URBAN SUSTAINABILITY

INNOVATIVE SPACES, VULNERABILITIES AND OPPORTUNITIES

Ricardo García Mira
Adina Dumitru
Editors

The new challenges of our economic, social and ecologic global context require solutions that go beyond "business as usual" strategies. While Europe and North America have gone through a deep economic crisis, which has affected all aspects of life –especially housing and working conditions–, other areas of the world have continued to grow and develop. The changing global context has important implications on the ways human beings organize their settings for everyday life –their residential environments and communal services, in particular– and on the necessity for supporting transitions to sustainable societies.

The authors of this book approach the analysis of a number of aspects of urban sustainability from different perspectives, drawing attention to the need of promoting the necessary political, economic and socio-cultural changes to provide for sustainable urban communities. The book also provides insight into the vulnerabilities of urban contexts, resulting from rapid processes of urbanization, rising inequalities and environmental consequences of anthropogenic climate change. The capacity of resilience of communities in risky circumstances is also analysed, as well as the opportunities for managing risk through interventions targeting security and safety. A number of positive and negative aspects of perceived safety as a psychological dimension is also analysed.

Finally, the book seeks to draw lessons from a diversity of cultural and geographical contexts on promoting sustainable and innovative urban communities, through multi-disciplinary analyses and the emergence of novel solutions to problems both old and new.

Xoan Vicente Viqueira
Institute for Psychosocial Studies and Research

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URBAN SUSTAINABILITY

INNOVATIVE SPACES, VULNERABILITIES AND OPPORTUNITIES

Ricardo García Mira & Adina Dumitru

(Editors)

On behalf of the Sustainability, Housing, and Culture & Space IAPS Networks

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PREFACE

Diego Calvo Pouso

President of the Provincial Government of A Coruña

The context that shapes the effective implementation of the principles of sustainable development is characterised by the presence of many actors, occupying different positions both in the social and political world, as well as in the world of science. The work of all of them is meaningless if not carried out collaboratively, generating dynamics that have proven to be efficient in the responsible management of resources and the effective implementation of policies.

This book brings together a selection of contributions to the International Symposium on Sustainable Environments in a Changing Global Context, recently held in A Coruña, and aims at providing an in-depth scientific analysis of urban spaces, in general, and more specifically of the vulnerabilities needing to be managed and the opportunities for innovation that need description and integration. As policy-makers, it is our duty to include these analyses in our decision-making processes, and one way of doing this is by promoting the publication of all those materials that can serve as reference for managers and public administrators, but also for students and specialists who develop their work in disciplines dealing with issues of sustainability and innovation. And this is precisely the type of work that the Provincial Government, of which I am President, undertakes, thus providing an opportunity for the wide dissemination of relevant knowledge and culture.

The book presents a variety of research experiences and results conducted by scientists from a wide array of universities and cultural contexts. As such, it gives us a perspective on the richness of approaches that can be brought to bear on issue of innovation and sustainability, when considering different cultural contexts and problems which characterise local communities and respond to local idiosyncratic geographies. These geographies constitute the background of social and political action, and require a balanced approach to suit their physical, social and cultural peculiarities. Geographies are physical spaces, but they are also social contexts in which the joint work of scientists and policymakers is a key aspect of community development and wellbeing, through the promotion of social and cultural activities. it is our responsibility to engage in these efforts, and this book is evidence of our commitment.

PRÓLOGO

Diego Calvo Pouso

Presidente de la Diputación Provincial de A Coruña

El contexto que configura una aplicación efectiva de los principios del desarrollo sostenible tiene muchos actores, tanto en el plano social y político, como en el plano científico. El trabajo de todos ellos no tiene sentido si no se lleva a cabo de manera colaborativa, generando dinámicas eficientes en la gestión responsable de los recursos y en la implementación efectiva de políticas prácticas.

Este libro reúne una selección de las contribuciones al simposio internacional sobre *Ambientes Sostenibles en un Contexto Global Cambiante*, que tuvo lugar en A Coruña recientemente, y trata de profundizar precisamente en el análisis científico de los espacios urbanos, con referencia, por una parte, a las vulnerabilidades que es necesario gestionar, y por otra, a las oportunidades para la innovación que es preciso describir e integrar. En el lado de quien tiene la responsabilidad de convertir este análisis en una parte del proceso de toma de decisiones, está promover la edición de todos aquellos materiales que puedan servir de referencia a gestores y administradores públicos, pero también a estudiantes y especialistas de distintos ámbitos que desenvuelven su labor en el campo de la sostenibilidad y la innovación. Y esto es precisamente la labor que desenvuelve la Diputación Provincial que presido, generando una oportunidad para la divulgación y la diseminación del conocimiento y de la cultura.

Con este texto, se documentan experiencias llevadas a cabo por científicos de diversas universidades del mundo, que ponen de manifiesto la riqueza de enfoques con los que en contextos diferentes se abordan propuestas de investigación innovativas, conectadas con la cultura y con la idiosincrasia de cada territorio. Estos territorios forman el contexto de actuación social y política, pero exigen planteamientos equilibrados y consistentes con su naturaleza física, social y cultural. Del trabajo conjunto entre científicos y políticos, emerge el conocimiento de que el territorio es un espacios físico, pero también social, por el papel que puede jugar como promotor de actividades sociales y culturales a su su alrededor, a las que nuestra responsabilidad nos obliga a no estar ajenos.

I CHALLENGES FOR A SUSTAINABLE URBANISM

URBAN SUSTAINABILITY: INNOVATIVE SPACES, VULNERABILITIES AND OPPORTUNITIES

Ricardo García Mira & Adina Dumitru
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Abstract

The need to promote a debate among researchers from active research networks in IAPS is at the origin of this book on "Urban sustainability: Innovative spaces, vulnerabilities and opportunities". This book is the reflection of a growing tradition of tackling issues that are central to social and political efforts to solve pressing societal and environmental problems in evermore intricate contexts of resource scarcity, growing population and urbanization, social inequality and rising emissions. Promoting research and creating the conditions for lively and effective scientific debate has been part of the mission of IAPS since its beginnings. The growing effervescence of content network is reflected in a rising number of scientific events and interesting publications, such as the book you now have in your hands. In this introduction, we will gloss over the reasons that lie behind the choice of theme, which is likely to underlie the discussions and debates throughout the next years, all over the world. The theme we have selected, and reflected in the title, makes reference to a recurring concept that is ever-present in today's society: sustainability.

Keywords: Sustainability, innovation, vulnerabilities, social responsibility.

Sustainability and social innovation in urban contexts

Although a fuzzy concept, sustainability has become a catchword to signify a way of living in environmental and social harmony, preserving and enhancing the values we cherish, while taking into account the diversity of cultures and contexts that characterise everyday life. It entails a moral code of social and environmental responsibility, a normative stance on the Sustainability has become the symbol of the identity of any endeavour that wishes to the way we live and the choices we make. Nevertheless, within a changing global context, the tensions inherent in this concept have become apparent and, rather than being a goal, it has become a journey to achieve balance, and a constant social negotiation of how to organise life and through which kinds of social institutions. Within this larger debate, the growing phenomenon of urbanization occupies a prominent place, with its many challenges. Arising problems of scarcity of resources, inequality and social injustice, or pollution and crime have caught the attention of scientists. Recognizing that the majority of the population will soon live in cities, the identification of both vulnerabilities and opportunities for resilience and wellbeing have become the centre of scientific debates, in order to transform urban spaces in contexts of positive individual and social development.

The multi-faceted nature of urban contexts with their multiple problems have also made visible that beyond solving problems, we need to create contexts in which innovative solutions can appear and can be tested in real contexts. The fast pace of urban

development requires that innovation be the result of participatory processes and social innovation, understood as solutions to problems arising neither from the government nor from the market, be supported and sustained.

Innovation is much more than it is commonly held to be, and all too often the fullness of its meaning goes un-comprehended, especially when it involves the urban territory. In order to speak about urban innovation we need to link this concept to many other concepts, which relate to new forms of organization of space and society, and require different forms of education for designers, architects and urban planners, while raising the issue of compatibility between traditional and modern approaches and the concern for the increasing standardisation of lifestyles.

The occurrences and circumstances that characterise urban globalization (Rusteikiené, 2008) undoubtedly affect urban life and they are often the source of tensions and risks as a result of the threat to local cultures, to diversity, or to the differences between lifestyles that shape notions of quality of life and wellbeing in a given space, a quality of life that is characterised by its own cultural preferences and forms. The changing global context has important implications on the ways human beings organize their settings for everyday life in general – and their residential environments and communal services, in particular - and on the relevance of the sustainability-related objectives in our societies.

Innovation is part of our responsibility as scientists. There is no doubt that interest in innovation has increased both in academic circles and in policy areas in the past two decades. Our research is a way of assuming this responsibility in the global context, and it is also part of our culture, expressed through the work we are carrying out at a global level, but also at the local, community level (García-Mira *et al.,* 2007), responding to citizens and local demands, with which we are in debt. We cannot forget that research is mainly funded by citizens and they have the right to obtain the benefits of these research results.

Social responsibility

Research and innovation are today excessively official. Research and innovation results are thrown into the most specialised journals describing scientific results and findings to the scientific community published by researchers in the form of articles, books, and reports. The problem is that this official channel, even though it is the most recommendable from a scientific point of view as it guarantees and safeguards objectivity and acts as a quality filter for the scientific accuracy of what is published, is limited, as it does not always reach non-scholars (see García-Mira, 2013). Given that non-scholars finance the country's research and innovation system with their taxes, it would not be fair for them not to enjoy the right of free access to the results of scientific productivity. This is one of the reasons why we decided to promote this publication with the support of a public organization, appealing to the necessary responsibility of social and environmental institutions to support these initiatives.

In the world as a whole the last twenty years have witnessed a considerable increase in the number of projects dedicated to analysing the relationship between people and the physical space (both built and natural environment). The network symposium which has generated the contributions contained in this book, sparked off the work of groups that are now carrying out well-established lines of research. These contributions bear eloquent witness to this potential for research.

A tradition in the people-environment studies dissemination policy

With the experiences described in this book, the aim of the editors is to give a clear picture of the application of current research to different contexts of the everyday life in cities, from a perspective of analysis which puts sustainability at the centre of discussions. There is a clear objective of bringing high quality contributions from scientists from various disciplines and creating a shared and reflexive space of knowledge and debate on issues relevant to people-environment studies, and provide creative solutions to acute problems in times and contexts of crisis. As a document for practitioners, policymakers, and students, the book is part of a collection established in IAPS years ago, as part of the publications that compile emergent subjects in symposia and conferences. It is a tradition that combines research studies with reflections about the theory and applications for the practice of psychologists, architects, urban designers and planners, but also of all those interested in the analysis of sustainable and rapidly changing environments from a human perspective. The primary aim of the editors of this book is to build on and enhance this tradition.

The authors of this book approach the analysis of a number of aspects of urban globalization from different perspectives, bringing the attention to the need of promoting the necessary political, economical and socio-cultural changes for dealing with the challenges that a sustainable urbanism requires.

Vulnerabilities and complexity

The book also provides insight into the vulnerabilities of urban contexts, as objects of analysis derived from the complexity of the impact of global change on human habitats. The capacity of resilience of communities in risk circumstances is also analysed, as well as the opportunities for managing risk by means of improving local safety both in the city and in its infrastructures and organizational environments, as a relevant dimension of urban development. This section analyses a number of positive and negative aspects of perceived safety as a psychological phenomenon.

IAPS: A framework for discussion and dissemination

We thank the high degree of participation and interest of all the researchers who submitted their work to be published. It bears evidence to the consolidation of IAPS networks and of the universal recognition of our association, dedicated to the tackling of hard environmental questions, whether it focuses on the built or natural environ-

ment, through the interaction of people and groups. The participation of researchers in European universities consolidates the European tradition in this field, whilst the increased levels of participation from South American and Asian nations are proof of the growing interest being shown in the work of this scientific society.

The number of contributions received at the conference "Sustainable Environments in a Changing Global Context" which was held in A Coruña, Spain, and served as discussion of the papers contained here, was over 170, from 38 countries and more than 130 research centres, all of which have passed through a rigorous selection process at the hands of the scientific committee, and they are evidence of the intensity of the scientific work that has been undertaken over the past two years, since the previous meeting in Daegu, in South Korea. Work that is not just carried out by psychologists, architects or urban planners, but also by professionals from many and varied disciplines such as education, geography, sociology, anthropology, economics, chemical science, law or health sciences, amongst others, who have come to our Symposium to pose new challenges for us and to increase our awareness and our understanding of problems which concerns us all, regardless of our academic specialisation.

The common element in all the different approaches that come together in IAPS is that they analyse all the human processes involved in this singular interaction between people and their environment, which itself derives from the complexity that is implicit in human behaviour. Because resolving environmental problems means changing attitudes, changing behaviour, influencing communities and building new identities around responsible projects. All this demands a research approach that must necessarily be considered from a trans-disciplinary angle.

To sum up, the contributions that have been made to the Symposium in general, and to this book in particular, represent a large step forward in research that helps to increase our awareness of the relationships between people and the environment, by supplying new evidence on the transactions that take place between people and their surroundings. And at the same time they are a major source of information that we hope will be of great use in the training of professionals and in the political decision-making process.

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THE EDUCATION OF THE ARCHITECT IN THE XXI CENTURY: PSYCHOSOCIAL NEW FINDINGS AND ENVIRONMENTAL SUSTAINABILITY CHALLENGES.

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Abstract

The Relationships between Architecture and Education have been analyzed in recent years with increasing interest (Hejduk, 1992; Muntañola, 2009; Pollack, 1997; Rapaport, 2010).

The environmental challenges to human sustainability such: as climate changes, environmental impact upon children health (Unicef Indicators, 2012) and impact of the computer in urban planning (Hillier, 2005), are some of the reasons for this growing interest in order to improve architectural education.

This paper will start with a "state of the Art" of the field from a dialogical psychosocial view point (Muntañola *et al*., 2010a).

In a second chapter, it will analyze the fundamental interactive link between physical forms and social behaviour, thanks to the study of the dialogical models of cities built by children (Muntañola & Muntanyola, 2012a). These sociological sociophysical models of cities allows to a progressive better evaluation of the specific feed-back between physical environmental transformations and social intersubjective behaviour that exists in each place, regarding different research scenarios, such as educational, design studios or urban planning research settings.

These findings go far beyond children education, and take into account the urban planning new theories (Magnaghi, 2011) and also the environmental impact upon children's mental, physical or social health (Muntañola *et al*., 2012b).

Finally the paper shows some examples of architectural education in universities pointing to a new ethical and social answerability of education, in front of the environmental sustainability worldwide challenges of today (Muntañola *et al*., 2012a).

Keywords: Education, sustainability, urban planning, environmental impact.

The Education of the Architect: The State of the Art.

Recent studies (Hejduk, 1992; Muntañola, 2009; Pollack, 1997; Rapaport, 2010) have analyzed the rather sad story of the Education of the Architect in the last fifty years, when urban development has been bigger than any other historic time in humanity.

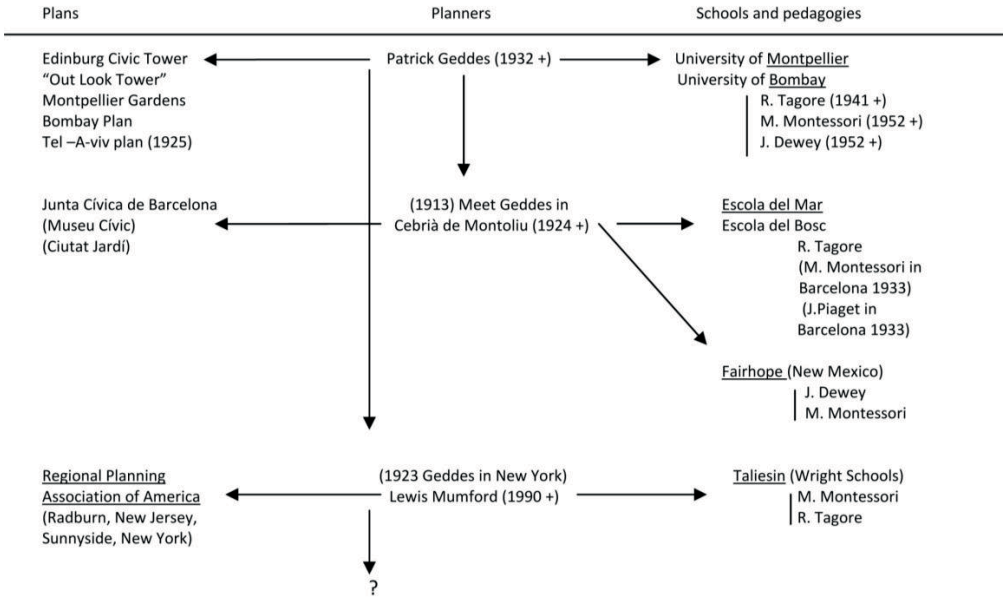
It is not possible to describe a complete picture of this rather sad story. We will summarize two aspects of it.

a) Children Education

b) University Courses and research

a) In relation to children's architectural and urban planning education, we have not advance what was a promise at the beginning of last century, when the new modern schools by M. Montesori, J. Dewey, J. Piaget or R. Tagore expanded worldwide, closely connected to the P. Geddes, L. Mumford, F.L. Wright, etc. desires of a new urban culture based upon (table 1) social welfare and ecological sustainability.

Table 1. The link between Planning and Education



The main weakness arises from an absence of spatiality in children contemporary education, where mathematics, science and virtual computation ignore the social impact of architecture and urban planning upon the physical, mental and social healthy development of children (Muntañola *et al*., 2013).

However, the situation can change very fast, since a lot of studies (see table 2) have described the sociophysical aggressive conditions of our cities. As a result, table 3 contains the indicators of urban quality for children's healthy development, included into the worldwide UNICEF Program of Child Friendly Cities (UNICEF, 2012). Regardless these recent developments, childhood professors are still reluctant to incorporate spatiality into social, psychological and physical education, that is, to link social interaction and culture to space. Probably this attitude can be related to political reasons, but this is not a complete answer. We need to do more research on this reluctance.

Table 2. The Chronotopic Hope. The "Eco-Cultural Revolution in 1973.

