can
be noticed that ambiguity is a very good trigger for unexpected actions, and at
the same time unexpected actions are not necessarily only produced through
ambiguity.

The appliance of the sixth principle pointed to the fact that although
introduced as a game -using a point-system and a self-grading system-, STEP
I felt short from creating a genuine game experience. From a functional per-
spective, the pointing system performed well, as it represented the trigger for
participants to check on each others’ input (since every night they had to give
three points to the best annotations of the day). However, as a game mechanics,
pontification is not an enough powerful tool in itself, to guarantee participants’
motivation to engage willfully in such an experiment. While some participants
used the rules of assigning points for winning the game (by making as many
daily annotations as possible), some other participants expressed frustration
regarding the criteria used for grading. For instance, the rule which assigns
one point for each annotation implies that the quantity and not the quality
of annotations is relevant. Moreover, the fact that participants had only three
points to give to others daily, while others were making a very large number of
annotations, made them feel like assigning their points is not able to make a
difference in the ranking. Some other participants perceived the point system
like an (annoying) artificial element, especially because it was not technically
integrated within the Evertrail platform, therefore requiring additional effort
for input- in comparison to the classic “like” button.

It was concluded that careful attention must be given to the design of
the game dimension of a tool that is expected to perform as a veritable game.
Integrating a successful format of game elements into a serious experiment
aiming to achieve scientific validation of its findings proves to be, eventually, an
extremely challenging task to be taken into consideration.

Testing of the seventh principle was attained in this experiment by
employment of location-aware technology, which facilitated context-related
experiences to be recorded as they occurred at roughly the time and place of
experience. By recording perception in action exploration of real-world situa-
tions was encouraged. However, it has been observed that by introducing novel technology and tasks into everyday practice, these practices suffer a process of transformation. It has been noticed -through observance of respondents’ performance in the game (the annotations) coupled with their testimonies- that the employment of such technology, combined with the assignment of making annotations, brings a significant change in their natural way of observing and exploring the environment. Already from the outset, their environmental awareness is increased by means of this technical encounter delivered by STEP I. Participants become more attentive to their surroundings and their performance in the environment changes into a more conscious process. Respondents testified that they started to pay attention to things they would not usually pay attention to and they were searching to discover interesting things to annotate—therefore through this experiment it was provided to them the motivation for exploration. Validation of the seventh principle, thus, pointed to the fact that Everytrail (as a platform for recording and visualizing location-based information), in combination with specific tasks for locative annotations, can be used as an enhancer of awareness, promoting embodied sensory experiences of the habitual environment. Given the GPS-technology abilities, it is obvious that precise spatial mapping of such sensory experiences is confined solely to the outdoor environment, which means that this type of technical approach is not able to be implemented indoors. Therefore, future design should take into account other technical tactics that would facilitate the analysis of indoor locations as well.

By integrating Everytrail within the conceptual frame of STEP I, conceived as a social game, with players interacting and grading each other, some shortcomings have been identified. These shortcomings relate mostly to the appliance of the eighth principle, entailing social media as an assistant of different types of knowledge exchange.

The limitations of the Everytrail platform as a social tool became immediately obvious. Since all communication was supported by the Everytrail platform, its limitations as a tool for dialogue were noticeable. Everytrail is not specifically designed as a social tool; therefore it did not support or encourage interaction between players. For instance, the fact that participants- who were all “following” each other on Everytrail platform—did not receive updates on the activity of the ones whom they were “following”, was reported as the most disturbing issue. This implied that participants would continuously check on others’ profiles on the Everytrail platform, in this way wasting a lot of time (and enthusiasm). Also the fact that Everytrail does not send a notice when somebody receives comments on their own trips represents a significant limitation of the social interaction provided by this service. In conclusion, appliance of the eighth principle requires a more appropriate social networking platform to be employed, in order to assist successful online social interaction.

Moreover, on a conceptual level, it was observed that having participants interacting with each other created a modification of priorities. The sharing activity-, which was basically, a consequence of visualizing the main activity of mapping- took priority over the ethnographic mapping activity- which was meant to be of primary importance. Participants’ attention shifted dramatically from mapping daily experiences to other concerns, such as impression management (Goffman, 1999). Impression management and privacy became the basic criteria used for the choice of input- instead of the particular meaning that places have for them. Regarding privacy, annotations and routes have been selected in terms of which information would be suitable to be presented
to others and which information should be kept secret (not showing parts of daily route which would point to the location of their house in order to keep it private, for instance). Regarding impression management, participants chose to make annotations in terms of their remarkable features and their potential to impress others when shared (for instance, taking pretty pictures was considered by most participants the highest goal) and not about the particular meaning that the object captured in the picture would have for them (for instance, pictures of one’s new house which was being in construction were considered not “pretty” enough to be shared with others during the experiment, although from a “meaningful” perspective, this was exactly what the assignment was about).

With regard to this finding, for future design concern, it was considered that adopting a performative rather than an autobiographical use of technology can be, perhaps, embraced as a design resource, instead of considering it as an obstacle. Rather than forcing an intended behavior onto users, the concept of the game could, instead, adapt to their behavior.

In general this technology-added approach, attained through employment of the Everytrail platform as a tool for recording, mapping and sharing location-based information, turned out more functional for younger than for older participants, as it was noticed that teenagers performed best. While older respondents expressed their frustrations with the insufficient amount of guidance received and with the use of a new, unfamiliar application, teenagers seemed to be very receptive and enthusiastic in learning how the new application functions- “You need some time to get used to it, but it’s not rocket science”. From here, one can speculate that teenagers (students) may be ideal participants in the game, as they seem to be better learners of novel technology, as well as more open and adaptable to ambiguous rules, as previously illustrated.
In terms of different types of exchange of knowledge, it has been noticed that those participants to whom instructions of the game have been given verbally have performed noticeably better than the ones who received instructions via email (and who repeatedly expressed frustration of not understanding what the goal of the experiment is). This observation may highlight the fact that an exchange of information through face-to-face discussions has a potential that electronic information exchange will never be able to replace (Gumbrecht, 2004). This remark provides an essential guideline for the future design of the game, being given that the game concept relies heavily on conversations. It is, thus advisable for the game to provide both online and face-to-face opportunities for social interaction.

In terms of applying the set of principles to this experiment, it can be concluded that while some of the principles could be successfully validated as valuable and appropriate for the purpose to be reached, some other principles established their limitations on a conceptual or on a practical level.

Moreover, applying some of the principles revealed their correlation-as it is the case with the first, the second and the seventh principle, and the fourth and the fifth principle. For instance, it has been noticed that for applying the first principle (observation of spatial tactics and the environment), it is necessary to perform observation within the very spatial setting (the second principle) where behavior or the affordances of the environment occur, to then later compare it to participants' declarations about their own behavior. Along the same line, location-based technologies employed in combination with a specific task may enhance people's awareness of the present moment and space (the seventh principle) and can promote observation as a starting point of actions (the first principle) only when they are running in a real spatial environment (the second principle), granting the potential for various sensory experiences. Likewise, encouraging ambiguity, through ambiguous game rules (the fourth principle), for instance, can trigger performance of unexpected actions.

The data collected through this experiment provided useful information regarding the two main aspects identified as relevant for the purpose of STEP I, i.e. of mapping behavior. One aspect regards the suitability of the Everytrail platform as an ethnographic data gathering system and its implications, while a second aspect regards the assessment of the ethnographic data itself, revealing various dimensions of participants' behavior in their daily environment.

4.1.2 The C-Mine experiment

Taking into account the limitations of previous experiments using GPS technology, which enabled only the analysis of the outdoor environment, the
experiment in the C-Mine is intended to test a technical approach that would facilitate a location-based game to be played at indoor locations.

The C-Mine experiment has been set-up as a game taking the shape of a QR-codes-enabled indoor quest, as an alternative for a location-based game played indoor without the involvement of GPS technology. The game was run inside the C-Mine complex in Winterslag, Genk, Belgium, for one day, during “The Day of Architecture 2011” event.

The location of the game, C-Mine, is a former coal mine comprising several industrial buildings converted into a cultural centre. The transformation has been achieved by integrating the old red brick structure and the large mechanical equipment into an upgraded facility, involving also the construction of two new buildings on either side of the main machinery hall. This cultural infrastructure houses a design centre, a music room, a restaurant, an event hall, exhibitions spaces, as well as tourist facilities for experience of the old mining site. Each of these places provides a unique atmosphere, while still maintaining the footprint of the former identity of the site, as a coal mine.

Given the function of C-Mine as a cultural venue, the emphasis falls heavily on the spatial layer- which encompasses the dominant dimension-, and not so much on the social layer, which consists mostly of one type of user, namely visitors (and not inhabitants). Therefore observation of spatial tactics (the first principle) performed by the participant does not seem to be relevant within this context, but rather observation of the affordances of the spatial setting can perform as a trigger for action, while having the experiment running on the location itself (the second principle).

A first step toward the development of the concept was to identify places that may have the potential to raise questions regarding specific spatial features and how these features mediate the newly prescribed function of such places. A total of seven places have been identified as relevant for our experiment (figure 23). These places were mostly exhibition places, with different atmospheres.

In each of these places QR-codes (figure 24) have been positioned, inviting participants to give a reaction, by interacting with them. Each QR-code was linked to Facebook pages, especially created for each one of the selected places. This technology-added approach, employing QR-codes as technological asset inviting for locative indoor exploration and Facebook as a social network service, assisted the appliance of the seventh and eighth principle.

On the Facebook pages, participants were asked to answer context-specific questions (Appendix C). The strategy employed to provoke participants’ reactions made use of a first reaction of a spatial expert entailing a bold statement regarding the atmosphere of the place. This strategy was meant to trigger participants to express their disagreement or to find inspiration. The goal was
to test the suitability of such a method to provoke participants into online discussions regarding location-based issues. In this way it was possible to apply the third principle (i.e. no pre-defined concepts imposed by the researcher), while following the lessons learnt from the previous experiment—i.e. the researcher asking relevant questions.

A game-mechanic was attached to this experiment, with the purpose of transforming it into a game, in this way assisting the testing of the sixth principle. By employing various game elements, a game dimension has been ascribed, providing participants the motivation to engage into the quest. Each place had been assigned a unique four-digit code, which was disclosed at the bottom of the related Facebook page. Therefore the discovery of the codes implied discovering the location of the QR-codes and answering the context-related questions on the Facebook page. The goal of the game was to discover all the seven codes (figure 25), in this way winning the game.

Despite the large number of people interested to play the game, only six participants were able to take part in this experiment. This limited number was, basically, due to the fact that, at that moment, we lacked the sufficient equipment to provide our players to play with—the smart-phones able to read the QR-codes and to navigate on the Internet sites. More explicitly, we provided only one iPhone available to rent to play the game, as we were relying on the fact that players would have their own smart-phone with a QR-code reader application installed on it. Unfortunately this last condition could not be fulfilled. Another implication of this shortcoming was an asynchronous experience of game-play, players not being able to play all together, at the same time. Theoretically, such a synchronous experience of play would have the ability to enhance the players’ game experience, injecting a stronger sense of competition. For this reason, the game elements were not able to be assessed as powerful tools to deliver motivational engagement into the game, therefore not being able to validate the sixth principle. Perhaps due to the same shortcoming, applying the fourth (ambiguity) and fifth principles (unexpected actions) was also not possible.

The data collected throughout this experiment consisted mainly of textual data—participants’ answers to the context-related questions situated on the Facebook pages and the questionnaires they filled in by the end of the game.
Visual data also supported the experiment, having the game-play documented through pictures, as reminders of players’ tactics in the game.

The results of the game delivered by the six participants showed that such a technical and conceptual approach is suitable to trigger participants into location-based conversations hosted on an online platform. By analyzing the textual data—the discussions which have emerged on each of the Facebook pages—it became obvious that a situated exchange of knowledge took place. The locative approach of technologies in combination with location-related questions (using QR-codes as locative triggers), facilitated an enhanced observation of the present moment and space, thus validating the seventh principle. This was possible due to the fact that the game was running in the spatial setting that triggered the observations, in this way validating also the appropriateness of the second principle. Observations of the affordances of the setting have been further used by participants as a starting point in their actions (the first principle) - i.e. to articulate answers to the context-related questions and to argument their choices. In addition, the Facebook platform performed very well as a platform hosting an online exchange of knowledge among the participants and the spatial expert, along the lines of the eighth principle. Besides, participants testified in the questionnaires that they felt inspired by others’ comments, integrating this novel knowledge into their mind-frame and, thus, into their answers. This provides a validation of the third principle, augmented with the findings from the STEP 1 experiment.

In conclusion, this experiment allowed the applying of the first, second, the third, the sixth, seventh and eighth principles. While the first principle has been applied only partially, the second, the third, the seventh and eighth principles have been effectively and completely applied. Within the circumstances drawn together by this experiment, the unattainable synchronic performance on the playground of all participants did not make feasible the validation of the sixth principle and the appliance of the fourth and fifth principle. This may suggest a correlation of the fourth, fifth and sixth principle. Moreover, the interdependency of some other principles has been noticed once again, as it is the case with the first, the second and the seventh principle: the employment of the locative approach of technologies combined with a specific task becomes valuable and instigates participants in observation, when running in the physical settings where the intervention is located. In addition, the new outlines of the third principle seem to suggest that a certain connection to the eighth principle may arise, since the relevant questions or provocative input of a spatial expert can become the trigger of conversation allowing for a valuable exchange of knowledge on an online social networking platform.

The C-Mine experiment proved valuable in order to assess the ability of such a tool to engage participants into an indoor location-based transfer of information. The spatial features of the physical location generated the content of the discussion, while employment of game elements triggered participants—spatial experts as well as non-spatial experts— to engage in asynchronous, location-based conversations, hosted on an online platform which, thus, facilitated a novel process of knowledge exchange.

4.2. The game Cure for the Campus

4.2.1 Learning from previous experiments

The game Cure for the campus has been built upon the two experiments previously described. The successful strategies, as well as the shortcomings revealed by the appliance of some of the principles in these two experiments have
guided the design of (some parts of) the new game.

STEP 1 revealed the advantages of defining a limited area as a playground for the game, in this way having the game concept stressing the specific context of the site. The game can be played in outdoor (STEP 1), as well as indoor locations (the C-Mine experiment), since a successful technological approach has been established to deal with both types of circumstances. It was noticed that youngsters seem to be better candidates to play the game, since they proved to be fast learners of technical features and more open and creative toward ambiguity- a central element in the game.

From a conceptual perspective, a performative, rather than autobiographical, use of technology must be used as a fundamental design resource, allowing the game to adapt to players’ behaviour, while spurring exploratory actions. Moreover, it seems advisable to aim at engaging players in synchronic experiences, since theoretically such a synchronous experience would have the ability to enhance players’ game experience, by injecting a stronger sense of competition. However, the previous two experiments used only asynchronic performances, and so, they did not manage to test the ability of a synchronic experience to enhance involvement in the game.

It was noticed that the game dimension needs careful consideration, since both previous experiments felt short in creating a motivating game experience. Game elements should be completely and holistically integrated into the game concept from the beginning, instead of defining them as augmentations to a scientific experiment- taking the form of points, codes, etc. These augmentations do not manage to create genuine intricate motivation, as they are simply entailing gamification strategies, which have been heavily contested in game-design practice (McGonigal, 2011, Schell, 2010, Walz, 2011).

**Figure 27**: Position of the PHL campus within the larger site

With these guidelines in mind, the aim was to design a game with emphasis on the three-fold goal which has been established through the theoretical framework; namely, the game is created to explore its ability (1) to collect valuable information for spatial experts about spatial tactics, (2) to increase the awareness of players about their living environment and (3) to motivate participants to engage into participatory spatial processes taking the shape of an LBG. Therefore the conceptual frame of the game demands special attention, since it has to be able to achieve such a laborious three-fold goal simultaneously.

4.2.2 Phases of the game design process

An outline of the approached followed to develop the game Cure for the Campus will be delivered next, in regard to the essential steps of the operation-
The phases of the process of designing the game itself will be presented, together with the implementation of the game concept into practice, data gathering tools, the data sets, their analysis and the validation of the findings. Finally, a theoretical generalization of the story board and the methodology will be attempted.

### 4.2.2.1 Temporality and spatiality

Following the first two goals of the game, the emphasis falls heavily on the relation between behaviour and the physical environment. From here, the first two features identified as relevant for the game relate to the design of the relation between the game and location. This relation entails time and space as underpinning dimensions.

In terms of temporality, it was considered that having the game run over

---

**Figure 28:** Spatial analysis of the PHL campus

**Figure 29:** Participant observation
a longer period of time (i.e. a few days), it would be possible to observe how
different settings (i.e. different times of the day, different weather conditions,
different locations within the chosen site, etc.) affect players’ experience and
choice of action within the game.

In terms of spatiality, it was pointed in the theoretical section (3.1.3) that
the game to serve the purpose of this dissertation should be a site-specific LBG.
Therefore, the physical space has been used as a starting point in the creation
of the design of the game. A specific site has been considered for designing
the concept of the game, namely the campus of the PHL University College
in Hasselt (figure 27). The PHL campus is situated adjacent to the ring road
of Hasselt, while on the south side it is bordered by a natural site, the Demer
river and next to it sits the Kapermolen park, the biggest park in the town. The
Elfde Linestraat, an important traffic artery connecting the ring road with the
centre of the town, cuts the campus in two. On one side of the street lie the
A-building- hosting the library and administration offices-, and the B-building-
the department of Business studies and Education-, while on the other side
lie the main D-building of the restaurant and cafeteria, the student dormitory
also known as “the tower”-, the Fine Arts department- hosted in the C-build-

![Figure 31: The playground](Image)

Figure 30: Problematic or relevant locations around the campus

Figure 31: The playground

and in the “Lange Gange”-, the Pavillon- hosting the Pop& Rock depart-
ment-, the central square, the green lane and the parking lot.

This site has been chosen for a few reasons. For convenience reasons, be-
ing the campus of our university, it allowed for easy access of use of its physical
facilities (for setting-up a game), while it provided a wireless network coverage
all over the perimeter of the campus, and at the same time providing a good
observation point, (I was living in the student dormitory situated in the centre
of the site). Moreover, it was an interesting site to analyze and work with, since
already in the past it has been the topic of architectural competitions- looking
to deliver improvements and new interventions, which, however, have never
been implemented. Therefore a multi-faceted interest has been mapped for this
site.
4.2.2.2 Socio-spatial analysis

Following a site-specific approach for the game, the physical location represented a critical element for the game design. Therefore a thorough understanding of the spatial and social context of the “playground” was essential, to begin with. Toward this scope, spatial analysis and participant observation have been employed as two preliminary methods for investigating the existing situation.

A spatial analysis of the site (figure 28) has been done by the researcher, from the perspective of an architecturally-trained observer. The spatial morphology of the site, the functions being present, the use of materials, the variety of green, etc., have been analyzed through fieldwork.

This analysis has been complemented with other remarks derived from four design proposals put forth by four architectural offices from Belgium and from the Netherlands (DaF, Thys, Lohmann, 51In4) for a competition requesting the restoration of the old building which shelters the Fine Arts department, called the “Lange Gange”.

In parallel, a social analysis has been conducted through participant observation (figure 30) on the way people use the campus. In this way, users’ behaviour patterns have been observed—where people gather, where they don’t, which actions they perform where, when they perform these actions, etc.

4.2.2.3 Formulation of hypotheses

On the basis of this double approach, a frame of analysis of the physical and social settings of the game has emerged. This analysis was based on for-
mulation of some hypotheses (figure 30) in terms of what a qualitative public space is, and what are the features that can enhance the use of a specific public space? (see appendix F)

Following the hypotheses, it was decided for the game to use as a playground four specific locations within the PHL campus -both indoor and outdoor-, identified as relevant for the performance of the campus as a whole. These four chosen locations (figure 31) are: the parking lot (1), (which eventually was repositioned at (1a) the sport field of the elementary school nearby), the central square (2), the main D-building of the restaurant (3) and the empty pond (4) that surrounds the student dormitory.

Following this socio-spatial analysis, it was possible to identify a series of locations within the campus that might be considered as problematic or relevant to raise questions.

The parking lot was chosen for its physical qualities resembling a Tabula Rasa. It unfolds over a very large perimeter in a strategic location within the campus site, and during the times the university is closed, it is a completely empty asphalt field. The central square, positioned- as the name suggests- in a very central location in the campus, it has been considered a problematic public space, since it does not attract users. The restaurant, from the other side, represents the liveliest public space of the campus, performing as a social magnet for all users. The empty pond around the student dormitories building for many years represents a dilemma. Its previous function -as a pond with fishes- proved to be impossible to maintain, so for a couple of years it lies empty, awaiting a new intervention to be attached to it. By running a game in these locations, the goal is to try to understand why such places elicit a successful or unsuccessful performance in terms of their prescribed function.
The biggest challenge remains, of course, to manage to transform these locative assignments into playful missions in a game.

4.2.2.4 Assembling the structure of the LBG

Each of the chosen locations or site-specific situations has been used, further on, as a starting point to create a variety of potential scenarios for a game concept. The social and spatial characteristics of these previously identified places and situations have generated the ingredients of the stories to be transformed into game assignments. In total, a number of thirteen scenarios have been envisioned.

From these, a combination of the most relevant scenarios has been selected for the final game concept. These scenarios have been chosen in terms of the prospect of addressing simultaneously the three-fold goal of the game, by balancing the amount of fun and the seriousness of the information to be elicited from these missions.

Four scenarios have been eventually chosen as one-day missions in the game, assembled under one coherent storyline.

Following the traditional structure of an LBG (rules, frames, fiction and authenticity, uncertainty and ambiguity) specific game elements have been employed with the purpose of creating the frame of an engaging and challenging LBG, named Cure for the Campus.

For this reason, an immersive narrative assisted by clear goals, a variety of rules and ambiguity have been considered powerful tools to enhance players’ experience in the game.

The final game concept envisions a four-day long pervasive game (figure 33), introducing the story of a sick campus that can be healed by playing the
Figure 35: The structure of the second mission game and finding the treasure buried by the founding architects within the campus ground, many years ago. The hunt is conceived as a four-day journey during which the players have to cure four wounds, referring to the four key locations. Each day, a group of spatial experts discloses to the players a new “wound” - a location or situation within the campus that needs to be “cured”. Players are required to find the location of the wound and to perform a specific location-based task, in order to “cure the wound”. When all the wounds are found and cured, the players would finally have access to the map of the hidden treasure.

Through a cohesive story, augmentation of locations through narrativization permits players to create links between the pieces of the story distributed in physical space. In this way, locations are used as part of the game-play and

Figure 36: The structure of the third mission players are required to strongly interact with them. They are creating the cure by means of indexical actions - mapping traces, creating an authentic intervention in the square-, or they use their imagination toward pursuing symbolic actions - drawing with chalk on the ground a river, flowers, creating a radio from a brick, etc., as simulations of elements comprising an ideal picnic place.

Cure for the Campus is combining ludic and paidiac rules, so that they generate a coexistence of presence and intentionality (Walther, 2007). Each mission of the game offers a balanced alternation between ludic and paidiac rules, using different tools to introduce them. The first three missions - “Tabula rasa Picnic” (figure 34), “Installation in Central Square” (figure 35) and “QR-codes Hunt” (36) - start with a text message from the game-master, with a
Figure 37: The structure of the last mission

location-based riddle pointing to the location of the picnic baskets or the boxes that needed to be found. In this way a ludic rule is introduced: players are given a purpose to run around the campus, to find these items. Inside these items, a new clue is given, in the form of a letter. The letter is enclosed in an envelope with the color of each team: red, yellow and blue, so players would know which letter is assigned for them. This strategy is used to increase ambiguity, so that players don’t know if other teams would have the same assignment as they do. Through the letter, players are given a location-based assignment to achieve. For the first three missions the assignment constitutes a combination of ludic rules and paideiac rules. In the first mission, players have to go to a specific location, to create an ideal picnic place from scratch. (figure 34)

In the second mission (figure 35) they have to map passers-by movement in a square in order to create an installation in a spot which does not usually attract users.

Since players can use any resources outside the game environment to accomplish their tasks, the choices for game actions are unlimited. The first two missions do not impose any timeframe, players being free to take as much time as they need to accomplish the missions, in this way encouraging the paideiac play. In the third mission players must discover the QR-codes (the ludus), and once discovered, they have to read the code, which will direct them to a Facebook page where they need to answer location-based questions. Answering the question requires players to reflect on the specific qualities of that space that trigger the meanings they assign to it. Again, an unlimited range of possibilities of answers is available. The third mission (figure 36) is running within a pre-defined time frame. In this manner, a strong sense of competition is generated, which stresses the ludus element of the mission.

In the last mission (figure 37) the opening text- message introduces a ludic rule- players must go to the office of a PHL employee for an appointment-, but also a paideiac rule- they need to choose the best option from a variety of options to find this office. From the moment players receive the map of the treasure further on, the game is based only on ludic rules. Players must find the treasure, and with it, they will engage in an entirely ludic game of Snakes and Ladders.

While the first two missions of the game place a greater emphasis on paideia play- requiring explorative and improvisational skills-, the last two
missions convey a stronger ludic experience, with emphasis on competition. However, in all missions, players are playing on the same field of action, and they are pursuing the same goal. This puts them in direct competition, which promotes a shared involvement in the game (Calleja, 2007).

In terms of frames, Cure for the Campus positions itself outside the classical theories of play (Huizinga, 2003), which describe games as being situated inside the “magic circle”, defined by fixed rules, and framed around well-defined borders of time and space, so that players are constantly aware what is part of the game and what is not (Salen & Zimmerman, 2004). In line with a pervasive game approach, this game connects play with everyday aspects of life. In this way, the boundaries between play and ordinary life become blurry, assisting a transformation of the familiar environment into a play-space that awaits rediscovery.

Thus, in Cure for the Campus players actions are related to many different frames: players are students of the PHL, they are residents of the tower, they are playing a game and they are researchers- sometimes ethnographers (observing people’s movement in a square), sometimes architects (creating a picnic place). These frames have an influence on the way players interpret and behave in these locations.

The frames within which players act, depend highly on the location and sometimes on the users of that location, in that particular moment. In the central square, for instance, mapping the pedestrian flow of the square depends strictly on the usage of the square in that particular moment, but also on the legitimacy of the action-being allowed to draw with chalk on the ground in the square. At the same time, this action may have implications in the outside world – being seen in this posture by some of their teachers passing-by, may raise different questions. Therefore, players’ actions matter not only in the frame of the game, but also in the context in which they are played (Borries et al., 2007).

Ambiguity, as a central element of locative play (Benford et al., 2003; Benford et al., 2006; Dansey, 2008; Gaver et al., 2003; Máyra & Lankoski, 2009), has been used on many levels during the game, in order to provoke surprises and excitement. Being considered a valuable resource for design (Gaver et al., 2003), ambiguity has the potential to engage participants with issues without constraining them how to respond. It allows conveying the game-master's perspective, while enabling players to find their own interpretations, colored by their specific socio-cultural backgrounds (Gaver et al., 2003).

Ambiguity emerges through the game sometimes as a pre-designed strategy and sometimes the game allows it to emerge through coincidence. An ambiguous context is created by implicating incompatible contexts (Gaver et al., 2003) – i.e. a parking lot for a picnic setting- to disrupt preconceptions and to trigger players’ creativity. The game engages also in ambiguous relationships, when the game-master announces players that appointments are arranged for each team with official figures of the school - with the General Director of the School, the Head of the Department of Art and Architecture and with a Research Advisor. Simultaneously, ambiguous relationships are created between the players and the passers-by which are being followed and having their movement traced with chalk. This can enhance a disturbing experience for most of the players, as they may consider the consequences of following strangers, without their permission or understanding of the situation.

Many times ambiguous information is presented to players. This sometimes arises from the designer’s intention and sometimes it emerges unexpect-
edly, as a result of unfamiliarity of the surroundings or an altered interpretation of instructions. In the first two missions players are not given any information about a time frame. This ambiguity made some players speculate about a secret time-race involved and act from this premise, injecting, thus, a stronger sense of competition to the missions. The individual text-messages introducing location-based riddles generate ambiguity regarding the object to be found: is it one for each team, located in different places, or is it the same one for all? This doubt, it was noticed, increased the excitement of the pursuit.

On the other hand, ambiguity sometimes emerges unpredictably during game play. The final location of the picnic scene- the sport field- was not able to be discovered by two from the three teams, for many different reasons. For instance, the coincidence made that all players of these two teams were having their rooms in the tower watching over the other side of the street, opposite the sport field; therefore they had no visual knowledge about this location. A single player from these two teams knew the location, but she considered that it cannot be this one, since it is not within the “PHL ground”. As a consequence of such ambiguity, the situation called for more clues from the game-master to help with the game progress. The players in doubt required (through text-messages) explanations from the game-master to elucidate the location where they would have to set up the picnic.

Ambiguity of the text leads some players to search in the most unexpected places. Instructions about the locations of the QR-codes inside the D-building mention “eight places with eight different atmospheres” for which players have to give a reaction. Interestingly, some players have been noticed to search for codes even in the toilets. Falling under players’ interpretation, every aspect of the game becomes distorted in unforeseen ways.

While making use of all these various game features illustrated above, Cure for the Campus frames physical elements of various key locations that normally are unrelated to each other, linking them together and connecting them to a plot. The storyline enforces immersion into the game and gives the players the motivation to keep playing, while the accomplishment of location-based tasks could bring valuable information for spatial experts regarding the tactics employed in these locations or situations. The overall performance in the game could enhance players’ awareness about their living environment by making them experience familiar places from a new perspective, by confronting them with the behaviour of other participants and by stimulating exchange of ideas and opinions, as well as by becoming more aware of their own behaviour in space.