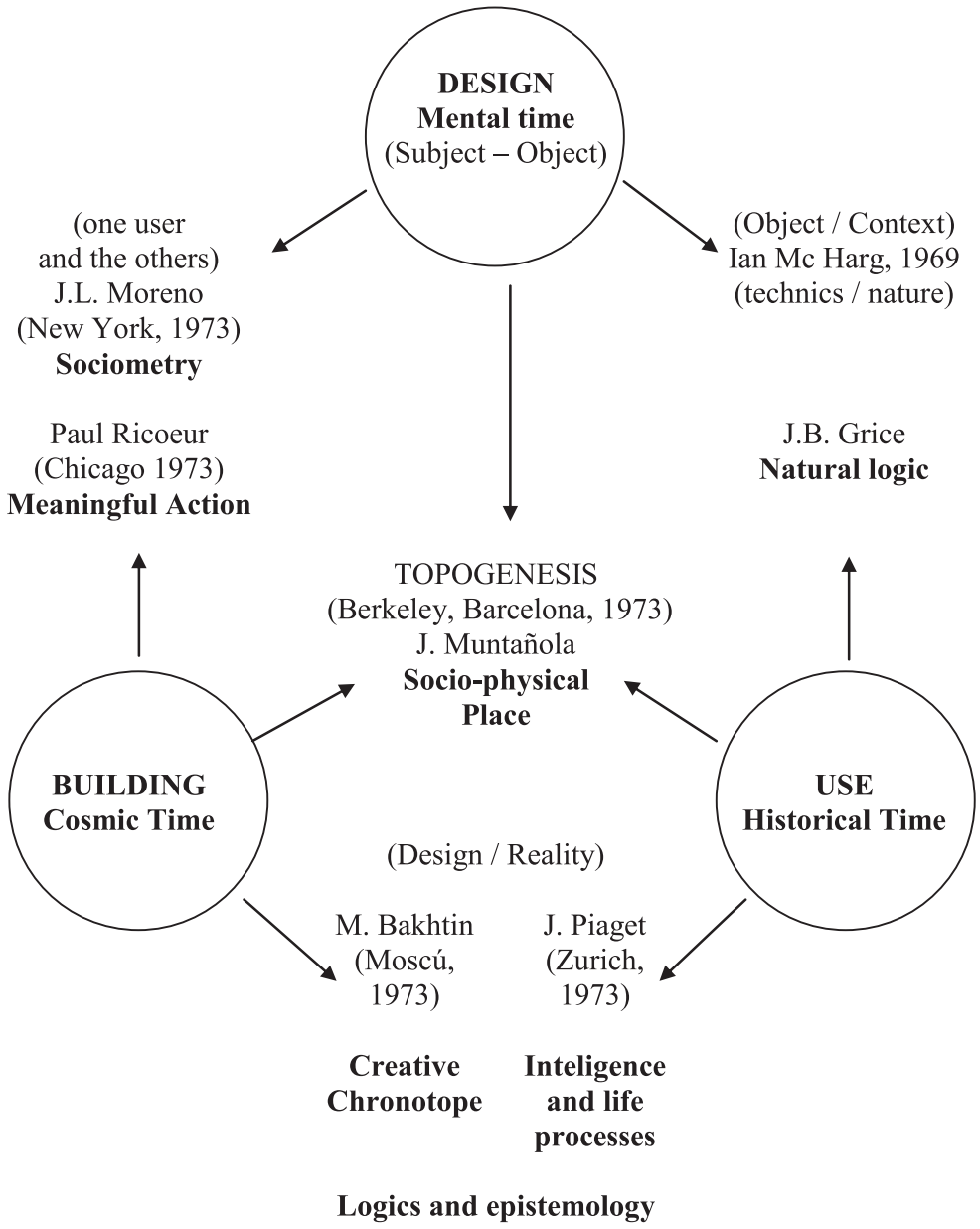


Table 3. Children's Architecture. Urban quality Indicators CAI Unicef

Indicator	Theoretical branches (Dig. III)	Definition	Limits & actions
I-1 Noise levels	2,5,6	Noise as harmful for children.	Noise Measure Limitation: if it impedes human conversation (40 Db)
I-2 Pollution	2,5,6	Pollution of air, water, earth and materials within a populated area.	Normal environmental controls, e.g. prohibition of asbestos, arsenic, polluted water, etc.
I-3 Electromagnetic Radiation	2.5.6	Harmful installation of aerials, high-voltage lines, etc.	Min. Distances. High voltage. Aerials: 200 m.
I-4 Safe playgrounds	4,1,6	Playgrounds near residential areas.	Max. Distances between dwellings Max. Size
I-5 Safe routes between main community areas	4,3,6	The importance of daily routes for the community.	Max. 15 mins.. on foot or 2 km, or well-planned school transportation.
I-6 The school as a dynamic center	1,3,6	Schools are open to the community as social agents.	List of major activities at, or around schools.
I-7 Public facilities for all age groups adapted and supervised for children's use	4,3,6	Promoting the use of facilities by different age groups.	Public facilities within walking distance.
I-8 Child-friendly public services	4,3,6	Adaptation of services for all age groups.	Facilities for the youngest age groups, adequate supervision, information/communication.
I-9 Adequate privacy at home and in community	4,1,6	To ensure privacy as child grows, in accordance with each age needs.	From 7 y. of a: privacy at home; from 12 y. of a: privacy in quiet spaces and in public areas.
I-10 Juxtaposition of built areas and the countryside	2,3,6	To ensure optimum spacing between built-up areas and countryside	Min. distances to garden areas or non-asphalted areas. Easy access to countryside.

b) The university courses and research are in an extremely complex subject that changes from country to country or from university to university in the same country. The European Association of Schools of Architecture (EAAE) has undertaken some very promising studies, but they remain incomplete (Muntañola, 2010a).

Cross-country analyses made by experts (Muntañola, 2012c) arrive to the following conclusions:

1) Children are able to coordinate different dimensions of knowledge –art, science or ethics-. This heterochronic ability is specific of men; other living species do not have these abilities at the same degree.

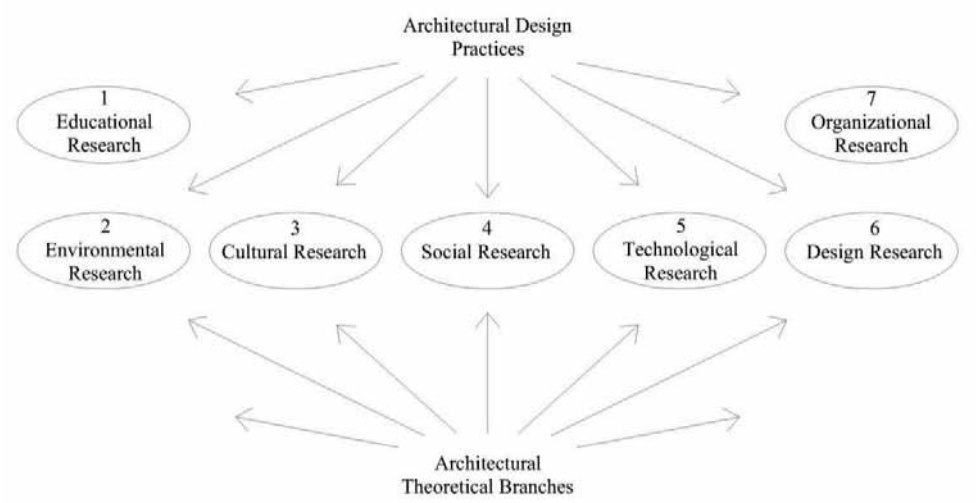
2) Architecture and planning is a cultural dimension of these abilities in order to coordinate art, science and politics in one single place: building, city, etc. Architectural Education and environmental education should be included in the curriculum. In this way, children could be aware of this cultural dimension.

3) Modern knowledge should be "extended" and "distributed" in order to avoid the pathological urban systems analyzed by Bill Hillier (2005).

There is an extreme dispersion of subjects, objects and theories. A recent congress by the EAAE and the AARL, made the point in Washington, as follows:

The architectural education was one of the key research settings offered in the conference (table 4). But the crossdisciplinary dimensions of architectural education makes extremely difficult to advance. One example is the impact of the computer upon design and the neurological fast scientific findings, a key aspect of the cognitive sciences huge research domain. However, without a synthesis between the physical, the mental and the social inputs, research findings will remain useless for architectural and urban planning education, since the use of scientific systems can produce fragmentation and misunderstanding, as I will try to prove in the next section of this paper.

Table 4. Architecture and Research. Basic Branches



The Dialogical Models of Cities built by Children.

After several studies about the psychogenetic development of children's conceptions of places to live in (Muntañola, 2012b), we started to analyze the construction (or co- construction) of cities by social groups of six children, three boys and three girls, from five to twelve years of age.

These models of cities are dialogical because they "represent" the sociophysical structures you can find in figures 1 and 2, where the differences between the monological cities and the dialogical cities are uncovered. Moreover, in table 5, the cultural characteristics of the schools that "produces" monological or dialogical "spatialities" are shown.

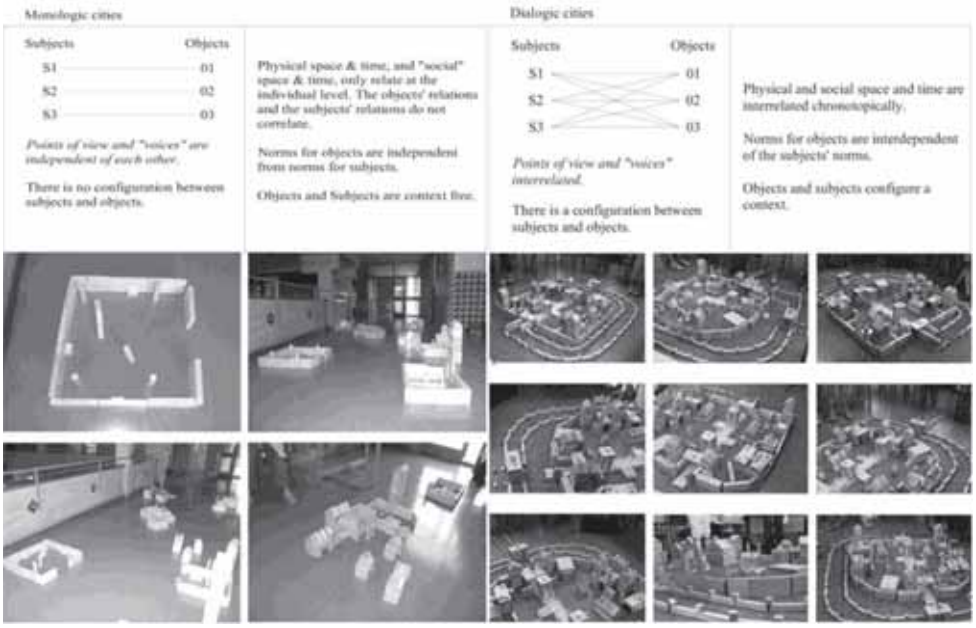


Figure 1. Children's Architecture. Monological and Dialogical Cities of city models

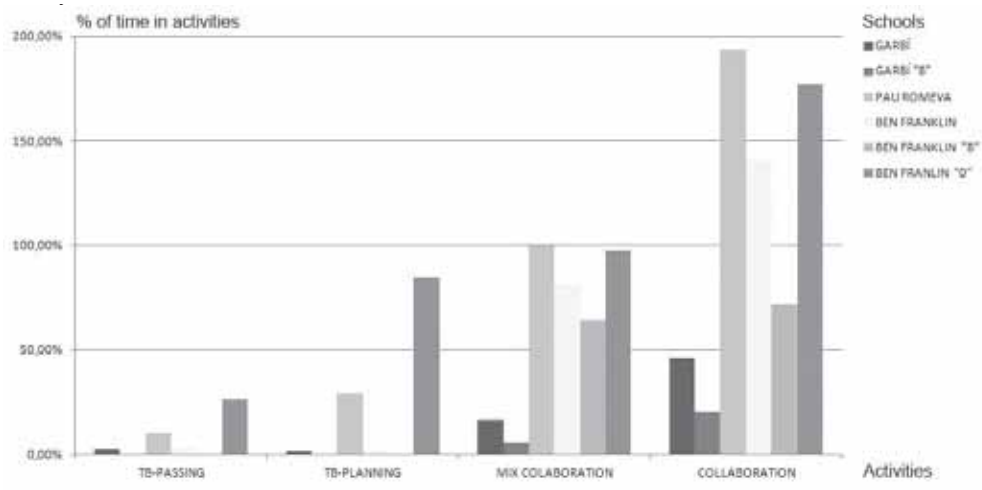


Figure 2. Measures of different kinds of social interactions in children's constructions of city models

Table 5. Monological and Dialogical schools.

	Monological City "A"	**Dialogical City "B"**
Number of different elements	10	60
Parent participation in the school	Does not exist	High participation
Organized visits and celebrations	Does not exist	Many
Theatre	Does not exist	Very important

In short, the dialogical cities demands a pedagogy of social cooperation, coordination or, at least, some kind of social interactive and intersubjective sociophysical learning processes.

In contrast, monological cities demand schools with either a high "competitive" input between children or a lack of cooperative intersubjective actions, where each child is working mentally alone. Both, wild children –children that live socially isolated in the natural environment– and virtual addicted children –children that live socially isolated in the real environment–, produce a monological spatiality with lack of social interaction.

Finally, monological fundamentalism produces monological global rigid cities with homogeneous rules.

Moreover these dialogical models are, as Mikhail Bakhtin indicates, "creative chronotopes" (Muntañola, 2011). They are at a crossing point between:

a) Social interaction and object interaction.

b) Psychogenetic development and sociogenetic development, since they represent the articulation of personal and social knowledge throughout participation.

c) The new city represented by the model and the real world where the model can be built.

Then, these cities are a beautiful example of "social art" and a good way of understanding the relationship between physical forms and social behaviour.

In this way, the fundamental link between the social interaction of each place and the physical characteristics of this same place are defined, and it is possible to measure it. As Bill Hillier has extensively discussed there exist general forces behind the specific cultural and sociophysical link of each place. However, these forces are at the

core of human evolution, so they evolve historically and behave in the way John Searle describes them as background (Searle, 1997).

They ar e n eit her “natur al”, nor “mech anical ”. The y ar e the human co nstructi on of reality and children know them very well.

Some Examples of Architectural Education at the University level

Two examples of Architectural Education from the Final Project of School of Architecture in Barcelona that intend to follow the three creative axis of the chronotope by Bakhtin, described above. That is, the relations between the object and the physical environment, the relations between the users and the building and the relations of the intentions of the design and the building (figures 3 and 4).

Figure 3. A monastery in La Fresneda (Spain). Almudena Jordán

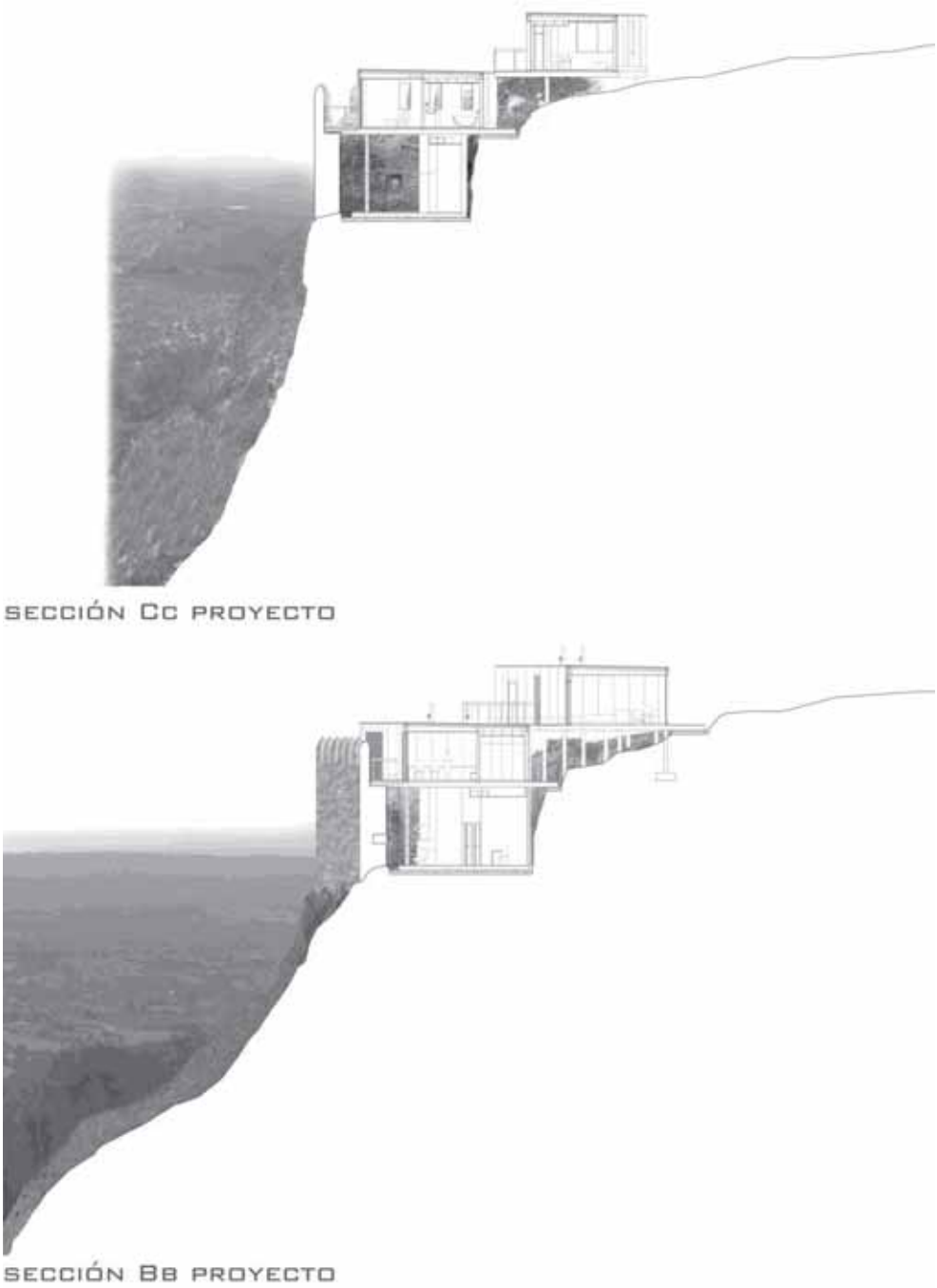


Figure 4. Hotel inside a Medieval Castle in Santueri (Mallorca, Spain). Arabella García

Conclusions

The need for transversal and interdisciplinary research on architectural education seems to be the main conclusion. Of course, this should not be a dark philosophical addition of different disciplines, but a clear interchange between theories of education, architectural and urban design practices and theories and, finally, social sciences.

Barriers, among them, are more and more transparent, because the ecological and the sociocultural environmental challenges are closer day by day. This has been "the Dream" by Amos Rapaport (2010) during the last fifty years, and this is now our dream. However, the dialogue between architects and social scientist is far from to be an easy one. A lot of misunderstandings and power games make it a difficult goal. Architectural education and our children deserve a better future.

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A STUDY ON THE MODERNIZATION AND SUSTAINABLITY OF TRADITIONAL HANOK IN THE 20TH CENTURY

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Abstract

"Hanok" is a term used to describe Korea's traditional housing. From the 1970s, the vast majority of citizens in urban areas have not lived in Hanok housing but in apartments. Consequently, many people are no longer familiar with the experience of living in traditional Hanok. There has been much debate about how Hanok housing can become more sustainable, while keeping the characteristics of its identity.

The purpose of this study is to examine the process by which traditional Hanoks and modern architecture can influence each other, how the popularization of modern homes was formed and its relationship with the new less popular Hanoks. Finally, we will examine how old Hanok housing can be renovated into new, modern Hanoks. The subject areas are Seoul, Jeonju, and Chongju in early twentieth century. By discussing the differences between upper-class and the more typical Hanok, we can improve the general standard upper-class Hanok to improve the general standard of most traditional Hanok.

Keywords: Traditional House, Modernization, Renovation, Changing Process, Sustainability

Background and purposes

Korea has a long history of strong affinity towards Hanok traditional housing. Korean identity is linked to the basic form of Hanok, unlike homogeneous apartments which lack identity. In recent years, the ecological aspects have been reassessed showing that Hanok has more benefits than apartments. Korea's economic situation in the early 20th century was very poor compared to developed countries, and Hanok was stigmatized unfairly as pre-modern housing.

As traditional housing, Hanok has cultural originality and strength but has become discontinued as modern housing. Today Korean people have furniture and spaces too large for the traditional Hanok, in comparison to modern detached houses and apartments. Hanok is not sufficient to compare to modern detached houses and apartments. A lot of people want to enjoy the traditional values of Hanok, the original form and space of the Hanok are priorities, even though we want convenience in housing, people prefer modern housing to Hanok. For this reason, a traditional Hanok as an ideal model for a modern Hanok has been the subject of endless debate.

GNI (Per capita income) in Korea rose from $79 in 1960 to $20,000 in 2007[1], and it also became a motivation to change to a higher desire for housing in health and

1 Korean Statistics, The Bank of Korea, Korean GNI, "National Accounts". Each Year based on 2005.

cultural awareness. In this respect, Hanok, in terms of health and well-being, have been reviewed in a new light. In the modern world of residential apartments, Hanoks are more ideal than apartments for the modern phenomenon of creating social atmosphere.

The purpose of this research is to understand the relationship between traditional housing, Hanok, and modern housing by considering the evolving processes in design, and to discuss how modern elements in traditional Hanok can influence contemporary Hanok as sustainable.

Approaches

Cultural influences with the japanese house

Social context and housing change depends on historical events. Because Korean society was dominated by Japanese colonialism from 1910 to 1945, this study deals with the changing process of modernization from traditional Hanok in the twentieth century. Korea was colonized by Japan in 1910 when Japanese style and culture was introduced into Korea, and the new style of houses influenced traditional housing, Hanok. Traditional Korean Hanok also underwent an interactive process of traditional and new cultural aspects.

Socio-economic growth and housing

Socio-economic change can be a motivation for housing problems and design, as it did during the Korean War from 1950 to 1953. Economic growth was significant from the 1970s to 2010 (see Figure 1). During the Japanese colonial era, the economy was very poor until the 1960s.. In the War, a lot of housing was demolished and the economy was more difficult than before. The National Economic Development Plan was enacted for twenty years from 1962 to 1981, and the economic statistic GNI marked $290 in 1971, $1,800 in 1981, $7,105 in 1991, $10,841 in 2000, $20,045 in 2007 and $22,798 in 2012.[2]

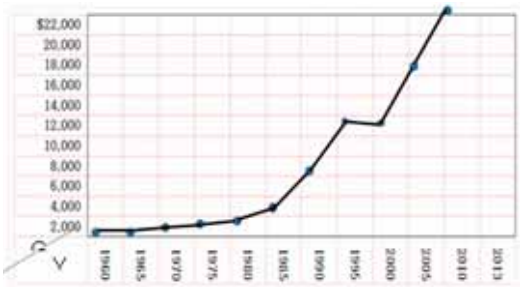

Figure 1. Socio-economic change in Korea (1960 – 2012)

2 The Bank of Korea, "National Accounts". Each Year based on 2005.

People who live in a Hanok need a bigger house for new and bigger furniture, for example, beds, refrigerator, sofa, table, and so on. Modern techniques were introduced to build a house, and the techniques and changing trends towards a new vision and life style became a motivation for various phenomena in the housing markets. It appeared as a renovation for bigger and new space, and various new housing types.

The transition from traditional to modern housing styles such as detached houses and apartments was a rapid and interactive process.

Interactive process between houses types

In the early 1900s, urban Hanok were middle-class houses built in clusters around courtyards. These became a prototype in densely-populated urban areas. From the 1960s detached houses were popular as urban houses instead of Hanok, and apartment houses also became the mainstream of housing markets. For a while, Hanoks were not built as a dwelling and Hanok carpenters also lost their jobs. A standard Hanok design evolved into detached houses and apartment housing plans, and experience in detached houses and apartment have emerged in the modern Hanok, together with renovated modern techniques and lifestyle.

How to approach a modern Hanok

The traditional Hanok was confronted with modern culture in housing. Hanok in an urban context had a value as housing in a developed area in the eyes of those who wished to pursue a new Hanok style and understood the changing reasons for Hanok, and the renovated Hanok.

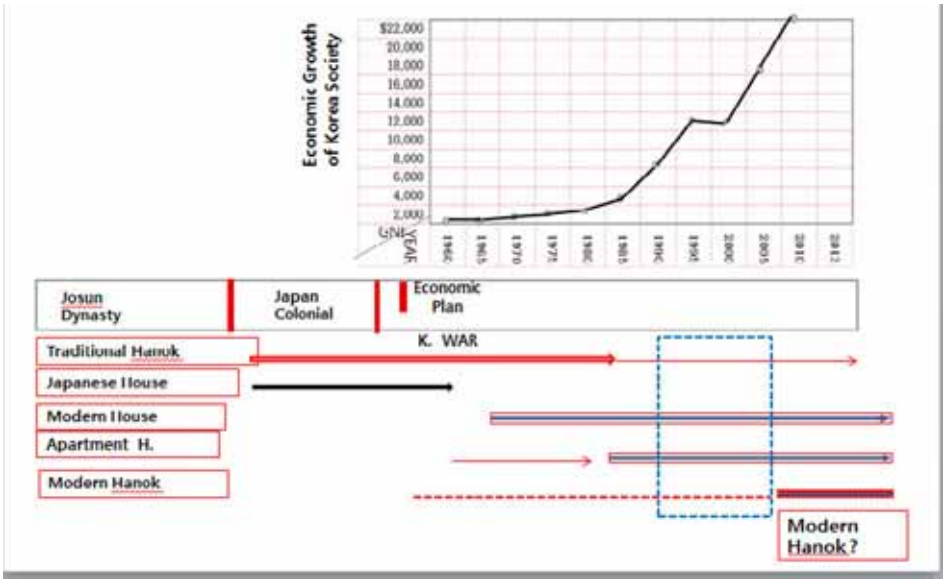

Figure 2. Hanok and houses in Korea correspond to socio-economic context

In the changing trends and design, we can see an interactive process between traditional Hanoks, detached houses, apartments and a new style for a contemporary Hanok through sustainable change.

Changing social context, housing type and interactive relationship

The value of Hanok and modern style house

Today, user's expectations of traditional Hanok are for originality of space, form and to represent the times. It is built rather to suit the user's personal life. If Hanok is to be a sustainable house for modern life, it needs to be transformed into a new model, adjusted to the residential needs of modern life.

In comparison to modern housing, "the characteristic of Hanok is attributed by a wooden structure and spatial organization of the Hanok, and its space, image, and places" (Jangsup Yoon 2001, Sanghae Lee 2011)[3]. Korean society opened its port in 1896 and in the 1910s the Japanese occupied Korea. Western and Japanese cultures were introduced to Korean people, and traditional Hanok was influenced by Japanese and European housing.

"Hanok is an eco-housing which is built from clay, wood and stone, and has a personality which displays human scale, natural images and harmony with nature. It was established over long periods and shows a unique culture" (Jangsup Yoon 2001). "Its appearance comes from roof eaves molding, spatial layout and organization, decoration, color that makes it elegant and gives it the spirit of Hanok" (Heongjin Yoo, 2003). "Hanok is a neat, stylish house, with the interior finished with paper, soybean oil applied on the wood with flooring paper, and Hanok's decorative doors and windows are most luxurious" (Minja Jung 2003).[4]

However, if we seek only the identity and design of Hanok, it may be an uncomfortable house that does not meet the owner's expectation of contemporary residential needs. In this respect, a modern Hanok as contemporary housing is embroiled in controversy, even though housing for people can vary greatly.

In the early 1900s, Hanok architecture was confronted by cultural interaction from Japan and the Western world, which influenced models built in that period. This experience can be a lesson for contemporary Hanok.

Change of traditional Hanok in urban context

Urban Hanok in the early 1930s

Urban Hanok in the Japanese colonial era are located in high density areas different from Japanese housing areas, which were newly developed. Hanok in rural areas

3 Yoon, Jangsup (2001). History of Korean Architecture. Seoul, Dolbegye.

4 Jung, Minja (2009). A Story of Hanok Construction by Aruemjigi. Seoul, Middle M&B.

and traditional urban areas were laid out in an organic cluster, and could be approached through a curved narrow alley. A new site for urban Hanok in the 1930s was divided with a grid pattern and its plot size was narrow compared to the rural and organic patterns of traditional areas. A Hanok was confronted with limited land use and layout on a plot.

The typical type of urban housing could be seen in Seoul, Jeonju, Sangju, and Cheongju city areas. In urban areas, the Hanok structure and design followed traditional styles, but the exterior walls and the roof of Hanok and its proportions needed to be changed because of short eaves, narrow spaces that form the view, and closed glass windows on the front of the open floor (*Toemaru*).

This kind of style is called the 'Improved Hanok', and the classification may still be validly used. Hanok in narrow plots was a necessary technique for enhancing privacy for three reasons: 1) Access to the house was controlled by a narrow curved alley 2) Courtyards were screened by a wall or subsidiary houses 3) The house plan was laid out by closed courtyards 4) The boundary and exterior walls of a house became higher and thicker than before.

Hanok in villages of Northern Seoul

The Urban Hanok in the Northern Seoul areas were built in a higher density than the provincial city areas, and the relationship with the outdoor space was also a more closed one. The house types can be seen in L shapes, C shapes, and shapes, and the outdoor spaces were closed as courtyards (Figure 3). For privacy, a courtyard layout is a good solution, and all the rooms of the house are open to the courtyard. Many houses can be seen in a linear shaped layout and the structure of the Hanoks involves narrow width in the plan. The Hanok in the provincial city areas, for example Jeonju, are built as an L shape, or an I shape because the density of the land was lower than Seoul, and privacy was also more relaxed in comparison to Seoul.

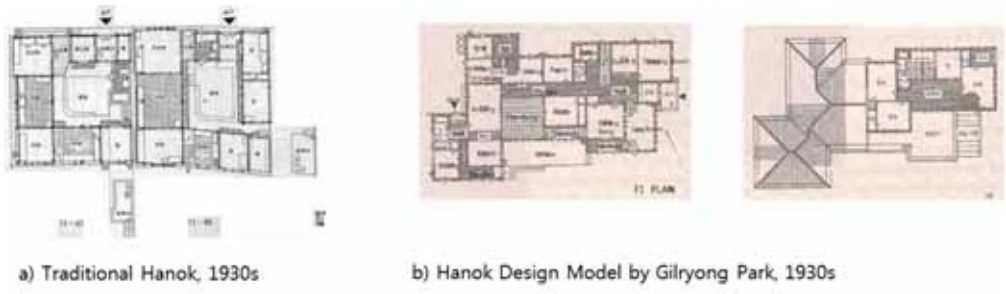

Figure 3. Hanok house for common people (left) and modern Hanok design by architect Gil-Ryoung Park[5]

5 Jun, Namil,. Son, Sekwan. Yang, Sehwa. Hong, Hyungok (2009) Social History of Korean Housing, Dolbege, Seoul.

In the housing design of Yeongsup Oh, we can see wooden floors as an access space in front of the house, the path connects with each room and the wooden floor (*Daechung)* was between the main bedroom (inner room, *Anbang*) and other rooms, and the main bedroom is consistent with the configuration of Hanok. However, installing a toilet and bathroom inside the house and installing a porch veranda reflects that modern life was penetrating into the house design.

A Hanok design for traditional housing improvements (1936) by Gil-Ryong Park, shows entrance access and corridor access, not a large wooden floor, between the rooms in the house plan (see Figure 3). The entrance, bathroom, toilet and fixed furniture in a chamber were introduced into the house, and the space looks like a Japanese house. Another design for traditional housing improvements by Gilyoung Park introduced a porch, bathroom, and toilet into the house. This was a new element in Hanok. but attached to the front and rear wooden floor, the corridor became an inside corridor, while the toilet and bathroom are adjacent to the rear corridor. It was a Japanese house style.

Spatial character of urban Hanok

Most of the entrances of urban Hanok in the Seoul area connect the gateway-courtyard-large wooden floor (*Daechung*) and the main chamber; each entrance was also intended for access to the courtyard. However, sites became narrower, and the attached floor was used as an entrance space for each room and gave more efficient access in the narrow courtyard and floor areas.

The wooden floor of the main hall (*Daechung*) was of low standard and the space very small, unlike wealthy or upper-class Hanok in the countryside where spaces were larger and standards higher, and the *Daechung* in both was often converted into a heated floor (O*ndol*). In order to build a typical Hanok on a narrow plot, the size and span of the house types was reduced to fit the site.

In high density areas, Hanok were built with stone or brick for the walls, which allowed for the opening of a small window. The windows were positioned high up, and this became a significant feature of Hanok. In areas of higher Hanok density, there were robust external walls, and high windows. The ratio of windows to an exterior wall was very low, but in the inner courtyard, the ratio was remarkably higher.

The privacy of the more narrow courtyards had to be strengthened, and the narrow width of the Hanok plan was profitable as it creates an enclosed courtyard even though it is part of the same floor area. However, in the case of large plots, the outdoor space becomes larger and it is easy to enjoy privacy compared to narrow spaces. An outdoor space can be more relaxing than a courtyard, and the house plan can have a greater width or corridor style.

Traditional Hanok and improvement discussion in the 1930s

In the 20th century, western lifestyles, Japanese housing and modern life was introduced into Korea, and the traditional Hanok and the residential environment was also influenced by these new types. The Enlightenment movement in the Japanese colonial era led to improved living and housing environments. The Hwangsung Newspaper in 1908 printed headline slogans such as "Pioneers of improved homes", "Food, clothing and shelter improved from the beginning", Cultural life and houses", "A scientific life", "Introduction of the selection of land", "For my home", "Let's renovate houses for happiness (1929)", "So-called cultural houses (1930)" and enlightening article(s) dealt with housing and sanitation for the Joseon society. In particular, the Dong-A newspaper serialised articles for the kitchen with texts such as: "The sanitary kitchen", "The kitchen in an invisible location", "An appropriate area for the kitchen", "Working movement and uprightness of working posture in the kitchen"; these kinds of discussion have been ongoing.

Renovation and transformation of Hanok

The perception of Hanok as a living space has grown. As the need for Hanok as a living space has grown, so has the number of households living in Hanok. After the liberation from Japan, the national income and desire for larger living spaces grew, as can be seen in the diversity of rapidly expanding Hanok renovations. Common phenomena in converted Hanok are as follows: 1) raising of the ground floor in the kitchen to increase movement and the use of new kitchen equipment such as gas ranges, sinks and tables, 2) a series of rooms and unit expansion into exterior spaces, and 3) converting the wooden floor to '*Ondol*'. The wooden walls of the Hanok structure were dismantled and the installation was done freely, with no need to alter the structural constraints as an advantage.

In the 1920s and 1930s the city areas in Korea had a lot of projects to build housing and construct Hanok, depending on the size of the economy which varied from region to region, notably the 'Hanok *bomundong* scale of 82.5 square meters, *Gaehoedong*, *Yongdu - dong dong*, or 115.5 square meters of the Hanok.' Since the 1960s and the success of national economic development in South Korea, the economy has improved significantly**,** and as the quality of life improved in the 1970s and 1980s, renovation work on deteriorating Hanok and configuring changes for the spaces became active.

Renovation type

Indoor spaces have become narrower, exterior spaces under the eaves have expanded, adjacent spaces have combined, while storage spaces, workspaces and boiler room accessories are common phenomena that space was converted into in the early stage of renovation. The most common phenomenon was extending the outer space of the housing type, which is a desire for expanding the area of living space. The next step is the expansion of the adjacent unit areas, or merging them. Hanok remodeling

remaining in the provincial city of Cheongju is the best illustration of these characteristics (Figure 4)[6].

In renovations, Hanok extensions under the eaves can be shown not to alter the path in the house, and the results are that the single bay in the Hanok plan is extended outwards and is converted into an extended bay. These kinds of changes are natural trends that respond to the expansion of lifestyle. In more active cases of house expansion, the unification of small rooms can be seen, and particularly the conversion of courtyards to indoor spaces results in changes from narrow widths into wider ones.

Figure 4. Extension of Hanok in an urban context

From outdoor to indoor in Hanok

Hanok is a passive type of housing which makes use of natural light and ventilation. Nevertheless, if there is insufficient housing area, some parts of the outdoor space converted to indoor space receive relatively little benefit from the sun on the sides and at the back. The facade of the Hanok in the courtyard was converted from an outdoor space to an indoor space, giving it the appearance of a Japanese colonial house. More aggressive than this were the changes in Seoul's courtyards, which were converted to a type Hanok. Many courtyard sizes of Hanok are between 25-50 square meters, and the courtyards are an enclosed space which are open only slightly for an entrance. The courtyards are also converted into indoor space.

6 Lee, M., & Kim, T. (2008). A Study on the Alteration and Extension of Urban Traditional Houses in Cheongju City located on the Central Inland of Korea. *Journal of the Korean Housing Association*, 19(2), 83-92.

Transformation of urban Hanok and the relationship with houses

Relationship between urban Hanok, detached houses and apartments

The exterior of Hanoks fronting the courtyard have a traditional podium, pillars and windows, and the roof is constructed over these. A sliding door giving access to the *Daechung* or *Toemaru* was installed from 1910, the sliding door converted the *Toemaru* and *Daechung* from a semi-open space to an enclosed indoor space, differing from traditional Hanok; paper-finished windows in traditional Hanok changed to glass doors.

Urban Hanok on small plots had difficulties in constructing the wide eaves, which was the general appearance in traditional Hanok, requiring them to be narrower. As a result of these changes, the lower part of the exterior wall could become wet during the rainy season as the lower part of the exterior was built of stone or brick. This kind of changes in urban Hanok caused features different from the traditional ones which are enclosed by boundary walls in large plot areas, and the image of Hanok changed remarkably in urban areas.

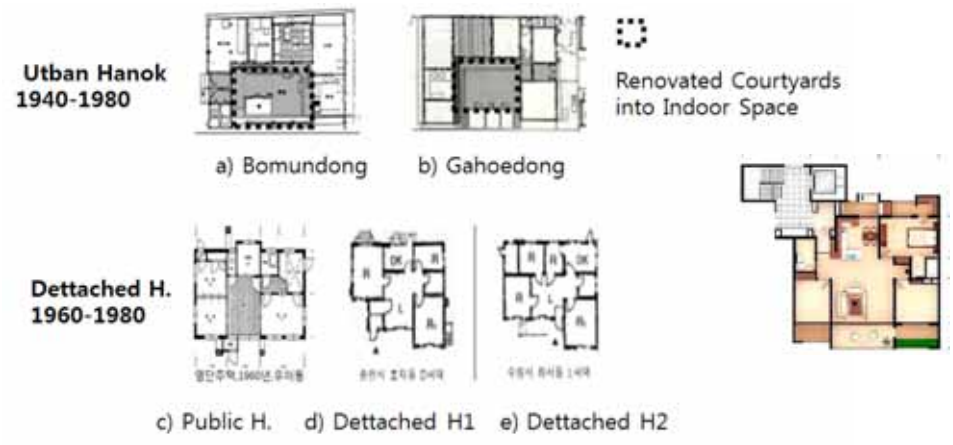

Figure 5. Dachung and courtyards in Hanok and relationship with house types

Converting courtyards to indoor space was done for insufficient living areas. It is interesting that the conversion of courtyards to indoor spaces had a very similar structure to detached houses and apartments from the 1980s and 1990s (Figure 5). The extension of indoor areas in Hanok still had major challenges, but on the other hand, this new need for housing space was developed within detached houses and apartments. The plan of Hanok layout had a spatial composition in which the living room was the center of the house, and *Daechung* in Hanok is similar to living rooms in modern housing.

For people who have only experienced modern housing and apartments, the question is how to base the design n for a new Hanok, and encourage such people to live in

them; should the new Hanok design be based on traditional Hanok, improved Hanok, or modern housing?

New Hanok from the experience of modern houses

A modern Hanok is appreciated as an ecological house, a cultural resource for tourism, and it is built as a private house in a village by local government. Thousands of Hanok were built in the province of Jollanamdo, which included the following Hanok architectural elements: traditional tile roof, column and beam timber structure, clay walls, and wooden windows. However, the indoor space was allowed to be in modern style, including a living room, kitchen and toilet. Those who built a Hanok received financial incentives from the local government[7].

Eighteen types of Hanok were prepared as standards following traditional Hanok designs that were transformed for modern living. The typical Hanok drawings were used for the building permit, but the house layout and composition were adapted by the owner and builder for more modern lifestyles after the building permit was issued. Local governments believe that Hanok should preserve cultural values. Residents of Hanok want a more modern life style like in new houses and apartments.