Cure for the Campus outlines locations and actions within sometimes overlapping frames that must be negotiated during play. Fiction and rules become defining elements of the frame, while ambiguity makes possible to study how players negotiate contexts and makes sense of ambiguous information. Being a site-specific LBG with a high interest in the qualitative performance of the players, the game is trying to create balance between the explorative playmode (paideia) and the competitive game-mode (Walther, 2007). Combining these qualities remains the biggest challenge and the highest contribution of this game. By intercalating playful game elements with serious location-based tasks, a good balance can be struck between the playability and the seriousness of the game, allowing the game to simultaneously attain its three-fold goal.

### 4.2.2.5 Integrating technology

Although in pervasive games, in general, and in LBGs, in particular,
location-aware technologies are exhaustively emphasized as critical elements from which the design of such games is initiated (Ejsing-Duun, 2011), in this game technology has been used to assist the game concept. Instead of using technologies as a starting point, and then “fitting” the concept in the range of possibilities of these technologies, our approach reverses the process. It stresses the importance of delivering a valuable concept for the game, and from there, (a combination of) different, already existing technologies can be adopted, in order to achieve our purpose and implement the game. This approach seems sensible given the fact that this dissertation aims to design a game to explore its ability to achieve a three-fold goal framed by conceptual issues, namely to provide valuable information to the architects about spatial tactics, to increase awareness about the environment and about behaviour in space and to do that in a fun and engaging way, that would motivate people to participate deliberately. Obviously, within such a frame, the technological aspect is not the main concern, in the sense that it becomes just a supportive backdrop toward reaching the objectives mentioned above. However, being given the mobile dimen-

**Figure 38:** The Desire Engine mechanism (all rights reserved Nir Eyal)

Cure for the Campus uses as a basic platform a Facebook page, for many reasons. At this moment, Facebook seems to be one of the most popular online social-networks used on the planet. One of the reasons for this popularity is that Facebook has the ability to create extremely powerful “desire engines” (Eyal, 2013) - experiences designed to create habits (figure 38). Facebook (and not only) gets users to “self-trigger” to return to their website by attaching their services to the users’ daily routines and emotions.

The result is having people checking their Facebook pages quite frequent-
The implications of this fact for our game are clear: the more powerful the desire engine created by the platform where the game is situated, the bigger the chances are that your players will integrate the game within their life, as a habit. The game does not ask for an extra effort from the player to log in to a different platform, investing even more time and energy into it. It is simply attached to a platform extensively used by all players, on a daily basis, and which attracts all kind of aspects of their private and public life. Since Cure for the Campus is a game running over several days, the Facebook platform can easily assist the immersion of players into the game –who are triggered by the little red sign generated by Facebook for each unchecked event, and so, regularly, they search for new updates, photos, comments, etc. In this way, the game pervades players’ life without producing apparent disruptions or unnecessary tensions.

Following this rationale, the online platform hosting the game takes the form of a Facebook page, entitled This Is Not a Game (figure 39).

The core function of this platform is to perform as an interface between the real-world game scene and the online community following the evolution of the game. A diary of the game is created on the Facebook page timeline. To the announced events, all sorts of documentation of the game performance can be attached. Players and the game-master can upload photos, videos, notes and comments on the daily missions of the game. Their purpose is double. While it is a good way to keep a record for the outsiders on the game progress, at the same time such input has the ability to trigger players to continuously check the page and actually continue their performance in the game on the online platform- by reacting to the game-master’s or other architects’ provocations in terms of content. In this way an online platform of interaction is created.

In order to assure immediate communication among all players and the game master, personal mobile phones are used, since they are the most private devices always carried around by players. A voice over internet protocol (VoIP) system is used by the game master to send text-messages to the players. This feature allows using the name “Your Game-Master” as the sender of the message, instead of having a usual mobile number, in this way adding fictional value to the storyline. By means of text-messages, location-based riddles are disclosed to direct players toward the location of the next task. During the game, whenever further instructions may prove necessary for the progress in the game, personal communication on the field between the game master and the players can be facilitated also through text-messages.

Apart from personal mobile phones, each team is equipped with an iPhone. It is used as a tool to document players’ performance in the game-by means of pictures and videos-, to communicate with each other- on the Facebook chat-, to read QR codes and to navigate to websites, whenever necessary.

Although in preliminary experiments GPS technology and a location-based application (Everytrail) have been employed to track and visualize participants’ movement in town, for the game Cure for the Campus no such technology was regarded as necessary. Given the limited area of the campus where the game was played, it was considered that mapping the players’ movement in the game will not provide us with valuable information for any of the three purposes of the game. For outdoor location-based tasks, players discover locations through riddles, disclosed by text-messages. For indoor tasks the players are pointed to locations by means of the hunt for the QR-codes. These codes successfully link the players to specific locations inside the restaurant building, where further actions are asked to be taken.

The strategy employed by the game is meant to limit the use of tech-
nologies to the extent that they assist the game concept, and at the same time also encouraging the use of material tools, whenever this proves to be easier to handle and to serve the purpose of the tool. For instance, players are given instructions through means of letters and maps (printed on paper), or they are asked to use chalk in order to map different aspects of the environment. Since “the LBG should direct the players’ attention toward their physical surroundings, not to a screen, and make use of the richness in these surroundings, not blocking them out” (Ejsing-Duun, 2011, p.142), this strategy proves beneficial. In this way, the emphasis falls to a large extent on the physical contact, enhancing the embodied experience, from where a meaningful interaction with the surroundings is created.

By restricting the role of technology, the intention is to manage to keep the players’ focus on the real environment. LBGs have often been criticized for putting too much emphasis on technology (e.g. Gustafsson et al., 2006; Kristiansen, 2009, 2010; Montola et al., 2009; Waern et al., 2009), while the real defining feature of LBGs should be the inclusion of and interaction with surroundings (Mäyrä & Lankoski, 2009).

4.2.2.6 Recruiting participants

Eight PHL students have been recruited to play the game, grouped in three teams. Three PHL employees have been recruited to play minuscule “staged” roles within the game. Passers-by have been involved into game-play occasionally. The game has been continuously supervised by a game-master, the researcher herself. A group of online players, conceived of two spatial experts, have contributed to the location-based discussions, having as a starting point the players’ performance in the game.

The main criteria for selecting the players were that they would all be PHL students and residents of the tower. By choosing players as residents of the tower an easy access to their location (their room) was provided. In this way it was easy to leave letters or notes under their door, or to have a physical space that they all share (the kitchen or the hallway) to use for announcements regarding the game (the ranking or last-minute changes). Moreover, this choice provided the location (the tower) where all players would be at the moment when the game would start.

The selected players were all studying at different departments at PHL-Music, Graphic design, Education, Green Management, Business studies, Ergo-therapy, Advertisement design-, with ages ranging between eighteen and twenty-three years old. Seven from the eight players were residents of the fifth floor of the tower and they knew each other before. Their time of residence in the tower varied between one and two years. One player alone was not a resident of the tower and didn’t know her co-players before the start of the game. However, she integrated immediately within the game community. She has been used during the game as a “spy”, having the role to collect information for the researcher “from inside” the game scene, while the researcher was observing the game as an outsider. This “infiltration” did not affect the strategic progression of the game in any way; its purpose was only related to employing different data gathering tools. This is a method sometimes used also in ethnographical research, when the people studied are given the status of co-researchers or researchers (Hammersley, 1992).

The eight players have been grouped in three teams: the red team (three players); the yellow team (two players); and the blue team (three players). The teams have been created following a decisive factor- the synchronization of players’ schedule. Given their different school schedules- since they were study-
ing at different departments- not all players were available at the same time, in
order to join the game missions every day. So teams have been formed so that a
reasonable number of players from each team would play each day of the game.

Apart from the eight players, other people have been involved in the
game play. Three employees of the PHL (the secretary of the General Direc-
tor of the PHL, the secretary of the Head of the department of Arts and
Architecture, and a research advisor) have been selected to play a prescr
ibed role in the game- that of having an appointment with the players and hand-
ing them the final letter. Their performances have been used to engage players
into real-world interactions, to give them the opportunity to connect with the
PHL employees, and simultaneously, to set-up an official stage for the game, by
involving “serious” figures into the final scene in order to congratulate players
for their performance in the game and to reward them with the last clue toward
the discovery of the treasure.

Strangers have also played sometimes important roles in the game. Dur-
ing the second day of the game, the game instructions asked the players to map
with chalk on the ground the movement of the passers-by across the central
square. Although not doing something out of the ordinary, just following their
normal activities, strangers crossing that square were not being aware of the im-
lications of their behaviour in space at that particular moment. The moment
when some of them became aware of the fact that their movement was being
traced, some unexpected playful interactions emerged between the players and
the passers-by:

An important figure in the game was the game-master. It was the re-
searcher herself who took up this role. The game-master actually played a
double-role within the game. The game-master delivered input about the

Figure 40: The begining letter

Figure 41: Letters under the doors

structuring elements of the game, pro-
viding players with hints facilitating the
progress of the game. At the same time,
the game-master played the role of the
spatial expert- the architect interested
to elicit from the players information
about their environmental image about
the campus, engaging them in conver-
sations with the purpose of facilitating
an exchange of knowledge between the
designer and the users of the space.

Apart from the game-master, a
group of online players have been
involved in one mission in the game.
These online players were two spatial experts. Their role was to provoke players, engaging them into “discussions” on the Facebook pages, regarding their performance in the game, questioning their answers and explanations, while guiding them toward more spatial thinking.

4.2.2.7 Implementation of the game concept- the iterative process of play

The game Cure for the campus has been set-up in four different locations within the campus area, outdoor as well as indoor. The game has been running during four days of the week 7th–11th of May 2012, namely Monday, Tuesday, Wednesday and Friday. Each day had a specific theme of play, running at a new location to be discovered and manipulated by the players. During these days, eight players, grouped in three teams, played the game for a time-period ranging between one and two hours daily.

The days in the week and the moments of the day when the game has...
been running have been selected based on some particular criteria. The most challenging criteria were the synchronization of players’ schedules, together with the specific time of the day, or day of the week, when it was advisable for the game to run in the specific locations—given the social use of that location—and last but not least, the weather condition, to which such a game is very sensitive, because the majority of locations where the game was played are outdoor.

An explanation of the choices of location linked to the choices of the moment in time will be given next for each day of the game, in order to illustrate how several constraints have been affecting the choices for setting-up the game.

Figure 44: The location of the second mission: the Central square

Figure 45: Scenes from the second mission: the Central Square
The game started on Monday morning. The beginning of the game was set by a letter that players received under their door (figures 40, 41), introducing the previously-mentioned narrative of the sick campus with wounds to be cured, toward the prospect of discovering the buried treasure.

On Monday, the theme of the game was “Tabula-Rasa Picnic”, and the location where the game has eventually been running was the sport field situated adjacent to the parking lot. The initial idea was to ask players to create an “ideal Picnic scene” from zero- by conceiving the spatial elements necessary for a picnic scene and then creating simulations of these elements and setting them up in this location. For this reason the physical attributes of the empty parking lot seemed to be fitting the task perfectly. Such a tabula rasa setting was meant to trigger players' creativity in terms of what elements would be necessary to create an appealing picnic place. This mission of the game was supposed to take place in a sunny afternoon, after 18:00 o’clock, when the parking lot would be empty. Unfortunately, due to last-minute changes, the parking lot was occupied by the time the game was meant to run; therefore a new location closed by was found instead. The new location has been chosen due to its similar physical

Figure 46: The location of the third mission: the D-building

characteristics with the initial setting: an asphalt empty field- appropriate as a “tabula rasa” setting, as the scenario of the game asked for.

And so, the sport field of the elementary school situated next to the parking lot (figure 42) has been used as a playground for the first day of the game. It has been decided to run this theme on Monday, because, following the weather forecast, it was supposed to be the only sunny day of that week. And indeed it was.

On Tuesday, the theme of the game was “Installation in the Central Square”, and the location was the square situated between the building of the Arts (the C-building) and the tower. This square (figure 45) has been chosen as a location for the game because of the fact that, despite its central position in the campus, it triggers very scarce use.

The mission in this square was asking from players to map with chalk the flow of passers-by across the square, and then, from this observation, to choose one of the “empty” spots of the square, where people do not normally walk,
Figure 48: The Facebook pages corresponding to each selected location inside the D-building

and to create an installation as an interactive tool which attracts people off the normal lines of walking in this square.

In line with the task of the game, the time of the game has been carefully chosen. Since this square does not attract intensive use, it was necessary to pre-plan the time of the game to coincide with a peak-hour of use for the square.

So, Tuesday was chosen—since it was a day when students from Arts would have lessons in the building bordering the square. The moment of the day the game was supposed to run was especially chosen to coincide with their break-time, at 11:00am. This would assure a certain traffic flow in the square.

On Wednesday, the theme of the game was “QR-codes hunt”, and the
location was inside the main D-building, of the restaurant and the cafeteria. The D-building is functioning as a social magnet, since it provides food and beverage for the users of the campus as well as a place to study or, even play.

Figure 50: One of the text-messages of the final mission

Based on different physical characteristics, the researcher had identified eight places inside the building with eight different atmospheres. These places have been chosen as places where people have lunch or breakfast - basically the areas with tables and chairs. They are spread on two levels inside the building and generate very different atmospheres (from very dark, or enclosed places, to bright or open places, with or without view to the street, to nature, or to the spectacle offered by the restaurant building itself). QR codes hidden in each of these places were linked to Facebook pages which were posing questions about the experience of each of these places.

Players were required not only to find the codes, in order to conquer a place, but also to give qualitative answers, that would prove their ability for reflection about the meaning of a place linked to their choice of behaviour in that particular place. This theme has been chosen to be played on Wednesday because it was a rainy day, so having the game played indoor was the best option.

Figure 51: The maps of the treasure corresponding to the colours of the three teams

Figure 52: The empty pond transformed into a huge game board
The time of the day have been chosen to fit players’ schedule and, at the same time, not to coincide with the lunch break - the peak hour of the restaurant, when the capacity of the building is overwhelmed by the amount of people coming for lunch. So the game was running during morning hours, when the use of the building was moderate.

Friday it was the day when the treasure was meant to be found and then a game of ‘Snakes and Ladders’ to be played inside the pond surrounding the tower. First, each team has been informed about an appointment they were having with an official figure from school.

Thus, several constrains needed to be taken into account. Since the scenario of the day required some employees’ involvement in the game, it was necessary to synchronize employees’ schedules, so they would be found in their offices at the same time. During this meeting, a letter was supposed to be handed to the players, enclosing the map with the location of the treasure, which was situated on the banks of the Demer River.

The treasure revealed the final game piece - a huge foam dice to be used to play the game of ‘Snakes and Ladders’ on a huge game-board, created on the floor of the pond surrounding the tower, therefore outdoors.

From here, a second constraint regarded the weather. Unfortunately this last constraint was not able to be manipulated. However, playing the game on a very windy day generated fun and surprises: the wind introduced itself into the game as a new player, rolling the dice in unexpected ways. Eventually, the game needed to be interrupted due to a strong rainfall.

Planning such a complex game as Cure for the Campus requires taking into consideration numerous factors that may play an important role for the
successful organization of the game. Some of these factors—such as temporality and location—are more or less controllable, therefore it is possible and advisable to be planned in advance. Other factors, for the best or the worst, are simply not controllable—such as the weather forecast, or the last-minute changes in people’s schedules or in the schedule of places. They bring an element of chance, which may completely ruin the game or may transform it into something else. The challenge of the game designer is to stay open and be flexible, so that it is possible to embrace these changes and, whenever possible, quickly adapt to them. Perhaps this is also the attractiveness of the location-based game, which is extensively employing real-life settings—an unpredictable environment still, even when pre-planned until the smallest details.

4.2.2.8 Congenial stages for conversation

As the game unfolded, some distinctive stages of the game have been created. They have occurred through emergent game play rather than through pre-defined scripted actions. A similar pattern followed in each of the first three days of the game and it is directly related to the first goal of the game—collecting valuable information for the spatial experts regarding people’s tactics, addressed mainly by the first three missions.

During the first three days, the location-based missions of the game, given through paydias rules, (creating a simulation of an ideal picnic place, creating an installation in the square and giving a reaction to the atmospheres of some places) steer a strong educational value, by engaging players into a process of exchange of knowledge. To accomplish these tasks, players are required to achieve a translation of their usual tactics in the environment into a vocabulary and praxis of spatial-terms. This is not an easy task and does not imply straightforward solutions. Players need to become observers of space, instead of merely passive users, and are sometimes asked to identify problems or patterns in urban places and to come to solutions to the spatial issues presented to them. This is not their common mode of interacting or performing in the

Figure 55: The congenial stage for conversation created during the Central square mission

Figure 56: The congenial stages for conversation established on Facebook pages of the QR-code hunt mission
environment and they did not receive a special training for that- as it is the case with spatial experts. Thus, a certain difficulty appears in terms of understanding what the assignment asks for and how a solution for such an assignment could be materialized. This intricacy actually gave birth to a new, subsequent stage in the game.

The accomplishment of the first day location-based assignment of the game ended by positioning the three teams on little "picnic islands" - the picnic scenes they have created, in close proximity to each other. Within this setting, the game-master joined the game scene from the position of an architect. In that specific location, a discussion has been launched with the players about the place and the problem at-stake - what is necessary to create an ideal picnic place?-, using as a starting point their interventions. In this way, a congenial stage for conversation has been created.

The same pattern was repeated the second day of the game. After players have constructed their installation in the square, I came down from the observation point - the fifth floor of the tower -, and joined players on location. A conversation has been initially prompted by the players’ frustration with the complexity of the task. After elucidating the real purpose of the task, I brought into the conversation the perspective of the architect, by posing the spatial problem of the square within the frame of their intervention.

The scenario of the third day of the game was pre-designed following a similar pattern; the only difference was that the conversation had been moved to an online environment, Facebook. The purpose was to test the ability of asychronic conversations, compared to face-to-face conversations, in order to understand their advantages and disadvantages, and to which context do they apply. An online team of architects have been provoking players into conver-

sations, using as starting point players’ reactions to location-based specific atmospheres. They had been questioning their answers and explanations, while guiding them toward more spatial thinking (see appendix F).

These congenial stages for conversation can be considered perhaps the most important contribution of the game, toward the first goal of the game.

In a fun and engaging way, the game functions as a tool that manages to bring players in confluence and to facilitate a transfer of knowledge among people coming from various backgrounds. Thus, authentic learning is generated in authentic locations, which, Huizenga (Huizenga et al., 2008, p.5) notices, presents the advantage that the learners need to “put in less effort to translate the subject matter to the situation-specific context in which they need to apply what they have learned”.

In conclusion, two separate stages can be identified: the game itself and the conversations after. While the conversations are missing the structure of a game, therefore it would not be correct to consider them as a part of the game, it is actually the game that facilitates the particular stage on which these conversations are built. Thus, they are mutually supportive. Being preceded by a game that brings people in confluence while engaging them into fun, collaborative, location-based activities, these conversations are framed into a different psychological mood than the usual discussions around- the- table that take place in participatory spatial processes. From here, it is interesting to observe how the commitment of the participants in these conversations is different. Preceding conversation, they had been actively involved into the creation of an intervention on that site. This conffers them a different status than simple users of the site, and a different emotional involvement - it becomes much more personal. Their interest in the site is enhanced now and the assimilation of
The game Design

information is framed within different parameters. The whole process facilitates an appealing exchange of knowledge between users and designer. Players learn from the spatial expert about spatial properties of the environment, in this way becoming more aware of the connection with their physical surroundings, so that eventually they can better articulate their choices in relation to the spatial context. From the other hand, the architect learns from the players about their tactics in space, based on their intimate motivations. Knowledge about how people use space is, thus, complemented with knowledge of why they choose to do it in that particular way. Such knowledge when integrated into the design of future interventions may help avoid repeating the mistakes of past interventions. Accordingly, the game itself prepares a congenial stage for conversation, while the conversations are deepening the process of learning initiated through the game.

4.2.3 Data gathering tools: collection and treatment of the data

A very large amount of data has been collected, across a number of media: notes, photographs, and audio- and video-recordings. These data are connected to different types of sources, following different steps in the research process: my own analysis regarding the spatial and social condition of the campus (spatial analysis and participant observation), complemented by remarks from four architectural projects regarding the site- as preliminary data; observations of the players’ performance in the game- as on-stage data; and semi-structured individual interviews and questionnaires- as post-game evaluative data.

In the preliminary research, data has been collected mostly through fieldwork. This data helped understand the spatial and social situation of the site under investigation. The spatial analysis and participant observation necessitated a good contact with the site; therefore a long time has been spent in the field. Participant observation of the PHL campus has been done using as an observation point the fifth level of the student dormitory (the tower). This building is situated in a central location within the campus, offering a panoramic viewpoint over the setting, the people, the interactions and events taking place outdoors. Users of the campus have been observed while pursuing their activities within the campus, without being aware that they are being observed.

The data collected during preliminary research was textual, as well as visual. Textual field notes have been made using a field log as a primary recording tool of the qualitative researcher (Glesne& Peshkin, 1992, p. 45). These notes have been organized into analytic ethnographic observations related to the use of the space and descriptions of the structural elements of the site. They mostly comprised descriptions of people, places, events, activities, or gestures, pointing sometimes to patterns that seemed to be emerging across individuals or events and their relation to particular spaces.

However, a large part of the data is also visual. For instance, the spatial analysis of the site included mostly visual data (architectural drawings, sketches, topographical plans, Google maps, satellite views, etc). During participant observation of the campus many photographs have been taken to document the situations under investigation. They have been coded under specific categories. These photographs have the ability to infuse interpretative ethnographic observations with empirical evidence.

During the game play, a huge amount of data was generated, in different formats and by different authors. Again, visual as well as textual data has been created by the players as well as by the researcher. The game-play was documented by both the players, the spy and the game-master using video, pictures,
notes, audio-recordings, Facebook-posts, etc. Players have documented their performance by recording videos and taking photos, uploading them to the Facebook page and, sometimes, attaching notes or comments to describe these events.

First as a researcher, and second as the game-master, I choose to come outdoors during the game play and to follow players within a short distance from the location of the game scene. From this vantage point, I was able to document players’ performance in the game through photos, videos, and notes. Depending on the situation, the notes have been mental, jotted or full field notes (Lofland, 1995). Mental notes have been made of observations in circumstances when writing in the notebook was not possible, i.e. when following players running in the field. Whenever possible, these mental notes have been augmented with photos as reminders of the setting. Most of the notes made during game-play are jotted notes- a few words written down to help remember thoughts, conversations and descriptions that I have completed later on. The full field notes have emerged as elaborations of the previous types of notes and they have been usually written down immediately after the game-play.

While observing the game-play, most of the times, I could not hear the dialogue among players, but this task was undertaken by the “spy”, who presented the advantage of being a native Dutch-speaker. She played the role of the so-called informant of the anthropological and sociological ethnographer (Glesne & Peshkin, 1992), an indispensable partner in the conduct of qualitative inquiry. She documented the game-play by making mental notes during game play and making field notes immediately after participating in each mission of the game. These notes have been shared with me at the end of the game.

Thus, after each game event, extensive field notes combining description and ideas, comments and interpretations have been made (Schröder et al., 2003). All the notes, from the game field and after the game, have been written in English. Actually, through these notes, the analysis has already started.

However, the more in-depth analysis did not take place until after all the fieldwork and the interviews were conducted.

In the week after the game, open-ended interviews have been conducted with each player individually. The interviews are considered open-ended, since they allowed for an open dialogue. However, these interviews have been conducted according to an interview guide with themes and suggested questions.

In conjunction with the interviews, players have also been asked to fill-in questionnaires in order to rate different aspects of their game experience, on a scale from one to five, where one represented the minimal emotional arousal and five, the maximum.
The open-ended interviews have been transcribed and the data has been analyzed using the Grounded theory method, developed by Glaser and Strauss (1967).

This methodology, emerging from the discipline of sociology, has been chosen especially for its bottom-up, emergent approach of developing theory empirically, which perfectly suits the non-manipulative approach defined through our theoretical framework. This methodology offers a set of principles for analyzing and abstracting the information. Beginning with a constant comparison of the collected data, the text is broken into units of analysis, and the interpreted meanings among the units emerge as categories. With the increase of the number of categories, the process leads to more abstract categories. This abstracting continues until a core category is elicited. This unites all the concepts in order to offer an explanation of the phenomenon. Eventually, this core category has theoretical significance, while being traceable through the data (Goulding, 2005).

The main part of the analysis took place while examining the data via transcribing it, coding it, sorting it. During this process, some parts of the data proved especially interesting, surprising, while other times some proved difficult to grasp, or interpret. In case of audio recordings, data has been transcribed, with the transcription focusing on the players’ words. In case of video recordings, an alternative interaction analysis method (Jordan & Henderson, 1995) has been employed to analyze the data. Interaction analysis is a method used to study the interaction of individuals with each other and with objects in their environment, by focusing on their observable actions- verbal and non-verbal communication, movement as well as the use of objects. This methodology allowed a real-time analysis of distributed creativity in action (Sawyer, 2009).

Photographs have not been analyzed but simply used as reminders of the scene, weather conditions, people, etc., in support of field notes, video or audio recordings. However, since they have been uploaded on the Facebook page, they have attracted various comments endowed with personal meanings.

By re-visiting some parts of the collected data (pictures, videos, notes) and watching the original on-stage data, sometimes new interpretations emerged, which steered the re-coding of parts that have not been analyzed before or altering the codification of others. Raw data proved helpful to remember the game scenes as dynamic living events in a context, and not as a final text, unrelated to what happened before or after (Kvale, 1996).

After all these chunks of data have been assembled together and have been analyzed, post-game assessment interviews with two spatial experts have been conducted in order to confirm and validate the findings. This data has been handled similarly with earlier collected data, these last interviews being transcribed in order to facilitate comparison with the analysis from previous stages of research.

**4.2.4 Data Sets - description of the three data-sets in relation to the three-fold goal of the game**

By using the above mentioned data collecting tools, a very large amount of data has been amassed. This data has been classified into three data sets, related to the three-fold goal of the game, as follows.

**Data Set 1** is addressing data regarding the link between behaviour and the physical layer, collecting information about the tactics that people
The game Design

The three data sets correspond

Figure 58: The three data sets corresponding to the three research goals

employ when dealing with this environment. Data in this set has been assembled from different stages of the research process and then compared to each other. The first chunk of data was collected by means of spatial analysis of the site, complemented with data from four architectural projects that participated in a competition for a new intervention on the site, and by means of participant observation of the users of the site. The second chunk of data encompasses the on-stage data regarding players’ performance in the first three days of the game as well as the semi-structured interviews conducted shortly after the game. A last chunk of data conveys an interview conducted with a Belgian architectural office, in order to validate if the data collected through the game can add or confirm valuable information for architectural practices.

**Data Set 2** is relevant for measuring the impact of the game on the awareness of the players regarding their environment and the behaviour of others in the environment, as well as their own. This data set includes data related to the players’ performance during each day of the game, and it has also been supplemented with data from the semi-structured individual interviews conducted after the game. Different kinds of enhancement in awareness are being testified as being produced through game-play.

**Data Set 3** is meant to evaluate the playability of the game in terms of players’ experience, in order to test if the game was able to motivate players to engage willfully into the process. This data is comprised by observations of players’ performance in the game, and assisted by their testimonies in the interviews that followed and the results of the questionnaires. Different aspects of the game playability are investigated, in order to understand which ones played an important role in providing the motivation to play.

The analysis of each of the three data sets previously mentioned will be illustrated next, together with a description of the methods that have been used to analyse, interpret, and present this data. Validation is attained in different ways, combining different methods, in order to assist various purposes.

### 4.2.4.1 Data Set 1

The data collected in this set is focused essentially on the particular type of information that can prove valuable in potential architectural assessments of the site under investigation, the PHL campus in Hasselt. For this reason, the emphasis will fall heavily on elucidating the relation between the spatial and social layer that coexist on this site.

As explained above, data in this set has been assembled from different
stages of the research process: the preliminary research leading to the creation of the game concept, the performance during the game, and the individual interviews conducted after the game. The findings elicited from this data have been validated by means of an interview conducted with an architectural office.

Within preliminary research, spatial analysis- complemented with remarks from four architectural projects-, and participant observation have been the two methods employed for data collection. While spatial analysis brought information about the spatial properties of the environment, participant observation revealed in-depth understanding of the setting, its users and their behaviour.

In terms of users, it was noticed the intermingling of three different types of users: the PHL students- some of them residents of the tower, while others studying in the departments hosted by buildings within the campus-, the PHL employees and the visitors- who come in two categories: the pupils of the Middelbare School nearby the campus, and participants in events organized in the campus, outside the working hours.

By observing their behaviour within the university grounds, an attempt to identify behaviour patterns was made, in order to understand how users relate to the site. The PHL students, residents in the tower, often study in different departments, located at other locations in the town. So their behaviour pattern in terms of places used within the campus is irregular. The only discernible pattern is that they live in the tower during the days when they have classes, but not the other days, which generates the situation of an empty tower (and implicitly, an empty campus) during weekends. They may, occasionally have lunch in the D-building, but not on a daily basis, as with the other users who work in the campus. The PHL students, having their studying department in the campus, and the PHL employees, follow a pattern of behaviour similar with each other. Usually they use the campus during working days, from Monday to Friday, for some periods between eight o’clock in the morning until six o’clock in the afternoon. While during the day they are mostly inside the buildings hosting their activities (A-, B-, C-building or the Lange Gange), during midday the majority of the students and employees gather inside or around the D-building for lunch. The third category of users, the visitors, is using merely the D-building. Some of them, the pupils from the Middelbare School are joining the same pattern of behaviour around lunch time of the PHL students and employees. Another category of visitors are following the opposite pattern- they are using the campus usually when all the other users are not there, external events being organized either late in the afternoon, in the evenings or during the weekends. In conclusion, the main reservoir of users all operate on
of data, in terms of Strengths, Weaknesses, Opportunities and Threats of the site. The strengths and weaknesses of the site are pointing to the goal of the investigation: understanding the larger context of successful and unsuccessful places around the campus may illustrate the reason why some places perform well, while others fail. Following this line, it is possible to identify, from the researcher’s perspective, the best spots for the game and also to discover relations between behaviour and space for using the site, and implicitly, for designing for spatial well-being, applied to the PHL campus condition.

The biggest strength of the campus seems to be the D-building- the main building of the restaurant and the cafeteria. During lunch breaks the D building becomes the magnet of all social activity that takes places within the campus. Therefore the (semi) outdoor space around the D building plays an important role at this moment. Unfortunately the best parts of it- the south exposure and the balcony towards Elfde Liniestraat -remain closed for public use, leaving as the only option available the north side, which conveys the main pedestrian path and the small square between the D building, the Pavilion and the green

![Figure 60: (Semi) outdoor public domain types](image)

The same daily time schedule. Obviously this behaviour pattern affects the campus physically, as it provides a blast of users to access it during midday, while in the afternoons, evenings and weekends it becomes a vacuum, unless some external event is organized in the D-building.

Being given the large amount of data assembled through spatial analysis and participant observation, it was decided that, for the ease of comparison, a SWOT analysis model should be used to classify all these different chunks

![Figure 61: Weaknesses delineate mostly (semi) outdoor public domain](image)

**Figure 61:** Weaknesses delineate mostly (semi) outdoor public domain

**Figure 62:** Prerequisites for using outdoor public space

<table>
<thead>
<tr>
<th>Prerequisites for using outdoor public space</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sense of Enclosure</strong></td>
</tr>
<tr>
<td><strong>Rain-protection</strong></td>
</tr>
<tr>
<td><strong>Sittability</strong></td>
</tr>
<tr>
<td><strong>Proximity</strong></td>
</tr>
<tr>
<td><strong>Sun</strong></td>
</tr>
<tr>
<td><strong>Nature</strong></td>
</tr>
</tbody>
</table>
lawn. Although situated nearby, the green lawn remains untouched. During the last two years, it was noticed that it never attracted people. Three years ago, when the Pavilion was functioning as a bar providing snacks and beverages, a minimal amount of people were using the green lawn. However, even then, its use was very limited, compared to its capacity.

While the pre-designed public domain of the campus is hardly used, places that encourage social interaction can be observed, however, in other locations- such as the stairs of buildings or the stairs at the end of the main pedestrian path, the parking lot, or sometimes the ledges around the D-building.

Following this situation, it was inferred that the majority of the weaknesses concealed into the site under investigation refer to a specific type of space, namely the outdoor and semi-outdoor public space.

It seems there is something challenging around the issue of specifically-designed outdoor public spaces, in this case the green lawn and the central square. These two places, although they seem to have been designed with the purpose of hosting outdoor social activities (mostly due to their central location within the campus, between central buildings), they are, in reality, never used. It is interesting to try to understand the reason behind this fact. Thus, it was decided that two of the location-based narratives of the game should investigate the condition of the Central square and, respectively, of the picnic place. Two different strategies have been employed for the two narratives: one was using the Central Square as it is, requiring a set of actions to be taken in this specific place based on observations of the behaviour patterns emerging in the square, while the other was using the concept of the place- “the picnic place”—, repositioning it into a completely different location, used as a “tabula rasa” setting for the creation of an ideal picnic place.

Within the preliminary research, a set of initial assumptions have been generated regarding the prerequisites necessary for a qualitative outdoor public space.

It was assumed that a sense of enclosure represented the most critical element of a picnic place, as a visual disconnection with the car-traffic areas would be essential. It was considered also the necessity of sitting-friendly pavement, since most outdoor furniture was, at that moment, made of concrete- a cold, not-sitting- friendly material. Having an easy-accessible outdoor public space was desirable, since a good connection to the central D-building would create a functional outdoor space. An enjoyable atmosphere was meant to be enhanced by having access to sunny areas, therefore taking in consideration sun orientation. It was also observed the necessity of rain-protected areas, as they were very limited, and during rainy midday’s their capacity was largely overcome. And last, connection with nature was regarded as a factor able to arouse the experiential aspect of the outdoor places.

These assumptions were meant to be tested within the game, by observing the elements that players value as essential in the creation of an ideal picnic place or for the improvement of the central square.

Aside from the outdoor public space, another weak spot has been as-
The game Design

assumed to be the indoor atrium in the D-building. One of the four architectural projects from the competition considers atriums as successful social-binding spaces, with the result of proposing the construction of a new one. However, participant observation revealed that the atrium in the D-building performs quite the opposite than intended. It is hardly being used by people to have lunch there, the adjacent spaces being preferred for this activity, as providing a cosier atmosphere.

This assumption was meant to be tested, by employing the D-building as the location of the third locative mission of the game. This task would facilitate an understanding of the criteria that influence people’s choices in terms of places where they prefer to sit in this building.

Through preliminary research some specific places have been identified as potential weaknesses of the site. They have been further used as a starting point for developing location-based scenarios for the game. In this way, the intention was to test the preliminary assumptions regarding the reasons for existence of these problematic spots, and not to blindly impose them as certain realities. In order to achieve this, it was necessary to allow players to interact with the locative narratives in unrestricted ways, permitting them to come with the solutions that best fits their mind frame. This sometimes may create certain difficulties in defining the balance between the game designer’s vision of the outcome and the players’ impact on the story. The designer has to keep control over the information while the players interact with it and add to it. Since the players’ contributions are the most valuable data created through the game, it was considered that complete flexibility should be offered to them, instead of constraining their possibilities of action.

The second chunk of data comprising the Data Set 1 has been elicited through the observation of the on-stage performance of the game and the interviews that followed. This data represents the most important part of this research, and special attention will be given to its analysis.

In line with the purpose of the Data Set 1, the first three days of the game have delivered valuable information regarding people’s spatial tactics of dealing with the site under investigation. Players’ choices of action towards the completion of the three location-based missions – ‘Tabula Rasa Picnic’, ‘Installation in Central Square’ and ‘QR-codes Hunt’- steered understanding about the way they perceive, conceive and eventually, use these places. The discussions that followed these missions managed to deepen this understanding, by directing the discussion towards more precise spatial concepts, facilitating a mutual exchange of knowledge between the architect, as a spatial expert, and...
the players, as “user” experts. The individual interviews conducted after the game guided the players to reflect on their experiences in order to deliver as much interpretative insight as possible. By means of retrospection it was possible to identify deeper insights and the meaning conferred to these places through lived experience.

The data collected by means of these three sources enhanced previous understanding of the way the PHL campus is functioning. Data has been classified again using a SWOT analysis model (figure 65).

This revealed new issues- in terms of strengths, weaknesses, opportunities and threats- identified as important, and which have not been taken into consideration in the preliminary analysis. Simultaneously, some of the prior assumptions regarding the prerequisites for the design of successful outdoor public spaces proved to have a different degree of influence or meaning in the given context than imagined previously.

Perhaps one of the most important discoveries brought insight about the social phenomena at work within the campus. All these aspects of the findings will be presented next.

Regarding users’ behaviour, it has been determined that the usual behaviour pattern of the PHL students and the employees is triggered around two basic types of activities: the short breaks and the long breaks.

During short breaks – which last between 10 until 30 minutes- people are situated in the vicinity of the buildings where they carry out their daily activities, either study or work- the buildings A,B, and C and the little oasis
within the Lange Gange. The basic activity taking place in these locations during short breaks is smoking and socializing.

During long breaks, which include also the lunch break, and are usually longer than one hour, people gather around or inside the D-building. The basic activities inside the D-building are having lunch or breakfast, socializing or even studying. However, there is a lack of plug-ins for charging the laptops inside the building, which limits the possibilities for using this place as a studying place, based on the fact that the laptops represent the main tool that students use for their studies.

Observation of the social phenomena unfolding within the university grounds can provide a better understanding of the tactics people employ - how they relate to their spatial surroundings and the reason why they do so.

It has been noticed that encapsulation is characterizing the main mode of existence of the social relations of the users of this site. Within the social science discourse, encapsulation assumes that people have an intensive to almost exclusive involvement in the network they make up together (Hannerz, 1980). Regarding the students, it was observed that the domain around which their networks are getting shaped is usually given by the study department (i.e. the "music group", the "graphic design" group, the "education" group), and sometimes by an ethnic choice (i.e. the Turkish students). During the mission of the game running in the D-building, players’ reasoning for choosing some particular places to sit were hardly connected to the specific atmosphere of that place or to its affordances. These choices, most of the times, are determined by the group to which players belong. People rarely act outside the group, within a social setting.

The implications of this phenomenon for the architecture are worth to be mentioned. Designing spaces while taking in consideration encapsulation might imply adopting different strategies than usual- i.e. creating places smaller in size to accommodate smaller social groups, instead of huge atriums, for in-

Figure 67: Socio- spatial phenomena identified within the PHL campus

Figure 68: Mapping social activity during short breaks
The atrium, however, has been observed to play a different role. While not attractive for more private activities (eating, studying, etc)- as assumed in the preliminary analysis-, the atrium performs well as a place that facilitates fleeting, standing interactions. As Whyte (2001, p.32) puts it, “circulation and sitting, in sum, are not antithetical but complementary”. The continuous flow of people in this area becomes an attraction for passers-by, as well as for people sitting in the areas nearby, having a good view over it. Thus, it falls into the category of what Lofland (2007) calls aesthetic and interactional pleasures. She identifies five sources of aesthetic pleasures and four sources of interactional pleasures based on the various forms for which the public realm provides especially favourable environments. The “crowding/stimulus diversity/ spectacle” (Lofland, 2007,p.86)- as a form of aesthetic pleasure- seems to be provided by various places inside the D-building, but especially by the atrium, which has to offer a visual excitement – “a quality of electric invigoration”, as Lofland (2007, p.87) calls it. Moreover, the same D-building endows with “public sociability” (Lofland, 2007, p.92)–as a form of interactional pleasure-, since its users involve extensively in verbal interaction, within their encapsulated social

Figure 69: Ownership: no interaction between well-defined territories

relationships.

The phenomenon of social encapsulation has obvious consequences on the way people relate to the space and it gives rise to other two socio-spatial phenomena, which will be named here **proximity** and **ownership**.

What is called here **proximity** is a socio-spatial phenomenon which refers to the previously observed situation that people spend break times in the vicinity of the buildings that shelter their daily activities, creating sort of clusters around them. Interestingly enough, these clusters remain near the buildings, and do not expand on larger areas, even when the possibility exists- i.e. the central square is attached to the C building, permitting the cluster to expand on a large area, but only a very small part of the square is used, the one situated near the entrance of the building. The reasons for this choice imply, among others, the feeling of “privacy” which this position confers. By staying close to the building, they remain part of the “audience”, while standing in the centre of the square would transform them into “performers”. People’s preference for not being part of the “performance” is a phenomenon extensively explained

Figure 70: Example of food provider as a social magnet- Villa Basta in the campus
by Goffman in his seminal book ‘Presentation of Self in Everyday Life’ (1999). However, players suggested that placing a point of attraction in the centre of the square—i.e. a fountain or a centralized lighting system—could eventually change the usage pattern of the square, in this way overcoming the tension of “performance”.

The clusters of users formed close to the buildings follow a very clear behaviour pattern, which delineates well-defined territories in terms of ownership. These territories are structured around the group identity, which is given by the study department (for building B, C and the Lange Gange) and around the work department (for building A). It has been noticed that people clustering around one building will never go into the territories of other clusters. (The only exception is the bench situated under the trees, on the grass-triangle along the Elfde Liniestraat, positioned at equal distance between the A and B building.)

By playing the game, players indicated that no matter how aesthetically beautiful the central square might be designed by architects, it will always remain the “territory of art students”, since students from across the street, from the B building, will never access it. They admitted, however, that placing a point of attraction—like a “broodjes”-bar or a barbeque facility—in the square might change the situation. This would represent, perhaps, a strong enough stimulus to break the psychological barriers of ownership. After all, it has been noticed that food never failed as a social magnet—“if you want to seed a place with activity, put out food” (Whyte, 2001, p.50). Thus, the issue of the central square is not merely an aesthetic one, but mostly it is about what kind of functions the square puts forth, and understanding to whom this place belongs to, in the first place.

By observing how the social phenomena interrelate with the spatial affordances of the campus site, it is possible to derive some relations between behaviour and space for the use of the outdoor public space.

**Sittability** seems to be, eventually, one of the most important prerequisites for using public space. Obviously, even the most striking designs do not have the ability to attract people to come and sit if there is no place to sit (Whyte, 2001). While in the preliminary analysis, sittability was mentioned only in relation to the material, it was noticed during game play that the amount of sittable space is a key figure for the successful use of the outdoor space. During the second day of the game, players were asked to create an intervention in the central square, which would attract people. The simple and brilliant answers they gave acknowledge the importance of sittability in pub-
lic spaces. One player proposed “a chair, to begin with” and as a group, they mapped with tape the area with the highest traffic in the square and proposed to heighten up a platform there, which could eventually be used for sitting.

This finding is supported by William Whyte’s (2001, p.28) remark that “people tend to sit most where there are places to sit”. This refers not only to pre-designed elements, but all kinds of features. This is why it is ideal to maximize the sittability of inherent features, like ledges, stairs, or all kind of flat surfaces. At this moment there are only a few such surfaces available around the campus, and it has been noticed that they are intensively used.

As previously observed, sitting needs to be physically comfortable in terms of the material, the size and the shape of the sittable area. But most important, it should be socially comfortable, so that people are given a choice. For that, movable chairs are an ideal option, as they offer autonomy, allowing the creation of social clusters, to move into the sun, into the shadow, into a psychological comfortable area, given by the situation. Also when sitting in a group, the design should take into consideration face-to-face sitting (i.e. the design of the ledges around the trees in the small square, next to the Pavilion, are obviously not supportive for face-to-face interaction).

Within this frame, it is clear to see that sheer, open space is not enough to attract people. In some circumstances (such as the green lawn or the central square) it might even have the opposite effect.

At the same time, the location of the sittable area is an as important prerequisite as sittability. For instance, during the game, players have pointed to the benches on the side of the tower as useless, because even though they are

---

**Figure 72:** Benches on the side of the tower –never used

**Figure 73:** The green lawn located near the Pavilion has never been used

**Figure 74:** Places within the public domain providing or in need of rain protection
centrally situated, they do not serve as an outdoor sitting area to any building around, mostly due to their elevated position, as if the user is sitting on a stage and “everybody is looking at you”. Likewise there were (at that moment in time when the game was played) no sitting options available at all around the entrance of the A and C buildings.

So proximity of sittable area seems to be another key figure to be considered when designing an outdoor public area, since people are sitting close by “their” buildings, during short breaks. Proximity might also be the answer to the mystery around the green lawn issue- why nobody is ever using it?

Players recalled using this area by the time when the Pavilion (the building situated close by) was functioning as a snack-bar, providing food and beverage. Now, the building belongs to the Pop & Rock department. Obviously the change of function of the Pavilion had a strong impact on the use of the adjacent spaces- in this case, the green lawn.

As Jane Jacobs (1989, p.98) puts it, the green lawn seems to be “a creature of its surroundings and of the way its surroundings generate mutual support from diverse uses or fail to generate such support”. Therefore proximity is an important prerequisite to be considered in design of the outdoor space, as it can be used in a constructive but also destructive manner, when consequences of some actions cannot be calculated upfront.

Besides sittability and proximity, which have been identified as main prerequisites for the use of public domain, some other factors play secondary roles in the design of qualitative outdoor public spaces.

The rain factor, for instance. It was considered by the players that it should be taken into account much more intensely than the sun factor, being given the climate of Belgium. That is why rain-protected areas are practical pre-

![Figure 75: Enclosure established through designed or natural features](Image)

requisites for using outdoor public space. Some areas within the PHL campus provide a simple roof (the A building); others provide a completely closed glass box as a semi-outdoor space, while others are completely lacking rain protection (the C and D building).

A simple horizontal enclosing feature can provide adequate rain protection, allowing large clusters of people to be outside, when raining. The smokers would be the ones to benefit most from such an intervention, but also their friends. It may be interesting to mention that during the game, players have expressed their interest for the existence of smoking places, although none of them was a smoker. This suggests that smoking becomes a key social activity, attracting non-smokers in the same places where smokers are hanging out, emphasizing the need of rain-protected areas, without posing the need for the design of separate places for smoking.

In line with the preliminary assumptions, a sense of enclosure was regarded as a valuable prerequisite for designing outdoor public spaces. From a
The game Design

Figure 76: Green areas issues and opportunities

functional standpoint, enclosure may provide protection against rain (through a horizontal enclosing element) as well as protection against wind (through side enclosing elements). At the same time, enclosure confers a psychological state of well-being. It creates intimacy and coziness. The best example of such atmosphere was identified by the players in the little oasis hidden inside the Lange Gange. The “outsiders” -students who don’t have access there because they don’t belong to the Fine Art department-, confessed to being envious of the “owners” of these places. Enclosure is a spatial quality very easily recognized and many times longed for, especially by female-players. The men testified that they usually, tacitly follow women’s choices, whenever they are together. Jane Jacobs (1989) also mentions enclosure as one of the essential elements in the design of parks that are intensively used. However, enclosure should not be done at the price of hiding the street spectacle. In contrast to the preliminary assumption suggesting a visual barrier to the car-traffic area, players revealed their preference for the view over the Elfde Liniestraat, as providing appealing visual stimuli. During the game, it was noticed a general preference for those places that combine a good viewpoint on the passers-by, and enclosure - the advantage of being protected from others’ view-, all at once. In this direction, the new benches situated under trees confer one of the best-liked enclosing scenes within the campus. William Whyte (2001) describes a similar situation, noticing that such a setting provides a “satisfying enclosure”, as people feel cuddled and protected.

This last remark brings in a new prerequisite to be taken in consideration for the use of outdoor public space, namely the green. While the preliminary assumptions consider that connection with nature may be desirable for the design of successful outdoor public spaces, this type of connection has been better elucidated during the game-play. Trees are, obviously, important features

Figure 77: The Demer river- an undiscovered potential
in the design of outdoor spaces, and they should be related closely to sitting areas, for the reason mentioned above. Except for trees, players identified grass as a very appealing feature, being on the top of their preference lists for outdoor public spaces. However, when correlating their behaviour and their statements, it is interesting to notice that grass is popular, in their vision, as an element which surrounds the sitting areas (the benches, ledges, etc) but not appealing to sit on - nobody is sitting on the grass in the green lawn. The reasons for this remain unknown. Some speculations may appear around the fact that, because of heavy rain falls, the grass and the ground are most of the times wet, in this particular climate area. Another explanation offered by players is that when pursuing activities such as picnicking, the near-by park (Kapermolen) is always considered more attractive. Unfortunately, the obvious relation between the PHL campus and the Kapermolen park (situated adjacent to each other) has never been exploited, by designing a proper connection between them. Play-
ers refer to it as “a big missed-opportunity”- pointing to the fact that these two places actually are mutually dependent: the PHL students are often going in the park for picnicking, long walks or other events, but coming back to the campus area because of the lack of toilets in the park.

Some other places, such as the southern exposure of the D building, are fitting in the same “missed-opportunity” category. Although designed as an enjoyable outdoor sitting area- a wooden deck, with stairs, looking over the Demer river- it is used instead as a road for cars and trucks to access the parking lot.

Water is another element to be taken in consideration for the design of outdoor public spaces. Unfortunately, within the PHL campus, water seems to be the forgotten ace. As players observed during the game, the location of the campus along the banks of the Demer river has a great potential for the development of an appealing outdoor public space. However, this has not been taken into consideration by any architectural proposals so far.

Water, in general, is a very appealing feature, and it may take all sorts of forms- from the banks of a river, to fountains, tranquil pools, water-walls, etc. During the first two missions, as players’ imagination start experimenting with this potential in order to accomplish the assignments of the game, they suggested all kind of interventions with water, as attractive central features in the design of a square or a picnic place. Within the frame of these observations, William Whyte (2001) notices that the best thing about water is the look and feel of it; therefore direct access to it is advisable (and, as the game indicated, desired by users) in the design of spatial interventions which incorporate water as a primary element, which should be “accessible, touchable, splashable” (Whyte, 2001, p.49).

Figure 78: Preference for sunny versus shady areas
Last but not least, the **sun** was considered a prerequisite for designing outdoor public space. It is obvious that, when designing outdoor public spaces, the more access to the sun the space has to offer, the better the quality of the experience of that space. However, sun is definitely not the critical factor, or at least not as important as it was considered in the preliminary analysis. Especially not in this climate area.

Players are not convinced that making an investment in the design of a picnic place within the campus area is a good idea in the first place, being given the very few sunny days during the academic year, as well as the vicinity of the Kapermolen park - which already provides this kind of space, in a much better version. However, if one would design with sun orientation in mind, a first step to be made is to take into consideration the already existing opportunities on the site - i.e. the southern exposure of the D-building, ideally, should allow for maximal use, instead of staying closed for public use.

The social and spatial phenomena observed around the site, and the prerequisites that they have pointed to as essential for the use and design of qualitative (semi) outdoor public spaces, facilitate a better understanding of the larger context of successful and unsuccessful places within the PHL campus. While the preliminary assumptions have pointed to a set of prerequisites, players’ performance in the game, the conversations and the interviews that followed revealed changes or augmentations in terms of the value as well as the significance of these prerequisites in the given context.

The prerequisites identified through the second chunk of data are, to some degree, interconnected and at the same time, autonomous. Each one of them represents a necessary but not sufficient condition on its own for the creation of what players consider enjoyable outdoor public spaces within the campus. They need to be considered in relation to each other, some of them (i.e. sittability and proximity) being more influential than others (i.e. sun). Applying them as guidelines for design depends strictly on the specific site conditions.

**Validation**

A validation of the fact that the game results are interesting for spatial experts was necessary, in order to confirm the value of this research. Toward this scope, interviews with two spatial experts have been conducted on the field. Both spatial experts were representatives of Belgian architectural offices, located in Flanders. The first office selected for this task is the C.T. Architects, a young
The game Design

Figure 80: SWOT model established from architects’ remarks

The architect’s approach
Observing...
- the relation between the buildings & between the buildings & the public domain
- the pedestrian flows
- the activities surrounding these spaces

Valuable Information delivered by the game
- Encapsulation ﬁg: need to design for a specific target group: cozy/intimate places but still visually and physically connected
- Rain-protected areas  ﬁg: a smokes’ necessity

LIMITATIONS of the ARCHITECT’s approach
- objective analysis- what the architect sees
- no subjective analysis- why things happen this way

Strengths
The Green Lane
- one of the most qualitative spaces
Demer walk

Weaknesses
Tower
- the fine-look- ugly
- ground floor towards Central Square- closed facade
Pavilion
- blind wall towards Central Square- create disconnection
Green Lane
- its location is hidden
- no visible and physical connection

Pavilion- to be used as an attraction point
Green Lane & Central Square
- connected into one coherent space
Connecting path between Lange Gang & D-building through the hatch in the green lane

Figure 80: SWOT model established from architects’ remarks

The architect’s approach
Observing...
- the relation between the buildings & between the buildings & the public domain
- the pedestrian flows
- the activities surrounding these spaces

Valuable Information delivered by the game
- Encapsulation  ﬁg: need to design for a specific target group: cozy/intimate places but still visually and physically connected
- Rain-protected areas  ﬁg: a smokes’ necessity

LIMITATIONS of the ARCHITECT’s approach
- objective analysis- what the architect sees
- no subjective analysis- why things happen this way

international partnership practicing full contemporary architecture, urban planning and interior design for both the public and the private sectors. Their interest in and approach toward participatory architectural practices steered our criteria for selection. The second spatial expert selected for an interview is one of the founders of De Gouden Liniaal Architecten- an office undertaking projects of urban planning, architectural- and interior design. He was selected as a candidate for the assessment because he took part- working as an intern then-, in the design process of the winning project in the competition for the inter-

vention in the PHL campus. Therefore he was familiar with the situation of the site and he had also theoretically established some solutions to the problems of the campus.

The spatial experts have been separately invited at the PHL campus, and on location they have been presented with a fictional scenario: their office have been selected to re-design the whole public domain of the PHL campus. Within this frame, the architects were asked to perform an analysis of the site in order to identify the generic problems of the campus. The results of their analysis have been again classiﬁed under a SWOT model. After they presented the results of the analysis performed on the site, the ﬁndings elicited through the game have been presented. The spatial experts have been asked, then, to react to the content of these ﬁndings.

Some of the observations made by the architects were, to some extent, similar to some of the data generated through the game, while other observations pointed to different aspects of the site. With a trained eye, the spatial experts evaluated the infrastructure of the site, the relation between the buildings, and the relation between the buildings and the public domain, the differences in height remarkable on the site, the impact of the sun orientation and the wind on different places, the pedestrian ﬂows within the campus, and the activities that surround the spaces. Both architects emphasized as the main problem the fact that the campus was too much car-traffic-oriented. Visual remarks were very abundant, pointing to the lack of visual and physical connections between places (e.g. the tower and the square), the blind walls (e.g. the Pavilion) and closed facades of some buildings (e.g. the tower).

The observations made by the spatial experts revealed the common features that an architect is trained to see, whenever assessing a site. However,
they acknowledged certain limitations of this type of architectural approach. The architect is able to evaluate a spatial situation following certain objective parameters (sun orientation, physical qualities of construction materials, metric analogies, etc.) but an understanding of why things are happening this way is generally missing from this approach. This may lead to certain mistakes in the design of spatial assets to be repeated again and again.

Some misinterpretations of the architects regarding the importance of the function of some places (i.e. assuming the parking lot functions as a physical barrier between the Middelbar students and the PHL students, when it represents actually the link), as well as of patterns of behaviour (presuming that students never use the Kapermolen park, considered to be located too far away) pointed to the fact that the social functioning of the place is difficult to be seized by the spatial expert. This is due to the fact that, first, it implies a large amount of time spent to observe the site, which requires a/o large financial resources, but also because this type of observation does not entail his or her domain of expertise. As one of the spatial experts puts it: “there are no rules for that”.

During the interviews the spatial experts assess some of the findings of the game as valuable, novel, and sometimes even surprising information that can prove supportive when designing for this context. “Most of the times you think you know what you are gonna get when you are designing a place like that. A standard solution: you put a tree there, you put a chair there. But it doesn’t work like that. And sometimes it’s nice to get results like that, from the users.”

Some pragmatic examples related to the need of rain-protected areas, a necessity which might not be foreseen by, for instance, a non-smoker (designer). The social phenomenon of encapsulation was found extremely compelling, which pointed to the need to design for a specific target group. This may lead to certain design strategies, which favour the design of specific type of places-cosy, intimate places but still visually and physically connected.

However, it was pointed to the necessity of sometimes translating the data into more tangible design prescriptions. Obviously such a process would diminish the potential of the collected data, therefore it would be ideal that the designer herself, playing the game, has the ability to make the “translation”, in this way fitting the information she gets to the specific design situation.

It must be noticed, thus, that a similar difficulty has been identified in both directions, regarding the designers as well as the users. The difficulty initially faced during game-play in making players (users, non-spatial experts) think in spatial terms, observing spatial issues, have rebound as a difficulty for the designers to translate the findings of the game in pragmatic design guidelines. From here the question arises regarding the dependability of the game on a “translator” - played by the game-master, in this experiment- in order to establish a common language, through an exchange of knowledge and expertise, through a broadening of perspective toward new disciplines and the integration of such new knowledge in own practice.

Nevertheless, it must be stressed that the inductive qualitative research method established through the game is interpretative in its nature. The information that one architect may find interesting, may seem useless to somebody else, and the other way around. The large amount of data generated as findings of the game may have different impact on different people, depending on many variables, such as the personal mind frame, the context in which it the information it is provided, etc. For this reason, the “translation” of the data into a
useful vocabulary for the expert must be done with caution, since it always involves a data reduction problem, leading to deletion of facts that to some may appear as relevant, while to others not.

The interviews with the spatial experts confirmed the value of this game as a tool to generate valuable information within a participatory design project. The understanding of the way people use, perceive and conceive their living environment may bring valuable information for the architects, planners, etc., helping them to get more insight into the “genius loci” knowledge, into the desires, aspirations and plans of people about their environment.

While information about the way people use their surroundings encompasses an interpretative analysis, the information generated by the spatial experts about the physical settings asserts a more objective approach. These two types of information can, obviously, reinforce each other, having as result the design of more tailor-made interventions addressing the specific way of living of communities.

The game is actually trying to facilitate an exchange between subjective and objective knowledge, to “make things public” (Latour, 2005), in a fun and engaging way. The information collected through the game as such, does certainly not represent an end-product, a “public proof” of “unmediated, indisputable facts” (Latour, 2005). It can be rather considered a well-documented starting point in a planning process, which may provide inspiring and, at the same time, interpretable facts to help understand the larger context of the social and spatial phenomena intermingled on the site.