Modern Hanok follows traditional types, but many things have changed to fit into modern technology and lifestyle. Apartment housing has wider rooms, a deeper layout of the plan, a large centered living room, and continuous living, dining and kitchen spaces. This plan developed into modern Hanok, while the concrete-oriented apartment structure changed the possibility of modern Hanok (Figure 6).

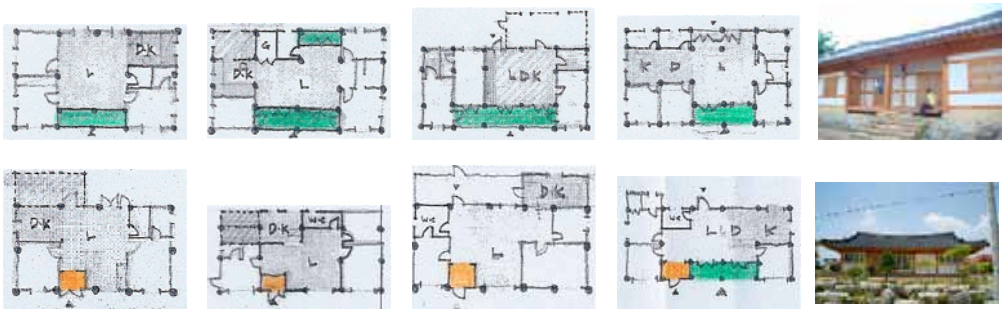

Figure 6. Modern Hanok key plans, Jollanamdo (designed by Shon, 2007)

The need for more space appeared with the change from a wooden to a heated floor in the Dachung (wooden floor of a house), now used as a living room. An open wooden pathway, the Toemaru, changed into a corridor by installing windows in front of houses, and a porch to the Hanok appeared. The shape of windows which were made of wood, aluminum and PVC, also changed. In particular, the appearance of the Hanok changed by an open wooden floor instead of a closed one (see Figure 6). The façade image appeared more as a closed space, like in urban houses.

7 A local government, Jollanamdo, Korea began the Hanok Village Program in 2007.

The most dominant shape of the modern Hanok, which differs from the traditional Hanok, is the huge roof. This comes from the deeper house space from front to back, which results in a larger roof. Another cause of the large roof is the expansion to include rooms attached to the traditional Hanok frame. Another comes from rooms attached to or expanded from the traditional Hanok frame.

A characteristic of the modern Hanok is the bigger columns for wider rooms and taller columns resulting in higher room volume. This gives the modern Hanok a different feeling than the traditional Hanok. A Daechung space (wooden floor) in Hanok which was open to courtyards was changed to Ondol (floor heating) which is indoor space, and used as a living room.

Conflict with tradition and modern

Each room size in modern Hanok is defined by columns, which are one bay, 1.5 bay or two bays, and each bay size is between 3.0 and 3.6 meters. This is about 50% larger than the traditional Hanok bays. The column in larger rooms bears heavier loads, especially when there are 2 x 2 or 2 x 3 bays, and the adjustment of room area is not small compared to brick structure housing and the traditional Hanok.

If we compare the traditional Hanok to the modern one, the physical technology, capacity and convenience of a room have improved, but the image of Hanok moved a step backward. The reason is that modern Hanok were influenced by a plan for modern houses and apartment style lifestyle, and as a result the proportionality of design has produced a different image from the traditional Hanok.

Conclusion

Korean people who are accustomed to Hanok in countryside areas were shown a plan of the urban Hanok that evolved from a traditional urban Hanok in the early 1900s. Urban Hanok in the early 1930s spread to Seoul and the provincial cities, people who had expanded their finances as well as the size of their residence showed that the renovations of Hanok corresponded to changes needed in order to adapt to the needs for residence in modern society.

While contact with Japanese culture introduced toilets, kitchen spaces, porches and corridors to the Hanok house, the style of the Hanok became a trade-off with a modern type. The Toemaru in Hanok can be compared to a Japanese corridor in a house, its space can act as an access zone which connects to rooms, and the wide plan of the Hanok meant that the layout could accommodate connecting rooms and corridors.

A Hanok built by wealthy people in the 1990s could be a good example of a large house that shows twin or triple areas of corridors on a large scale. Through the modernization of case studies, this research contributes to finding out how bringing together traditional Hanok and modern Hanok could provide clues towards finding a contemporary new Hanok, and that this could be the starting point for pursuing a contemporary Hanok in a rapidly growing economy and lifestyle.

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TOWARDS HUMAN SUSTAINABLE URBANISM: INTERROGATING THE CONTEMPORARY APPROACHES AND THE TRADITIONAL TURKISH (OTTOMAN) CITY*

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Abstract

Today, owing to uncontrolled globalization, serious environmental problems are threatening cities and their inhabitants. Cultural integrity is constantly under attack and many cities lack socially inclusive and responsive environments. What is questioned in this chapter is that, given our knowledge that environmental sustanability is a crucial need, are the contemporary approaches adequate for all settings? At a time of uncontrolled globalization in which sense of place, history and cultural distinctiveness is constantly under attack and many cities lack socially inclusive and responsive environments, do these approaches also integrate social-cultural dimensions? These call for a new understanding of traditional settlements as they represent good uses of local environmental and social values in their times.

The paper first provides a theoretical underpinning of sustainable urbanism and a critical review of its philosophical and practical framework; second, assessing contemporary approaches to sustainable urbanism and analysing the traditional Turkish (Ottoman) City, proposes a holistic framework for 'human' sustainable urbanism that integrates environmental considerations with social-cultural sustainability.

Keywords: Sustainable urbanism, environmental sustainability, culture, social.

Introduction

Changes that have taken place in the world over the past twenty years, including ecological disturbances and radical changes in traditional settlements have produced cities that are not just chaotic and monotonous in appearance, but have serious environmental problems threatening their inhabitants. Sustainable urbanism, on that ground, appears as a sound framework that draws attention to the immense opportunity to redesign the built environment in a manner that supports a higher quality of life and human health. In this context, when sustainable urbanism is characterised, what is usually addressed as the main concern is natural environment, and hence ecological sustainability, a condition that could be explained with the climate change, the inevitable environmental crisis. Today's development practices consume enormous amounts of land and natural resources, damage ecosystems, produce a wide variety of pollutants and toxic chemicals, create ever-growing distances and inequities between groups of people, fuel global warming, and undermine local community and social values, economies, and quality of life. These incremental changes imply a more critical state in cities of traditional societies where transformations in the urban level are still visible.

What is questioned in this chapter is that, given our knowledge that environmental sustanability is a crucial need, are the contemporary approaches adequate for all settings? At a time of uncontrolled globalization in which sense of place, history and cultural distinctiveness is constantly under attack and many cities lack socially inclusive and responsive environments, do these approaches also integrate social-cultural dimensions? These call for a new understanding of traditional settlements as they represent good uses of local environmental and social values in their times.

The chapter first provides a theoretical underpinning of sustainable urbanism and a critical review of its philosophical and practical framework; second, assessing contemporary approaches to sustainable urbanism and analysing the traditional Turkish (Ottoman) City, proposes a holistic framework for sustainable urbanism that integrates environmental considerations with social-cultural sustainability.

Background: a critical review of contemporary approaches to sustainable urbanism

Although the concept of "sustainability" in its modern sense emerged in the early 1970s in response to a dramatic growth in understanding that modern development practices were leading to worldwide environmental and social crises, during the seventies and eighties, the word "sustainability" was connected with the quotation from the Brundlant Report "development which meets present needs without compromising the ability of future generations to achieve their own needs and aspirations" (WCED, 1987). As that definition has attracted a lot of discussions over the decades, i.e. in terms of being too accommodating to the interests of the industrialized nations and for not questioning the desirability of continued economic growth, the notion later developed to describe the goal of integrating concerns and analyses that join economic development and ecological health (Eid, 2003). Hereafter, the notion of endurance and continuity was thought to be the domain of natural science that studied environmental measures to ensure that controlled growth meant that we use the earth in a way that endowed the same rights for future generations. Falling beyond the realm of natural science, the city, the community and their concerns were treated as separate entities, rather than being incorporated into the sustainability context (Haughton & Hunter, 1994; Berg, Magilavy & Zuckerman, 1990). What is more, most of the literature viewed the city and urban living as detrimental to the natural environment and hence a challenge to sustainable development.

On the other hand, since the city is an organic and dynamic entity and may take many different forms and meanings at different time intervals, we are bound to take the "time" factor into account. Sustainability, then, can be regarded as a perspective or paradigm in which we consider the three dimensions of society, economy and environment together, extending the fourth dimension of time".

Sustainable urbanism grows out of three late 20th Century reform movements that have transcended McHarg's antisocial environmentalism to highlight "sustainable development", that is a development which is non-damaging to the environment

and which improves the long-term health of human and ecological systems (Wheeler, 2004, 24). The "New Urbanism", "Smart Growth" and "Green Architecture" movements provide the philosophical and practical framework of sustainable urbanism. Each of these movements, however, has revealed certain insularity.

Within architecture and urban design the movement known as the New Urbanism, which appeared in the early 1990s and has become a strong force for re-evaluating the physical layout of communities, cannot be considered efficient and urban, as its focus has been better-designed suburban development. New Urbanism cannot be considered new either, as it revives many ideas about the city and planning that was mainstream before the Modern Movement. Another criticism about New Urbanism is about the elitism within the movement (Kelbaugh, 2002). Indeed, the movement is open to criticism on a number of fronts – in particular for being focused on better-designed suburban development, often for upper income groups, rather than the creation of truly "urban" places, and for not incorporating green building design and landscaping. Furthermore, it can be considered a new type of "ideal vision" conceived, ordained and disseminated from above and not rooted in specific places or local cultures.

Just a few years later, in the mid-1990s, "Smart Growth" evolved as an effort to recast the policy debate over sprawl in a way that more directly linked the environment, the economy and daily life concerns in pursuit of a positive and sustainable urban growth as essential to the quality of the city and urban life (Tregoning, 2006; Wheeler 2006;). The movement focused especially on mechanisms to promote more compact, walkable[1] and economically efficient urban development.

Compact cities are argued to offer opportunities to reduce fuel consumption for traveling, as homes, work and leisure facilities are closer together. They are also favored by many in the field of urbanism because urban land can be re-used, while rural land beyond the urban edge is protected. Economic benefits, due to high concentrations of people supporting local economics and easier access to services and facilities, are also suggested. Compact cities with higher densities may also mean that people are more likely to meet each other on the street than in low density areas (Talen 1999; Duany, Plater-Zyberk and Speck, 2001), and people may have a stronger sense of attachment to place (Nelessen, 1994; Diamond and Richardson, 1997). Ultimately, a good quality of life is argued to be sustained, with high concentrations of people providing social conditions conducive to vibrancy, liveliness and cultural production and consumption.

However, the case of the compact city cannot be said to be proven, and there are many counter-arguments on its "negativity". The overriding problem with the compact city is that it requires us to ignore the causes and effects of decentralisation, and benefits it may bring. However, the compact city concept can still be considered con-

1 Southwork (2005) defines walkability as the extent to which the built environment supports and encourages walking by providing for pedestrians comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys through the network"

tradictory to the preference for suburban living where the advantages of concentration might change into disadvantages through congestion which would outweigh energy consumption benefits of the compact city. Indeed, empirical research verifies the preference for suburban living in many cities where the city cannot offer an ideal living environment in its central parts[2]. These contradictions indicate a serious problem indeed and require a thorough understanding of determinants.

On the other hand, anti-sprawl strategies, which have obvious consequences for green and open space, have frequently lead to deadlocks in planning, especially concerning green space. Research supports the intuitive belief of a beneficial relationship between contact with nature and quality of life. A city with high-quality and generous green spaces symbolizes good planning and management, a healthy environment for humans, vegetation and wildlife populations, and bestows pride on its citizenry and government (Jim, 2004). On that ground, it can be stated that if green space is deprived, a compact city may become the antithesis of a green city.

Further, the compact city makes little sense for developing countries because the context is completely different from North American and European countries whose cities have experienced declining populations and deindustrialization. Cities of developing countries have much higher densities than their counterparts in developed countries, and they are not becoming significantly less compact in spite of decelerating population growth and the beginnings of decentralisation. Moreover, there are some other issues which necessitate developing country cities to be making realistic - yet minimal - plans for urban expansion. Rapid urbanization and higher densities, especially in some developing countries, have obvious consequences in terms of the choice of transportation modes, living conditions, congestion and pollution, and could compromise an environmentally sound planning. In most of these cities, city cannot be restructured into a compact sustainable city within the current planning framework that is limited to a two-dimensional thinking and the private land-owning interests, at the expense of long-term sustainability. Moreover, the increasing amount of people with anti-urban values (owing to the usual problems of the central parts of the city such as traffic congestion, air pollution, insufficient car parking, and lack of green spaces) are powerful elements supporting the low-density city.

Overall, what is disregarded in all these approaches is that cities also have social-cultural aspects. As stated by Rees (1997), “Cities are the engines of economic growth, the centres of social discourse and the living repositories of human cultural achievement, but also nodes of pure consumption and entropic black holes of industrial society”.

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2 One recent example is a quality of life survey carried out by the author in Famagusta (North Cyprus), where uncontrollable sprawl and rapid urban development characterize the urban development in the last 15 years. Findings of this comprehensive survey reveal that, in response to the question about a desirable place to live, more than a third (38%) of 400 respondents preferred a neighbourhood comprising single family garden houses with access to natural areas, where a car was an absolute necessity (owing to the lack of public transportation) (Oktay, 2010a; Oktay and Rüstemli, 2011).

King (2009) and Littig and Griessler (2005) suggest social sustainability means the satisfaction of basic human needs, the continual reproduction of humans and the subsequent continuation of culture. Mc Kenzie (2004, 120) more efficiently defines social sustainability as "a life-enhancing condition with communities, and a process within communities that can achieve that condition". In this understanding, social sustainability is a system of cultural relations in which the positive aspects of disparate cultures are valued and promoted and there is widespread participation of citizens not only politically but also socially in all areas of urban life environment.

The recent efforts towards more sustainable urban environments have revealed that, in order for sustainable urbanism to move forward and gain traction, it is essential that it be seen by citizens as playing an integral role in addressing the key issues of our times. The shift to a more sustainable lifestyle necessitates the communities to integrate individualised and privatised environmental action into everyday life and to achieve resource savings in a more extensive context using less water, less energy, less fuel for transportation and leading to less CO2 emmissions.

To this point, we have to ask ourselves what specific measures need to be taken to create sustainable urban environments, and how environmental and social concerns can be brought together into one convincing scenario, in which everyone benefits. In this context, it is important to understand that the idea of sustainability is not new, and the traditional cities are excellent examples to learn from regarding various dimensions of sustainable urbanism. Sensitivity to tradition allows us to excavate the sophisticated repository of knowledge embedded in planning and design principles and processes linked to the ecological and socio-economic contexts of times past. However, factors such as rapid population growth, an unbalanced population movement due to shifts from rural to urban areas, the possible integration of the country to the capitalist world economy and significant changes in expectations and life styles all combine, in their various ways, to erode the viability of traditional approaches to shelter provision. This means that whilst there are some aspects of traditional approaches which still work well, other aspects may have become inefficient or unworkable, or generally unsustainable. On that ground, this chapter will focus on the Ottoman (Turkish) city, which teaches many lessons that can contribute to meeting contemporary and future planning and design needs provided that their viability are checked for each case and in a time-based perspective.

Lessons from the Ottoman city

The Ottoman city, built collaboratively by various cultures on a geographical setting extending from Middle Asia to Anatolia, from Mediterranean to Balkans, demonstrates sensitivity to local topography, Islamic and Christian philosophies about the natural world, and local habits and traditions built from a multitude of human values over centuries (Cerasi,1999).

From an urban and social point of view, the main characteristic of the Ottoman city was its compartmentalization by *mahalles* (neighbourhoods), the outcome of ethnic

particularities and religious differences. The *mahalle* was a geographical entity as well as a homogeneous community providing social and economic collaboration among neighbours (Figures 1, 2). Each *mahalle* had its own characteristics and provided an indicative, unique social environment for their inhabitants. However, spatial segregation that was based on ethnicity and profession leaded separate lives within each minority, and therefore indicated a negative aspect from the perspective of contemporary sustainable urbanism. The *mahalle* was self-sufficient as well through the presence of a variety of functions including a religious-social center, small local market, fountains, *imaret* (open kitchen) and at times, workshops (Oktay 2004). As a result of the closed economy, every household produced their own foodstuffs, i.e. vegetables, fruits and a variety of seasonal produce that can be preserved and stored.

Figure 1. A typical layout of mahalle

Figure 2. A view to the traditional townscape in Safranbolu

The efforts of numerous private builders (masters) in residential areas were guided only by a few simple rules of civility, assuring individuality within the neighborhood as well as community identity apart from the works of government. It is a remarkable lesson that every house in the Ottoman city was different, even as there is an overall unity and consistency in building technique, scale and character (Eldem,1987). As such, despite the lack of an organising development plan at the governmental level, that is a must in today's development practices, the respect to local environmental and social values made the Ottoman City a sustainable settlement regarding many points.

The space of the traditional (Ottoman) city was, at a functional level, clearly divided into public and private realms. The public realm, often in the town center, contained all the collective activities of the town, such as trade and commerce, religion, education, administration, and urban facilities, resulted in a fine-grain mixed-use character. The main public node and the representation of people's power were bestowed to the citadel, the Friday mosque and its courtyard, and the bazaar. One of these elements, the main - often covered - street or streets of the city, the bazaar or *arasta*, functioned also as a communication channel, connecting these to each other and top the less important activities such as public baths, water storages, and educational centers, hence creating a vivid public realm in a spatial continuum (Figure 3). This space was the meeting place of the local people with each other, with the political, religious, end economic hierarchies, and with the outside world. However, owing to the cultural codes and realities of the time which were very different from those of the modern Republic of Turkey, most of the the public facilities were perceived as the territory of men as the traditional role of women necessiated them to spend the majority of their time in the house and in its environs, which constituted the private realm.

Figure 3. A representation of Arasta

The street system in residential areas was mostly pedestrian and had a hierarchical order: from the main streets spread out narrower streets that themselves had dead-end branches that lead to individual houses. In this system, only the main through-fares separated the urban fabric. This system was achieved through a process of organic growth in which the street pattern was gradually adjusted and changed according to

the peculiarities of the land and needs of the local people, where there was no need for wider streets and a low level of accessibility was required. The hierarchical pattern of streets with dead-end branches serving a group of houses created privacy for the dwellers (especially for women - as a significant need at the time) and helped create a strong sense of belonging to their negihbourhood. From an urbanistic point of view, this organic character of the street, in the state of continuous becoming, produces an effect of great expressiveness, and therefore, enhances the character in the Ottoman city. The street also bore a potential for social activities. Children of similar ages played together and identified themselves with the street they lived in. Fountains of running water were found at many street corners where women had the chance to meet their neighbours and have a chat whilst getting water every morning and evening.

On the other hand, *avlu*, the courtyard of each house, an isolated environment that is well defined and well protected, served a variety of uses including social gathering, such as wedding and circumcision parties, women's preparing winter food together, or just spending time together, and helped create a more cohesive community in the *mahalle.*

Owing to the fact that Ottoman urbanism was never based on the kind of strong formalism characteristic of western cultures, a generally informal character was dominant in cities. In this context, there were no formal public open spaces, i.e. well-defined squares, or monumental axes to be found in the cityscape. However, despite having no planned squares and the lack of an active use of *meydan* by people, there was a social and psychological tendency towards meeting and gathering in open spaces of natural character (Eldem 1987; Cerasi 1999).

The Ottoman city possessed various attributes that generated an ecologically sustainable environment. Regional climatic characteristics were reflected on the patterns of settlements, and accordingly every region produced its own characteristic urban fabric and architecture. For instance, in Safranbolu, one of the most characteristic towns in the northwestern Black Sea region of Anatolia (Turkey), hard winters forced the people to settle in sheltered valleys (Günay, 2005, 21). The pre-existing topographic character of the site was apparent at the urban scale even in intense built-up areas. The green gardens, i.e. vegetable gardens and patches (*bostan*), orchards, and so forth, implied a green belt dividing the quarters (sometimes occupying a natural creek as observed in Antep, a city in the southeastern region of Anatolia) and bounded the town[3] (Aru 1998, 12), and contributed to the self-sefficiency in general. The small squares at the intersection of streets with trees created opportunity for access to nature in the public realm as well. The streets that were defined by high walls of the residential courtyards provided a protected and comfortable space, and being divided into two by a 10-14 cm water canal running through the middle, helped distribute water to gardens, and prevented the rainwater from flowing into the courtyards.

The presence of a variety of house plans all with a courtyard, *avlu,* or garden in every region of Anatolia reveals the fact that there was a natural relationship between such a

3 Walled cities obviously need to be excluded from that generalization.

layout and the Anatolian life-style (Kuban, 1983). With its fruit trees, flowers and small kitchen garden, the *avlu*, separated from the street by a wall, was the closest relation the house has to nature; and thus it also provided the inhabitant with direct access to nature, and enhanced both the building ecology and self-sufficiency of the house.

All these peculiarities, on the contrary to many newly developed urban environments in Turkey and around the world, make the Ottoman city an ideal model for ecologically and socially sustainable cities despite its shortcomings in terms of viability of certain aspects (i.e. women's limited use of the public realm) for today's cities and urban life. Since sustainability needs to be assessed considering the cultural codes and realities of the time, as discussed in the background section of this chapter, these shortcomings may be tolerated within the larger, holistic context provided that requirements for every aspect of life are satisfied in today's urban planning and urban design.

Redefining essentials for sustainable urbanism

Based on our critical review of contemporary approaches to sustainable urbanism and our analysis of the Ottoman city as an ideal model for sustainable urbanism, it seems essential that new urban planning and design endeavours should comprise a human dimension and demonstrate respect to regional characteristics. In this context, the following aspects are considered essential: Context-sensitive compactness and de-fragmentation; Completeness: good mixed-use; Connectedness: integrated transportation and land use; Ecological sensitivity; A focus on place and public spaces; Social-cultural sustainability; and Sustainable life style.

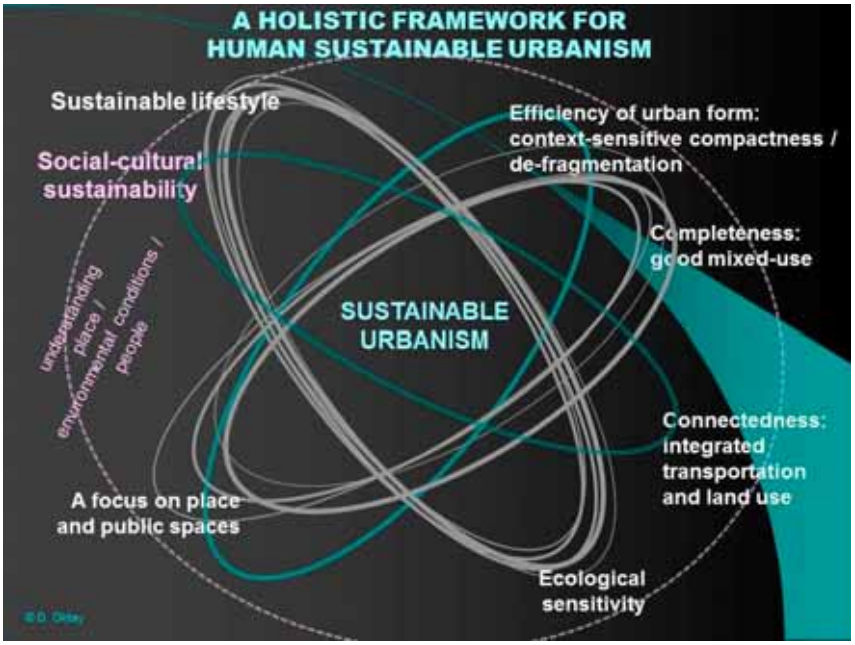

Figure 4. A holistic framework for human sustainable urbanism

Context-sensitive compactness and de-fragmentation. Assuming that urban sprawl is mostly a negative phonemenon characterized by a low density development pattern and presenting as many problems the traffic congestion, massive absorption of green space, inadequate infrastructures and services, low quality developments, as well as bureaucratic dysfunctions and lack of finacial resources (Downs, 1999), a proactive management of urban growth containing sprawl can be considered essential. Urban design of compact cities can obviously contribute to a more sustainable way of life, particularly in industrialised societies. However, as revealed through the ideas exemplified by the traditional Ottoman city that comply with regional characteristics, it cannot be expected that cities should all fit the same formula. What is needed is not a radical set of measures, but by a complete diagnosis of the territory, identifying local characteristics (i.e. climate, landscape, identity, culture and traditions), specificities, demands and dynamics, and an estimating and evaluation of the urban development processes, through comparing the demand and the offer for urban growth, and consideration of the issues of "where" and "how" the urban settlement grow.

Inspired by the Ottoman city and *mahalle,* the contemporary city could be thought as an entity made up cohesive and identifiable districts*,* and smaller towns of functional diversity could be created in the vicinity of the city rather than reaching unacceptable levels of density and population. In this context, density should be related to design in such a way that its advantages and disadvantages are investigated by considering local social dynamics (need for privacy, degree of privacy, neighbourly relations, and so forth) and environmental values (green infrastructure, made of wetlands, forests, groundwater recharge zones, and so forth), and new scenarios for "de-fragmentation" where open growth may find its placement.

Completeness: good mixed-use. Fine-grain mixed-use is sought in urban expansion in order for those environments to be lively, safe, sensorily rich, choice laden, economically and spatially efficient and ecologically diverse; sustainable as far as the built environment can believably be. This 'good mixed-use' was an important component of the public realm in the Ottoman city. Containing all the collective activities (i.e. trade and commerce, religion, education, administration, and urban facilities), the central parts of the city revealed a fine-grain mixed-use character and helped the local people meet with each other (despite the limited frequency by women owing to the cultural codes of the time) and with the outside world. The main street and the bazaar or *arasta* in the Ottoman city, functioned as a communication channel, connecting the main activities to each other and top the less important activities (i.e. public baths, water storages, and educational centers), and created a vivid public realm in a spatial continuum. These characteristics can be re-interpreted as a model when planning and/or re-designing our cities whose central parts are deteriorating owing to the lack of diversity of main functions (business, commerce, housing, recreation) and the effects of privately owned, intraverted spaces of modern urban commerce and design.

Connectedness: integrated transportation and land use. The findings of empirical surveys (i.e. Lund, 2002; Kim and Kaplan, 2004; Khandokar, 2009; Oktay, 2010b) suggest that the social and physical contexts of the walkable neighbourhood enhance

casual interactions and social participations and are likely to contribute to the sense of community. In the Ottoman city, the walkability of the streets (at a time of the unavailability of motor cars but other means of transport such as horses and donkeys) was enhanced by human scale, physical convenience (protection from sun, rain, etc.) due to the narrow and winding streets following the natural contours of the land, and pleasant continuity of the outer walls of the houses and courtyards that. From these, one important lesson for the contemporary city is designing the city streets first for people taking into account the functional and aesthetic needs of people rather than complying with cars only.

Ecological sensitivity. As observed in the Ottoman settlements which reveal an ideal integration with the natural environment and climate, sustainable urbanism seeks to connect people to nature and natural systems, even in dense urban environments. In this context, an attempt at integrating such features as edible landscapes of fruit trees and large vegetable patches (allotments) into the city would be beneficial for dwellers in terms of lower heating and cooling bills, lower food costs, and reduced risk of flooding and landslide damage. Trees with canopies can be used for their shadowing effect, and for the definition of spaces both in streets and courtyards. At the building scale, other important aspects to ecological sensitivity are the use of local and regional materials of natural character, conformity of the building to its environs and in particular to the climate, the flexibility to adapt to changing conditions over time, and the rich variety of spaces extending from interior spaces to open spaces through various types of semi-open spaces.

A focus on place and public spaces. Although public spaces form a crucial feature of sustainable and liveable cities, contemporary urban environments frequently lack enough space kept aside for them, and most of those spaces which are introduced as "public spaces" miss spatial, ecological and social qualities, and cannot be considered "places for people". The author's recent survey study (Oktay, 2010b), on the other hand, has proved that the character of place and public spaces have positive effects on the liveability of a neighourhood. In this vein, inspired by the Ottoman city, new urban areas could be planned and designed around a hierarchy of spaces for different purposes, the idea of main shopping strip could be revived in order to prevent the shopping malls to be the norm, and the street pattern could be organized in a way that each street has an identity through the continuity, design and functional layout of buildings. In the contemporary city, streets, squares and public parks are the only places where people truly meet as equals, and a high-quality public realm may help create a sense of belonging and collective identity.

Social sustainability. Social sustainability is a system of social-cultural relations in which the positive aspects of disparate cultures are valued and promoted and there is widespread participation of citizens not only politically but also socially in all areas of urban life environment. Its success depends on the level of people's expectations, behaviour, value systems, transparency and accountability in both public and private decison-making. As the most appealing aspect of sustainable urbanism is to be the sustainable neighbourhood with its societal benefits, we must widen our definition of the sustainable urban neighbourhood to include social as well as environmental concerns

as reflected in *mahalle*, the cohesive neighbourhood unit in the Ottoman city. However, we should not ignore the great changes that happened in the daily life of people, i.e. significant increase in percentage of working women, women's equal participation in almost all aspects of life, and so forth.

Sustainable lifestyle. Everything we do as professionals and as human beings in the name of sustainability means very little if we don't actually change environmental behaviour of consumers, companies, communities and governments. Adopting sustainable lifestyles require incorporating a range of behavioural responses from energy saving and water conservation, to waste recycling and green consumption, and these would influence the urban quality of life without damaging the planet for the future. In the Ottoman city, in the early Ottoman and Seljuk periods in particular, owing to the preferred simplicity in every aspect of life and self-sufficiency in many senses, people generally adopted a sustainable lifestyle, and it was a healthy and contended community. In today's cities, what is needed for sustainable lifestyle is "education for sustainable development" and hence "ecological citizenship", that would enable urban residents to develop the knowledge, values and skills to participate in decisions about the ways they do things individually and collectively, both locally and globally.

Conclusion

As we live in environments that have often been very damaged, in ecological, social and cultural terms, there is an urgent need for a radical shift towards a holistic approach to sustainable urban planning/design, combining ecological and social-cultural sustainability. This calls for sensitivity to traditional urbanism and impact of global ideas, practices and technologies on local social and cultural practices. In that sense, the Ottoman city, in the early Ottoman and Seljuk periods in particular, possesses various characteristics that can inform modern planning and urban design.

Urban design of compact cities can obviously contribute to a more sustainable way of life, particularly in industrialised societies. However, since cities are all different in form and structure owing to a host of place-specific factors, it cannot be expected that they should all fit the same formula when it comes to the question of a sustainable urban form. The degree of compactness and/or defragmentation should therefore be context-sensitive. Inspired by the Ottoman city and *mahalle* that comply with local environmental and social-cultural values of the time, the contemporary city could be reconsidered as an entity made up of cohesive districts, and smaller towns of functional diversity could be created in the vicinity of the city rather than reaching unacceptable levels of density and population.

A sustainable community endeavours to promote multi-functional rather than mono-functional settlement patterns by providing compact urban centres, with a broad range of services and amenities in close proximity. This reduces the need for vehicular and public transport, thereby decreasing demands on infrastructure and energy resources, while promoting pedestrian accessibility and community. The fine-grain mixed-use in the public realm of the Ottoman city can be re-interpreted as a model when planning

and/or re-designing our cities whose central parts are deteriorating owing to the lack of diversity of main functions and the negative effects of privately owned, intraverted spaces of modern urban commerce and design.

In the course of environmental transition, cities could attempt to keep as many as possible of the environment-sustainability ingredients, including green spaces. In that sense, an attempt at integrating such features as edible landscapes and directing some of the efforts of greening towards streets would be beneficial.

What matters in terms of "green architecture" or "sustainable buildings" is that the concept of the relationship between nature and the architecture as a design philosophy be restored, without resorting to superficial mimicry. It is worrying that so-called contemporary green buildings are often considered in isolation from their urban or regional contexts. It should be accepted that a city is not a simple collection of buildings, and green or "zero-energy" buildings alone do not create a sustainable city. What are important to green architecture are the use of local and regional materials, conformity of the building to its environs and in particular to the climate, the flexibility to adapt to changing conditions over time. High-tech innovation and new sustainable technologies undoubtedly have an important role to play, but in an energy-depleted world, cities that can de-link from their dependence on these are likely to be more resilient.

Inspired by the Ottoman city, new urban areas could be planned and designed around a hierarchy of spaces for different purposes, the idea of shopping strip could be revived in order to prevent the shopping malls to be the norm, and the street pattern could be organized in a way that each street has an identity through the continuity, design and functional layout of buildings. We can move towards more inclusive urban design approach that not only views the public realm as an outside room with equitable access, but also as a welcoming place where a variety of users benefit from it and place a value on it as they interact with other people and their own prior experiences.

We must widen our definition of the sustainable urban neighbourhood to include social as well as environmental concerns as reflected in *mahalle*, the social-spatial unit in the Ottoman city, without ignoring the great changes that happened in the daily life of people. In the new settlements, there must be places that foster special rituals where all residents come together in common pursuit and observance as used to be done in the streets and courtyards. There should be places, which support multiple public activities, recreation, and settings arranged to encourage safe, and everyday, personal exchanges among people who might otherwise remain strangers.

Naturally these ideas and principles will not achieve their objective without an appropriate application strategy. Urban planning and design is a shared responsibility and putting aims into practice depends on evaluations within a far broader political-economic context. For this reason, a common vision shared by every strand of society needs to be determined and for this to materialize in the long run, uncompromising efforts must be made that do not resort to low quality and cheap solutions. Finally, policy-makers need to become a little more subversive in how change towards a more sustainable environment is sold, and governmental pressure on individuals to engage with environmental practices is strongly needed.

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II VULNERABILITIES AND OPPORTUNITIES FOR LOCAL SAFETY

VULNERABILITIES AND RESILIENCE OF COMMUNITIES LIVING IN CIRCUMSTANCES OF RISK

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Abstract

In Recife and other cities in Brazil, the sites available to those excluded from the housing system were hills and floodplains. The strategy used to occupy these spaces and provide a minimal dwelling infrastructure often exposes residents to risk of landslides or flooding. The affected populations are the most socio-environmentally vulnerable, but under the right psychosocial, cultural and environmental conditions, individuals, groups and communities can develop ways of resisting and overcoming adversity, making them stronger. Reflecting on this way of life, their capacity to survive the multiple fragmentation of the urban and socio-economic space in which they live is indeed remarkable. They draw on their social resources and creativity to adapt and survive, as individuals and a group, developing forms of solidarity in response to difficulties and threats. This study aims to identify the scope for community resilience to overcome crises and disasters, and how the resilience of urban communities is structured. The two cases studied are examples of spontaneous settlements exposed to disasters and ongoing risk situations common in Recife. Exploratory interviews and two focus groups were conducted at both sites. Though they may live in vulnerable situations with high risk exposure, some communities develop resilient behaviours in response to repeated incidents, but this resilience still depends on the existence of committed community leaders and their individual resilience.

Keywords: community resilience, risk, flooding, solidarity.

Introduction

This article brings together considerations on socio-environmental vulnerability and the potential of low-income settlements for resilience in order to understand the basis of resilience in these settlements and how they overcame their vulnerability; it also aims to identify the potential offered by community resilience for overcoming crises and disasters.

In the literature, resilient communities are ones able to develop effective responses to challenges that arise, including disasters. This is all the more important because the affected populations are predominantly those with the greatest socio-environmental vulnerability: that is, the poorest, who live under the most insecure circumstances, many at constant risk of flooding or landslide whenever there are heavy rains. Such disasters are periodic or even seasonal, and they are increasing in magnitude, so public policy needs to increase investment in preventing these occurrences and to strengthen the resilience of these communities.

An exploratory study using interviews and focus groups was carried out in two communities in Recife in northeastern Brazil that are subject to landslide and flood risk; these two types of disaster are the most common in low income settlements. The first community, Beco do Óleo, is located on the riverbank, and is subject to seasonal flooding every year; the second, UR-12, is in an area at high risk of landslides. These two communities are typical examples of spontaneous settlements exposed to disasters and ongoing risk situations common in Recife and other Brazilian cities, and they also show the prerequisites for the types of mobilisation and community organisation being investigated.

This article aims to identify: i) how situations of risk arise and develop; ii) the mechanisms and strategies for sustainability that are developed to cope with these; iii) the scope for community resilience to overcome crises and disasters; and iv) how the resilience of urban communities is structured.

Urban development in Brazilian cities and the impact on low income communities

Developing countries have been particularly affected by increased urbanisation. Latin America and the Caribbean are among the most highly urbanised regions in the world, with almost 80% living in cities. The rate is set to slow down, but nonetheless, the urban population in these regions is predicted to approach 90% by 2050 (ONU-HABITAT, 2012).

The most recent Brazilian census (IBGE, 2011) showed 84.36% of the population living in urban areas. This increase in concentration is associated with a development model that prioritises economic growth, and it has consolidated a pattern of urbanisation that is aggravating the problems of large cities in Brazil. Two central examples are the growth of the automotive industry (around 7% per annum) and civil construction (contrast its growth of 11.6% in 2010 with GDP of 7.7% in the same year). (Spina, 2013)

The impact this scenario has on cities is all too familiar: increased density and verticalisation with no planning and insufficient infrastructure provision such as water and sewage, transport, low-income housing, together with serious urban mobility problems, pollution, contaminated watercourses, and increased flooding.

How spontaneous settlements become consolidated, and the associated risk situations

The accelerated occupation of flood-prone and hillside areas due to expulsion of low- income populations from central areas is another impact of the development model, and is increasing their exposure to landslide and flooding risk. In Recife and other cities in Brazil and worldwide, the sites available to those excluded from the housing system were hills and floodplains. The strategy used to occupy these spaces and provide a minimal dwelling infrastructure – cutting into the hillside and building embankments – does not always offer sufficient safety, and may sometimes expose residents to repeated risk of landslides or flooding. In some cases these settlements are

so well consolidated that moving the community is not an option, or the only alternative may be distant localities and a housing typology unsuited to residents' customary way of life. Some communities, trying to make their situation sustainable, pursue alternative approaches.

Such chaotic land use and occupation, lacking urban planning and with insufficient housing and infrastructure provision makes it more likely that landslides and flooding will result from the ever more intense and frequent incidents of extreme rainfall.

In low-income areas, social questions of income and housing were the key factors underpinning the occupation of these settlements. This involved invading water ecosystems, or else cutting into hillsides and occupying the high ground. These areas are vulnerable to flooding or landslides, because as their population density increases so do the risks: embankment collapse, erosion, and flooding caused by the obstruction of drainage routes.