Even though the goal of the Data Set 1 has been reached, and a better understanding of the larger context of the site was helpful in order to identify prerequisites for designing qualitative outdoor public spaces within the PHL campus, however, it is desirable to keep the list open and always be alert to observe the potential emergence of new factors able to influence the use of the outdoor public space.

4.2.4.2 Data Set 2

Data collected in this set is related to the second purpose of the game, which claims that the game should be able to enhance the awareness of the players regarding their environment, the behaviour of others in the environment, as well as their own behaviour in space. The game undertakes this task by stimulating an exchange of knowledge and by engaging players in deliberate

Figure 81: Physical contact generates a new relation with the spatial environment
exploration of the site. Thus, this data set includes data related to the players’ performance during each day of the game, the conversations and the open-ended individual interviews conducted after the game.

Players’ increase in awareness produced through the game is, however, very difficult to operationalize. The difficulty arises from the fact that this raise in awareness cannot be directly and objectively measured by an outside observer, because it is an intangible process. Therefore the impact of the game on the players’ awareness will be inferred by means of a combination of methods: objective observation of the players’ performance in the game, supplemented by a subjective qualitative analysis of the conversations and the individual interviews conducted after the game.

Three different kinds of awareness have been identified as being enhanced through game-play: awareness regarding the spatial environment, awareness regarding the behavior of others in this environment, and awareness about own behavior in space.

To begin with, awareness regarding the spatial environment has been aroused through different means. Players’ active performance in the game proved to be the foundation for this aroused capacity of awareness. Through exploration of the site and completion of location-based tasks, players have witnessed enhancement of awareness of the environment in relation to various dimensions. First, an increase in awareness has been spurred by an amplified sensorial experience. Physical contact with elements of the environment created an unusual tactile experience which guided the players toward more spatial-aware actions. For instance, during the ‘Tabula Rasa Picnic’ mission, sitting down on the hard asphalt field made players think in terms of soft materials to sit for a picnic place. “You can talk about it, but when you experience it (sitting on a hard surface) is easier to know”. During the same mission, another player confessed that after spending a long time looking again and again over the place where the picnic basket was hidden - a very dense shrub - it was possible to find it, eventually, only by using the hands. This implied establishing a new, atypical relationship with the spatial elements with which they interact on a daily basis in conventional ways.

Some of the game missions place players in locations within their daily environment where they have never been before. Although situated adjacent to their dormitory building, the Central Square has never been accessed by most of the players before the game, since it is the “territory of Art students”. The lack of interaction with this place produced a feeling of non-attachment for them: “I don’t come here a lot, so I don’t feel involved in it”. The game offered players a reason to become involved with such unfamiliar places - to go to this location and even to take actions in it. The fact that they needed to accomplish a task into this square has changed their emotional bond with the place, and also it has enlarged their understanding about how the place functions, about the problems it entails, as well as made them reflect on possible solutions toward these problems. Thus a broader understanding about new, unfamiliar places located within their living perimeter has been achieved, having as a result a more rooted relationship with their environment: “most of the times I don’t care, but now I think more about it”, “I just start to think about the campus like I’ve never thought about these things”, some players confessed.

It has been observed that by taking part in the first two locative missions of the game, an enhanced sense of presence has been attained by the players. This was proven by players’ performance in the game in the third day. By using QR-codes, players have been triggered to go to specific places inside the main
D-building and to give a reaction to the place. The players who participated in the game during the first two days delivered very different answers compared to the one player who joined the game for the first time the third day. While other players observed places and gave reactions in terms of spatial elements - i.e. light, the shape of the tables, view, etc. - the new player referred to already-established meanings conferred to those places - i.e. “a nice place to sit”, “a nice place to study” - without explaining the reason of her choice, without paying attention to the atmosphere of places or their spatial features. During this task, some of the old players testified that it is the first time they experience a familiar place (the restaurant) from a completely new perspective, paying attention to things they have never noticed before. Playing a locative game for three consecutive days, and being involved in location-based conversations with an architect had a big impact on the way players perceive their surroundings. Comparison of the performance of more experienced players and the performance of the new player represents an indirect indicator of the raise in awareness that the game is able to produce, regarding the spatial environment.

However, players’ statements, as well as the indirect indicator of the increase in spatial awareness are open to interpretations. The potential raise in awareness remains difficult to be measured objectively, since it depends on what players already know, both consciously and unconsciously.

While the game can prove valuable as a tool to enhance players’ awareness regarding the environment, in some situations, the immersion in the game can be so deep, that awareness is replaced with selective attention towards a single feature that makes the subject of interest of the player. For instance, when asked to map passers'-by movement in the square, players were so deeply engaged into the physical act of drawing with chalk on the ground the traces, that they only noticed the biggest flow of people, and didn’t mind people coming from other directions. This is a phenomenon usually experienced in games, when the immersion into the completion of a task makes players forget about the world outside the game. Perhaps this can be sometimes avoided by more precise instructions or sometimes integrated into the game structure (i.e. as a new rule). However, it does not seem to interfere dramatically with the outcome of the game that we are interested in.

When players are recruited from various backgrounds without spatial expertise, asking them to think in spatial terms about spatial issues can prove a very difficult task. In such situations, a conversation with a spatial expert can prove valuable to enhance players’ awareness about spatial issues that do not belong to their environmental image. The first mission of the game is a good example to illustrate that. The players were required to imagine an ideal picnic place, to make a list of the elements necessary to create it and then to set up the scene in a ‘tabula-rasa’ setting, by creating simulations of these elements. Instead of imagining spatial elements of the picnic place, players have mostly created attributes of the place (i.e. a radio, a parasol, etc). Only few, superficial, spatial features have been mentioned, and these were the same for all the teams. It proved impossible to think further than ‘grass’, ‘flowers’, ‘nature’, or, at best, ‘a river’. However, the conversation with an architect that followed the completion of the task produced a remarkable adjustment. By asking questions and being offered explanations, players have been directed into spatial thinking, making them think deeper about issues relating to the problem at stake, coming up with innovative solutions. The face-to-face conversation, which has been set-up in a very appealing décor of picnic islands, while enjoying food and drinks under the sun, managed to bring people in confluence and to facilitate
an engaging exchange of knowledge. Players’ awareness about the environment has been enriched with multiple spatial issues presented by the architect. In this way, an alert mind-frame toward spatial appraisal has been created, assisting players to deliver valuable information for the architect, in return.

A similar situation emerged the following day, after the completion of the location-based mission in the Central Square. During the conversation that followed, many spatial issues have been elucidated, and thus, players were able to assess the spatial situation from a new perspective and to offer compelling solutions to the challenge.

While the first two days of the game the conversation has been set up as a synchronous, collective, face-to-face discussion on location, the third day of the game, this conversation took place on Facebook. It took the shape of an asynchronous, one-to-one, online discussion between online architects and the player. This type of conversation proved also educational, in the sense that player’s attention was directed toward spatial features, and thus, their capacity of awareness regarding the environment was roused. However, its impact was weaker compared to the face-to-face conversations. There are various reasons to explain it. Primarily, the Facebook discussion was post-factum, since it did not occur while the player was still on location, engaged in the game; thus, the affordances of the place were being re-collected from memory rather than elicited through present, sensorial observation. Besides, players testified that they prefer face-to-face conversations to online conversations for many reasons. Mostly because the instructions are always understood better when given verbally, leaving no misunderstandings; also because “non-verbal things are very important”, as one participant puts it, since visual contact plays an important role in conversation; but also for the ease of the interactional process, since typing obviously involves more effort (almost all players complained about it), and it implies waiting too long to get a reaction.

However, beneficial effects of online conversation have been noticed as well. By having an ongoing conversation online, the player is incited to continuously check for the other party’s reaction; therefore the engagement in the game lasts for a longer time, above and beyond the period when the game mission is running on location. Moreover, this allows for an educational approach to be stretched over a longer period of time. For instance, the only team to find all the QR codes provided initially very superficial answers (most of their answers were: “I like to eat with friends in this place”), without explaining the reason of their choice. As a result of the online conversation with spatial experts, the team provided new answers, which indicated a better understanding of the task at hand, and also a more spatial- aware attitude when evaluating spaces.

This appears as a side-effect effect delivered by the game, as a result of using social media. Jyri Engstrom (2011) points to the effect of social streams (Facebook, Flickr, twitter, etc.) in opposition to what Linda Stone(2008) calls “the email apnea” (or even “screen apnea”)- a phenomenon of holding one’s breath when reading (office) emails, as awaiting (bad) news. Engstrom contrasts this “apnea” with the addictive effect (created through release of oxytocin- a feel-good hormone- in the brain) that social media has (Zak, 2011) on the side of the user of this technology. He notices that people don’t have the necessity to respond to tweets, or Facebook posts, as they have the expectation to respond to their emails. However, he goes on to say that posting on a blog, or Facebook, YouTube, etc. it already within it implies that the next update is missing. As soon as the user (as well as the creator) delivers something, it immediately builds up the “sense of lacking” (Knorr Cetina, 2001), the need
for delivering the next one, in this way nurturing the feeling that you have to keep updating all the time. This asserts a desire driven by the experience of lack (Knorr Cetina, 2001) and comes in the same line with the explanation provided earlier in this dissertation of the “desire engines” (Eyal, 2013) that social media employ to attract users.

In the case of this game it seems like it’s a bit of both: there is an “apnea” but also an excitement coupled with a request for a next update. Players are in an ongoing, asynchronous conversation with a spatial expert from whom they may receive advices towards how to solve the assignment (which creates this “apnea”), and in return, they can choose to provide new answers, in this way improving their performance in the game. The expectation to respond seems like it creates the apnea, while the prospect of improving one’s performance in the game (and from there, eventually, winning the game) may bring the excitement, possibly through release of oxytocin. Besides being a feel-good hormone, scientists showed (Zak, 2011) that oxytocine is also the “molecule of trust”, connecting people to each other through trust, empathy, generosity, etc. So, while research (Mark & Voida, 2012) shows that “apnea” effect is considered not good for one’s health, the excitement produced by the prospect of a next update could be interpreted as beneficial, as it could support long-term involvement in participatory spatial processes, while developing indispensable values in participation, such as trust (Granlund, 2012; Buchel, 2012).

Online conversations seem to be also practical, because they give the opportunity to engage in the game people from far away distances. In this way, architects can play the game from their offices. This may, for instance, reduce the costs of involving spatial experts in the process.

The game acknowledges the power of conversation as an extremely powerful tool to externalize and to acquire knowledge. For this reason, during the experiment, three different types of stages of conversation have been employed in order to facilitate this exchange of knowledge, to ensure that all players have been fairly involved in the process. The conversations with an architect which took place after the completion of the missions were considered by most of the players the most powerful tool to elicit input: “the conversation was the best way to get something from people. It brought the understanding, the motivation and also inspiration”, a player stated in the interviews after. However, this open, collective stage of conversation was intimidating for some people. It was noticed that some of the players never took a position in these conversations. On the other hand, these players became very much engaged in the ‘QR code hunt’ mission- where they had to collaborate only within their team, in order to give a reaction to places by typing in answers on Facebook pages. Exchange of opinions within own team about these places has increased the awareness about the environment under investigation. Simultaneously, this interaction within the team gave the opportunity to introverted people to become involved as well. And last, the individual open-ended interviews conducted at the end of the game proved to be a valuable tool to elicit information, for instance, from players with problems of timidity caused by language problems (i.e. stutter), who confessed that one-to-one conversation was the only way to trigger them to externalize their opinions. When dealing with this specific target group-teenagers with ages ranging between eighteen and twenty-three years old -, it proved valuable to integrate different possibilities of interaction, by taking into considerations all psychological factors at work.

Awareness regarding the spatial environment, as illustrated by the game, can be best enhanced by means of a combination of different types of action:
The game Design

mental action, verbal action and physical action, where verbal and physical actions are products of the mental action. Mental action is triggered by the game mission- the goal that players must achieve. When the goal is straightforward, it is usually given by a ludic rule, i.e. going somewhere to find something. When the goal is more complex, usually given by a paedic rule- i.e. creating a spatial intervention-, it might involve knowledge outside the player's expertise. That is when the externalization of the mental action into verbal and physical actions becomes intricate, and it requires external assistance- i.e. a conversation with an architect to clarify things. The interplay of these three types of action- mental, verbal and physical- seems to be the perfect instrument to empower players to deliver input by engaging willfully into active participation, while having the necessary knowledge to act, and sharing visions with others, facilitating, thus, an exchange of knowledge among different expertise.

In a similar way, awareness regarding other dimensions can be obtained. For example, during the game, it has been witnessed that players enhanced awareness not only regarding the environment, but also regarding behavior- the behavior of others, as well as their own behavior in space.

Awareness of others' behavior in space occurred through collaborative play and was supported by social interaction. When players choose to collaborate in order to accomplish a mission, the different patterns of interaction that emerged from collaboration gave birth to an exchange of knowledge among players regarding their behavior in that particular location. In this way, some players confessed that they become more aware of how other students make use (or actually don't) of “their territory”- the Central square, for instance. One player noticed: “The Central Square and the C building are like a different world. Other students never come here. If you do something with that space it will only be for us (art students). There is no point of interest for others, but we need to walk there. There is a big distance between people in those buildings (B and C), and a really big distance towards this area”. When the game encourages collective involvement- as it is the case with the first two missions of the game-, radical subjectivity of singular responses to specific urban atmospheres (Greenfeld & Shepard, 2007) can be avoided, and a sense of awareness about others' behavior in space is shared among players.

Perhaps the most interesting finding of the players and the one that produces the strongest personal impact is related to their own behavior in space. For instance, during the third day mission inside the D-building, when players are being asked to explain the reasons why they choose a specific place to sit, they realized, perhaps for the first time, that their choice is not actually related to any of the affordances of the place itself, but most of the time it represents a group decision. They realize that they hardly pay attention to the places where they spend their daily activities. In this way they become aware of their decisions in space and how this space influences their daily lives.

While being interested in measuring the impact of the game on the awareness of the players, the analysis of the data assembled in Data Set 2 proved that the second purpose of the game has been attained. By location-based missions and the conversations that followed, the game was able to rouse players' capacity for awareness regarding their environment, but also to develop awareness regarding others’ behavior in space, as well as their own.

All these different types of awareness regarding the environment and the behavior, which have been discovered through game-play or testified in conversations, have the ability to generate short-term influences on players' behavior. However, it is very difficult to manage to create long-term impact on people's
Figure 82: External expression of emotions may not be always so easy traceable behavior, which would further develop into habits. It may be assumed, though, that if one is to be repetitively involved in such a game for a longer period of time, a potential change in behavior on long-term may occur.

4.2.4.3 Data Set 3

Data collected in this last data set is related to the third goal of the game, which states that the game should be able to motivate players to engage wilfully into the spatial participatory process set up as a game. In order to be able to understand if the game is capable to provide engaging motivation, it is necessary to assess the players’ experience during the game. In scientific literature on game design, in order to design and evaluate player experiences, various methods, meant to investigate different aspects of game usability and playability, have been developed. Some of these evaluation methods have been employed in this thesis, in order to identify which factors and aspects play an important role in providing the motivation to play.

At the outset, it seems pertinent to outline the conceptual framework (the essential factors) that defines the game experience, to then provide a short overview of methods employed to measure user experience in games in general, to then focus on the most appropriate (combination of) methods to evaluate the specific type of game that this dissertation delivers.

From a conceptual perspective, the state of flow and immersion defining the level of enjoyment and fun (IJsselsteijn et al., 2007) of a game are considered essential factors to define the players’ experience.

The concept of flow was first introduced by psychologist Mihalyi Csikszentmihalyi as an “optimal experience”, generated by a mental state in which a person in an activity is “fully immersed in a feeling of energized focus, full involvement and success in the process of the activity” (Csikszentmihalyi, 1992). This concept has often been related to games, since games usually have the ability to generate flow, as “an intense experiential involvement in moment-to-moment activity” (Nakamura &Csikszentmihalyi, 2001, p.600). In order
to create such an experience, games require to have clear goals, no distractions, direct feedback and to be continuously challenging (Schell, 2008, p.118-9). Flow activities must stay inside what Csikszentmihalyi calls the “flow channel”, the narrow edge of a challenge that lies between boredom and frustration.

Another concept closely linked to the players’ experience in games is immersion. This is a metaphorical term which derives from the physical experience of being surrounded by water (Murray, 1998). It is a bodily sensation that affects perception and attention. Ejsing-Duun (2011) observes that in LBGs, we are there with our bodies and we can become psychologically immersed as well. Engagement is one aspect of immersion and it will be further used in this research to measure the game playability.

However, flow, as well as immersion, is an emotional state very difficult to recognize as such, since it is not always accompanied by an external expression of emotion (Schell, 2008).

For this reason, it was considered as appropriate to take into account a combination of methods which will be able to assess these states shaping players’ experience, from different perspectives and approaches.

Various methods, both qualitative and quantitative (Federoff 2002; Desurvire et al. 2004; Sweetser & Wyeth 2005; Hazlett 2006; Koivisto & Korhonen 2006; Mandryk & Atkins 2007), have been established in literature to measure user experience in games: biometric or psycho-physiological measurements, expert evaluation (i.e. heuristics), subjective, self-reported measures, retrospective surveys, focus groups or usability tests. From these, special attention will be given next to the expert evaluation method of heuristics.

Heuristics, which have been initially employed as design guidelines to evaluate usability of human-computer interaction (HCI), have been further applied, in adapted versions, in the field of game design in order to evaluate games without the participation of players. Traditionally, an expert performs an inspection of the game, using a checklist known as heuristic. Many kinds of models of heuristics have been developed over the years to assess concepts such as usability (e.g. Nielsen, 1994, Nielsen & Levy, 1994) and playability (e.g. Desurvire et al., 2004; Lazzaro & Keeker, 2004; Thomas & Macredie, 1994; Salen & Zimmerman, 2004).

The majority of these sets of game heuristics have been designed for computer and video games. Perhaps one of the most well-known set is the Heuristic Evaluation for Playability (Desurvire et al, 2004), which classifies heuristics in four general areas: Game Play, Game Usability, Game Mechanics and Game Story. However, these methods have been tailored for the most popular genre of games, namely the video and computer games. Now with regard to the specific type of game that this thesis is interested in (pervasive games), research on developing heuristics for the evaluation of pervasive games remains very scarce. Only one such model (Jegers, 2009), has been developed until now, by transforming the much contested (Cowley et al. 2008) GameFlow model of Sweetser & Wyeth (2005) into the Pervasive GameFlow model. While the GameFlow is integrating common heuristics into the steps of flow, proposed by Csikszentmihalyi (1992), the Pervasive GameFlow is augmenting this list with other aspects that are particular to pervasive games.

In terms of testing evaluation methods of games, “playtesting” can prove a useful concept, closely connected to the development of the playability concept (Jegers, 2009). “Playtesting” is a common term in specialized literature describing activities that improve significant aspects for the player experience, such as the balance in the game or how the game feels to play (Newman,
2004). It is considered (Crawford, 1984) that “playtesting” consists traditionally of two parts: the “playtesting” done by the game designer on her own and the “playtesting” performed when the game is delivered to external playtesters (experts).

Now with regard to the game Cure for the Campus, given the fact that the game is still in the form of a prototype, only the first part of “playtesting” has been performed, by the researcher herself. For testing the mechanisms of this game that are able to create enjoyable and motivating gaming experiences, three different sources of data have been used to validate the third purpose of the game. Thus a combination of methods has been put at work. The data collected in Data Set 3 consists of researcher’s observations of the game-play, assisted by players’ retrospective testimonies in the interviews that followed the game, as well as the quantitative rankings of various aspects elicited through questionnaires.

Since user experience mainly focuses on affect and sensation, which are two very subjective impressions (Law et al. 2008), it was considered appropriate to investigate players’ experience through qualitative methods, namely individual open-ended interviews conducted after the game play. However, it was necessary to mould the questions of these interviews around specific aspects regarding the game experience. Thus, an alternative method has been specially crafted for this game to evaluate players’ experience. This method uses as a starting point a collection of thoroughly selected heuristics meant to guide the observations of the researcher regarding the game play experience, and also to pre-design the questions of the interviews and the dimensions to be rated in the questionnaires.

Being given that pervasive games, and more particular LBGs, differ in many aspects from computer games, a tailor-made approach was necessary to be used to evaluate players’ experience in Cure for the Campus. From the large amount of heuristics developed for all different kind of games, this research has selected the most appropriate ones, based on their relevance for this LBG. The heuristics that did not seem relevant for this particular game have been excluded, for instance heuristics regarding artificial intelligence, screen layout, or the game interface. The final set of selected heuristics is going to be presented next, grouped in four categories: Game Play, Game Story, Game Mechanics, and a special category of heuristics particular for Pervasive Games.

In terms of Game Play, the heuristics which have been considered as relevant for our game and, thus, inspected as such are the following:

1. The game goals are clear. The game delivers “overriding goals early as well as short term goals throughout the game play”. There are “multiple goals on each level”, so that players are given the possibility to choose among different strategies to win. (Federoff 2002; Desurvire et al. 2004; Koivisto & Korhonen 2006; Schaffer 2007)

2. The players are given meaningful rewards that immerse player more deeply in the game. “The acquisition of skills” could also be a reward. (Federoff 2002; Koivisto & Korhonen 2006)

3. The game provides “variable difficulty levels”, so that challenges increase as players develop mastery. The game is “easy to learn, hard to master” (Federoff 2002; Desurvire et al. 2004; Pinelle et al. 2008)

4. Teach skills early that you expect the players to use later (Federoff 2002)

5. “Challenge, strategy and pace should be in balance”. Challenges are positive game experiences, rather than negative experience, resulting in
their wanting to play more, rather than quitting. (Desurvire et al., 2004, Desurvire and Wiberg, 2009, Koivisto & Korkhonen 2006)

6. The game should be balanced so that there is no definite way to win (Federoff 2002)

7. Players discover the story as part of the game play. (Desurvire et al. 2004, Desurvire & Wiberg, 2009)

8. The game allows players to build content (Federoff 2002)

9. There is “not any single optimal winning strategy” (Federoff 2002)

10. Design for multiple paths through the game. (Federoff 2002)

11. The game should have “an unexpected outcome”. (Federoff 2002)

12. The game should give hints, but not too many. (Federoff 2002)

13. The game should be consistent and “respond to the user’s action in a predictable manner”. This includes “consistency between the game elements and the overarching settings as well as the story”. The story should “suspend disbelief” and be perceived as a single vision, i.e. the story should be planned through to the end. (Desurvire et al. 2004; Koivisto & Korkhonen 2006; Pinelle et al. 2008)

14. Play should be fair (Federoff 2002)

15. The game must maintain “an illusion of winnability” (Federoff 2002)

16. The game play should not require the player to fulfill boring tasks. (Koivisto & Korkhonen, 2006)

17. “The game does not put an unnecessary burden on the player”. (Desurvire & Wiberg, 2009)

18. The game should be replayable and the player should enjoy playing it. However “challenging tasks should not be required to be completed more than once”. The challenge should create the desire to play more. (Desurvire et al. 2004; Schaffer 2007; Pinelle et al. 2008)

In terms of Game Story, the set of heuristics selected for evaluation is:

1. The game delivers a “great storyline” (Federoff 2002)

2. Players are interested in the story line. The story experience relates to their real life and grabs their interest. (Desurvire et al. 2004)

3. The game “transports the player into a level of personal involvement emotionally (e.g., scare, threat, thrill, reward, punishment) and viscerally (i.e. sounds of the environment)” (Desurvire et al. 2004)

In terms of Game Mechanics, the heuristics selected as guidelines for playability are:

1. Feedback should be given immediately to display user control (Federoff 2002)

2. The game should get the player involved quickly and easily (Federoff 2002)

4. A player should always be able to identify their score/status and goal in the game. (Desurvire et al. 2004)

5. “Players should be given context sensitive help while playing so that they are not stuck” (Desurvire & Wiberg, 2009)

A few other heuristics have been considered particularly relevant with regard to pervasive games:

1. The technological platforms are “easy to use and manage for the players”. The game should make use of “as few technological platforms as possible”. (Jegers, 2007)
2. Concentration: “Pervasive games should support the player in the process of switching concentration between in-game tasks and surrounding factors of importance”. (Jegers, 2007)

3. Social interaction. “Pervasive games should support and enable possibilities for game-oriented, meaningful and purposeful social interaction within the gaming system. They should incorporate triggers and structures (e.g. quests and events, factions, guilds or gangs) that motivate the players to communicate and interact socially” (Jegers, 2007)

This set of heuristics has been employed to evaluate players’ experience of the game on field. By observing players’ performance- their actions in the game, reactions to places, social interactions, etc. - it was possible to assess certain aspects of playability of the game. It became obvious rather fast that Cure for the Campus managed to offer players a strong motivation to engage in the game play through a good storyline, multiple and clear goals allowing for different strategic actions, didactic challenges guiding toward the acquisition of various skills, etc.

It has been noticed that the factors which are most deeply influencing the players’ experience during the game are the social aspects and issues connected to the physical locations. Since the meaning of the gaming experience arises from the interrelationships between players (de Souza e Silva et al., 2009), players solve assignments by directly engaging themselves in social participation, by bonding together their efforts, building cooperating teams, joining forces into a collective playful performance.

Various types of social interaction have been generated through game play; some of them were pre-planned in advance, as part of the game, while most of them emerged unexpectedly. When the game took a life of its own, it became actually difficult to predict what kind of interactions will emerge. The most common type of interaction was among players, entailing interaction among players within the same team or interaction among different teams.

Interaction among the players of the same team generated collaborative solutions to the tasks of the game (i.e. defining the elements of the picnic scene and their simulations or delivering answers to the questions hidden under the QR-codes). Interaction among different teams depended very much on the
context in which it emerged. For instance, with the picnic task, the interaction was less verbal but more visual, in the sense that the teams where looking at what others did to get inspiration, without explicitly declaring it. For the task in the central square, being given the difficulty of the task, the teams decided to work together as one team. Therefore their interaction generated collaborative solutions and, at the same time, playing together in a bigger group have been experienced as having a comforting psychological effect when they had to perform what they called “an embarrassing task”- following strangers and mapping their movement. In the D-building, during the QR-code hunt, interaction had an instructive purpose, when one team explained to the others the misunderstood instructions. In this way a tight social fabric has been woven among players, which has been build upon mutual trust.

Interaction with strangers has been considered, by the majority of the players, as challenging. Especially the interaction with passers-by in the square, but also with the employees, has been assessed as “embarrassing”, producing a kind of pleasantly frustrating experience.

Interaction between the players and the game-master involved two different purposes. First, in the role of the game-master, unexpected physical meetings on the field, as well as interaction facilitated through text-messages, providing players with hints about progression in the game (i.e. clues about the location of a box or the playground). Playing the role of the architect, the game master was able to teach players the necessary skills to accomplish their missions.

By using heuristics as evaluative guiding principles, it was also possible to test if the game employs the necessary elements- in terms of goals, challenges, story, etc- to create the desired experiences of flow and immersion, previously mentioned. When observing the players’ performance in Cure for the Campus, it has been noticed that players in flow communicate with one another enthusiastically, while they are always focused on the game. For some players, these emotional states are enhanced even more when the game mission promotes a high sense of competition. However, it has been observed that the impact of the game varies a lot from one player to the other, since it depends on a large number of other external as well as internal factors (i.e. the mood of the player is very sensitive to the weather conditions, to the ability of the player to cope with technology, the social frame in which the game is situated, etc).

The selected set of heuristics has proved useful further on as guiding principle to structure the interviews conducted after the game. The specific questions ranged from rather broad questions about game play behaviour and

<table>
<thead>
<tr>
<th>QUESTIONNAIRES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUN - per total</strong></td>
</tr>
<tr>
<td><strong>FUN - picnic</strong></td>
</tr>
<tr>
<td><strong>FUN - Central Square</strong></td>
</tr>
<tr>
<td><strong>FUN - QR codes</strong></td>
</tr>
<tr>
<td><strong>FUN - Snakes &amp; Ladders</strong></td>
</tr>
<tr>
<td><strong>ENGAGEMENT - per total</strong></td>
</tr>
<tr>
<td><strong>ENGAGEMENT - picnic</strong></td>
</tr>
<tr>
<td><strong>ENGAGEMENT - Central Square</strong></td>
</tr>
<tr>
<td><strong>ENGAGEMENT - QR codes</strong></td>
</tr>
<tr>
<td><strong>ENGAGEMENT - Snakes&amp;Ladders</strong></td>
</tr>
<tr>
<td><strong>COLLABORATION within TEAM</strong></td>
</tr>
<tr>
<td><strong>picnic</strong></td>
</tr>
<tr>
<td><strong>Central Square</strong></td>
</tr>
<tr>
<td><strong>QR codes</strong></td>
</tr>
<tr>
<td><strong>COLLABORATION with other TEAMS</strong></td>
</tr>
<tr>
<td><strong>picnic</strong></td>
</tr>
<tr>
<td><strong>Central Square</strong></td>
</tr>
<tr>
<td><strong>QR codes</strong></td>
</tr>
</tbody>
</table>

**Figure 84:** The results of the questionnaires
impressions of the game, to more narrow questions that emphasized specific aspects of the play experience of Cure for the Campus.

Last but not least, the questionnaires also made use of the heuristics to identify some relevant aspects of the game experience to be measured. Since “fun” (Desurvire et al., 2004; Desurvire & Wiberg, 2009; Federoff, 2002; Malone, 1980) and “engagement” (Brown & Cairns, 2004) have been very often identified in literature as fundamental aspects that define the game experience, they have been selected as attributes to be measured in questionnaires for the overall game experience, as well as for each mission of the game, apart. While observing the social interactions emerging through game play and their effect on playability, it was considered that “collaboration within the team” and “collaboration with other teams” is an illustrative attribute to be measured for each mission of the game that supported such a dimension. Another aspect observed during game play and often mentioned in the interviews as playing an important role in players’ experience of the game, was players’ acquaintance with technology, namely with the iPhones. Depending on players’ ability to handle it, different outcomes and different social relations have been produced during game play.

So, following these four aspects, the questionnaires required players to rate “fun”, “engagement”, “collaboration within team”, “collaboration with other teams” and “the iPhone experience” on a scale from one to five, where one represented the minimum arousal and five, the maximum.

The result of the questionnaires revealed that “fun” as well as “engagement” scored high, per total, with 4, respectively 3.6 points out of 5 points, which indicates that the game was experienced as motivating, by being fun and engaging. Players’ preference for the “Tabula Rasa Picnic” mission became obvious, since the fun was ranked at 4.4 points and the engagement at 4.6 points out of 5 points- the highest ranks of all measured attributes. It is difficult, however, to make assessments regarding the “collaboration” aspect, since results proved to differ considerably among players, who used different criteria of appraisal, leading to different results. The iPhone experience ranking revealed a majority of players who enjoyed intensively the fact that they have been provided with such a tool. They perceived it as an educational and exploratory experience. However, three players regarded it as a difficult and challenging, sometimes frustrating experience.

Employing of heuristics proved useful to evaluate various aspects of the players’ experience, following different approaches, ranging from qualitative to quantitative methods. Different aspects of the game playability have been investigated, in order to understand which ones played an important role in providing the motivation to play. The analysis of the data of this last data set provides solid information confirming that the game Cure for the Campus performs rather well as an engaging and fun game.

4.2.5 Applying the set of guiding principles

Within the Cure for the Campus experiment the set of eight principles have been applied following the guidelines delineated in the pre-study - i.e. the previous two experiments, STEP I and the C-Mine experiment. All principles have been fully applied and several remarks will be made next regarding their appropriateness.

The first principle has been applied on the part of the game-master in several circumstances. Observation of spatial tactics of the users of the site under investigation, performed as a participant observation study, provided
information necessary to design the concept of the site-specific LBG. Furthermore, observation of players’ tactics during game play proved to be a valuable tool to derive knowledge to be later compared to participants’ declarations and opinions about own behaviour, and also to be compared to the designers’ preconceptions regarding prerequisites for the successful use of space, as they have been identified through the preliminary methods of investigating the existing situation—i.e. spatial analysis and participant observation. In this way more accurate conclusions can be drawn regarding behaviour in space and the functioning of the spatial structure.

Applying the first principle also on the part of the participants—asking them to use observation of the affordances of the environment or of spatial tactics as a starting point for solving the game missions—proved a very effective, although unusual approach, since this was not their habitual way of addressing space. In this way, participants start seeing familiar places from a new perspective, and furthermore they could better articulate their choices in terms of preferences for specific atmospheres, spatial settings or social circumstances. This led to constructive conversations with other players and with the game-master, acknowledging, thus, the appropriateness of the first principle on the part of participants. However, since people are not used to perform aware observation through sensory perception, applying the first principle on the part of the participants requires some clear and strict instructions to be provided as game missions or game rules, in order to assure the performance of observation as a starting point for action.

It has been noticed that the first principle requires to be applied in close relation with the second principle, i.e. within the context where the affordances of the environment or the spatial tactics occur. Following the findings of previous experiments, the game employed a limited area as a playground (the PHL campus), involving both outdoor and indoor locations. This constraint proved to be beneficial, since the game concept focused on the specific condition of the chosen site, allowing for its elaborate socio-spatial analysis.

Another interesting remark posits that the appliance of the first principle on the part of the participants (observation of the environment and behaviour as a trigger for action) have been assisted and instigated by the use of a locative approach of technologies, along the lines of the seventh principle. Following the guidelines of previous experiments, the employment of this technological approach coupled with a specific intention (game mission or game rules) managed to enhance players’ capacity for awareness. As such, text-messages with location-based riddles, and QR-codes linked to Facebook pages posing context-related questions have been used successfully in order to enhance players’ attention toward specific aspects of the environment, or to engage them in deliberate exploration of their surroundings.

The correlation of the first, the second and the seventh principle becomes clear, as the second principle becomes a necessary condition for the first and the seventh principle to be applied, while the seventh principle has the potential to support to some extent the appliance of the first principle on the part of the participants.

The third principle has been applied pursuing the guidelines of the previous experiments. Thus, a combined methodology has been employed: through preliminary methods of investigating the existing situation, the researcher put forth some hypotheses regarding potential prerequisites for the use of specific outdoor spaces. Through game-play and the conversations that followed, players have been asked to come with their own arguments regarding the issues ana-
lysed by the researcher, to then compare and discuss the differences emerging between the two approaches. Players’ input during the game missions has not been influenced by the researcher’s mind frame, and this input has been used as a starting point in the conversations with the researchers which followed the game-play sessions. In this way the researcher did not impose her pre-defined concepts on the players, allowing them to bring their contributions based on their own understanding of the situation, which later to be used to spur conversations regarding the proposed issues. During these conversations the researcher’s role was to ask relevant questions in order to trigger players to think in spatial terms, coming up with innovative solutions to the problem at stake. These conversations developed both as face-to-face and also online conversations hosted on the Facebook page.

From here, a correlation of the eighth principle with the third principle can be perhaps traced. While learning from previous experiments, the game Cure for the Campus facilitated a double exchange of knowledge, both through face-to-face conversations, and also on an online platform. Several advantages and limitations of these two types of conversations have been uncovered, thus, justifying the necessity of integration of the both types with the game. The appliance of the eighth principle demonstrated that Facebook is an appropriate social networking platform to host such an online conversations. When this is properly framed within the game structure, such online communication has the potential to endorse the knowledge exchange with positive features (long-term involvement, for instance).

Appliance of the fourth principle (ambiguity) to the game Cure for the Campus transpired on many different levels (ambiguous context, ambiguous information, ambiguous relationships), given that ambiguity is a key element in the structure of a game. It has been sometimes introduced as a strategy in the game, in order to immerse players in the game experience, while some other times it emerged unexpectedly. Moreover, ambiguity is a very good trigger to engage players in performing unusual actions (the seventh principle), therefore a correlation of the fourth and the fifth principle arises. While applying the fifth principle through paidic rules, and thus engaging participants in performance of unexpected actions, it was indeed feasible to make players perceive their surroundings from a new perspective, as they developed different sensory relations with their familiar social and spatial environment (having a picnic on a hard asphalt surface, for instance).

The sixth principle has been finally applied successfully within this experiment, which managed to strike the balance between seriousness and playfulness by carefully designing the game elements. A game structure entailing a fair combination of ludic and paidic rules, an immersive narrative, clear goals and different frames of action endorsed with ambiguity, managed to deliver a fun and entertaining game experience, able to motivate players to engage with it enthusiastically.

A correlation among the sixth, the fifth and the fourth principle seems pertinent, since ambiguity represent a key feature in the structure of an entertaining game, while at the same time having the potential to trigger a large range of unexpected actions.

In conclusion, the set of eight principles which have been applied to the game Cure for the Campus seem to facilitate an appropriate operational frame for an LBG to perform as a participatory tool able to achieve the three-fold research objective.
4.2.6 Lessons learnt - discussion of problems faced in tests plus solutions

The assessment of the implementation of the game concept into a successful experiment indicated that Cure for the Campus was able to attain its initial three-fold purpose. However, a series of issues have been identified requiring special attention on an operational level. Some of these issues relate to the game design, some to the data collecting tools, while some refer to practical issues of setting up the game stage. By observing things that have turned out not as intended and that have influenced the outcome in a deficient way, it is possible to propose improvements as solutions to the faced problems.

In terms of game design issues, it was noticed that a too long period of time separated the opening event- the letter introducing the storyline of the game- and the first mission, the Tabula Rasa Picnic. Players received the letter under their doors early in the morning, while the mission of that day took place late in the afternoon. Due to this long time-gap, it was observed that players had forgotten about the letter and they could not connect the story with the mission they had to accomplish, in this way the goal of the mission becoming unclear. This situation can be solved by introducing the letter right before the beginning of the first mission, and also by making frequent referenc-
es to the letter during the missions of the game, as a reminder of the long-term goal of the game.

During the Tabula Rasa Picnic mission it was noticed that all players created simulations of the “nature” element in their picnic scenes by ripping grass, leaves, and flowers. Despite the fact that near the location there were piles of freshly-cut grass, players did not notice it, perhaps due to selective attention towards one feature. Players’ actions gave rise to destruction of the surrounding green environment, something that was obviously contrasting the intended scope of the game.

In order for such situations not to be repeated again, it is advisable to clearly forbid such sort of actions, while at the same time promoting even an environmental-friendly attitude- for instance, by using for example the so-called “seed-bombs” compressed bundles of soil containing seeds of live vegetation, as game elements to simulate nature in a picnic scene. The action of using such symbolic game elements conveys a real long-term involvement, since these seed-bombs have the potential to eventually transform into mini-gardens.

In terms of data collecting tools, an enhancement of the technical equipment can prove valuable in various situations. It has been noticed that one of the most interesting outcomes of the game was creating the stage for conversation after the game-play. In order to document these conversations it is perhaps advisable to use a voice recorder, instead of taking jotted notes using a field-log.

Simultaneously, using fixed tripods placed in strategic positions for video-recording in order to document the full-time unfolding of the game missions can enhance the data sets with valuable data for the interactional analysis.

Regarding online interaction, some issues regarding delivery of feedback of reactions in online conversations have been noticed during the QR-codes Hunt mission. During the online conversations that emerged between the players and spatial experts it was noticed that players had not been notified by the Facebook platform about the reactions that they have received on their answers. This shortcoming was due to the fact that Facebook does not allow making comments on somebody else’s comment. This shortcoming can be overcome by asking players to give reactions as a “status” on the Facebook pages, in this way allowing others to make comments on their statements and also to be notified about it. This would potentially increase the engagement in these online conversations and would lower the burden on the players of checking manually for reactions.

Since mobility is a central component in the game-play, it is advisable that the game-master should also be “mobile”- on the field, as well as online. This implies that the game-master should also be equipped with a smart-phone, facilitating interaction with the players through the Facebook platform- as a less expensive alternative to text-messaging.

In terms of organising such an elaborate game, the recruitment of participants seems to require special attention. To begin with, on a practical level, the last-minute cancelations of the players, due to changes in their school schedule, have been one of the biggest issues faced in the experiment. This situation can be best avoided by involving and planning the game with the support of the school and the professors, in this way granting a certain stability of the schedule of the players.

Taking into account the various issues which have been presented above may lead to improvements in the game design, in setting-up the stages of the game, as well as assisting the methods employed for data collection. All these
are small issues which, as a whole, have the power to facilitate an improved version of the game, regarding the preparation, running and assessment of such a laborious experiment.

4.3 Theoretical generalization

4.3.1 Generalization of the story board - the applicability of the game concept in other contexts

A theoretical generalization of the storyboard of the game will be attempted next in order to extend the applicability of the game concept into other contexts. This theoretical generalization will refer to the game features which have been initially selected as defining the game: spatiality, temporality, and the game elements that create the traditional structure of an LBG - rules, frame, fiction, and ambiguity. The discussion will further extend toward the social dimension of the game, concerning the role of the game-master and recruiting the participants.

In terms of spatiality, the game designed to attain the three-fold goal initially prescribed within the frame of this research has been especially selected to be a site-specific LBG. When a generalization is intended, the content of this site-specific game may be adapted into generic elements found in most places, transforming Cure for the Campus into a site-adaptable LBG (Montola et al., 2009). The implications of this transformation still impose as a constraint playing the game in a restricted area - i.e. a campus site. When expanding the game concept to an unrestricted area - i.e. the scale of the city-, this would theoretically transform the game into a location-free game. This can be done by localizing local elements and sharing them worldwide (Ejsing-Duun, 2011).

When a generalization is attained either by transforming a site-specific game into a site-adaptable or a location-free one, the outcome of the game remains strictly related to the locations employed in the game (de Lange, 2009). The locations that the game Cure for the Campus made use of are of two types: there are outdoor public spaces as well as indoor public spaces. Regarding outdoor public spaces, two particular types of spaces have been used: the square and the green lane, which could be further extended to the park. For each of these types of places, specific methods have been established to transform these places into game scenes, while exploring their potential as qualitative public spaces, from an architectural and social perspective. These methods will be resumed next.

For indoor public space a well-established method that can be easily generalized represents the QR-codes Hunt mission-type. This method has been initially tested in the C-Mine experiment, and then it has been firmly established in the game Cure for the Campus. Since GPS technology is not performing indoor, a technical approach employing QR-codes as connectors to specific indoor locations is recommended instead. When the task requires the assessment of various issues regarding specific indoor places, the method employs QR-codes located in each of the locations under investigation. These QR codes are linked, for instance, to Facebook pages which are posing questions regarding various aspects relevant for these places. Players need to answer these questions by submitting a “status” statement, which will later allow the reaction of others (i.e. spatial experts) to their statements. A group of online spatial experts are also involved in the mission, with the purpose to provoke players into discussions, while guiding them toward more spatial thinking. In this way, the Facebook pages perform as a platform for online conversations regarding various context-related issues, conversations that stretch beyond the period of time that the game is being played on the field.
Regarding the game dimension, a set of game mechanics are prescribed, in terms of narrative, rules and outcome. The purpose of the game is the conquering of as many places as possible, by following the rules. The rules employed by this method are both ludic and paedic rules, combining the motivation to run around to discover the codes with an elaborated strategy for conquering places, based on the quality of provided answers. Since the game is running in a restricted area—i.e. a building—a limited number of QR codes will be employed, so this number can be announced in advance. Players are, thus, informed about the existence of a pre-defined number of places which they have to conquer within this confined indoor environment, by finding the QR-codes and answering the location-based questions. Since the quality of the responses to places is the most valuable input of this mission, the rule for conquering places should stress the importance of the quality of the answer and not the quantity, therefore encouraging players to take time to provide valuable answers. Within such a rule, the player (or the team) providing the best-documented answer—and not necessarily the first answer—conquers the place. While presented as a time-race, running for a limited period of time analogue with the size of the environment, this mission introduces a strong sense of competition, emphasizing the ludic component of the game. Players are in direct competition, playing on the same “field”, in the proximity of each other, fighting to reach the same goal: conquering the most places. However, a strategic approach toward winning the game is illustrated by the paedic rule which makes capital out of players’ ability to assess physical locations. By combining the ludic and the paedic rules, this type of mission provides the ability to create a challenging, motivating game experience, while at the same time to engage players in qualitative assessments of places.

In terms of outdoor public spaces, and more precisely for squares, the method that has been developed is assessed in the Installation in the Central Square game-mission and it can be generalized to any type of square. This method entails two distinct steps: observation and transformation. The first step provides an understanding of how the square is being used, with special emphasis on the movement. Here players are tracing with chalk the movement of passers-by within the square. Besides collecting ethnographic knowledge, such an action, as observed in the game Cure for the Campus, can give rise to unexpected interactions between the players and the passers-by who may eventually realize that their steps are being mapped and may choose to engage into playful interactions, i.e. creating loops or other ambiguous movement. This may be perceived as a fun or frustrating activity, depending on the psychological mind-frame of the player. The second step of the method builds upon the first step. Based on the knowledge accumulated by tracing pedestrian flows in the square, players are asked to create an installation in a “blind spot” —a place which does not usually attract people. This intervention encourages a transformation of the pattern of usage of the square. Players are thus required to become involved in the active creation of a spatial attractor and then to engage strangers to use their installation. Therefore two different skills are required: creativity, as well as communication skills toward advertising. Different players may take up different roles, based on their expertise and their innate aptitude. The two steps involved in this game-mission, observation and transformation, are mutually supportive. Players are encouraged to create a transformation, but this act must first arise from a thorough understanding of the usage patterns of the place. The method established here, thus, is actually describing the ideal methodology that should be followed when creating spatial interventions. This
methodology is applied to the condition of a problematic square. In this way, players are transformed into spatial experts, being provided with an empowering method and a didactic tool, at the same time.

The game dimension in such a mission places a greater emphasis on paidia play (play-mode), engaging players in exploratory actions. For this reason, several additional game-tasks may enhance the game with ludic experiences. Such tasks may take the shape of location-based riddles to disclose the location of various features that may prove useful in a game- i.e. the tracing tools, the instructions for the next step of the game, etc. Such game elements are easily adaptable to the context where the game is played.

In terms of outdoor public spaces that involve a lawn, encouraging activities like picnicking, etc. -e.g. parks- the method that has been established is the Tabula Rasa Picnic mission-type. The method is able to be generalized and its location is independent from the location where the real intervention is meant to be implemented. It only necessitates a tabula rasa setting- e.g. an empty asphalt field. Several levels of action-mental, verbal and physical- are required to accomplish this mission. Players must imagine an ideal picnic scene, they must list the spatial features that outline such a place, and eventually, they must create simulations of these features, thus, constructing ‘picnic islands’ as their conceptualization of an ideal picnic place. As a result of such an exercise it is possible to identify those factors that players find important in the creation of qualitative green places, such as parks, lawns, etc. The advantage of such an approach is that these factors- “outdoor public spaces touchstones of success” (Jacobs, 1989)- are not pre-defined by designers and then given to be tested through game-play, but they emerge through players’ active participation into the process of creation of places. Employing a tabula rasa setting proved to enhance players’ creativity toward the accomplishment of the task. The player must imagine how the represented space unfolds to use the simulations of the intended features.

From a game perspective, it is noticeable that such a mission is heavily relying on a paidic dimension, directing players toward exploratory actions in the environment. Again, various game elements can be injected in the script for inducing ludic experiences. Riddles that point to locations of, for instance, the tabula rasa setting, of a picnic basket or other game features, are potential tools to be used in order to enhance the ludic dimension that would bring the motivation of the player to take actions.

The game Cure for the Campus has established three methods of dealing with outdoor and indoor public spaces. These methods can be generalised by adapting the game script to other locations which perform similar functions with the settings used in the game- i.e. a square, a lawn, and indoor public spaces. Depending on the site under investigation and the locations on this site that have been identified as relevant for analysis, these three methods can be employed together, as different location-based missions in a game, but also separate, as singular game-missions. In the first case, when several methods are used as missions in a game, it is advisable to be linked through an overarching storyline. The treasure-hunt story proved to perform well in Cure for the Campus as a connecting story but also to provide the motivated engagement to play the game for several days.

In terms of temporality, a generalization of the story board may entail having the game running for a period of as many as four days, introducing one location-based mission daily, while it can also assemble two different missions in the same day, in this way decreasing the period of time necessary to run the
Either way, it is essential that the game-master remains the key-figure of the game. It is advisable that the game-master is a spatial expert, with good knowledge of the site under investigation. Having the game-master as an orchestrator of the game-play is a condition sine qua non, because of her role to continuously adapt the scenario of the game to the emerging situations. Every time the game is played a completely new situation is generated, which may require a different approach. The change of situation may occur because of a change in the parameters of the game: the players, the climatic situation, the time of the day, the social context, etc.

Regarding the participants, it was noticed that grouping participants in teams was an advantageous option. This increased the motivated engagement, by encouraging collaboration within the teams and generating distributed creativity, having players partaking in the accomplishment of missions.

The issue of testing the game using a different combination of participants has been raised. The present formula displays the game-master as the spatial expert and the players as experts in the use of the space, without spatial expertise. A proposal was made to recruit players as both spatial experts and users, and to play the game with different types of teams: spatial experts’ teams, users’ teams and mixed teams. It was assumed that this kind of approach would, eventually, generate a different set of results to be compared with the results of the initial experiment, in order to conclude the most appropriate formula of players. We argue that both types of approaches are valuable; however, the results cannot be used to define or isolate the effect of the team.

As it is many times the case with design-based research, during the experiment, many different elements influence each other; from these, some are controllable, while some not. Thus it is not possible to isolate one element, changing it and keeping everything else constant to see how that particular element affects the situation, as it is done in laboratory research. Difficulties arise from the complexity of real-world situations and their resistance to experimental control (Collins et al., 2004). With the modification of elements, complexity grows, and in such experiments as it is the case of the game Cure for the Campus this implies collecting large amount of data, since everything can be regarded as data during such an experiment. Significant resources are necessary to collect these data, and the resulting amount leads then to a data reduction problem, because not everything can be analyzed.

The strength of design-based research is that it focuses on how designs work in the melting pot of practice (Dede, 2004). Because this type of research blends empirical research with the theory-driven design, it is a methodology enabling us to examine how, when, and why innovations work in practice (The Design-Based Research Collective, 2003).

### 4.3.2 Generalisation of the methodology- the set of methods used to collect and analyse this type of data

The game Cure for the Campus employs a complex set of methods to assess the context of the case-study, create the concept, observe the game-play, and then to collect and analyze the very large amount of data emerging from such an experiment. A generalization of this multifaceted methodology will be presented next in order to convey an endeavour for generating, collecting and analyzing this type of data.

At the outset, the site where the experiment will be running must be examined. A thorough understanding of the spatial and social layers that shape
the specific features of the site is necessary in order to identify relevant locations to be further investigated by means of this tool. Therefore a spatial analysis of the site, regarding the physical structure, the relation between elements, the infrastructure, etc., complemented with participant observation of the way the space is used, represent the preliminary methods to come to terms with the existing situation. As a result of the socio-spatial analysis, a formulation of hypotheses will be made regarding the quality of spaces under investigation. Several places will be selected as appropriate locations to run the game, identified as problematic spots on the site or places relevant to raise questions regarding specific situations.

The generalization of the storyboard presented in the previous section can be then adapted to the selected locations. In this way the game concept is created tailor-made to the specific site under investigation. In terms of integration of a technology for serving the game concept, a suggestion is to use a Facebook page as an online platform for the game to will facilitate the visualization of the documentation of the game-play as well as various types of interaction.

A next step represents the methodologies employed in the observation of the iterative process of play. Through observation, the players’ choices of actions when playing the LBG are examined. Observation, and implicitly documentation, can be achieved from an external standpoint, which can be fixed - i.e. video-recording from a fixed tripod, when the exact setting where the game will be played is known in advance -, or mobile- video-recording fragments or taking pictures of the game-play, when this is mostly mobile. Data collected through video-recordings represents raw data for interactional analysis. The standard interactional analysis is a deeply empirical method that has been developed by Jordan and Henderson (1995) and it has been employed to study the interaction of individuals with each other and with objects in their environment, with the purpose to identify recurring patterns in collective behaviour.

Apart from the visual documentation, field notes represent a valuable tool used when observing the game-play. Usually mental notes – when writing is not possible- and jotted notes – a few words written down in a field log as reminders of thoughts, events, descriptions, etc. - are elaborated into full field notes immediately after the game-play. Observations can also take place from an internal standpoint, like it is the case with the conversations emerging between the game-master and the players after the game-missions have been accomplished. In this case, the most appropriate tool is a voice-recorder. This tool presents the advantage that it facilitates the automatic recording of all those involved in the conversation, while the researcher keeps her attention focused entirely on the conversation, without the necessity to simultaneously take notes. Observations from the field are valuable to reveal aspects of the players’ experience and tactics in the game that can be used further as a point of reference in interviews.

After the game-play, the next method employed to elicit data is conducting individual open-ended interviews. By interviewing, the multitude of the players’ understanding of the game can be captured, which represents also the strength of the interview conversation (Kvale, 1997). These interviews are transcribed and analyzed with the Grounded theory method, developed by Glaser and Strauss (1967). This qualitative research methodology allows the extraction of abstract categories through sampling, comparison, coding and sorting the data. This eventually leads to core categories traceable through all the collected data, developing from them a theory that fits and works (Glasser & Strauss, 1967). This bottom-up approach resulting in the discovery of theory
from data has proved beneficial when dealing with sociological issues applied to
the condition of the spatial environment.

In terms of assessing the game playability, two methods can be employed. The first method requires players to fill-in questionnaires. Players are asked to grade on a scale from one to five—where one represents the minimal arousal and five the maximum—certain aspects of the game experience, such as fun, engagement, collaboration or players’ acquaintance with technology. A second assessment method represents the set of heuristics that this research has assembled from various sources from specialized literature as appropriate to be used as design guidelines to evaluate the playability of this game. This set of heuristics has been described in the Data Set 3 section.

A generalization of the methodology employed to assess, collect and analyze the huge amount of data generated through this type of game-experiment, therefore, imply a persuasive adherence to a step-by-step following of the set of methods illustrated above. The purpose of these methods is multifaceted, depending on the circumstances in which they are employed. Some of them relate to the preliminary research—i.e. assessment of the context of the site under investigation—, some relate to the observation and documentation of the game-play itself—i.e. video- and voice-recordings, field notes—, while other methods relate to a retrospective assessment—i.e. interviews, questionnaires, a set of heuristics. As the Cure for the Campus game-experiment showed, this set of methods performs well together, while it can be adaptable to the ever-changing situations that may emerge during a game—i.e. fixed or mobile game scenes, unexpected interactions, etc. Creating the game and observing people playing this LBG, as well as assessing their experiences post-factum have elucidated the ability of the game to simultaneously attain its three-fold purpose initially prescribed.
Conclusions PART 2

The Empirical Section (Part 2) of this dissertation presented the most relevant experiments which have been conducted within the frame of this research. Two preliminary experiments (STEP I and the C-Mine experiment) have provided the building blocks on which the final experiment (the location-based game Cure for the Campus) has been developed.

The theoretical framework elaborated in the first section of this dissertation provided a set of principles to be followed, throughout a series of experiments, for the design of a model for a location-based game. A concise summary of the findings from these experiments in regard to the appliance of the set of principles will be given below.

In line with the first principle, observation, on the part of participants, has been suggested to be used as a starting point of all actions in order to enhance awareness and at the same time, to facilitate a better graspable conversation between players. In the STEP I experiment this strategy was introduced to participants like a suggestion, given through a fragment from a text of George Perec (1997) as inspiration. The findings of this experiment have shown that participants have hardly paid attention to this suggestion. Minimal input came from extensive observations (triggered by deliberate sensory perception), and it came mostly from people who had been previously trained to analyze the physical environment (e.g. architecture students) or who had previous experience with location-based applications entailing sensory annotations. It seems that people are not used to experience their surroundings through observation alone. For this reason, the next experiments introduced this strategy by providing more precise instructions: for instance, by means of QR codes linked to questions asking respondents to observe some aspects of the specific places where they were located. In this way, it was noticed, their input was triggered more effectively by observation of the affordances of the physical structure. In the Cure for the Campus experiment, participants testified that active observation of their familiar environment was definitely not their habitual way of approaching space, and that the game assignments helped to make them see places from a new perspective. This led to an extended understanding of some aspects of their familiar environment, which helped them to provide a refined articulation of their spatial choices: for themselves, as well as for the others. This eventually gave rise to an effective interdisciplinary dialogue with other players. From here, it may be concluded that sheer observation can be a powerful tool to be used in participatory processes to help users to conceptualize and articulate their preferences and wishes, by grounding their arguments (for instance, the reason why they like or don’t like specific aspects of places), in this way facilitating more constructive conversations with others. However, since aware observation through sensory perception seems not to be an inherent mode of relating to the environment, it is necessary to provide direct and clear instructions for participants in order for them to perform it.

Moreover, an important issue to be mentioned here is that in all these experiments the process of observation has been assisted to some extent by technology. This facilitated testing the seventh principle concerning the ability of a location-based approach of technology, in combination with a relevant task, for rousing people’s capacity of awareness regarding the environment. In the first experiment the technological-driven approach consisted in having smartphones running a location-based application (Everytrail) which was making use
of the GPS function for tracking people’s daily routes and of photo cameras
for making annotations of places they pass by. It has been testified by partici-
pants that simply by carrying this device combined with the intention of taking
pictures generated a strong stimulus to look around for interesting things to
capture—thus relating in a different way than usual to the environment, and
eventually producing a raise in awareness. Being aware that they are carrying
around in their pocket a technical device able to perform various functions (e.g.
taking pictures, videos, recording sounds, etc) and they are requested to use
it in one way or another, creates a certain responsibility towards a more aware
performance in the environment (even when following daily routine), in terms
of observing things that they don’t usually pay attention to, and at the same
time looking for things that also others may find attractive (because of sharing
it with others). The combination of the technical potential of the device with
a given request— a task someone has to attain, like an assignment in a game, for
instance—represents a very powerful tool for awareness-raising.

However, many times the annotations revealed that they have been ini-
tially triggered by interpretation rather than plain observation, by what partici-
pants usually do or like in everyday spatial context rather than discovering new
places or new aspects of familiar places. Places with an emotional meaning for
respondents were abundant (for instance, shops they particularly like, work-
place, school, playground, etc), compared to only few annotations of sensory
notations in places (“smell of tandoori, or is it wok? definitely not incense”, “I
smell fresh croissant...can’t resist”, “there is so much more to the world than
what you see merely in front of you...look up! is he crushing for real?”).

In the C-Mine experiment the same technology has been employed as in
the third mission of the game Cure for the Campus, namely through QR-codes
linked to Facebook pages asking participants to observe the space around them
in order to be able to answer spatial-related questions. As the findings of these
experiments illustrated, this technological approach performed very well in its
pursuit to raise awareness about the physical environment.