In low-lying areas, the precarious nature of housing and the lack of basic sanitary infrastructure expose the population to the threat of diseases. Hilly areas are subject to landslides and collapsing embankments, both of which are highly dangerous. Gusmão Filho (1995, p. 18), Farah (1998, p. 35) and Alheiros (1998, p. 34) describe the problems associated with the way hillsides surrounding urban centres are occupied. Dwellings are built on flat areas cut into the slope, and occupied land is intermixed with exposed ground, bringing together all the factors that promote instability: the removal of soil replaces the natural slope with vertical drops; the new pattern coexists indiscriminately with older housing; excess of removed material, which is uncompacted and highly permeable, so that it easily becomes waterlogged with large volumes from rainwater and drainage; the pattern of rainwater drainage is modified inappropriately; natural drainage routes are occupied; vegetation cover is removed indiscriminately, rubbish is dumped, and so on.

The occupation of these spaces is the result of a set of broader social and political problems involving the relation between capital and labour marked by unequal access to the means of production and the appropriation of land, reflecting a model for society where property has been and continues to be expropriated and concentrated in the hands of the few.

Natural disasters and the global call for resilient cities and communities

Disasters seen in cities around the world include hurricanes, tsunamis, earthquakes and other events that tend to cause greater harm than landslides and flooding in terms of the magnitude of the disaster. However, in Brazil as a whole and in Recife, landslides and flooding are the most frequent natural disasters to occur. Floods make up 58% of natural disasters nationally, and landslides 11% for a total 69%. The greatest number of deaths are caused by large-scale landslides. (Santos, 2007)

Though low-income populations are generally the most vulnerable and the most severely affected, the scale and seriousness of these events are such that other income

groups also suffer; also, in some cases the whole city may be compromised or temporarily paralysed, as occurred with the disasters in the Serrana region and in the 'Mata Sul' zone in Pernambuco (Banco Mundial, 2012, 2012a).

There is a global movement to strengthen the resilience of cities and communities. The growth in disasters around the world has led the United Nations, the World Bank, and others to support agendas aiming to help countries and cities respond to such disasters. The World Bank gives priority to strengthening governments so they can fulfil their role, through capacity building and improved resource management as well as public policy to mitigate and reduce disasters. The UN emphasises strengthening society to make it better prepared, since the worldwide experience of dealing with disasters has shown that communities have taken a leading role in response. One example is the Serrana Region, in Rio de Janeiro, where local communities took clear independent steps to promote solidarity, reduce human losses, support those affected and overcome traumas and difficulties in the wake of the disaster. (Alcântara *et al*., 2012) Though they may live in vulnerable situations with high risk exposure, some communities develop resilience in response to repeated disasters, as well as more minor and localised incidents. In this global context, administrators, researchers, civil society leaders and even private enterprise have joined in reflecting on strategies for building resilient cities and communities with the capacity to recover from disasters and adapt to climate change. The United Nations International Strategy for Disaster Reduction (UNISDR) released the brochure "Building Resilient Cities: My City is Getting Ready", which has been translated into numerous languages, including Portuguese, and publicised by the Brazilian government. The title of the report of Ban Ki-Moon's High-Level Panel on Global Sustainability, "Resilient People, Resilient Planet: a Future Worth Choosing" is an example where the term is applied to human beings and human collectives, not just places. In sum, the contribution of this agenda is to recognise that uncertainties and risks should occupy a privileged place in planning, which should aim to strengthen resilience in cities and communities in order to face the disasters, crises and difficulties that may continually occur.

Recife: a city of water with a high level of inequality

Recife is a coastal city in the northeast of Brazil with 1,537,704 inhabitants (IBGE 2011). Due to its location at sea level, as well as the presence of rivers and canals, it is known as the "Venice of Brazil". The site was progressively occupied by drainage of mangroves and marshes, and so "[...] whatever in Recife is not water was once water or holds its memory." (Oliveira, 1942)

Deforestation, land reclamation, mineral extraction, and cutting into hillsides for construction, together with the intensive and persistent process of land use and appropriation for the city, radically transformed and defined its current aspect.

Recife's occupation of hills with cutting away of their slopes, land reclamation in mangrove areas and floodplains, inadequate drainage networks, and the precariousness

of maintenance and operational services combine to make the city one of the most vulnerable, especially to flooding and to the increasing sea level.

The low income population is most vulnerable because they live on low-lying land, so they would be the first to be affected. In periods of high rainfall the city's roads and drainage systems enter a state of collapse, and this is just an indication of what may happen in the future. During rainy periods a large proportion of the city is subject to flooding, whether from sea water, high tides, or swollen rivers.

Despite these geophysical and ecological factors, human actions played a decisive role in forming the city's characteristics. In the evolution of the city, the pattern of development and building in middle-class districts privileged economic aspects to the detriment of environmental factors. This whole process of land use and occupation and the property boom has increased runoff because of paved and built up areas reducing natural drainage.

Recife's high level of inequality can be seen in the many favelas that form part of its urban fabric. Such settlements doubled between 1975 and 1990, when they made up 15% of the urban land area and 26% of the built-up area, containing around 56% of the city's dwellings. (Souza, 1990 quoted in Souza, 2007). These photos (Figures 1 and 2) show situations where the high level of social inequality in Brazilian society is manifested in environmental standards and quality of life.

Figure 1. Morro da Conceição

Figure 2. Houses on stilts (palafitas) on the banks of the Capibaribe River

Reflecting on the way of life of these communities, their capacity to cope with difficulties and survive the multiple fragmentation of the urban and socioeconomic space within which they live is indeed remarkable. They draw on their ingenuity, social resources and creativity to adapt and survive, both as individuals and on a group level, developing forms of solidarity in response to difficulties and threats.

While we wish to be careful to avoid presenting a romanticised view of the favelas, because "It would be madness to replace one distortion – that favelas are places of crime, sickness and despair – with its opposite: that they can safely be left to their own

devices." (Seabrook, quoted in Davis, 2006), nonetheless, we understand the great potential richness of the way of life in such low-income settlements, particularly as regards their capacity to overcome adversities; and this is closely linked to resilience.

Theoretical basis

The informal character of life in spontaneous settlements is often sustained by a delicate web of relations that arise from proximity, everyday life and forms of adaptation that may not always be easy. (Alcântara *et al*., 2012).

Many authors see solidarity as fundamental to dealing with everday stress as well as crises and disasters. Alcântara (2011) argues that solidarity and mutual help are resources available to low-income residents to deal with scarcity, the problems and daily difficulties of living in these localities and the limitations and failings of public policy. Brand *apud* Perlman (2007) also has the view of favelas as models of community solidarity and mutual support. Barbosa (2010) investigates solidarity, seeing religion as a factor motivating solidarity in two groups of female volunteers who served as community mental health agents. Lomnitz (1994) shows the effectiveness of exchange and reciprocity in Mexico's "barriadas" in relation to economic insecurity, on a basis of trust, equality in adversity, and the physical proximity of dwellings. Boaventura de Souza Santos emphasises mutual recognition and self-help networks within kinship links in Portugal (Santos B., 1993 *apud* Portugal 2008).

Self-help networks and the sense of community are sources of satisfaction for slum residents, according to Seeley (1959) and Fried & Gleicher (1961). Perlman (2007, p. 5) perceives favelas as "vibrant communities of migrants who had risked everything to come to the city and were willing to sacrifice themselves to provide more opportunities for their children".

Our own experience of favelas and spontaneous settlements over more than 30 years leads us to share the vision of these authors, in contrast to the view of the favela as a stigma and a problem, an agglomeration of pathologies or an inevitable calamity. This was log the vision of government and the dominant elites, and in some cases still is, as noted by Perlman (1977, p.42-44). We argue that the characteristics of the population of low-income settlements – the risks they take to survive, and their networks of solidarity and self-help – favour the development of capacities (Sen, 2000) and abilities that can contribute to their resilience. In a study of the social vulnerability of young people, Bomfim *et al*. note the complexity of social vulnerability, meaning that it should not be understood in a simplistic way in terms of poverty, income etc. but "as a phenomenon that does not restrict people's opportunities and lead to the reproduction of the *status quo*, but one that can produce resistant forms and alternatives manners of coping and leading personal and community life."(2012, p. 172).

The concept of resilience is used in contexts ranging from engineering and ecology to the social sciences, but it is always understood as a process; in the case of disasters, the right psychosocial, cultural and environmental conditions can allow individuals,

groups and communities to develop ways of resisting and overcoming such adversity, actually making them stronger as a result. It can be applied both at the level of the individual and the community.

Grotberg (2005) made a synthesis of the basis of individual resilience, indicating some resilient factors by the sentences: "I have" (support), people I can rely on; "I am" (development of intrapsychic strength), being loved, loving and respecting others, taking responsibility for one's own actions and confidence in the future; "I can" (acquiring interpersonal skills and conflict resolution), facing problems and finding support from others. Resilient conduct means preparing for, living with and learning from adverse experiences.

Melillo (2005), drawing on a study by Kotliarenco (1997), summarises the characteristics of the resilient individual as follows: skill, adaptability, low susceptibility, positive affect, capacity, resistance to destruction, positive key behaviours, special temperament and cognitive skills. For Melillo, "resilience depends on certain qualities of the interactive process between the subject and other human beings; this process is responsible for constructing the human psychic system" (Melillo, 2005, p.61).

Froma Walsh (1998), quoted in Ravazzola (2005, p. 81), emphasises the need for social relations to be permeated by certain practices that reinforce the qualities present in social subjects: 1. attitudes that show emotional support; 2. dialogue to agree on rewards and sanctions; 3. conversations that allow the formation of shared meanings in relation to the harmful events, with narrative coherence and with a dignifying meaning for the protagonists.

Turning to community resilience, Ojeda (2005, p. 50-3) identifies some of its key elements: 1. collective self-esteem, that is, an attitude of pride in the place where the community lives; 2. cultural identity leading to the group's adoption of customs, values, idiomatic expressions, dances, songs, etc. as defining elements; 3. social humour, that is, the ability to see the "comedy in one's own tragedy"; 4. collective honesty, that is, the decent and transparent exercise of public functions. Ojeda also mentions the "capacity to produce authentic, participatory leaders, effective democracy in decision-making, and the 'inclusiveness' of a [wider] society without discrimination" (p. 53). The empirical findings of the present study showed the importance of such leaders in disaster prevention, response and recovery.

Adger (2000) defines community resilience as the ability of communities to absorb external shocks within their social infrastructure. Norris *et al*. (2008) cite the definitions given by several different authors: Brown (1996/97) defines it as "the ability to overcome adversity or a continually stressful life, or easily adjust to them"; Ganor (2003) describes resilience as "the ability of individuals and communities to cope with a state of continual stress over the long term; the ability to draw on unknown inward strengths and resources to deal effectively with such difficulties." (Norris *et al.*, 2008, p. 129). They conclude that resilience is a process bringing together a set of adaptive capacities to create a positive trajectory of functioning and adaptation after a disturbance.

Resilient communities, then, would be capable of finding effective ways to deal with challenges that arise, including disasters. This point is important because the affected populations are precisely those showing the greatest socio-environmental vulnerability, understood as both social vulnerability and physical vulnerability (the house and the surrounding environment). Because of their relatively more insecure housing, many in these groups live with the frequent risk of flooding or landslides at times of heavy rainfall. As this pattern worsens, the need for public policy to strengthen community resilience grows greater.

Godschalk (2003, p. 137) argues that "traditional hazard mitigation programs have focused on making physical systems resistant to disaster forces. However, future mitigation programs must also focus on teaching the city's social communities and institutions to reduce hazard risks and respond effectively to disasters, because they will be the ones most responsible for building ultimate urban resilience."

In the author's view, a "resilient city is a sustainable network of physical systems and human communities. Physical systems are the constructed and natural environmental components of the city. […] the physical systems act as the body of the city, its bones, arteries, and muscles. [...] Human communities are the social and institutional components of the city. They [...] act as the brain of the city, directing its activities, responding to its needs, and learning from its experience." Whereas most studies of resilient cities have emphasised the production of resilient physical systems, the author argues that resilient communities are also essential to urban resilience.

A longitudinal study carried out by George Vsillant e Timothy Davis (2000, quoted in Grotberg, 2005, p. 18) shows that there is no connection between socioeconomic level and resilience, nor between intelligence and resilience or social class and resilience. Humour is an important aspect of resilience, perhaps especially in Brazilian culture, where it can play a large role in creativity and overcoming adversity. Rodriguez (2005) describes the importance of humour for resilience as a "powerful resource, essential for sustaining subjectivity, social ties and collective identity, that helps strengthen resilience through its function of resisting adversity" (p. 137) Though the relation is indirect, Rodriguez considers that because the sense of humour favours novel points of view that open up "new lines of action, it should be considered as an indicator of the capacity for resilience" (Rodriguez, 2005, p. 138).

Melillo (2005, p. 68) provides the psychological basis for considering humour a key element of resilience, because as well as facilitating changed perceptions of a situation, it may alter the behaviour of the individual in a liberating, comical or creative moment; the link between humour and creativity is well known. Melillo quotes Freud's essay (1927, p. 162) on humour: "the essence of humour is that one spares oneself the affects to which the situation would naturally give rise and dismisses the possibility of such expressions of emotion with a jest". Melillo goes on to argue (p. 69) that humour "is the best possible defence against suffering; rather than leading the spirit to resignation, it favours its health. Something painful may thus be turned into a

source of pleasure." Humour can also help "recover self-esteem" (*ibid.*). Furthermore (p. 69-70), humour is linked to creativity (another pillar of resilience), whose origins lie in the playfulness of children. A child when it plays reorganises reality and the world at its whim; in this way, it masters its fears. The adult's capacity to create and also to deal with new, painful situations has its roots in the same process. Humour is a way of responding playfully to fateful situations.

Nonetheless, Rodriguez warns that there is no direct link between humour and resilient behaviour that would actually change the adverse situation. Humour offers a change of perspective without guaranteeing that the person who responds with humour will be able to do anything effective. However, humour may be indirectly associated with other characteristics such as intelligence or creativity that, in her view, are linked to resilience (Rodriguez, 2005, p. 138).

The element of humour in Brazilian society as a response to adversity needs to be studied more; it does seem to help people look for solutions despite the difficulties they face; even those who have lost almost all they possess hold out the hope of a future with better psychosocial conditions, and are prepared to fight for it.

Another characteristic of Brazilian culture is optimism. Perlman's longitudinal study (2007) of the favelas of Rio de Janeiro was carried out in the 1960s and then over 30 years later when she returned to reinterview some of the subjects of the original study, their children, grandchildren, and other residents, and one thing it noted was "the optimism that prevails despite all" (p. 2). Optimism can be a source of support in facing everyday stress as well as extreme situations.

Methodology

An exploratory study to investigate how people who lives in areas suitable to flood and landslides deal with these situations of risk provided evidence of critical high-risk situations where the combination of public and, above all, community action brought about positive results.

We adopted a mixed methodology that involved:

i. Consulting the City Council on possible locations for the study

ii. Visiting five suggested sites – areas at risk of landslides and flooding where there were signs of the population taking the initiative and mobilising to face risk situations

iii. Beco do Óleo and UR-12 were chosen as emblematic of extreme conditions both in terms of disaster risk and the initiative taken by leaders and residents to face adversity

iv . Further visits and open, exploratory conversations with community leaders

v. Two guided focus groups were conducted with a view to understanding the basis of community resilience in vulnerable areas and identifying the mechanisms for coping with the landslides faced by UR-12 and overcoming their

consequences, also after the flooding in Beco de Óleo, with housing on the riverbanks

vi. Table 1 shows the means adopted to identify the evidence of resilient factors;

vii. The profile of participants in the two focus groups was of people who had been more directly involved in the flooding or landslides at each site

viii. Selection was both on the basis of invitation by the community leaders and the snowball technique, where one person invites someone else they know; some participants also just happened to be there at the time

ix. The focus group at UR-12 included 7 residents (3 women and 4 men) all over 50 years old

x. The focus group at Beco do Óleo included 5 residents (four women and one man all over 30) as well as four girls aged between 10 and 12; two of the adults were community leaders studying law and social work, respectively.

Individual socioeconomic profiling of the participants was not possible, because we decided to start the focus groups straight away and at the end people were in a hurry to leave; in future, it would be best to do this brief check first. In any case, this was an exploratory study to identify mechanisms of coping with crisis.

The first community, Beco do Óleo, located on the banks of the Capibaribe river, is subject to seasonal flooding every year, and residents suffer the effects of this precarious situation on a daily basis, including pollution arising from untreated sewage. The lack of basic facilities such as sanitation, health, education, security and leisure combine with the structural fragility of the houses – most built of waste cardboard and wood – to put the lives of inhabitants at risk.

In the second, UR-12, a landslide in April 2012 destroyed 5 houses, and people would have died if the response of civil defence and the community leaders and the residents themselves had not been fast enough.

These two communities are typical examples of spontaneous settlements exposed to disasters and ongoing risk situations common in Recife and other Brazilian cities, and they also show the prerequisites for the types of mobilisation and community organisation being investigated. The results will feed into the ongoing research project "Urban resilience of coastal cities: a resource to meet the challenge of climate change" and part of the post-doctorate of one of the authors.

Table 1. Ways of identifying factors that favour resilience

ON AN INDIVIDUAL LEVEL	COLLECTIVE OR COMMUNITY LEVEL
Evidence of resilient factors – overcoming crises, traumas, stress, everyday pressures • Accounts of overcoming problems • Individual statements about where people found the strength to succeed • Who did people say they relied on • What did they say might have helped, but was not available	*Evidence of resilient factors with potential collective impact* • Accounts of events and achievements • Accounts of how the disaster, adversity or crisis was overcome: the main actors and institutions • Institutions and leaders most active and successful in the crisis • What would have helped to overcome the problems more easily or quickly, but was not available • - in the district • - outside help

On the basis of the characteristics attributed in the literature to resilient individuals, similar attributes were sought applicable on a collective level, together with the qualities described in Ojeda (2005). The results, presented in summary in Table 2, with a list of the categories of resilience drawing on this data, was used to understand the basis of resilience in these two communities and how they overcame their vulnerability.

Table 2. Attributes and categories that favour resilience

ON AN INDIVIDUAL LEVEL	COLLECTIVE OR COMMUNITY LEVEL
Characteristics and attributes that favour resilience (Melillo (2005), Kotliarenco (1997), Walsh (1998), Ravazzola (2005), Grotberg (2005) • Skills, adaptability • Resistance to destruction • Initiative • Getting on with people • Humour, creativity • Morality • Consistent self-esteem • I have, I am, I can	*Characteristics and attributes that favour resilience* • Collective self-esteem, taking a pride in the place where you live • Cultural identity, incorporating customs, values, idiomatic expressions, dances, songs, etc., that become an inherent part of the group • Social humour, the capacity of the group to "see the comedy in the midst of tragedy" • Collective honesty – carrying out public functions decently and transparently (Ojeda, 2005) *Categories and aspects analysed* • The presence of institutions offering support to the community, with people actively involved • Common history of facing adversity • History of collective action to solve collective problems • Committed community leaders • Cooperative, integrated relations with civil defence • Communication between public authorities and the community in place, or an alarm system

Results and Discussion

Common history of facing adversity and history of action to solve collective problems

Beco do Óleo

In May 2011, the population of Beco do Óleo suffered flooding caused when some of the gates of the Carpina reservoir were opened without notice to the community, leaving several families without shelter. In such a situation of crisis, local community leaders played a vital social and political role through their solidarity. Their actions representing the collective catalysed mobilisation and acts of solidarity in support of residents affected by the disaster despite the general lack of institutional or political support. The community did receive help from the Archdiocese of Recife and Olinda, which provided space for the homeless and organised actions with the leaders such as attempting to set up a soup kitchen, though the latter was abandoned when no suitable location could be found.