Another approach used repetitively during the game Cure for the Cam-
pus was delivered through text-messages with location-based riddles. The
players’ performance in the game as well as their testimonies after revealed that
these riddles were very good tools to engage players in deliberate exploration of
the environment. Conveyed as ludus rules, they provided a strong motivation
for players to run around the campus in search for a particular item. The fact
that this search sometimes involved an amplified sensorial experience (explor-
ing the depth of dense shrubs or sitting on the hard asphalt floor of the park-
ing lot) generated an atypical relationship with spatial elements, leading to an
increase in awareness regarding various aspects of the environment.

From these experiments, it can be concluded that the location-based
approach of technology combined with a specific intention (a motivation)
performed as very good tools to raise participants’ capacity of awareness. How-
ever, the technology seems to function only as a supportive backdrop, which
coupled with a strong incentive can deliver promising results. The technology
itself does not represent the incentive, since it has been shown in the game
Cure for the Campus that replacing such a digital approach with analogue tools
(for instance, replacing text-messages or QR codes with paper letters) can de-
 deliver similar results. Perhaps a combination of digital and analogue tools (as the
game Cure for the Campus envisioned) may deliver an ideal formula providing
an alternation of methods to feed players’ interest with diversion in order to
avoid monotony.
In line with the first principle, observation of spatial tactics on the part of the researcher occurred in the STEP I experiment as well as in the game Cure for the Campus. These experiments followed, however, different approaches. STEP I operated on a confined group of five participants and observed their behaviour in an unlimited area - at the scale of the city - by means of GPS tracking daily habitual routes and annotations along these routes. The game Cure for the Campus investigated a confined area - the university campus - through observation of all users of the site from a fixed viewpoint, as a starting point for developing hypotheses. These hypotheses have been further tested on a confined group of participants, through game play. Although STEP I experiment revealed many spatial tactics employed by participants when dealing with their environment, it has been noticed that these tactics remain very generic when the analysis focuses on such a large spatial area. When a small site is investigated, as it is the case of the game Cure for the Campus, the analysis of the socio-spatial phenomena governing the site can be examined in depth, bringing more valuable information to the designers regarding the reasons of existence of the tactics employed in very specific areas and circumstances. However, both methodologies (GPS tracking of habitual routes with annotations along the routes and participant observation findings tested through game-missions) can eventually prove useful, depending on the context the participatory process is interested in. For instance, GPS tracking methodology may be used for sites without boundaries, when participation emerges as a source of inspiration, in order to allow users to identify problematic locations within a larger area; participant observation may be used successfully as a source of information for delimited sites already in use, where proposals for future interventions have been put forth.

On a conceptual level, the third principle - addressing the importance of not imposing concepts pre-defined by the researcher, since such concepts may not belong to participants’ mental image - has been tested in the three experiments following slightly different approaches. STEP I did not impose any predefined categories for the annotations required to be made along daily routes, leaving participants a free choice of the type and content of annotations. As hints for inspiration a fragment of text from a text of George Perec (1997) was provided in the beginning of the experiment. Moreover, by embracing a methodology of having participants share and evaluate each others’ input, it was expected that participants would offer inspiration to one another. Indeed participants confessed that sometimes they had found inspirational topics in others’ annotations. However, they have adopted and developed these topics in line with their frame of mind. It was clear that some topics noticed by some participants did not fit in other participants’ mental repository (such as sensory annotations), therefore have not been adopted as inspirational material.

A similar methodology was employed in the C-Mine experiment, which used Facebook pages as platforms for interaction among participants. The idea was to provoke participants’ reactions through a bold statement used as a first answer to the location-based questions, with the purpose of triggering participants’ disagreement or inspiration, in case they would choose to use it at all. Respondents’ testimonies revealed that indeed they have chosen to be inspired by or to react to previous respondents’ input, in this way assimilating these ideas into their mind-frame. It must be stressed that in both these experiments the conversations were running on virtual platforms (Everytrail and Facebook), which limited (the full potential of) the process of exchange of knowledge to a few lines of text.
Learning from these previous experiments, the game Cure for the Campus proposed a combined methodology. At the outset spatial analysis and participant observation were performed in order to create some hypothesis regarding problematic places or aspect of places which can create a strong impact on the users. These hypotheses have not been presented as ready-made categories in the game. Instead, through game-play and the conversations that followed, players have been asked to provide their own explanations of the phenomena previously noticed by the researcher. As a result, a confrontation of the initial principle with the players' input in the game revealed several differences in perspective, in terms of the degree of importance as well as the significance of related topics. Within this frame, it must be stressed that two distinct stages have emerged during the game: the game-play itself and the congenial stages for conversations after. Players' contribution during the game missions has not been “contaminated” with knowledge coming from the researcher or any spatial expert, while the following conversations set-up the stage of an exchange of knowledge between the researcher and the players, using as a starting point the players' input in the mission. During game-missions knowledge has been developed from sheer observation or it has been generated through conversations among players. It has been noticed that in the beginning, players' contributions during accomplishment of game missions, following the conditions of the third principle, seemed to be limited in terms of spatial concepts (for instance, flowers, nature and the sun were mentioned by all teams as the only necessary elements for the construction of an ideal picnic place). These remarks, however, have been employed further on as a foundation from where conversations with the spatial expert emerged. By asking questions and receiving explanations, players have been exposed to spatial expertise, which assisted them to think deeper about the problem at stake, coming up with innovative solutions. Thus, during these conversations the previous apparently limited topics have been elaborated, through an exchange of knowledge, into valuable information regarding spatial tactics. This experiment revealed the importance of both these stages (game-missions and conversations after) for developing a clear understanding of the topics, by the users and also by the spatial expert, translated into their own mind-frame, for eventually reaching a constructive dialogue. The game Cure for the Campus offered, thus, a variation of stages of dialogue, both face-to-face as well as hosted on a virtual platform (Facebook).

In line with these observations, it seems pertinent to discuss the testing of the last principle, assessing the impact of social media on the exchange of knowledge. All three experiments facilitated the exchange of knowledge on a virtual platform but in quite different circumstances. STEP I used Everytrail as a platform for interaction among players. Since Everytrail is not specifically designed as a social platform, but rather a very good platform to visualize trip reports of travel experiences, its limitations as a social tool became obvious immediately, in this way reducing the potential of social interaction, and from there, of knowledge exchange among participants. The C-Mine experiment employed Facebook pages as platforms where conversations around a specific location-based question emerge. This proved to perform rather well, assisting an exchange of knowledge through inspirations and reactions. Although it seemed like a promising method, the potential of this technical approach was not able to be fully tested during this experiment due to the lack of technical support (having only one iPhone, players were not able to play all together) leading to an asynchronous experience of game-play. The next experiment, the game Cure for the Campus, however, went a step further, by testing the full po-
tential of such online conversations (on Facebook) and enabling a comparison with a counter approach, namely face-to-face conversations. The findings of the final game revealed various advantages but also limitations of the technological-driven approach of employing Facebook as a platform to facilitate an exchange of knowledge. At the outset, these online conversations, being asynchronous and extending over a longer timeframe, generate a long-term engagement, stretching the knowledge exchange over a longer period of time. Moreover, they present the advantage of engaging people (spatial experts) who are physically far away, in this way reducing travel costs and being time-effective. On the other hand, these conversations are post-factum, as they go on after the player leaves the specific location, therefore answers are provided through recollection rather than observation through direct sensory perception. Players’ testimonies revealed preference for face-to-face conversations, compared to Facebook conversations, arguing that explanations are better understood when orally given and amplified by body-language, and also easier to perform, due to the ease of the interactional process. In conclusion, these experiments revealed that positive effects, as well as several limitations can be traced by employing social media as a platform for conversation assisting an exchange of knowledge. It seems that the potential of face-to-face conversations is very difficult to be reached by online conversations. However, the latter may prove valuable in different circumstances. Therefore a combination of online and face-to-face conversations can be advisable, depending on the situation framing the participatory process. Whenever these online conversations are to be used in such a game, in order to take advantage of their full potential (long-term involvement, for instance) they should be framed within an engaging structure (which was missing in the C-Mine experiment, compared to the game Cure for the Campus). Such an engaging structure should be able to instigate player’s curiosity, thus providing the motivation to return with a next update, by nurturing the “sense of lacking” (Knorr Cetina, 2011). This can be achieved through a good balance between playfulness and seriousness, as the sixth principle emphasises.

The fourth principle addresses the role that ambiguity plays within such a participatory tool. Ambiguity represents one of the key elements in the structure of a game, which provides engagement by encouraging exploration on many different levels. Ambiguity has been introduced differently in the three experiments. Sometimes it was intentional, while other times it emerged coincidental. STEP I introduced ambiguity in the rules of the game through minimal guidance regarding the type or content of annotations, in this way leaving participants a free choice of annotations. This approach, for instance, was welcomed by some participants, who used this freedom to create their own rules. It has been noticed that, in order to have ambiguity giving rise to a creative approach, it is important to define a clear goal for actions, while allowing ambiguity to emerge in relation to the various ways in which these goals can be accomplished.

While the C-Mine experiment did not create many opportunities for ambiguity to emerge, the game Cure for the Campus delivered a large range of ambiguity, sometimes introduced as a strategy and sometimes emerging through coincidence. Ambiguous context, ambiguous information, or ambiguous relationships have all successfully assisted in the immersion of the players in the game experience, setting-up a scene for unlimited range of actions, allowing them to confer own meanings to objects, places, events, etc. Such ambiguity, it was noticed, has the potential to engage players in performing unusual actions, such as having a picnic in a place that does not normally afford such action (e.g.
the parking lot). Through such incompatible contexts, for instance, it is possible to disrupt preconceptions and to trigger creativity, by seeing places from a new perspective, becoming more aware of specific affordances of places which have been otherwise taken for granted. In this manner, indeed, ambiguity proved a useful tool in activation of unconscious information, through unexpected associations of perceptual features (Kearney & Kaplan, 1997).

The fifth principle posited the impact of performing unexpected actions on participants’ perception of the environment. The aim was to test if such unexpected actions have the ability to make participants look at their familiar environment from a new perspective, in this way increasing their awareness. In these experiments unexpected actions have been prescribed through the rules of the game. In STEP I the request for making annotations along habitual routes introduced the unexpected action. It was noticed that this action managed to engage participants in more intense observation of their surroundings. As they have testified, in the first days they have been annotating places and objects they were familiar with, but as days have been passing by, they needed to continuously look for interesting things to annotate along the same routes. In this way their attention has been deliberately enhanced by this action (taking pictures and writing notes), which they would not perform during their daily routine.

The final game Cure for the Campus engaged players into a large range of unexpected actions, given through paidic rules, such as having a picnic on an empty asphalt field, mapping strangers’ movement with chalk on the ground, or playing a game of Snakes and Ladders on the floor of an empty pond. These actions stimulated players into relating to the physical, and sometimes the social environment in a different way than they used to do on a habitual basis. This disruption in habituation enabled and enforced an enhancement in participants’ awareness regarding different aspects of their surroundings, in this way validating the fifth principle.

The sixth principle addresses the condition for designing a serious and simultaneously entertaining game, by properly integrating successful game elements into the players’ experience. The first two experiments did not manage to skillfully address this task, and as a result, they did not manage to deliver a genuine fun and engaging experience overall. It seemed clear that simply attaching a point-system to a scientific experiment does not transform it into a game and that more consideration for the game part is required. Learning from these two experiments, the final game Cure for the Campus managed to strike the right balance between seriousness and playfulness, through a combination of ludic and paidic rules, an immersive narrative, assisted by clear goals, as well as through different frames of action, introduced sometimes through ambiguous context, ambiguous relationships or ambiguous information. In this way a serious and also entertaining game has been created, which was able to deliver through fun and engaging experiences the motivation for players to become and remain involved enthusiastically with it.

In line with these observations, certain correlations are noticeable among different principles. The first (observation as a trigger for action) and the seventh principles (locative media as enhancer for presence) seem to be mutually dependent on the second principle (the context), while, at the same time, the seventh principle may act as an enhancer for observation, regarding the first principle. On the other hand, the appliance of the eighth principle seem to be reliable on the third principle, since some sort of question or bold statement will act as a trigger for the online exchange of knowledge hosted by social me-
dia. Finally, the fourth principle (ambiguity) seems to be a key element towards the achievement of the sixth principle (a good balance between fun and seriousness) and, in addition, a very good trigger for the fifth principle (unexpected actions). However, applying the fifth principle (engaging players in unexpected actions) is not necessarily produced only through ambiguity, as well as applying the fourth principle (ambiguity) does not guarantee the validation of the sixth principle (a good balance between fun and seriousness). Therefore some of these principles have the ability to reinforce each other, when suitably applied within an appropriate operational frame, while the appliance of some does not necessarily entail the validation of others.

Applying the principles has shown that in order to be able to develop an instrument that can mediate between different universes of discourse, a two-step approach seems appropriate: the game-play itself, alternated by the congenial stages for conversation. At the outset, employing observation as a generator of knowledge to be further used for taking action in the game missions, while not imposing concepts pre-defined by the researcher, seem to be a successful method for the first step. At this level, assistance by locative technologies may provide a supportive backdrop, which, in correlation with precise instructions toward a clear goal, may enhance the whole experience of the game and also players’ awareness regarding the environment and behaviour in space. During game-play performance of unexpected actions – introduced through paidic rules- can prove to be a powerful tool to influence players to observe their surroundings from a new perspective, in this way arousing their capacity of awareness. Moreover, elements of ambiguity, introduced in different circumstances within the game-missions, encourage players to negotiate contexts and meaning, in this way exposing unconscious associations of perceptual features within their mental structure. When such a raise in awareness occurs, this facilitates a productive conversation between the users and the designers, allowing users to conceptualize and articulate their choices in terms of spatial vocabulary, while providing designers with in-depth knowledge regarding the spatial tactics that people employ when dealing with their living environment. Depending on the context and the circumstances in which the game is employed, such conversations can be face-to-face conversations, on the location itself, but they can also be hosted on an online platform, such as a social-networking service (e.g. Facebook) already integrated within participants’ daily routine.

The two steps (the game-missions and the stages for conversations) are mutually supportive, since the success of the congenial stages for conversation relies to a large extent on the understanding which arises from the accomplishment of game-missions. These progressive and collaborative processes have the ability to elicit valuable information for the spatial experts regarding spatial tactics, and to raise users’ awareness regarding space and behaviour, in this way delivering a serious game as a participatory tool for spatial interventions. Moreover, the integration of a thoroughly crafted system of game elements (defined by a combination of ludic and paidic rules, an immersive narrative, overlapping frames and elements inducing ambiguity) ascertain the right balance between seriousness and playfulness, in this way providing the motivation for participants to engage deliberately and enthusiastically in the spatial participatory process.

In conclusion, the application of this set of guiding principles- through their direct confrontation with the actual game design, as well as with the analysis of the data collected through the implementation and assessment of the tool -, provide a framework within which it was possible to evaluate the
tool proposed through this dissertation, in order to attain reliable results.

From here, a refine method has been developed to design a location-based game. The method entails a number of steps that has been followed throughout the process, in a precise order. These steps consist of (1) spatial analysis, (2) participant observation, (3) formulation of hypothesis, (4) narrative construction, (5) action and rule formulation, (6) integration of technology, (7) an iterative process of play, (8) congenial stages for conversation, (9) open-ended interviews, (10) questionnaires, (11) assessment, and (12) validation. This precise method provides the way to implement the above-mentioned set of principles into an operational tool, while being still so generic that it may be applied to a whole range of settings and issues. In this way an operational framework for a serious location-based game has been established as the final result of this dissertation.

This dissertation has explored the potential of designing a tool to support participatory processes addressing spatial planning issues as a site-specific location-based game (LBG). The research objective was to develop a tool able to (1) provide valuable information to the spatial experts regarding local knowledge, and to (2) expand people’s understanding about their environment and about behavior (of others and their own) in space, while (3) providing genuine motivation for people to engage in such a process. This triple objective has been addressed via an interdisciplinary research involving fields like architecture and urban design, ecological and cognitive psychology, phenomenology, sociology, game design and ICT coming together under one umbrella, by intertwining design research, social research, case-study analysis and project experimentation.

The output of this research consists of two distinctive, but interdependent, parts. The first part is theoretical and it is conveyed in a set of guiding principles for the design of the tool. In accordance with these guiding principles, the design of this tool should (1) observe everyday spatial tactics, (2) take place in the context where they are performed, (3) avoid imposing pre-defined topics that don’t belong to participants’ mind frame, while still asking relevant questions, and (4) encourage spontaneity through ambiguity, which may, eventually, (5) give rise to unexpected behavior—in this way rousing participants’ capacity for awareness. Moreover, as a game, the tool should be able to (6) strike the right balance between seriousness and playfulness, while (7) employing locative media in combination with a specific task to rouse the sense of presence and (8) use social media to assist an exchange of knowledge among players.
The second part comprises the case study, consisting of the design, implementation and assessment of the LBG Cure for the Campus as a four-day treasure-hunt adventure set up for the specific condition of the PHL University campus. This experiment delivered a very large amount of data, which has been organized into three data sets from which the findings of this dissertation have been derived, in close relation to the three research objectives. In this way, the hypothesis of this dissertation has been validated: a tool to be designed following this set of principles can simultaneously meet the three research objectives.

**Research Objective 1**

The data collected in the first set addressed information valuable for spatial experts in terms of the relation between behavior patterns and the physical layer. Players’ choices of action in completing the location-based missions, as well as their testimonies in the interviews that followed, provided information about the tactics they employ when dealing with key locations around the campus. The conversations that followed each mission, between the Game Master and the players, managed to deepen this understanding, by pointing towards more precise spatial concepts, in this way assisting a mutual exchange of knowledge between the architect, as a spatial expert, and the players, as experts in the use of space.

The knowledge obtained through observation of spatial tactics (through participant observation or observation of players’ choices during the game) compared to the players’ testimonies regarding their interpretation of their behavior, was able to deepen understanding regarding the dialectic nature of human phenomena, how participants’ actual performance differs from how they imagine it. This finding points to the fact that what people say they believe and what people say they do are often contradicted by their behavior. Therefore, it acknowledges the value of a double methodological approach- of observation of facts as they occur, and also of following the social construction of meaning-towards a better understanding of everyday practices, and integration of this knowledge into spatial participatory processes.

The findings from these sources and methodological approaches provided information about several interrelated socio-spatial phenomena (such as social encapsulation, proximity and ownership) that have been shaping the way people use space across the campus.

Furthermore, a comparison of the initial hypotheses -conveyed by the researcher through preliminary spatial analysis and participant observation, and regarding the potential prerequisites for successful use of specific outdoor public spaces- with the data collected through observation of players’ performances in the game and the interviews that followed, pointed to differences in perspective. In this way, it was possible to identify, for instance, changes in the value and significance of what we consider prerequisites for successful use of outdoor public domain.

Findings based on the first data set prompt the identification of two types of traces. First, it is possible to observe what kinds of traces people leave on the physical structure. These may take the shape of permanent or semi-permanent traces (such as the desire-lines, produced by people taking the most convenient path) or temporary traces (such as the effects of clusters of people attending a festival, or in the parking lot on a snowy day, etc.13). It is also possible to observe what traces (or influences) the physical structure produces on social behavior. For instance, spaces that do not provide opportunities for sitting, eating, etc. will hardly ever attract users, while physical elements attractive in terms of sittability, sun, enclosure, etc. (such as niches, stairs) may become augmented
with functions far beyond their prescribed ones. The knowledge provided by these two types of traces can eventually assist the design of more tailor-made interventions, consistent with the users’ needs and desires.

In line with the first research objective, in order to illustrate that the findings collected through the game experiment may prove valuable for spatial experts, a series of interviews have been conducted on-site with two architects. They have confirmed the value of the findings presented to them, pointing to the fact that the social functioning of a place can escape the eye of the spatial expert - who is trained to visually assess various elements and characteristics of the physical infrastructure and its function. The two architects found the data provided by the game valuable due to the fact that it explains why people use the space in a particular way, revealing specific behavior patterns triggered by the social and spatial structure. A deeper understanding of what triggers specific behavior in space may prove useful so that the mistakes of unsuccessful spatial interventions will not be repeated.

Limitations

There was difficulty to handle the data explicating the connection between behavior and space, for the spatial experts - trying to figure out how they could implement it in tangible design solutions, as well as for the players - who were not used to conceptualize their living environment in spatial terms, the emphasis of their comments falling heavily on the functional and social meanings attached to the physical structure, rather than the structure itself. The need for a translation of the data may arise. Obviously, the data’s full potential becomes partially lost when going through a process of translation.

The inductive qualitative approach of this tool is interpretative in its nature. This means that the findings depend on the ability of the “translator” to incorporate the data and make it meaningful. The data collected may have a different impact on different people - depending on variables such as the personal mind frame, the context in which the information is provided, etc. For this reason, special attention should be conferred to the translation, since it always involves a data reduction problem, leading to deletion of facts that might be considered relevant to some, while irrelevant to others.

During this game experiment the Game Master (played by the researcher) took the role of the “translator”. For this reason, the findings depend to a large extent on the researcher’s personal interpretation. One could raise the issue of the findings’ reliability, based on the competence and influence of the translator. For future applications, the translator should develop the ability to translate the data, by broadening his understanding of new disciplines and integrating this knowledge in his own practice. The designer should obtain a minimum set of professional competence for reading everyday socio-spatial practices.

Research Objective 2

The second set of data collected through the game-experiment revealed several types of enhancement in players’ understanding. First, by engaging players in deliberate exploration of the site, the location-based missions managed to expand understanding about the spatial environment. This sometimes occurred through an amplified sensorial experience (e.g. a tactile experience), sometimes by relating oneself to the physical structure in a new, atypical way, and sometimes by becoming involved with unfamiliar places or places for which no interest has previously been shown. In this way the players developed an enhanced sense of presence, which emerged from observation of the affordances of the environment. Following this approach, players confessed that
they started to experience familiar places from a completely new perspective, observing things they never had before.

Understanding of the spatial environment was also spurred through conversations with a spatial expert, which immediately followed the game missions. In this way, the players’ attention was guided toward spatial issues that had previously not been a part of their environmental image. They developed more alert perceptions of environmental appraisal, assisting them to deliver valuable information for the architect.

Also, collaboration on different levels within the game gave rise to social interaction, which stimulated an exchange of knowledge leading to enhancement of understanding regarding others’ behavior in space. This increase in awareness can lead to more socially-aware behavior in the environment, and it may eventually influence one’s own behavior in space. Players’ performances in the game, as well as their testimonies after it, revealed how they became more aware of the reasons behind their preferences for certain places. This had (short-term) implications on their behavior in space, as they allowed the assessment of the affordance of places to become an influential factor in their decisions on how to use space.

Limitations

Nevertheless, the game approach proved to have its downsides. In some situations, it has been noticed that immersion in the game can be so intense that awareness is replaced by selective attention towards a single feature. Perhaps this can be avoided by more precise rules integrated within the game.

A fundamental limitation consists in the fact that the potential raise in awareness remains difficult to operationalize because it is not possible to measure it directly and objectively by an outside observer. For the Data Set 2, players’ statements and indirect indicators were used to detect the enhancement in awareness. However, both methods are open to interpretations. This is due the fact that awareness is an intangible process, a result of conscious and unconscious thought.

Another limitation raises questions regarding the long-term implications of these findings. All these different types of increments in understanding—regarding the environment and behavior—have the ability to generate short-term changes in one’s behavior. However, it is difficult to create a long-term impact on behavior, to change habits. It may be assumed that repetitive involvement with such a game for a longer period may cultivate a long-term behavioral change. This could be tested in future research. This attitude is in line with the concept of participation as an attitude, which in itself advocates that one continuously addresses all kinds of issues regarding everyday environment, leading to new dynamics. Therefore, this game may perform as an instrument within the more general approach of participation as an outcome.

Research Objective 3

By assessing players’ experience during the game, the data collected in the third data set illustrated that the game offered the selected players a strong motivation to engage in the game play. The experiment was run on a specific type of players, namely students; their interest in playing games was diverse (from occasional game-players, to a majority of non-players). It can therefore be assumed that the game offers genuine motivation to all kinds of people, not only game fans. Motivation was delivered through various game elements, tested through a tailor-made set of heuristics—such as a good storyline, positive immersive game experiences, emotional involvement, multiple and clear goals allowing for different strategic actions, didactic challenges guiding a gradual
acquisition of skills, an unexpected outcome, many types of meaningful and purposeful social interaction, etc. All these elements assisted in the creation of the desired experiences of flow (Csikszentmihalyi, 1992) and immersion (Murray, 1998), which define the level of enjoyment and fun of a game (IJsselsteijn et al., 2007) - guaranteeing an optimal state of player involvement in the game.

**Limitations**

Several practical problems faced while playing the game have been discussed in the “Lessons Learnt” chapter. A general limitation of this game could be that some constraints need to be considered, for the game to reach its highest potential as a fun and enjoyable experience. It has been noticed that players’ mood- and from here, their level of engagement with the game- relied heavily upon the weather (sunny day, rainy day) and also the number of players within the team (the more players, the more fun). Since the game is running over several days, it is necessary to synchronize all players’ schedules in advance, in order to avoid last-minute cancelations.

Being mostly an outdoor game, the game is to a large extent weather-dependent, playable exclusively during warm months. Therefore, some constraints in terms of weather forecast, though not always predictable, need to be considered beforehand. Both these constraints bring an element of chance, which can completely ruin the game or may transform it into something else. The game designer’s challenge is to manage to embrace these changes and, whenever possible, quickly adapt to them. They address the very nature of location-based games- and simultaneously, their attractiveness-, since LBGs are games running in real-life settings, offering an element of unpredictability which increases the suspense of what is to come next.

The limitations due to weather conditions could be overcome by transform the outdoor missions into indoor missions, when spatial circumstances require and allow this change.

**General observation: the interplay of mental, verbal and physical actions**

The research questions have been answered and the tool was able to simultaneously reach its three-fold objective by means of a combination of three types of action: mental action, verbal action and physical action, where verbal and physical actions are products of the mental action. Mental action has been initially triggered by the game mission- the goal that must be achieved. When the goal is straightforward, it is usually given by a ludic rule, i.e. going somewhere to find something. When the goal is more complex, usually given by a paidiac rule- i.e. creating a spatial intervention-, it might involve knowledge outside the player’s expertise. In this case it has been noticed that externalization of the mental action into verbal and physical actions becomes intricate, and it may need external assistance- i.e. a conversation with an expert to clarify things. The interplay of these three types of action- mental, verbal and physical- seems to be the perfect instrument to empower players to deliver input by engaging willfully into active participation, while having the necessary knowledge to act, and sharing visions with others, facilitating, thus, an exchange of knowledge among different expertise. Perhaps the best example of the potential of such interplay of mental, verbal and physical action is represented by the congenial stages for conversation created by the game. This represents one of its greatest contributions, as it will be illustrated in the next section.

**Contributions**

**An operational framework**
Conclusions

This dissertation is positioning itself in the science of doing, of acting, offering as an overall contribution of this research an operational framework for a serious location-based game assisting spatial participatory processes. The operational framework consists of a set of guiding principles and a model for a serious locative game. Just as the case with the dialectic nature of human phenomena, -which are both performed and interpreted-, it can be considered that, metaphorically speaking, the two parts comprising this thesis are corresponding to the same concepts of interpretation and presence denoting the above-mentioned dialectic. Part 1 is delivering an interpretation of theories, to be further used as guidelines for the actual creation of a tool illustrated in Part 2, which is thus conveying the practical aspect of presence, of performing in the world through real actions.

The set of guiding principles has been developed following a stepwise approach achieved through literature review from disperse fields such as cognitive and ecological psychology, phenomenology, sociology, ICT and game design. This set of principles comprises the design guidelines to be pursued towards the creation of the model for the game.

The model for the game, based on this set of principles, entails a number of steps to be followed in a precise order: (1) spatial analysis, (2) participant observation, (3) formulation of hypotheses, (4) narrative construction, (5) action and rule formulation, (6) integration of technology, (7) an iterative process of play, (8) congenial stages for conversation, (9) open-ended interviews, (10) questionnaires, (11) assessment, and (12) validation.

Practical tips regarding the implementation of various technological assets have been put together as a result of the integration of such technologies within the model.

A serious and entertaining game as a spatial participatory tool

From a different perspective, another contribution is conveyed by the design of a tool to support participation in spatial planning issues as a fun and engaging game. While creating an enhanced emotional involvement framed within an operational state of flow, the game reveals its potential to provide the players with the genuine motivation to engage into active performance and deliberate exploration of surroundings. In this way, it manages to attain the right balance between playfulness- offering a fun and enjoyable experience- and seriousness- providing valuable educational output. Players are, thus, willingly and enthusiastically becoming involved with this tool, and this positive emotional arousal has also a constructive impact on the kind of feedback that they provide through their actions. By designing a serious and, at the same time, fun and entertaining game as a participatory tool in spatial planning processes, a contribution is made to the field of participatory urban design.

Use of technologies

Another contribution is related to the employment of locative and social media within the game. Since these technologies assisted some significant parts of the game experience, special attention needs to be conferred to their potential contributions, as well as shortcomings. The discussion will follow two paths, according to the two different types of technologies employed: social media (Facebook) and the innovative use of locative media.

Social media

Introducing an online social-network, such as Facebook, as an interaction platform for the game conveys a certain added value to this tool. This consists in the acknowledged ability of social-networking sites like Facebook to create extremely powerful “desire engines” (Eyal, 2013) - experience designed to cre-
ate habits, by attaching their services to the users’ daily routine and emotions. By using a Facebook page to host the game platform, full advantage of the ability of this network is taken. Since all players are Facebook users and they are checking frequently this site, the game becomes integrated into their habitual use. In this way, it does not require an extra effort of investing more time and energy by logging in to another platform, but it is simply attached to a daily-used service which attracts all kind of aspects of players’ private and public life. The use of this social-network, thus, assists the immersion of players into the game (feeding expectations of new events, updates, comments, pictures, etc), and so, the game pervades players’ life without producing apparent disruptions or unnecessary tensions.

In addition, the Facebook page provides a platform for communication among the players, the Game Master and the online team of spatial experts. Some advantages of this type of conversation have been traced, as well as several limitations. The advantages of such ongoing online conversations consists in creating a longer-term engagement, above and beyond the period the game is running on the field (since the player is incited to check for the other party’s reaction), in this way stretching the educational approach over a longer period of time. Such online conversations present also the advantage of engaging people who are physically not there, giving the opportunity to spatial experts to participate in the game, for instance, from their offices. This may have beneficial implications in terms of financial expenses—cutting down the travelling costs—, but also being time-effective—considered to be a very important factor lately. Moreover, such online conversations (chat) deliver directly typed data, which present the advantage of being more practical for the analysis and storage of data in general.

However, certain limitations of the online conversations have been observed as well. The most straightforward limitation consists in the fact that these conversations are post-factum, as they don’t take place while the player is still on location, engaged in the game. For this reason, answers are provided through re-collection of a memory (of a place) rather than elicited through present, sensorial perception. Moreover, players’ testimonies indicated a clear preference for face-to-face conversations compared to Facebook conversations. This is mostly because instructions are better understood when given orally, also because non-verbal things (such as body language determined through visual contact) play an important role in conversation, and also for the ease of the interactical process—since typing requires more effort and a longer waiting time for getting a reaction.

In conclusion the asynchronous, one-to-one, online conversations offer advantages, as well as limitations, whenever compared to synchronous, collective, face-to-face conversations. Depending on the circumstances in which they are employed (e.g. online or on the field spatial experts) and the desired output of the tool, the choice can be made to eventually make use of such conversations or not.

Locative media

In addition to social media, the design and implementation of this LBG investigated the effect of a locative approach of technologies on enhancing players’ ability for conscious presence observation—achieved through complete sensory perception of their bodies in space—and from there, what is their potential impact on spatial participatory practices. The locative approach of technologies implies that no GPS or other locative technologies as such have been employed for this game, but rather technologies that invite for locative exploration
through some particular function they are assigned with (i.e. text messages with location-based riddles, or QR-codes linked eventually to location-based questions). It has been noticed that such a technology-driven approach allows and even boosts an endeavor towards sensory contact with the game features (such as connecting players with physical locations and their affordances). Instead of having players staring into a screen providing 3D mimetic simulations, strongly creating an uncanny-valley effect (Slavin, 2009) and being completely cut-off from the substantial reality, the game creates immersion through physicality. Physicality of actions, of locations and features on location, even physicality of people’s behavior (i.e. tracking movement with chalk on the ground) is promoted through a minimal use of technology, which functions merely as a supportive backdrop.

Following such an approach, the intention is to combat the present condition of our daily lives that transpires an ever-growing loss of environmental and societal awareness. Gumbrecht observes that this situation, marked by a total loss of presence moments, due to our dominant meaning-culture, is actually approaching a turning point, as it is now coming back in the form of “an intense desire for presence, reinforced or even triggered by many of our contemporary communication media” (Gumbrecht, 2004, p.20). This may come as a paradox, since the initial scope of these media technologies was to fulfill the so-called Cartesian dream - the dream of omnipresence, by which lived experiences can be grasped independently of the locations that bodies occupy in space (Gumbrecht, 2004).

Like Slavin’s conviction (2011), the findings elicited through this game employing a locative approach of technologies illustrate that reality is plenty and able to provide genuine, connecting experiences, grounded in the individuality of places. There is no need to take refuge in exhaustive virtual augmented-reality worlds, providing a “thin and easily broken illusion” (Becam, 2006, p.67) and a fake sense of identity (Sigman, 2009) to alienate us even more from the responsibility of participating in the functioning of the spatial and social environment. We are already creating enough of these virtual realities in our head - since our perception of the environment is an illusion (von Foerster, 1973), so why not do the opposite, and explore the benefits delivered through the contact with the material world and own body.

In this way, the contribution of this game is to achieve a reconciliation of the challenged relationship between architecture and (the extensive use of) mobile technologies - sometimes referred to as destructive of public space. Through a locative approach of technologies, the game promotes the potential of location-based learning, transforming any place into a classroom, where a mutual exchange of knowledge is made possible. Moreover, Greenfield (2008, p.55) noticed already some years ago that this novel ability to “record our subjectivities by the millionfold and connect them to real localities constitutes a potential boon for social sciences”, which may benefit from an inconceivable better grasp of social patterns. As such, it is challenging for future work to imagine what potential lies at the intersection of place, social context and appropriately designed systems.

Suggestions for future research

The LBG developed throughout this dissertation performs as an innovative facilitator to enable an exchange of knowledge between users and spatial experts. The stages for conversation which emerged after game-play illustrated the benefits of mutual education. As Greenfield (Greenfield & Shepard, 2007,
p.29) puts it, “we’re all going to have to let go of our tendency to want to control the narrative if we want genuine conversation to emerge”. The users may gain insight into the everyday profession of an urban designer, in this way, becoming able to think in spatial terms and observe the spatial features of places they appropriate, and from there, to use this knowledge to articulate their preferences. On the other hand, the designers, as professionals, may attain a minimal set of competences in order to make sense of the information conveying local knowledge of everyday practices, instead of requiring a “translator” to suggest how this information can be used in terms of design solutions. In the game Cure for the Campus the role of translator was played by the researcher herself, who had, at the same time, architecturally-training. For future research, however, special attention should be given to the role of “translator”, since it conveys the most critical role in the game, the findings depending to a very large extent on his or her competence and ability of “translating” data. Even though the results and interpretations of translations can be agreed upon by the participants, such “translations” imply filtering of information through an individual-system of interpretation, which brings the danger to leave out a lot of information that may prove valuable in the process. From here, it seems crucial for the actors involved in participatory processes to be able to make sense of and integrate more knowledge, coming from different universes of discourse, into their own knowledge structure. Opening-up perspectives and providing a holistic understanding of the many facets that assemble a situation grant the potential to facilitate not only more tailor-made solutions for spatial interventions but also an enhancement of the community spirit.

Following these lines, it seems relevant to design a game as a participatory tool to empower people to participate, but most importantly, to train and educate them. The knowledge collected by the game may create a new “community of practice” (Wenger et al., 2002) since inhabitants and designers learn from each other in a process that builds social capital, create new knowledge and encourage innovation (Wenger et al., 2002). Within this frame, the game may be perceived as a tool to facilitate better educational outcomes, rather than a deliverer of an end-product. It seems thus pertinent for future research to play the game with mixed teams of users and spatial experts, in this way extending the moment of exchange of knowledge, from the stages for conversation into the action field. In this way users and designers may collaborate towards the completion of missions. It is within the realm of possibility that following such an approach improved results may arise in terms of creativity, community building, etc., while it may also introduce the danger of having designers over-powering lay people, for instance.

By confronting people with their own behaviour, the game promotes reflection towards a more self-aware and community-directed performance in the environment, which may have positive effects on the environment, in general, and on community-living, in particular. However, it was noticed to function only as a short-term behavioural change. It may be possible for future research to test the ability of transforming these changes into long-term habits, through repetitive game play. Questions may arise regarding the ethicality of such practice–imposing a specific behaviour or way of observing the world. By playing the game players (users) have been already presented, they took notice of, and tried out a different way of perceiving the environment. The knowledge has been shared and they are aware of it. Now it depends on them if they will choose to continue to use this knowledge in the future and for what purpose- if they are ready for it or not. In this way, adopting this new way of making sense
of the world can be considered to be a personal choice rather than an imposed behaviour.

Following such a choice, the game as a tool for participation in urban planning offers the potential to transform the way in which people understand and participate in the dynamics of structure that govern their surroundings; this presupposes that knowledge detained by spatial experts to be shared with the residents, and as a result, through their actions and interpretations, to be added to their lived space (Lefebvre, 1991).

Designing pleasant and perfect interventions showing respect for the social fabric it seems to be an impossible task, since there will always be tensions, there will always be groups that cannot live together and people who are excluded. By distributing social and spatial maps of people, the game makes explicit the genius loci knowledge that has remained latent, providing a platform to make tensions visible, to trace new forms of exclusion, to map new issues that make people worried, etc. Such information may assist designers to better argue their choices.

As Greenfield (2012) says “how we respond — what we do now, what cities we make of the potentials before us — is still largely up to us. Now as never before, the city is here for you to use”. The tool proposed through this dissertation is an example of valorization of existing potentials -in terms of already existing technological platforms and their applications, but also in terms of the human potential for observation and learning. In this way, this tool proves valuable to steer these potentials and allow people to experiment with them. By means of employing such innovative tools – like a location-based game -in spatial participatory processes, the participatory approach changes the old frame of the game of urbanism into a new game, for which the rules, the frame, the narrative are still ambiguous. Finding the appropriate tools to "play" is very much a task still under investigation. However, as Rushkoff (2005) observes, it is the shift in perspective itself that is much more valuable than where it takes us.
REFERENCES


Benford, S., Crabtree, A., Reeves, S., Sheridan, J., Dix, A., Flintham, M.,


Geographical Analysis, 11, 414-421.


Case, A. (2010). We Are All Cyborgs Now, TED talk, retrieved from: http://www.ted.com/talks/amber_case_we_are_all_cyborgs_now.html


References


Ejsing-Duun, S. (2011), Location-Based Games: From Screen to Street, Ph.D. Dissertation, The Danish School of Education, Aarhus University, Copenhagen


Ermi, L., & Mäyrä, F. (2005). Fundamental components of the game-


references

Pub Incorporated.


Golledge, R. G., & Hubert, L. J. (1982). Interfacing micro and macro
approaches in geographical analysis: Some epistemological and practical
the Comparison of Related Structures: Implications for the Analysis of Criminal
Justice Data. Santa Barbara: Department of Geography, University of California
Santa Barbara.

Perspective: Guilford Press.


Goulding, C., (2005), Grounded theory, ethnography and phenomenol-
y- a comparative analysis of three qualitative strategies for marketing research,
Publishing Limited

Grabow, S. & Heskin, A. (1973). Foundations for a Radical Concept of-

Granath, J., (2001), Architecture: Participation of users in design activi-
ties, retrieved from http://ebookbrowse.com/architecture-participation-of-users-
in-design-activities-pdf-d308817117

Granlund, T., (2012). Trust in the public domain, in Trust design, #4-
Public Trust, Supplement to Volume #30: Privatized, Archis.

Greenfield, A., (2008), Location-based and Context -aware Education:
prospects and perils, in Emerging Technologies for Learning, Research Report,
Volume 3 (March 2008), pp. 47-57.

Greenfield, A. (2010). Everyware: The Dawning Age of Ubiquitous Com-
puting: Pearson Education.

Greenfield, A., 2012, The City Is Here For You To Use: 100 easy pieces,
retrieved from http://speedbird.wordpress.com/2012/12/03/the-city-is-here-
for-you-to-use-100-easy-pieces/

ten ts- Situated Technologies Pamphlets 1, retrieved from http://www.situated-
technologies.net/files/ST1-Urban_Computing.pdf

Greenfield, S., (2009), Facebook and Bebo risk ‘infantilising’ the human
mind, the Guardian, Tuesday 24 February 2009, retrieved from: http://www.
guardian.co.uk/uk/2009/feb/24/social-networking-site-changing-childrens-
brains

Guardiola, E., (2011). How to be sure to kill the game part of a serious
game: Game design beyond Gamification. Workshop at Lift 11 Conference, Ge-
neva.

SAGE Publications.

not Convey: University Press.

Gussarsky, E. & Gorodetsky, M. (1988). On the equilibrium concept:
References


Cognitive Psychology, 52(2), 93-129.


Jegers, K., (2009), Pervasive GameFlow- Identifying and Exploring the Mechanisms of Player Enjoyment in Pervasive Games, PhD dissertation, Umea University, Sweden, Department of Informatics.


Jorgensen, B. S., & Stedman, R. C. (2001). Sense of place as an attitude:

Jungnickel, K. and Proboscis, (2004). Urban Tapestries- sensing the city and other stories, Proboscis Cultural Snapshots, no. 8: June 2004


Kraut, R., Mukhopadhyay, T., Szczypula, J., Kiesler, S., & Scherlis, W.


Kronenfeld et al. (1972). Toward a science of design for successful food service. Institutions and Volume Feeding 70 (11): 38-44.


Lehmke, T. (2001). The birth of bio-politics: Michel Foucault’s lecture at the Collège de France on neo-liberal governmentality. Economy and Society,


McAndrew, F. T. (1998). The Measurement of ‘Rootedness’ and the Pre-


Moore, G.T., (1979). Knowing about Environmental Knowing, Environment and Behavior II (March).


Naveh-Benjamin, M., McKeachie, W. J., Lin, Y.-g., & Tucker, D. G. (1986). Inferring students’ cognitive structures and their development using the
“ordered tree technique”. Journal of Educational Psychology, 78(2), 130-140.


Papageorgiou, F. (2012). Auditing the Sustainability of Public Open Spaces- the ASPIS project. ASPIS Conference, Sint Lucas School of Architecture, Gent, 12-14 November, 2012


Pile, S. (2013). The Body and the City: Psychoanalysis, Space and Subjec-
tivity: Taylor & Francis.


cal world socialization of the self. Journal of Environmental Psychology, 3(1), 57-83.


References


Sorkin, M. (1996). See you in Disneyland. In S. Fainstein and S. Camp-
bell (eds.), Readings in urban theory. Oxford: Blackwell


References


APPENDICES

APPENDIX A
Instructions STEP I experiment
STEP I

The first part of the game is observing the daily activity behaviour of the players in a non-intrusive way, along a one-week period.

Participants will be pursuing their normal daily activities, as usual; in addition, they are required, during one week, to make use of the Everytrail application on their iPhone in order to record all their daily routes and to make annotations (notes, photos, videos) along these routes, in places that they find interesting. They should stop at those places that make a great impact on them - a sensory impact (visual, acoustic, chemical, tactile, kinetic, thermal) or an emotional impact (places that have some personal meaning attached, or that produce some strong like/dislike reactions in the observer, etc), and they should try to capture the specific atmosphere of that scene that retained their attention. Annotations can be done by taking a picture, a video or by writing a note. When making an annotation, participants can have in mind noting down things such as:

- Why do you mark this place?
- Is there anything that strikes you?
- How do you feel about this place?
- What is your previous experience related to this place?
- What does this place mean to you?
- How do you use this place?

A fragment from George Perec – Species of Spaces and Other Pieces (1997:50), for inspiration:

“Observe the street, from time to time, with some concern for the system perhaps.

Apply yourself. Take your time.

Note down the place. [...] Note down what you can see. Anything worthy of note going on. Do you know how to see what’s worthy of note? Is there anything that strikes you?

Nothing strikes you. You don’t know how to see.

You must set about it more slowly, almost stupidly. Force yourself to write down what is of no interest, what is most obvious, most common, most colorless.

The street: try to describe the street, what it’s made of, what it’s used for. The cars. Detect a rhythm: the passing of cars.

The people in the streets: Where are they coming from? Where are they going to? Try to classify them: those who live locally and those who don’t live locally. There don’t seem to be any tourists. The season doesn’t lend itself to it, and anyway the area isn’t especially touristic. What are the local attractions?

Beauty of the women. The fashion is for heels that are too high.

Read what’s written in the street: Morris columns, newspaper kiosks, posters, traffic signs, graffiti, discarded handouts, shop signs.

Decipher a bit the town. Its circuits: why do the buses go from this place to that? Who chooses the routes, and by what criteria?

The buildings. Distinguish residential from official buildings.

The shops. What do they sell in the shops? Ask yourself where the locals do their shopping.

The cafes. How many cafes are there? Why did you choose this one? Because you know it, because it’s in the sun, because it sells cigarettes.

Make an effort to exhaust the subject, even if that seems grotesque, or pointless, or stupid. You still haven’t looked at anything, you’ve merely picked out what you’ve long ago picked out.”
By the end of each day, participants must upload their trip to the Everytrail website.

They are encouraged to bring feedback — so called “home-made” reflection-on-action— on their annotations, while comfortably sitting by their computer (instead of doing it on the field). When done, they must share it with the rest of the group, by email.

They must also check other participants’ annotations and make comments – if they agree or not with the information/ if they find the information interesting, useful, etc- and to give them points. The classification of each day will be announced the next day before 18:00, by email.

**Instructions**

1. Create an Everytrail account.
   Go to www.everytrail.com → Signup

2. Download the Everytrail application for the iPhone → the free version [last Version 4.3]

3. Go out and play! (It is advisable that you test the application beforehand, to see how it works)

   From your iPhone:
   - Open up the Everytrail application.
   - Start a new trip, by pressing Start Tracking.
   - The GPS is automatically recording your location when you are outside of buildings. That’s why it is important when you enter a building to Pause the Tracking, and when you go out again, you must press Resume to continue recording. Some tips will show up- they might be useful.

   The same thing when you are not moving. The GPS is recording your position by comparing it to previous one, so when you are staying in the same spot for a longer time (more than a few minutes) the GPS is going “crazy”. So it is advisable – when you are waiting for the bus, train, friend, etc.- that you Pause tracking and when you start moving again, you press Resume to start recording.

   Do NOT press Finish until you finish your last trip of the day – this will stop the tracking and end the route, so the new recording will appear in a new file, which is not possible to be linked to the previous one. If you press Finish at your last destination, you will have only one trip to upload to the Everytrail website that day.

   While recording a trip, you can normally use your phone; even when you exit the app, it will run in the background, so you can make phone calls, or use other apps. If you want to save battery, you can switch off the screen, by pressing the top right button of the iPhone.

   Along your route, you can make annotations:

   - **PHOTOS**: press the photo icon on the top left of the screen – take the picture and make sure you press the Use button, (the photo is linked to the location where the Use button is pressed; so if you forget to press it at that location and you do it somewhere else, the photo will be linked to a different location. However, you can edit from the computer, later on, the location and the description of photos).

   - **NOTES**: press the Options triangle at the bottom right of the screen and choose Add a Waypoint option. In this way, you “mark” that place, and if you like, you can bring more explanations about that place later on, from home.
From your computer, after you uploaded the trip to the website, you can edit Waypoints.

- ViDEOS: you can record videos with your camera, as you would normally do with the Camera application, and then upload it to YouTube. When your trip is uploaded to the Everytrail website, you have the option to add video from your Youtube account.

When you finish all your trips for the day, you can finally press the Finish button.

Choose Upload and Share Trip, to automatically upload the trip to the website, in case that you have internet connection (or wifi) at that moment; or choose Upload later, if you don’t have internet access.

Name your trip- please fill in the Title with the date the trip was recorded -i.e. on the 8th of February, the title would be 8Feb. (If, by mistake, you’ve pressed the Finish button before the last trip of the day, so at the end of the day you will have several files, you can name your trips i.e. 8Feb_p1, 8Feb_p2, etc.)

You can add the type of activity – usually “Others”. And then press Save – top right. A new screen will show up- Share Trip-, showing the title of your trip, your account, etc. You can choose to make your trip public or to keep it private- Make Trip Public ON or OFF. And then press Share, at the bottom of the screen. That’s it! Your daily trip is uploaded- if there is internet connection! You will receive also an email to inform you about this.

Now you can improve your trip, from your computer, by giving tips, adding a story or tags to the trip, by editing the tracks, the waypoints or writing a description to your photos (please do that, so other players can understand what was in your mind when you took that photo, and they can comment on it).

Very IMPORTANT! When you finish editing your trip, please don’t forget to share it with us! You can share it by sending an email to the group, with the link to your trip - copy-paste the line in the Share This Trip option, on the first page of your trip – bottom right.

Check others trips –for inspiration- and make comments- on their photos or, in general, on the whole trip-, whether you agree with their observation, or not, or if you find it interesting, or useful.

When you start following others, you will be able to look at their activity – their trips- in their profile; if you interact with their trips (make comments), you will automatically receive an update about the trip that you have interacted with – in case somebody else is making a comment, for example.

**Encouraged actions**

- Exploration
- “Home-made” reflection-on-action
- Objective annotations (community/ place -related)

**Technical TIPS**

- For those participants who do not have a DATA contract with their mobile company, it is advisable to switch OFF Cellular data (from Settings→General→Network→Cellular Data), so they will not have to pay extra for using the app, in areas where wifi is not available. This will not interfere with the application, but there will be no Map- Background related to the pointer.
- For saving more battery, you can even use the application without a SIM card inside.
APPENDIX B
Topic list interviews of STEP I

Appendix B mentions the key topics and issues that were covered during interviews with participants in the STEP I experiment.

For how long do you live in Hasselt?
How many houses/neighborhoods did you previously live in?
Where is your job/school department?
How often do you go there/ per week/ per day?
How do you usually commute between home-work/school?
Describe your routes: to work, to school, family, weekends.
Describe your interactions with your environment.
Describe how do you use the environment/ the objects in the environment daily.
Describe how do you move in the city, during one day/ one week.
Describe a routine day- step by step, in detail.
Describe a routine week.
How do you move in the city, during one day/ one week?

How do you commute? Where are you waiting for the bus? What kind of people do you see there?
-Places where you socialize?
What kind of people do you see in the places where you go out?
Do you engage in conversations with strangers? When? Why? For how long?
On what occasion?
Questions about traffic, groceries, neighbours.

What is your opinion about the town where you live (Hasselt)?
Are you satisfied with what it is providing (function)?

Awareness issues:
Whenever you go out for a walk, do you pay attention to the space around you?
Could you identify any changes in the way you were observing the surroundings, during this week?
Have you been able to notice differences between the way you used to experience the city before, the way you did while playing the game, and now, after the game?
Do you believe that your awareness regarding the environment has increased while playing the game?
Awareness regarding transportation mode differences:
Could you describe any differences in the way of observing the environment while you were driving a car and walking, when you used the app?
Which one was easier, and which one was more engaging in exploration?

Questions regarding the GPS Tracking - moving in the city:
- along fixed paths? going to fixed destinations?
  Home&work : different routes?
  Home&shopping: different shops? different routes? Transportation mode?
  Home&park/ going out: different places? People you meet there?

Why do you choose this (same) route/ shop?
- faster/ shortest way?
- Commodity (near the house)?
- psychological security (known way/area)?

Technical difficulties on Everytrail platform:
Did you find difficult to work with the Everytrail app? (the process of uploading/ recording trips/ making comments/ receiving updates)
What were the difficulties?

The game experience
How would you describe your experience of the game?
What do you think about the interactions created in the game, between players, through the comments?

Annotations:
Why did you take this picture? What does this mean for you?
Why do you take this route?
Location: Barenzaal

https://www.facebook.com/pages/Barenzaal-in-C-Mine/287635377914956

Conversation:

Barenzaal in C-Mine
October 5, 2011
Vind je dat de nieuwe bestemming van deze plek past bij het oude decor?
Waarom?
2Like · Share
• Oswald Devisch Ja, want heeft geen fysieke impact op het monument
October 7, 2011 at 10:39am · Like
• Arent De Dapper Ja, het is een originele locatie voor feesten.
October 9, 2011 at 1:15pm · Like

Location: Central Compressor Hall

https://www.facebook.com/pages/Central-Compressor-Hall-C-Mine/287285581284612

Conversation:

Central Compressor Hall C-Mine
October 5, 2011
Wat vind je van de herbestemming van dit industrieel monument?
3Like · Share
• Oswald Devisch Is goed dat dit monument bewaard is, maar vindt 'cultuur' wel een erg makkelijke invulling. Waarom kon hier niet opnieuw een bedrijf?
October 7, 2011 at 10:42am · Like
• Arent De Dapper Positief dat er reconversie is, maar het valt af te wachten of het een duurzame invulling is. Wat als het nieuwe eraf is? Is cultuur voldoende om het project stand te laten zorgen
October 9, 2011 at 12:53pm · Like
• Arent De Dapper Stand te laten houden?
October 9, 2011 at 12:55pm · Like
**Location: Exhibition Space**
https://www.facebook.com/pages/Exhibition-Space-in-C-Mine/16526263562420

**Conversation:**

Exhibition Space in C-Mine
October 5, 2011

Sommige mensen zouden beweren dat deze plek geen eigen identiteit heeft, dat je het overal kan vinden. Ben je het hiermee eens? Vind je dit een probleem?

2Like · Share
- Oswald Devisch Is geen probleem, een tentoonstelling vraagt om een dergelijke ruimte
  October 7, 2011 at 10:44am · Like
- Arent De Dapper Een tentoonstelling geeft een identiteit aan de ruimte niet omgekeerd.

October 9, 2011 at 12:33pm · Like

---

**Location: Hook Room**
https://www.facebook.com/pages/Hook-Room-in-C-Mine/268617996504480

**Conversation:**

Hook Room in C-Mine
October 5, 2011

Welke type van activiteiten zouden hier volgens jou kunnen plaatsvinden?
1Like · Share
- Arent De Dapper Recepties.
Location: Machine Room

Conversation:

Machine Room in C-Mine
October 5, 2011
Hoe zou je je algemene indruk van deze ruimte beschrijven?
1Like · Share
• Oswald Devisch Alsof het dak zweeft. Hoe een industriële ruimte toch zo licht kan zijn

October 7, 2011 at 10:45am · Like

Location: Terrace
https://www.facebook.com/pages/Terrace-in-C-Mine/124313034338384

Conversation:

Terrace in C-Mine
October 5, 2011
Sommige mensen vinden de uitbreiding van de rode en witte tegels op het terras een sterk statement. Wat vind jij hiervan?
4Like · Share
• Oswald Devisch Vind dit juist erg gepast. Zo wordt de buitenruimte een deel van het interieur.

October 7, 2011 at 10:47am · Like
• Arent De Dapper Geen statement. Estetisch
October 9, 2011 at 12:44pm · Like · 1
• Arent De Dapper Esthetisch de juiste keuze.
October 9, 2011 at 12:46pm · Like
• Elien Neyens Door oude authentieke tegels in deze fase te gebruiken, kunnen nieuwe architectuur-principes, zoals het exterieur naar binnen trekken, hier uitgevoerd worden.

October 23, 2011 at 2:25pm · Like
Vragenlijst

Wat is je favoriete plek in dit gebouw?
• centrale compressor hal
• haak kamer
• machine kamer
• barenzaal
• terras
• tentoonstelling
• gehoorzaal
• ander ...........

Vond je het eenvoudig/moeilijk om de vragen te beantwoorden?
• het typen was moeilijk
• ik had wat denktijd nodig
• In het algemeen was het makkelijk
• …………………….

Las je ook de bijdragen van de anderen?
• ja
• nee
• soms

Werd je, bij het beantwoorden van de vragen, geïnspireerd door anderen of door de rondleiding die je voordien gevolgd hebt?
• door andere deelnemers
• Door de rondleiding
• Geen andere inspiratie

Vertrouwelijke persoonlijke gegevens

Geslacht: • man • vrouw

Leeftijd: 

Beroep: • architect • ander ....

E-mailadres:

Gebruikersnaam Facebook:
General questions:

Hoe zou je je algemene indruk van deze plek beschrijven?
Waarom vind je deze plek leuk/niet leuk?
Wat maakt deze plek speciaal?
Is dit je favoriete plek in het gebouw?
Is dit je minst favoriete plek in het gebouw?

How would you describe your overall experience of this space?
Why do you like? Don't like this place?
What makes this place special?
Is this your favourite place in the building?
Is this your less favourite place in the building?