The lack of outside support was frequently mentioned, and residents said that though government bodies, politicians and the press appeared with offers of help in the immediate aftermath of disasters, none of them kept up contact with the community after the incident had occurred even though the area was still suffering its effects and trying to gather the means to overcome them. There were also complaints of the negligence of Civil Defence and local government, especially given that most local floods are caused by opening dams without notice, thus denying the community any chance to prepare.

In such situations of external neglect and indifference, the proactive approach of community leaders is key to the success of local projects. The prominence this gives them was the main aspect mentioned by interviewees as a return for their efforts in support of the community's struggle.

UR-12

Through the joint efforts of residents in the struggle for improved housing and urban infrastructure, with the support of community leaders, the community managed to create the UR-12 Community Centre, which has acted as a conduit between local leaders, local government and the community to facilitate mobilisation, cooperation and solidarity while working to minimise the effects of possible disasters.

These actions included the mobilisation after the 2012 disaster, when the centre was offered as temporary housing for local families until new houses were built for them through the community's own efforts; a community kitchen was also set up with support from politicians, the city council and national programmes such as Fome Zero (Zero Hunger), but it was not kept up because of a lack of management and volunteers.

The Community Centre also took part in a project in conjunction with local government, private companies and communities with the aim of reducing risk situations in vulnerable areas. Embankments were reinforced and other steps taken to improve hillside living conditions, and the community was directly involved in monitoring and implementing the improvements to raise quality of life and reduce disaster risk. However, a change of local government brought this programme to a halt through lack of commitment, with delays and budget cuts.

The majority of statements recognised the importance of community leaders in facilitating mobilisation and acting as mediators between the community and local government, as well as their dedication and commitment to the common struggle.

The mechanisms and strategies for sustainability developed by the population

By analysing the prior history of mobilization, we find that at UR-12 there were previous initiatives for collective building: i) building the community centre; ii) building the house for residents that occupied the community centre; iii) they checked the construction quality of public works within the Parceria nos Morros programme [Hillside Partnership] by taking part in the Commission for Supervision of Works; iv) they developed effective communication and cooperative relations between residents, community leaders and civil defence.

For Beco do Óleo, their prior history of mobilisation during flooding is related to: i) proactive role of community leaders both with everyday problems and at times of crisis; ii) criticism of opportunism of politicians given the vulnerability of the population; iii) demands made to civil defence and politicians – most seriously, the majority of the time the population is not informed when dams will be opened, flooding their homes.

Perceptions of participation and the role of community leaders

In general, community leaders realise the importance of their role, but they find it hard to be a community leader:

"It's not easy being a community leader, in the thick of the struggle, people criticize you, they say we're getting paid for it, I don't earn a penny, just friendships and wisdom. If someone needs me, I'll go." (female leader 2, BO).

The leader of UR-12 understands their importance in pursuing community demands:

"I think our role is very important because we always make demands, even when the community isn't motivated, because they think nothing will come of it [...]. I believe in this very strongly, when I'm gone, there'll be somebody to take my place." (female leader, UR 12).

In Beco do Óleo they do not have good relations with civil defence, and these are their requests:

"Get in touch, talk to us first, communicate, so we can prepare the community. I wish they would do that, that they would listen to what we're asking, because then we could make sure every resident was prepared, we'd go from door to door." (female leader 2, BO).

The words of this leader show how important community leaders feel information is for them to carry out their role more effectively and help prepare the population for flood situations. It is difficult to understand why people are not informed when the dams just above their community will release water, which affects them to the extent of flooding their houses, together with other material and immaterial harms. This is an example of negligence by the public authorities, typical of their treatment of poor riverside communities. This can be seen in the revulsion expressed by another leader:

"How many times are these people going to have to go through this? Well, a lot of people are going to die, and then they'll see how a house needs to be built. People don't just die of being murdered, they die from diseases, diseases carried by rats, where she lives it's dreadful, she has the disease, and it's not just her either, lots of people do there" (female leader 1, BO).

She also touched on the risks associated with the precarious electrical infrastructure they are exposed to on a daily basis:

"The wire is exposed, that means if a child touches it, bye-bye (she will die). So, are we going to keep quiet about these things? [...]. We want a better life, not just for me or for anyone else, for everyone who lives in my community. Not just this community either, there's lots of them" (female leader 1, BO).

One of the leaders at Beco do Óleo is studying law, and despite her own prospects for a better quality of life, she affirms her commitment to the community she belongs to, whichis an example of pride in the place where you live, as mentioned in Ojeda (2005):

"[...] the day will come when I can have a better life, but I won't leave this place, I'll set up my office here" (female leader 2).

Participation, increased integration and confidence

When asked what was most important and what could help with their work, a man in UR-12 stated that participation was a way to make the community stronger:

"People notice it when there's participation, and so they're more likely to listen to our demands" (male leader, UR 12).

A female leader from the same community emphasised community integration as key, for all members and also for leaders:

"Integration between us is very important [...] the community is a marvel when it's stronger, not just for residents, for local bodies too. We get respected, it's less stressful. (female leader, UR 12).

She also underlined the importance of a community's confidence in its leaders and their role:

"I think we need more confidence. Your (the community's) confidence in us, because you know our work is serious, we don't earn anything for it but we're here to make a difference. [...] I'm one of the first, I don't want to stop" (female leader, UR 12)..

This lady was 64 years old and full of energy to be involved in community actions.

Humour and Optimism

The humour of the participants could be seen in their body language, joking and smiles: see Figures 3 and 4. This more relaxed way of speaking was more pronounced in Beco do Óleo. There was just one man in the focus group there; the rest were women and children who showed intimacy amongst themselves. One moment of particular relaxation and laughter was when they mentioned the "help" received from politicians and the press, who in fact only turned up to make use of the tragedy to improve their image. This is a sign of the humour of some participants who could laugh at their own misfortune and at the same time perceive the true motives of people in power who took advantage of their situation. In this group there was another emotional moment when one of the leaders was recounting her personal experience of overcoming adversity.

Figures 3 and 4. Light-hearted moments during the focus group at Beco do Óleo

Comparing the groups, the greater representation of men at UR-12 (around half) and the presence of fewer children seems to have created a more serious atmosphere than in the Beco do Óleo group, with fewer jokes. However, in both groups, optimism about the future was in evidence. The leader at UR-12 thanked us for having convened the focus group, which she saw as an opportunity to restate the community's demands:

"[...] well, one meeting leads to another, here we are now and there's going to be another meeting on Tuesday. [...] we gave thanks to God for this moment, because we want to find a way to start asking for what we need and those improvement works can't stay on hold."

She was also optimistic about the appearance of new leaders: *"when I'm not round any more, when so-and-so has gone, and the rest, someone'll come along [...] I remember the story in the Bible, when one died, there was another, and then another, wasn't there? Well it's the same thing with us."*

Among factors that research consider to act as reinforcers of resilience, Ravazzola (2005, p.78) mentions beliefs, attitudes, and skills such as the capacity for collaboration, access to emotions related to hope and optimism, cheerfulness, humour, flexibility and self-awareness. In support of these conclusions, Barbosa (2012, p. 21) argues that religion/spirituality appears to be a protective factor that influences the development of resilient behaviours to the extent that belief can enable the formation of a Sense of Coherence (ANTONOVSKI, 1982, 1989), thus permitting an understanding of adversity, a meaning for life, as well as favouring an experience of empowerment for people to deal with these situations.

Perlman (2010, preface XIX), in her study of the favelas of Rio de Janeiro, also noted humour and creativity as useful skills in dealing with everyday difficulties: "I admired the residents' jeito (knack) for inventing solutions and using humor as a survival skill".

Although it does seem likely that humour and optimism have a relevant role in individual and collective resilience, the results of the present study do not go far enough to support this affirmation. These features of Brazilian culture require further study in other locations.

Figures 5 and 6. Focus Group at UR-12

Learning things, Helping Neighbours, Solidarity and Empowerment

When asked what they had learned after the flood, landslides or crises faced, support and love for others were emphasised – as though the suffering of others were an invitation to help them. In an emotional moment, one leader recounted how she had overcome the adversities she faced:

"What I learned was to love my neighbour. Because I have my children, we want to give them education, so we want to learn, and you want to help your neighbour and

your own family at the same time. [...] When you see someone suffering, just stop, everything that you have, because the best thing in the world is if you can think "My God, I did something for someone", because it's really bad to suffer with no-one to help you" (female leader 1, BO).

Readiness to learn new things and overcome one's own fears and limitations are among the benefits of the work of the community leaders. This openness to new things, and to learning from others, makes them stronger, and these are attributes that foster resilience. This declaration shows the potential for solidarity in these communities, as well as the pleasure given by helping others and being useful in a moment of crisis, as observed by Alcântara (2011). This resource comes to the fore in moments of crisis and disaster such as those in the Serrana Region of Rio de Janeiro and the Zona as Mata Sul in Pernambuco (Alcântara *et al.*, 2012a).

"The friendships we make are really good, thank God, living with you means building something. That's how we achieve things. These friendships mean knowledge, because every day we learn from each other, we're starting, I learn more and more from people every day. And we have some friends where we say to each other "we are each other's strength", first God and then the people who are with us. After I went into the OP (Participatory Budget), going to the meetings and talks, they asked us to talk about the community, in front of an audience, there were foreigners there, people from the university, we were scared out of our wits, but it's something you really learn from, it's an experience, building something, I was there, we did it, but I didn't go just to say "I went", I went to learn, because it's very good to learn things, to build something, and then other people want to hear about our story, and we can talk a bit about where we have come from." (female leader 1, BO)

Being a leader makes them stronger, gives them the confidence to speak in public, and to tell their stories. The entire process of creating and strengthening leadership empowers them and increases their self-esteem by overcoming theor limitations, shyness or insecurity. This increased self-esteem ends up spreading out into the community itself, leading to spontaneous initiatives to recover from and overcome the disaster.

Though three female leaders in the focus groups demonstrated resilient characteristics, some of the other participants did show a degree of apathy. This led us to conclude that the potential for resilience in the communities studied remains fragile, and depends on the commitment and leadership of individual members of the community; this accords with the findings of Ojeda (2005). However, there is also a need for studies in areas with a longer history of struggle and community organisation.

Preliminary Conclusions

First, of the two types of disasters in the studies, there is a tendency for civil defence to pay more attention to landslides than flooding, because in the former case, though there are fewer incidents, the number of fatalities is greater.

Another finding is that greater integration and better communication between the population and their leader, and between the leaders and civil defence, can prevent disasters, as we identified at UR-12.

It appears, corroborating the work of Ojeda (2005), that community leaders play a fundamental role in coping with day-to-day problems as well as in more critical situations when landslides or flooding occur. The presence of dedicated and resilient community leaders may contribute decisively to coping with disasters. This means the community resilience of the localities analysed is fragile because it is highly dependent on the individual resilience of the community leaders themselves.

While the readiness of outside agencies and local government to provide support and resources is an influential variable, the persistence of community leaders in communicating their needs and insisting on the fulfillment of what has been promised, or respect for the basic rights of residents, is essential regardless of the degree of external commitment.

Some communities, trying to make their situation sustainable, pursue alternative approaches. When facing disasters, these communities have taken clear independent steps to promote solidarity, reduce human losses, support those affected and overcome traumas and difficulties in the wake of the disaster. Solidarity with the suffering of others was also seen in both communities. Resilience is also seen when they seek help, whether from the community itself or from public institutions.

One aspect that fits in with the experience of the authors and observed by Janice Perlman (2010), Rodriguez (2005) and Ojeda (2005) seen in many other communities facing disasters, crises and day-to-day stress was humour as a resource to overcome adversity and build resilience. The interview subjects and focus group participants showed a great deal of cheerfulness, despite their suffering and the difficulties they face. Humour alone may well not be enough to promote resilience unless it is associated with creativity in finding solutions to cope with the conditions of scarcity and risk the communities face. Although we were often surprised to find people in situations of extraordinary social vulnerability who were nonetheless able to face their circumstances cheerfully, the results of this study are not in themselves sufficient to affirm that the humour of the focus group participants contributed to their resilience.

It may seem that this is particularly a characteristic of Brazilian culture: playfulness, laughing at one's own fate, and such attitudes might well play a significant role in developing resilience. Optimism and religion also figured among the characteristics seen in the exploratory focus groups, and they are mentioned by Perlman (2010), Ravazolla (2005), Ojeda (2005) and Barbosa (2012).

However, more studies are needed to investigate the relevance of these characteristics to resilience and the role played by such attitudes in helping low-income populations to live with recurrent adversity. It is frequently the case that they make use of the little they do possess to overcome their misfortunes, seeking to mitigate their suffering by resignifying situations, whether it is through humour, through religious faith, or in hope of finding and fighting for a better future. In-depth interviews and life history ac-

counts are a promising avenue to understand these phenomena better, and especially their relation to resilience.

Though they may live in vulnerable situations with high risk exposure, some communities develop resilient behaviours in response to repeated disasters, as well as more minor and localised incidents, but this resilience is still dependent on the individual resilience of the leaders and on the existence of committed community leaders.

We would like to pass on a message given to us by a leader in UR-12 to underline the commitment we researchers owe to this population:

"I'd just like to ask if you could help us, and talk about our complaints, about the stuff we were supposed to receive and we have to go after it, and now the university is with us, I think that's really important, because it is important for academics to focus on the community and tell people about what they have seen, because they are educated, someone who has studied knows more than we do" (female leader, UR 12).

To conclude, we would like to quote Perlman (2010, preface XXIII), who perceived the richness of favela life:

> Favela is life, favela is love.
> Favela is freedom, friendship and feijoada.
> Favela is people persevering.
> It is laughter and tears, life and death – only a hair's-breadth apart.
> It is a place where the unexpected is expected and spontaneity is the norm.
> It is not all pain, poverty, and passivity.
> It is people living their lives amid a civil war.
> People who would prefer to work and to study.
> People trying to be recognized as people by other people.
> For whom they are invisible and inconsequential.

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OPPORTUNITIES FOR SECURITY GOVERNANCE IN THE FACE OF LOCAL SAFETY CRISIS IN CITIES

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Abstract

This study looks into the opportunities for local security governance in the face of rising safety problems, taking a housing neighborhood watch group who takes to policing its own area. The rapid growth experienced by Malaysia's cities in recent years have had the negative side effect of increased neighborhood crime, and hence sense of insecurity amongst the residents is widely felt. Social problems are on the rise, and increasingly more places are seen as being unsafe. Schools, the workplace, streets and housing areas are seen to be unsafe for people. There is also a rising consciousness of personal and family member safety especially with respect to violence that includes snatch theft, carjacking and break-ins. This situation has resulted in the 'seiged mentality' of residents, visualized through the constructions of strong gates and metal-grilled houses. Data were gathered from the following sources; i. safety reports from government agencies, the police, the municipal office – responsible for city safety that will provide the background information on safety crises and actions to overcome the crises at the National, State and Municipality level; ii. neighborhood level residents actions and activities through participant-observation. The crisis has mobilized the authorities at the national, state and municipal level to deal with the safety crises. It has also provided opportunities for increased police-community cooperation, together with local government agencies ensuring increased vigilance. Safe neighborhoods need to develop a sense of belonging and place, avoiding the feeling of being marginalized for any segment of the community. Safe neighborhoods also require good and effective governance to carry out all the necessary functions expected, providing an alternate bottom up solution to traditional top down authoritative control.

Keywords: neighborhood crime, siege mentality, neighborhood governance, safe city, urban crime prevention.

Introduction

Cities in fast growing Malaysia are now grappling with safety issues with respect to personal, family and neighborhood wellbeing, as what have troubled cities in the developed world in the past (for example Jacob 1962; Myers, Branas, & Kallan 2011 in the USA). These issues however, provide an opportunity for a local community governance initiative; bottom-up in nature but within a collaborative-partnership of state, market and society framework (its articulation below). Wealth creation that

is propelled by greater participation of the private sector through foreign direct and local investments, has put in place advanced physical as well social and cultural infrastructures which in turn contribute towards socio-economic progress and a better quality of life for the urbanites, a testimony towards attaining sustainability and modernity (Malaysia 2010; 2011). That cities all over the world are the generators of growth is equally true for cities in the Malaysian nation state. Over fifty years of Independence from British colonial administration has increased the space for Malaysia to create responsible governance that is attractive to foreign capital owners to come and to set up their branch export production industries in the main cities. Consequently, the trickle down effects can be visualized in the modern expanding cities with ultra-modern communication facilities, housing, high-end shopping complexes and excellent all weather highways connecting regions and cities. Yet, the socio-economic achievement has generated lately downside consequences, getting visible on the urban social landscape in the form of rising social problems generally petty in nature but of great nuisance to the urbanites. This paper is to achieve the following objectives, namely; first, to identify, characterize and account for the social problems in major Malaysian cities; second, to examine the existing urban governing institutions to ensure safety of the urbanites; and third, taking a case study to illustrate the opportunity for security governance in which a local community representing an housing neighborhood responds to the need to protect their houses and family members from safety crises perpetrated by bad-hats.

Ccity safety crises and governance: a view from the community in Malaysia

Crises in city safety in Malaysia can be better understood in the state-market and society framework-narrowed down to the administrative hierarchy in the country and its relation to market activities and social empowerment to pursue useful activities for their wellbeing (Abdul Rahman Embong 2000; Abdul Rahman Embong 2007; Azizah Kasim 2011). From Figure 1, the state-market and society administrative framework will provide the umbrella for the meaningful functioning of the local initiative. This means that the local initiative since Independence in 1957 from British colonial administration the Malaysian nation-state has been sustaining the developmental state paradigm, in which the state takes the lead in promoting development by formulating market friendly policies. Though selective at first, over the last fifty years the Malaysian policy makers have gradually liberalized its market policies, allowing for easier global trade and capital flows especially in the form of direct foreign investment and also wider participations of local capital in industrial activities for local consumption and export. Over those years the fragmented market or better described as dualistic market - the modern and the traditional (Malaya 1956; Malaysia 1966) has evolved into a modern one, capable of wider participation in the globalized market. The New Economic Policy with the aims to eradicate poverty and to restructure the Malaysian society such that no one ethnic group will be identified by its core economic activities (Malaysia 1971) becomes the tipping point in achieving wide spread equity in the society, hence promoting greater participation in the global market; Malaysia gradually

liberalizes its economy further. The nation state enjoys a relatively peaceful existence despite the terrorist activities from the British Administration era till the 1980.