Location: The Congress
https://www.facebook.com/pages/The-Congress/423915494287216

Answers:

The Congress Ik hou (niet) van deze plek om te…………… (activiteit, vb. eten, studeren, etc) omdat................(reden)
May 8, 2012 at 8:40pm · Like

• Joke Wouters Fijn om te ere met vrienden
May 9, 2012 at 9:39am via mobile · Like
• Lize Pinxten Een leuke en gezellige plek om te eten. Als het het druk is dan is het heel chaotisch . Ook is er vaak geen plaats en zit het vol met middelbare studenten.
May 9, 2012 at 10:05am via mobile · Unlike · 1
• Sebastiaan de Ridder Ruime plaats
Veel licht dat is aangenaam
Veel plaats
May 9, 2012 at 10:22am via mobile · Like · 1
• Peter Martens Joke, we still don't know why you like it...
May 9, 2012 at 10:28pm · Like
• Joke Wouters je hebt er de mogelijkheid om aan ronde tafels te zitten, zo is er een betere interactie met je studiegenoten.
er is ook natuurlijk licht (door de gaten tussen de bladeren van de bomen die langs de demer staan)
**Location: Pool Bar**
https://www.facebook.com/pages/Pool-Bar/430023360358893

**Answers:**

- Joke Wouters Gezellig met vrienden wat ontspanne
  May 9, 2012 at 9:43am via mobile · Like
- Lize Pinxten Het is een fijne plek om tussen de lessen te zitten. Het is niet speciaal maar voldoende voor studenten. Een groot voordeel is de bar waar je goedkoop kan drinken. Mkpunt is dat de muziek er soms te hard staat. Ook staat er soms niemand achter de bar en dan is een koffie machien soms wel handig!
  May 9, 2012 at 9:55am via mobile · Like · 2
- Sebastiaan de Ridder Een groen uitzicht
  Lekkere drankjes
  Ronde tafels zijn leuk

**Location: On the Dark Side**
https://www.facebook.com/pages/On-the-Dark-Side/146216288836744

**Answers**

- Joke Wouters Lekker studere
  May 9, 2012 at 9:38am via mobile · Like
- Lize Pinxten Niks speciaal. Niet gezellig want iedereen die de school binnen komt ziet je zitten.
  May 9, 2012 at 10:12am via mobile · Like
- Sebastiaan de Ridder Donker
  Veel kunstmatig licht
  Je ziet iedereen langs het Raam voorbijkomen
  May 9, 2012 at 10:16am via mobile · Like · 1
- Peter Martens lekker studere..but why? what makes it lekker, Joke?
  May 9, 2012 at 10:53pm · Like
- Joke Wouters dat je rustig kan zitte met je studiegenoten en wat muziek op de achtergrond, je kan er ook op je gemakje wegdromen door de passanten te volgen.
  May 10, 2012 at 9:39am · Unlike · 2
- Sarah Martens @sebastiaan, het is wel aan de donkere kant (noordzijde) van het gebouw, maar toch veel natuurlijk licht? Vind je het leuk of niet om voorbijgangers te zien?
**Location: Mono**
https://www.facebook.com/pages/Mono/402154059817779

**Answers**

- Mono Ik hou (niet) van deze plek om te…………… (activiteit, vb. eten, studeren, etc) omdat................(reden)
  May 8, 2012 at 7:20pm · Like
- Joke Wouters Ik hou van deze plek omwille van de grote tafel
  May 9, 2012 at 9:52am via mobile · Like
- Lize Pinxten Het is een leuke plek omdat je er met veel kan zitten. Ook is het fijn dat je een beetje afgezonderd zit van de rest. Het is heel licht en ruim.
  May 9, 2012 at 9:59am via mobile · Like · 2
- Sebastiaan de Ridder Te afgesloten van de rest
  Weinig uitzicht

**Location: Going Low**
https://www.facebook.com/pages/Going-Low/242960409144528

**Answers**

- Going Low Ik hou (niet) van deze plek om te…………… (activiteit, vb. eten, studeren, etc) omdat................(reden)
  May 8, 2012 at 7:18pm · Like
- Joke Wouters Hou ervan om rustig met laptop ere op te ete
  May 9, 2012 at 10:03am via mobile · Like
Location: Getting High
https://www.facebook.com/pages/Getting-High/224636810977980

Answers

• Getting High Ik hou (niet) van deze plek om te ............... (activiteit, vb. eten, studeren, etc) omdat..................(reden)
  May 8, 2012 at 7:15pm · Like
• Joke Wouters Rustig bijkleurde met vriende
  May 9, 2012 at 9:40am via mobile · Like
• Lize Pinxten Een rustige aangename plek om te eten of tussen de lessen te vertoeven. De kleuren geven het een vrolijke uitstraling. Het is een fijne plek omdat ze rustig is en je het restaurant overkijkt.
  May 9, 2012 at 9:45am via mobile · Unlike · 3
  • Sebastiaan de Ridder Te klein
  Zit vaak vol
  Verhoog is aangenaam
  May 9, 2012 at 10:18am via mobile · Unlike · 2
• Sarah Martens een uitkijkpost om te eten
  May 10, 2012 at 12:08pm · Like

Location: Atrium in D-building
https://www.facebook.com/pages/Atrium-in-D-building/34841815854899

Answers

• Atrium in D-building voorbeeld: Ik hou (niet) van deze plek om te .......... (activiteit, vb. eten, studeren, etc) omdat..........(reden)
  May 8, 2012 at 7:10pm · Like
• Lize Pinxten Het is een leuke plek omdat ze ruim en licht is. De school doet goed zijn best om er een huiselijke plek van te maken door de planten etc.
  May 9, 2012 at 9:50am via mobile · Like · 1
  • Sebastiaan de Ridder Geen rustige plaats
  Veel volk dat passeert
  Trek door de deuren
  May 9, 2012 at 10:10am via mobile · Unlike · 2
  • Joke Wouters Veel ruimte en mooie lichtinval
  May 9, 2012 at 10:14am via mobile · Like
  • Sarah Martens @sebastiaan: klopt, maar vind je dat toch ok voor deze plek? Met wat er gebeurt / of moet gebeuren. Of net niet?
Location: Along the Demer

https://www.facebook.com/pages/Along-the-Demer/378411395533250

Answers

• Along the Demer Ik hou (niet) van deze plek om te……………. (activiteit, vb. eten, studeren, etc) omdat..................(reden)
  May 8, 2012 at 7:11pm · Like
• Joke Wouters Ik hou er niet van omwille van het weinige uitzicht
  May 9, 2012 at 9:54am via mobile · Like
• Lize Pinxten Leuk uitzicht door het raam. Spijtig dat wa nooit buiten op het terras kunnen en aan het water kunnen zitten. Het is er wel een beetje chaotisch. Als het druk is onoverzichtelijk.
  May 9, 2012 at 10:03am via mobile · Unlike · 3
• Sebastiaan de Ridder Mooi uitzicht Nast buiten Leukemia plants omdat je Hirt samen eet
  May 9, 2012 at 10:04am via mobile · Like
• Sarah Martens @joke waarom vind je dat het uitzicht ‘te weinig’ is?
INITIAL HYPOTHESES

1. Outdoor public space is the central, binding element (therefore extremely important).
   1.1 Outdoor public space must be an enclosed space. This implies enclosure on a horizontal axis - the correct connection between elements, (i.e. no visual connection to the street with auto-traffic), and partial enclosure on a vertical axis - protection from rain (i.e. remain functional during rainy periods). In return, this enclosure provides a cozy atmosphere which may encourage social interaction.

   1.2 Outdoor public space must provide sitting-friendly pavements. Special materials (i.e. grass, rubber, wood, etc.) used in the area of the outdoor public space may invite to a particular type of behavior - (i.e. picnic, sitting, etc).

   1.3 Outdoor public space must be easy-accessible. A good connection to the central D building must be taken in consideration, for designing a functional space.

   1.4 Outdoor public space must provide sunny/shadowy areas. When designing the public outdoor space the sun orientation should be taken in consideration, in order to take advantage of sunny areas available or to offer protection from sun on torrid days. This may provide an enjoyable atmosphere.

   1.5 Ideally outdoor public space must provide connection to nature. When connection to nature is made available in the outdoor public space, the whole experience of enjoying the space is aroused.

2. The atriums (in the C and D buildings) perform opposed than intended.
   2.1 The atrium should not be considered a social-binding place. Due to its huge scale, the atrium performs as a walking corridor, rather than a place for social activities (i.e. confrontation, collaboration, etc.). The atmosphere generated in the atrium is not cozy, but rather intimidating. For this reason, people choose adjacent spaces (with human-scale) to socialize.

3. The central square (between C building & tower) is always empty.
   3.1 The central square is apparently missing function. In fact, it doesn’t - it is supposed to stay empty for emergency access. However, its central location may suggest its transformation into a more livable place. This doesn’t necessarily involve a radical transformation into a permanent social place, but perhaps into a place for transient events (i.e. exhibitions) to attract a specific type of behavior (i.e. passing-by).

4. Elfde Liniestraat crosses the most important paths between buildings within the campus.
   4.1 The traffic jam on Elfde Liniestraat at noon does not create a problem for the campus. Despite the traffic jams created in this particular location during lunch-time, this is not interfering in any way with the functioning and safety of the campus life. It might rather be a problem for the car-drivers. But they have deliberately chosen this road, which points to the importance of Elfde Liniestraat as a basic artery connecting inner town to the ring road. Therefore, instead of shutting it down, perhaps a “shared surface” street design approach would prove more beneficial.

5. The “tower” (student dormitory) is absolutely necessary for the campus.
   5.1 The tower represents the core for ‘living together’, bringing 24-hour-life inside campus. The importance of the tower is delineated by the fact that it is the only building within campus to provide 24-hour - life to the site. Through shared facilities (i.e. kitchen, shower, lounge area), the tower creates the context of “living together” - so important for the well-being of human species.

   5.2 The tower provides a unique viewpoint, due to its height. Due to its central location within the campus and its height (Structuring aspect) the tower offers to its inhabitants an (taken-for-granted) opportunity to have a bird’s eye view perspective. This may generate a special ability of the inhabitants of the tower to understand their campus in a holistic way, and perhaps engaging into a more aware behavior.

   5.3 The pool around the tower is missing function. Time has shown that the pool is not able to function the way it was designed. However, due to its central location, it may be transformed into a useful and/or playful element, which may serve and engage into social interaction.

6. The desire lines show the difference between “prescription” and “real implementation”.

6.1 Desire lines indicate shortcuts created to access locations in a more natural way, different than the one prescribed by designers. They usually point to the shortest connection between elements and make explicit people's preference for efficiency (i.e. taking the short way).

7. The parking lot is problematic.
7.1. The parking lot is a huge wasteland.
The parking lot occupies one of the most privileged locations within the campus, having a perfect connection to the central D building and simultaneously being protected from direct view to traffic roads. It provides unpleasant visual stimuli on a huge scale, generating negative feelings. Despite the fact of being used only a limited period of time, it represents a “necessary evil”. However, the parking may take perhaps a different shape, on a different location. In this way, the location could be used (at least partially) for outdoor public space.

General parameters to be observed in the physical environment
1. Physical volume/structure
2. Connection between elements
3. Circulation/movement
4. Materials
5. Light
6. Viewpoint
7. Climate conditions (rain/wind protection)
8. Sun orientation (sunny/shady areas)
9. Function
10. Atmosphere of place
11. Social context
How would you rate your engagement in the game per total?
1 2 3 4 5

How would you rate your engagement in the first game mission (the picnic)?
1 2 3 4 5

How would you rate your engagement in the second game mission (central square)?
1 2 3 4 5

How would you rate your engagement in the third game mission (QR codes hunt)?
1 2 3 4 5

How would you rate your engagement in the last game mission (snakes and ladders)?
1 2 3 4 5

How would you rate the fun in the game per total?
1 2 3 4 5

How would you rate the fun in the first game mission (the picnic)?
1 2 3 4 5

How would you rate the fun in the second game mission (central square)?
1 2 3 4 5

How would you rate the fun in the third game mission (QR codes hunt)?
1 2 3 4 5

How would you rate the fun in the last game mission (snakes and ladders)?
1 2 3 4 5

How would you rate collaboration within the team in the game per total?
1 2 3 4 5

How would you rate collaboration within the team in the first game mission (the picnic)?
1 2 3 4 5

How would you rate collaboration within the team in the second game mission (central square)?
1 2 3 4 5

How would you rate collaboration within the team in the third game mission (QR codes hunt)?
1 2 3 4 5

How would you rate collaboration with other teams in the game per total?
1 2 3 4 5

How would you rate collaboration with other teams in the first game mission (the picnic)?
1 2 3 4 5

How would you rate collaboration with other teams in the second game mission (central square)?
1 2 3 4 5

How would you rate collaboration with other teams in the third game mission (QR codes hunt)?
1 2 3 4 5

How would you rate collaboration with other teams in the last game mission (snakes and ladders)?
1 2 3 4 5

How would you rate the iPhone experience in the game per total?
1 (very difficult)
2 (difficult)
3 (not too bad)
4 (interesting)
5 (enjoying it!)
APPENDIX H

Topic list interviews of Cure for the Campus

Appendix G mentions the key topics and issues that were covered during interviews with players in the Cure for the Campus game.

How long do you live in Hasselt?
What is your study department? In which year of studies are you?
How often do you go back home to visit your family?
How do you spend your free time in Hasselt/ in and around the campus?

Could you describe the way you use the campus (daily / weekly).
Which places in this campus do you use?
How often do you use the restaurant and for what purposes? Where do you usually sit?
Which places in the campus/ in the D building do you particularly like/ dislike and why?
How do you feel about living in the tower (student dormitory)?
How do you feel about your room? On which side of the tower do you prefer to have your room and why? How about the view from your room?

How would you describe your experience with the game?
How would you describe your engagement with the game?
How would you describe your understanding of the instructions of the game?
Did you experience any frustrations during the game? If yes, related to what?

How would you describe your interaction with the iPhone?
How often do you use Facebook and for which purpose?
How often have you been checking Facebook for the purpose of the game?

How do you feel about the conversations on Facebook, compared to the face-to-face conversations, after the game?

How do you feel about the fact that you have been playing this game with friends? If you would have been asked to play with complete strangers, how would you feel about that?
OR
How do you feel about the fact that you have been playing this game with people you didn't know? If you would have been asked to play with friends, how would you feel about that?
Could you describe your experience in the conversations after the game play?
How do you feel about playing the game in teams?
How would you describe the collaboration within your team?
How would you describe the collaboration with other teams?
Do you consider that playing in teams but still close to each other (in the first two missions) had an influence on your game choices?

Would you like to play the game again?
How would you describe your experience of playing the game for many days?

How would you describe the influence of the game on your image of the campus?
Introduction letter –English

Dear Sarah/ Dear Sebastiaan/…,

Many years ago, when this campus has first been built, the founder architects have buried a treasure somewhere within the campus area. Because this treasure is not material, but, instead, it has the potential to bring great joy and happiness to its finders, the architects forewarned that the treasure should be uncovered only when times of trouble will come.

This time is now. Our campus is sick. A group of experts (designers, architects, planners) is working hard to discover the WOUNDS hidden in different locations of the campus.

When a wound is found, you will receive a message. Your task is to observe each of these wounds like you’ve never done before and come up with a CURE for them. For each healed wound, the winning team of the day will gain one point.

When all the WOUNDS will be healed, the quest for the treasure may begin. In that moment, the points accumulated during the last days will come into play.

Today afternoon the first wound will be uncovered. Wait for a message with instructions about the task.

The power to improve your campus now lies in your hands! Act upon it!

The Game Master

Introduction letter –Dutch

Best Sarah/ Beste Sebastiaan

Veel jaren geleden, toen deze campus gebouwd werd, hebben de architecten een schat begraven ergens op het campusterrein. Omdat deze schat niet materieel is, maar wel het potentiële heeft om grote vreugde en geluk aan haar vinders te brengen, waarschuwden de architecten vooraf, dat de schat enkel ontdekt mag worden wanneer moeilijke tijden aanbreken.

Dat moment is nu aangebroken. Onze campus is ziek. Een groep van deskundigen (ontwerpers, architecten, planners) werkt hard om de WONDEREN te vinden, verborgen op verschillende locaties van de campus.

Wanneer een wond gevonden wordt, ontvang je een bericht. Het is jouw taak om deze plekken, deze wonden te observeren, zoals je voordien nog niet deed en een BEHANDELING te bedenken. Voor elke genezen wond, zal het winnende team van de dag één punt krijgen.

Wanneer alle WONDEREN genezen zijn, kan de zoektocht naar de schat beginnen. Op dat moment, zullen de punten die verzameld zijn gedurende deze dagen een rol gaan spelen.

Deze namiddag zal de eerste wond blootgelegd worden. Wacht op een bericht met instructies over de taak.

De kracht om je campus te verbeteren ligt nu in jouw handen! Handel goed!

The Game Master
Tabula Rasa Picnic Letter – English

Dear team,

The campus is sick and the first WOUND has been discovered!

It is the outdoor public space of the campus!

Your mission today is to choose a location somewhere in the sportfield in the back of the parking lot and have a picnic there.

You first need to think of the elements necessary to create an ideal picnic place. Make a list of them.

Then you must create simulations of each of these elements (for example a stick for a tree, etc), and organize them into the ideal scenery for picnic.

Enjoy your picnic!

Don't forget to document (videos/photos) each step of the process, so the jury can understand your “simulations”. You must upload it on the Facebook page.

The team who will create the most complete picnic decor (after a jury evaluation) wins the point of today!

Good luck!

TIP:

Each day one point will be gained by one of the teams, based on the efficiency of the CURE they produced.

Teams are always encouraged to return to the WOUNDS, even days later, and to try to “win back” the lost points, by improving their CURE.

Tabula Rasa Picnic mission Letter – Dutch

Beste team,

De campus is ziek en de eerste WOND is ontdekt!

Het is de buitenruimte van de campus!

Jouw missie vandaag is om een locatie ergens op het sportterrein (naast de parking) te kiezen en daar een picknick te houden.

Als eerste moet je denken aan de elementen die noodzakelijk zijn om een ideale picknick plek te creëren. Maak hier een lijst van.

Vervolgens moet je simulaties creëren van al deze elementen (bijvoorbeeld een stok als boom, etc) en organiseer hen tot het ideale decor voor een picknick.

Geniet nu van je picknick!

Vergeet niet om elke stap van het proces te documenteren (video/photo). Zo kan de jury je simulaties begrijpen. Je moet deze gegevens uploaden op de Facebookpagina.

Het team dat het meest complete picknick decor kan creëren (na jury evaluatie) wint het punt van vandaag!

Veel succes!

TIP:

Elke dag kan een punt gewonnen worden door één van de teams, gebaseerd op de doeltreffendheid van hun behandeling.

Teams worden aangemoedigd om terug te keren naar de wonden, zelfs dagen later, en verloren punten “terug” te winnen. Dit kan door hun behandeling te verbeteren.
Riddles of the first mission

English

Riddle 1: Along the river bank, in the bushes on the left side of the lilac tree, there is a basket waiting for you. Inside the basket you’ll find instructions for the next task.

Riddle 2: In the bushes behind the corner of the green lane, just under the light pole, there is a basket waiting for you. Inside the basket you’ll find instructions for the next task.

Riddle 3: In the bushes around the only chestnut tree with edible chestnuts in the campus, near the stairs, there is a basket waiting for you. Inside the basket you’ll find instructions for the next task.

Dutch

Raadsel 1: Langs de oever van de rivier, in de struiken aan de linker zijde van de lila boom, wacht er een mand op jou. In de mand vindt u instructies voor de volgende taak.

Raadsel 2: In de bosjes achter de hoek van de groene laan, juist onder de lantarenpaal, wacht een mand op jou. In de mand vindt u instructies voor de volgende taak.

Raadsel 3: In de struiken rond de enige kastanjeboom met eetbare kastanjes op de campus, dicht bij de trap, wacht een mand op jou. In de mand vindt u instructies voor de volgende taak.

Central Square mission Letter- English

Dear team,

The campus is sick and another WOUND has been discovered!

It is the CENTRAL SQUARE (between the tower& the C building) of the campus!

One member of your team must do a “flow -mapping” exercise. For this, you will need first to find the right tool. Three tools sit in a wooden box attached to the C- building. By using one of these tools you must follow people passing by the central square and draw lines of their tracks on the ground, for as long as it takes, to have a good idea of how people move around the square.

In the meantime, while observing this mapping –tracks exercise, the other members of the team will pick up an “empty” location in the square –a place where people don’t usually walk. In this spot you must create a small intervention – an interactive tool which attracts people off the normal lines of walking in this square.

The desired outcome (people interacting with your installation) must be recorded (video or photos) and uploaded before 16:00uur on this Facebook page :http://www.facebook.com/pages/This-Is-Not-a-Game/450219838327992

The team who will attract the largest number of people coming off the “normal” lines to interact with their project will win the point of today!

Good luck!

TIP: Each day one point will be gained by one of the teams, based on the efficiency of the CURE they produced.

Teams are always encouraged to return to the WOUNDS, even days later, and to try to “win back” the lost points, by improving your CURE.
Central Square mission Letter- Dutch

Beste team,

De campus is ziek en een andere WOND werd ontdekt!

Het is het centrale plein (tussen de toren en het C gebouw) van de campus!

Een lid van je team moet een “flow-mapping” oefening doen. Hiervoor moet je eerst het juiste instrument vinden. In een houten doos bevestigd tegen het C gebouw, vind je drie instrumenten. Met één van deze instrumenten moet je voorbijgangers volgen die over het centrale plein lopen. Je trekt de lijnen van hun pad op de grond, zolang als mogelijk, om een goed idee te krijgen hoe mensen over het plein bewegen.

In de tussentijd, tijdens het observeren van deze mapping-tracks oefening, zullen de andere leden van het team een “lege” locatie in het vierkant kiezen — een plek waar mensen meestal niet wandelen. In deze plek moeten jullie een kleine interventie creëren. Een interactieve installatie die mensen uit de normale looppatronen van dit plein trekt.

De gewenste uitzet (mensen die in interactie gaan met je installatie) moet worden vastgelegd (video of foto) en geupload voor 18:00 uur op deze Facebookpagina: http://www.facebook.com/pages/This-Is-Not-a-Game/450219838327992

Het team dat het grootste aantal personen aantrekt dat van het “normale” traject afwijkt en interactie gaat met hun project, wint het punt van de dag!

Veel succes!

TIP: Elke dag kan een punt gewonnen worden door één van de teams, gebaseerd op de doeltreffendheid van de behandeling die ze bedachten. Teams worden aangemoedigd om terug te keren naar de wonden, zelfs dagen later, en verloren punten “terug” te winnen. Dit kan door hun behandeling te verbeteren.

Riddle of the second mission

English

Riddle: You are in your room on the 5th floor in the tower and a fire starts in the building. Where would you run first?

At this place, there is a basket and inside the basket a letter is waiting for you. Inside the basket you’ll find instructions for the next task.

Dutch

Raadsel: Je bent in je kamer op de 5e verdieping van de toren en een brand breekt uit in het gebouw. Waar zou je het eerst naartoe rennen?

Op deze plek staat een mand, hierin wacht een brief op jou. In de mand vindt u instructies voor de volgende taak.
Dear team,

The campus is sick and another WOUND has been discovered!
It is the D-building of the campus!

Inside this building there are 8 places (for sitting, eating, socializing) with 8 different atmospheres.

In each of these places you need to find the check-in point. This is a big QR code, which you must scan using your iPhone application. Each code will take you to a Facebook page where you will need to give your reaction about that specific place.

Your task is to conquer as many places as possible. You can conquer a place if you check-in first (by scanning the code and answering the question). If a place has been already conquered by another team, you can conquer it back if you bring better arguments to the question than the previous team. So you always have to pay attention to have good arguments for an answer, so that the next team who will come will have difficulties in conquering that place from you.

The game will stop in 40 minutes when you will receive a message “STOP GAME” and further instructions.

The team who will conquer the most places (after a jury evaluation) wins the point of today!

Good luck!

TIP: Each day one point will be gained by one of the teams, based on the efficiency of the CURE they produced.

You are always encouraged to return to the WOUNDS, even days later, and to try to “win back” the lost points, by improving your CURE.

Beste team,

De campus is ziek en een andere WOND werd ontdekt!
Het is het D-gebouw op de campus!

In dit gebouw zijn er 8 plekken (om te zitten, eten en ontmoeten) met 8 verschillende atmosferen.

In elke van deze plekken moet je het check-in punt vinden. Dit is een grote QR code. Scan deze code via je iPhone applicatie. Iedere code zal je naar een Facebook pagina brengen, waar je een reactie moet geven over deze specifieke plek.

Het is je taak om zoveel mogelijk plekken te veroveren. Je kan een plek veroveren door als eerste in te checken (door de code te scannen en de vraag te beantwoorden). Als een plek al veroverd werd door een ander team, kan je de plek terug veroveren door betere argumenten te brengen op de vraag dan het vorige team. DUS besteed aandacht aan goede argumenten als antwoord, zodat het volgende team het moeilijk zal hebben om te plek terug te veroveren van jou.

Het spel zal na 40 minuten stoppen. Je zal een bericht ontvangen “STOP GAME” en verdere instructies.

Het team dat de meeste plekken heeft veroverd (na evaluatie van een jury) wint het punt van de dag!
Veel succes!

TIP:
Elke dag kan een punt gewonnen worden door één van de teams, gebaseerd op de doeltreffendheid van de behandeling die ze bedachten.

Teams worden aangemoedigd om terug te keren naar de wonden, zelfs dagen later, en verloren punten “terug” te winnen. Dit kan door hun behandeling te verbeteren.
Riddle of the third mission

English

Riddle:
Somewhere in the D-building, there is a basket sitting under Bono.
Inside the basket, there is a letter waiting for you. Inside the basket you’ll find instructions for the next task.

Dutch

Raadsel:
Ergens in het D-gebouw, ligt een mand onder Bono.
In de mand, wacht een brief op jou. In de mand vindt u instructies voor de volgende taak.

Last day text-message

English

You have an appointment with Mr. /Mrs. Y at 12 o'clock sharp. Go to his/ her office. He/She has something for you.

Dutch

Je hebt een afspraak met Mr/Mvr Y. Ga naar Mr/Mvr Y’s kantoor om 12u stipt. Hij/zij heft iets voor jou.
Letter from Mr. Y – English

Dear Team,

Congratulations!

For your continuous efforts during the previous days, you are rewarded with the map to the buried treasure. Now it is only up to you to use this information the best way possible.

Good luck!

The Game Master

Letter from Mr. Y – Dutch

Beste Team,

Proficiat!

Voor je voortdurende inspanningen de afgelopen dagen, je wordt beloond met een kaart van de begraven schat.

Nu is het aan jou om hier het beste van te maken!

Success!

De Spelleider

Final Letter- English

Dear X,

Now that all the wounds are healed, the campus has found again the power to regenerate itself.

As a thank you for the cures you’ve created to heal the wounds, the campus is offering you the treasure: the ex-pool surrounding the tower will be transformed into a new playground and the dice you’ve dig up can be used for any game you like!

Here is a game to begin with…

The original version of the ancient game of Snakes & Ladders has been set up on a large scale inside the pool.

The object of the game is to navigate one’s game piece from the start to the finish, helped or hindered by ladders and snakes, respectively. The historic version had root in morality lessons, where a player’s progression up the board represented a life journey complicated by virtues (ladders) and vices (snakes).

Playing the game:

For playing the game, you will need to use the floor of the pool -as the board, one of your team members- as a game piece, the dice and the iPhone- to decode the snakes and ladders.

For the first round of the game, the ladders (virtues) and snakes (vices) are hidden under a digital layer- inside the QR codes which you can scan with your iPhones. Once you play the game for the first time, you can choose to draw these symbols with chalk on the ground, allowing also others (without an iPhone) to enjoy the game afterwards.

Each team starts by placing one member of their team on the starting square, indicated by the number of points they have gained during the previous
days. Teams take turns to roll the dice, to move by the number of squares indicated by the dice roll.

Whenever they land on a square with a QR code, they must scan it and follow the instructions (going up, if landed on a ladder, or going down, if landed on a snake).

If a team rolls a 6, they may, after moving, immediately take another turn; otherwise play passes to the next team in turn.

The team who is first to bring their player to the last square of the track is the winner. A team must roll the exact number to reach the final square. If the roll of the dice is too large, the player remains in place.

Please feel free to create any variation of games you like. The tools are now in your hands!

ENJOY!

---

**Final Letter - Dutch**

Beste X,

...alle wonden genezen zijn, heeft de campus de kracht gevonden om te herleven.

De campus wil je bedanken voor alle behandelingen die je bedacht om de wonden te genezen. Het oude bad rond de toren zal veranderen in een speelterrein: meer plezier! De dobbelsteen die je hebt opgegraven kan je gebruiken voor elk spel dat je wil!

Hier is een spel om mee te beginnen...

In het bad vind je, in het groot, de originele versie van het oude Indiase spel Slangen&Ladders.

Het doel van het spel is om van het begin tot het einde te navigeren, geholpen of gehinderd door ladders of slangen. Jij bent de pion.

De historische versie van dit spel steunt op enkele moraal lessen. De vooruitgang van de spelers op het bord representeert een levensroute doorkruist met deugd (ladders) en ondeugd (slangen).

Het spel spelen:

Om het spel te spelen heb je nodig: de bodem van het bad als een bord, een teamlid als pion, de dobbelsteen en de iPhone (om de slangen en ladders te ontwijken).

De ladders (deugden) en slangen (onondeugden) zijn verborgen achter de QR codes. Scan ze met je iPhone. Als je dit spel voor de eerste keer speelt, kan je deze symbolen met krijt op de grond tekenen. Zo kunnen anderen (zonder iPhone) achteraf ook van het spel genieten.

Van ieder team gaat er één speler op het vierkant staan. Je gaat staan op het nummer met het aantal punten die je de voorbije dagen hebt verdiend. Teams
mogen om de beurt met de dobbelsteen gooien. Beweeg zo veel vakjes als je met de dobbelsteen gooit.

   Kom je terecht op een vakje met een QR code, scan dan de code en volg de instructies. (omhoog gaan, voor een ladder, of naar beneden, op een slang).

   Gooi je een zes, dan mag je nog een keer gooien.

   Het team dat als eerste zijn speler in het laatste vakje krijgt is de winnaar. Je moet het juist aantal ogen gooien om laatste vakje te bereiken. Gooi je te hoog, dan blijft de speler/pion op je plek staan.

   Voel je vrij om zelf een variatie op het spel te creëren. De middelen liggen nu in jouw handen!

   GENIET ER VAN!
1. Appendix

List of Abbreviations
2. References


Kahrel (2001) Use the script by Peter Kahrel (www.kahrel.plus.com/inDesign/tablesOr.html) to sort your references alphabetically!
3. Acknowledgements
4. Honesty Declaration

This thesis is my own work and so on...

X _________________