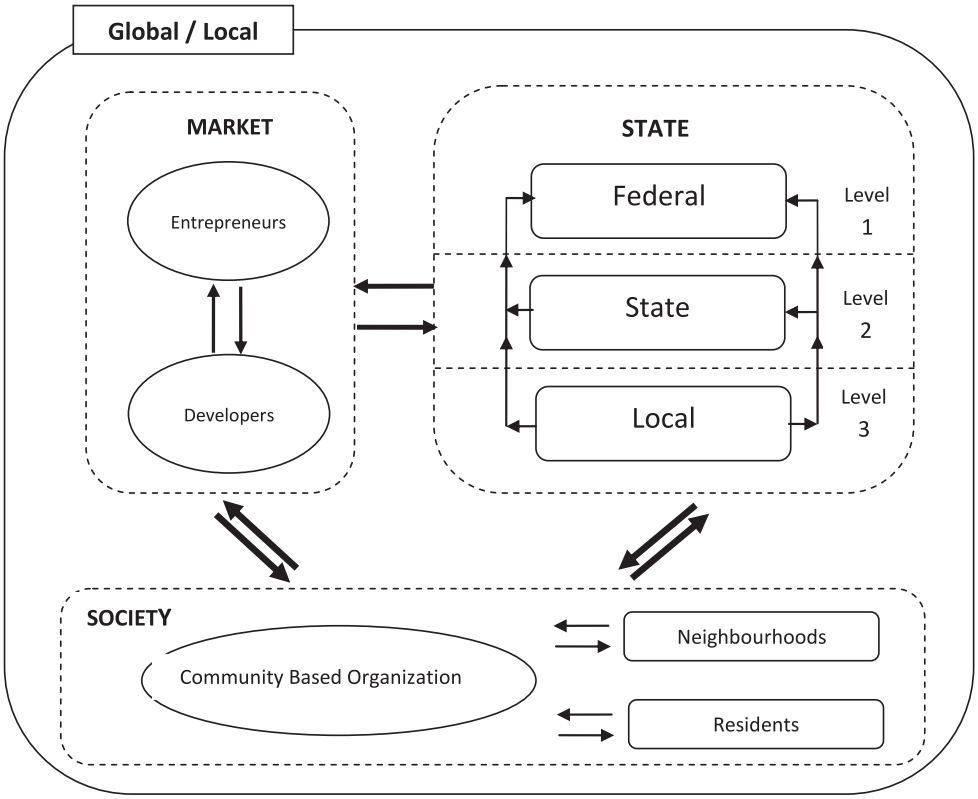

Figure 1. State, Market and Society Framework for Governing Local Safety Crises in a Local Community in Malaysia

The pursuit of industrialism funded by foreign direct investment and local ones have made wealth accumulation possible to pay for the widespread social development projects, including new urban housings, health, more importantly education, modern transportation infrastructures, physical infrastructures and recreational facilities befitting the continuously improved quality of life among the urbanites. As the manufacturing, small and medium industries are located in urban areas, especially in the major townships and cities, the embodiment of Glaeser's 'triumph city' (Glaeser 2011) is seen in Malaysia. Indeed the triumph of city in continuously attracting more people by the day to come and make the city their homes is there for all to witness. By 2012 the Malaysian Census estimated that 72.2 percent of Malaysians are urban. By 2013 Malaysia has also reported to have reduced the absolute poverty group to less than three percent (Malaysia 2011; 2013) of the total population. Cities in Malaysia are no stranger to safety- security problems. Relatively young in age, less than 150 years, the cities grew from urban centres founded by the British intervention and administration of Malaya then, initially peopled mainly by the local Malays straddled in villages

(*kampung*) close to the city centre and the periphery, and Chinese migrant workers in tin mining areas (Khoo Kay Kim 1972) and Indians migrants in public works. The migrants at the time, especially the Chinese in the tin mining area were organized into two separate and exclusive associations perpetrating rival gang clashes.

Social problems have been making their presence in the Malaysian social landscape all along but have tended to assume more visibility in the last two decades especially in the aftermath of the Asian currency meltdown in 1998 that affected Malaysia badly (Malaysia 2000). But all problems were under control. Malaysia is still safe for all including the visitors.

Rising problem in city safety in Malaysia has a wider implication on human security in the Malaysian nation-state. Human security became the central point in the UNDP's approach to development in the 1990's and still relevant for developing nation-states including Malaysia (UNDP 2010). Although human security is widely used to refer to security of a country it embraces much more. In this respect, the concept can be adapted to conditions within Malaysia or even a local area, narrating about security of livelihood, employment, food, health, education and accessibility to basic amenities and resources.

In the midst of the continuing growth and improved quality of the citizen's life Malaysia has to grapple with rising safety problems, at first involving petty disturbances of houses in housing neighborhoods but as time moves on people in housing areas have been gripped with fear of house break-ins, robbery, snatch thefts, and others. Lately, since December 2012 Malaysia was awakened by arm intrusion from Southern Philippines into Sabah, Malaysia eastern most state, and since March 2013 murder crimes using fire arms had added serious notes to the safety issues (New Strait Times June, 20, 2013).

Findings from research on city safety are slowly increasing in Malaysia. Mohammad Abdul Mohit, Hanan Mohamed Hassan Elsawahli (2010) for example, examined crime in a terrace housing in Kuala Lumpur, Malaysia. They found that a majority of the crime reported by the residents are petty, shoe stealing and iron cover for drainage in front of house, with women's hand bags snatching on open streets as the dominant fear. Further, the perceived danger is found to be more dominant than the actual crimes. The residents have taken to add iron grill to mop up security of windows and doors of their houses. The step taken helps to reduce incidences of petty thefts and slowly overcoming fear. The authors found also that their houses are safe but not the neighbourhood. So they suggested among others surveillance, full illumination of houses, modifications of entrance to houses.

A related study by Aris-Anuar et al (2011) examined among others, the effectiveness of the Safe City Programe for urban tourism taking Putrajaya, the administrative capital of Malaysia as a case study. Through questionnaires interview of sampled respondents they found that most the respondents crime find the prevention steps taken to ensure people's safety in Putrajaya are just satisfactory. Almost three-quarter of the respondents strongly believed on the importance of Closed Circuit Television (CCTV) usage to ensure their safety in Putrajaya. In addition crime prevention steps such as safety education and providing of a community's crime booklet are less important to

ensure their safety. The respondents feel that the local authority has to collaborate with other government agencies and non-government organization (NGO) in order to intensify education on the safety aspects.

Another aspect of study on city safety is about living in gated housing area. Mariana Mohammed Osman, Noor Suzilawati Rabe, Syahriah Bachok (2011) just did that by investigating the factors influencing communities decision to reside in gated and guarded housing areas in Kuala Lumpur through questionnaires survey of 200 people in such housing areas. In such housing areas, guards are stationed at the entrance of the housing areas equipped with high-definition security cameras, CCTV monitoring devices and alarm systems. Guards monitored the housing areas and they also patrol the area. They found that a majority of the respondents (79.3 percent) claimed that the patrol service was provided 24 hours. While the remaining mentioned that the patrol service only provided during night time which is starts from 7 pm to 7 am. Higher payments monthly they paid the better the safety and security services. The study found also that a majority of the respondents claimed that that they never heard of any house break-in occurring in the months of the survey although a few of their respondents mentioned that house break-in did happen in the area through the front doors, back doors and windows of some houses. As a whole, a majority of respondents felt safe when walking alone in the neighbourhood during the day and at night time, and they felt safe to let their children play outside the house during the night time.

Methodology

First, this study uses participant-observation as the instrument to generate the local data for the present discussion. The main writer is from the housing area. Second, having bought and lived in the housing area Phase III for the last 32 years he has seen the progress of the neighborhood from a loose assembly of house buyers, socially unconnected, one household to its own to a caring community. Third, much information for articulating the social dynamics in instituting a Neighbourhood Watch Group was gained through participating in activities in the area, and structured observation on the local organizing committee's, being sub-divided into sub-committees with specific functions and activities and the women's wing, and how the main and specific subcommittees go about executing their works. All the people involved in the programmes are voluntary, with participants willingly carrying out tasks set out by the main committees and outlined by the Chair –person of each sub-committee.

Secondary Data Source

In addition, manuscript data with respect to urban security issues in the country, the Negeri Sembilan state and the Seremban municipal area were also collated. Information on policy, guide lines and local requirements relating to the process of establishing the Neighbourhood Watch Group were gathered. Information and data about the Neighbourhood Watch Group itself were obtained from the Secretary and Chairman of the main committee. We use descriptive statistical analyses here as the

gathered information is somewhat limited for a more meaningful and sophisticated statistical analysis.

Study Area

The study was carried out in a housing neighbourhood in the Seremban Municipality in Negeri Sembilan, Malaysia (Figure 2), located about about 65 kilometers south of Kuala Lumpur, the Malaysian capital city, with a population of 450,000 (Department of Statistic 2010). The housing neighbourhood study area is Phase III of the larger Paroi Jaya middle class housing completed in the early 1981 with first generation buyers mainly from government and government agencies employees. The total houses are 592 with a population of 2,500 living in the area. At the time of writing the area was multi-ethnics with the Malaysian majority. About one percent were renters.

Figure 2. Location of the Study Area

Results

From the information collated, Figure 3 provides a summary of social problems in the neighbourhood seen in the larger context of human security (UNDP), and in the three formal administrative tiers of Malaysia. From the UNDP (2010) list of human security problems Malaysia is well on the way to solving them. Absolute poverty for example has been reduced to almost three percent and poses no longer a national issue. Hence Malaysians have access now to good education, healthcare services and infrastructures. On national security the country has enjoyed a peaceful period despite the intrusion by armed terrorist from Southern Philippines in December 2012.

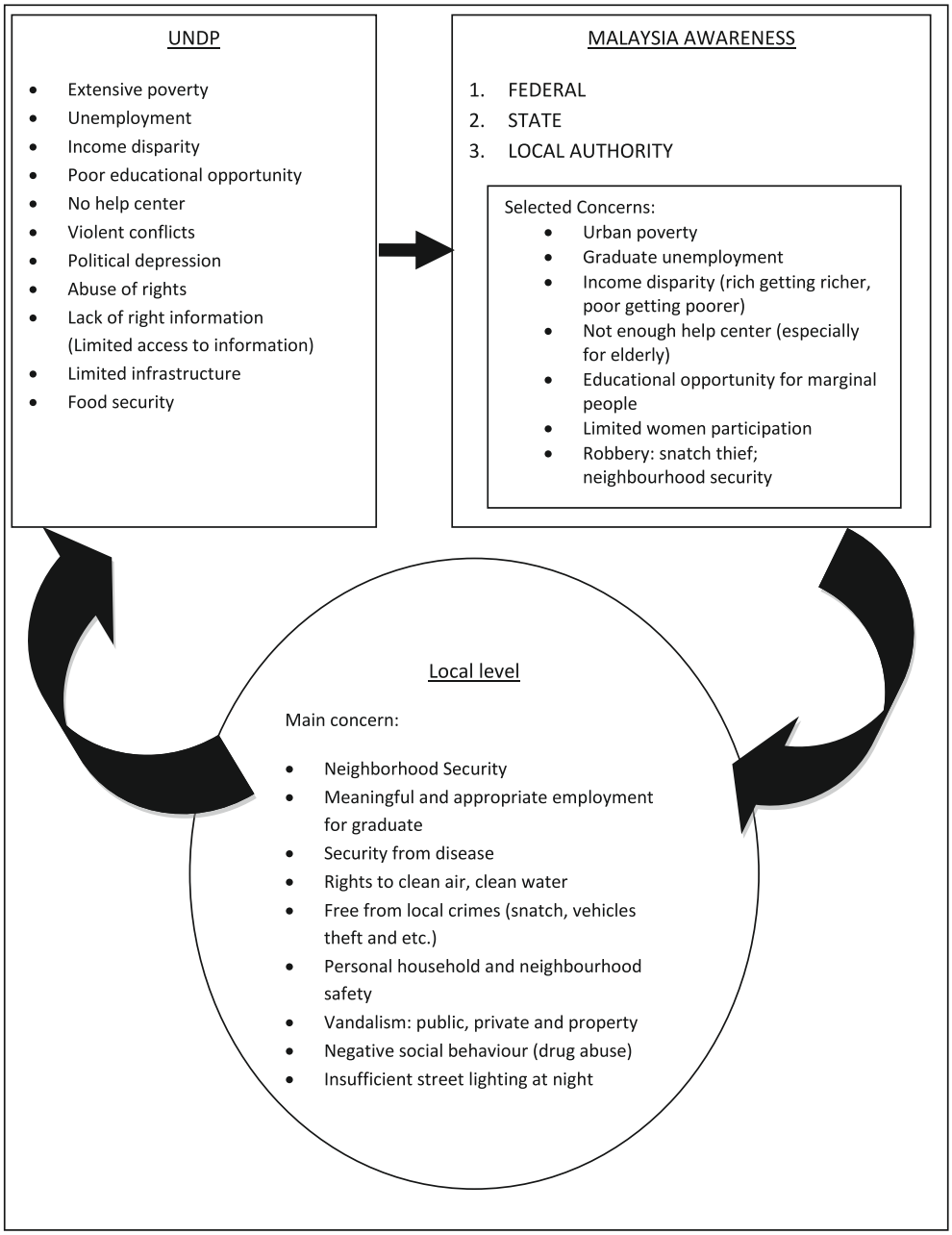

Figure 3. Human Safety And Security Programme At The Local Level

Insights Into City Security Problems in context of the Three Administrative Levels

City security as a set of social disturbances in cities and urban areas in Malaysia is generally petty. Nonetheless the social disturbances have disturbed the serenity of

life in housing areas for more than a decade, sending fear and uncertainties of possible bodily harm, house break-ins, snatch thieves and others as reported data are continuously brought to attention through the mass media. From Figure 4 and Figure 5 there are various dominant cases of security problems that have surfaced in Malaysia, in the Negeri Sembilan state and the Seremban municipal area and in the housing area case study.

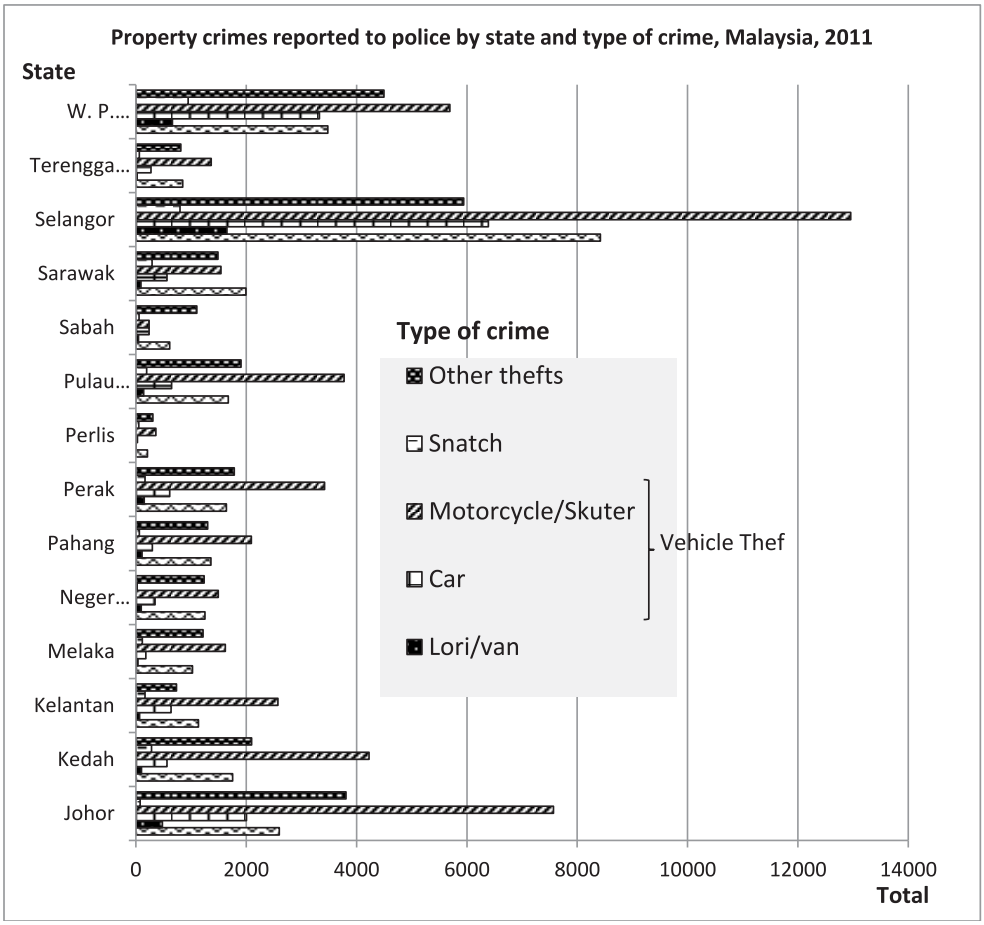

Figure 4. Property crimes reported to police by state and type of crime, Malaysia, 2011
Source: Malaysia Royal Police Department. 2012.

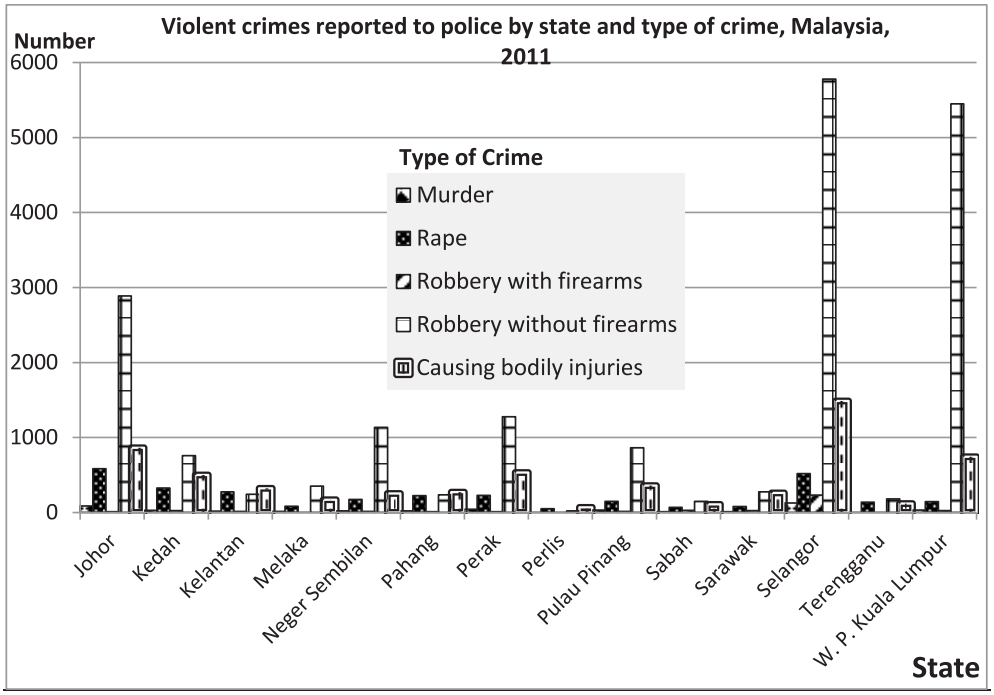

Figure 5. Violent crimes reported to police by state and type of crime, Malaysia, 2011.

Source: Malaysia Royal Police Department. 2012.

About the same time the Seremban Municipality with a population of about half a million people and a few thousands of estimated foreign workers had experienced such problems also. Figure 6 provides a visual distribution of those security problems and types. Indeed, there is a strong case to look at the security problems and study the governance opportunity from the community to arrest the problem. The local community mobilized ideas, manpower and the existing available governance structure and mechanism to fight back the uncertainties and fear.

In the neighbourhood, the range of safety issues are generally petty (Figure 2-material in the circle), nonetheless they have affected the serenity of life and fear.

Being in a middle income group the residents narrated that most pervading problems relate to petty disturbances such as petty thefts. Thieves were said to have broken into homes and threatened owners with bodily harms, carting away valuables especially cash, gold ornaments and even valuable household goods from 1905 to the present. The actual number of houses broken into over the observation the last 30 years was less than five and other petty disturbances such as stealing flower pots were random and did not occur continuously. The fear generated by those incidences produced a general state of 'siege mentality'. The situation was exacerbated by reports about similar cases elsewhere in the main stream papers, television reports and also in the alternative social media whose information may not entirely factual.

Petty thefts however have been rampant in the municipal area. Cases had been reported in the link houses whose inhabitants are from the low middle income groups. All inhabitants in such affected areas had responded to the problem by establishing community watch groups whose members voluntarily took turn to look after their housing areas especially from the middle of the night to dawn during which time most of the problems took place. The watch groups are linked to the police. Thus, crimes such as house breaking, petty thefts and drug pushing by deviant individual stealing, had been taken care of. Once again, all housing areas with those problems had so far not recorded any decline in property value nor house owners wanting to sell off. Thus, vulnerability arising from crime thus far has not produced mass sell-out or move outs.

The crime cases recorded show people living in the urban areas more vulnerable and the security infrastructure such as police officers and private security guards have to work closely with the residents of the areas (Figure 6).

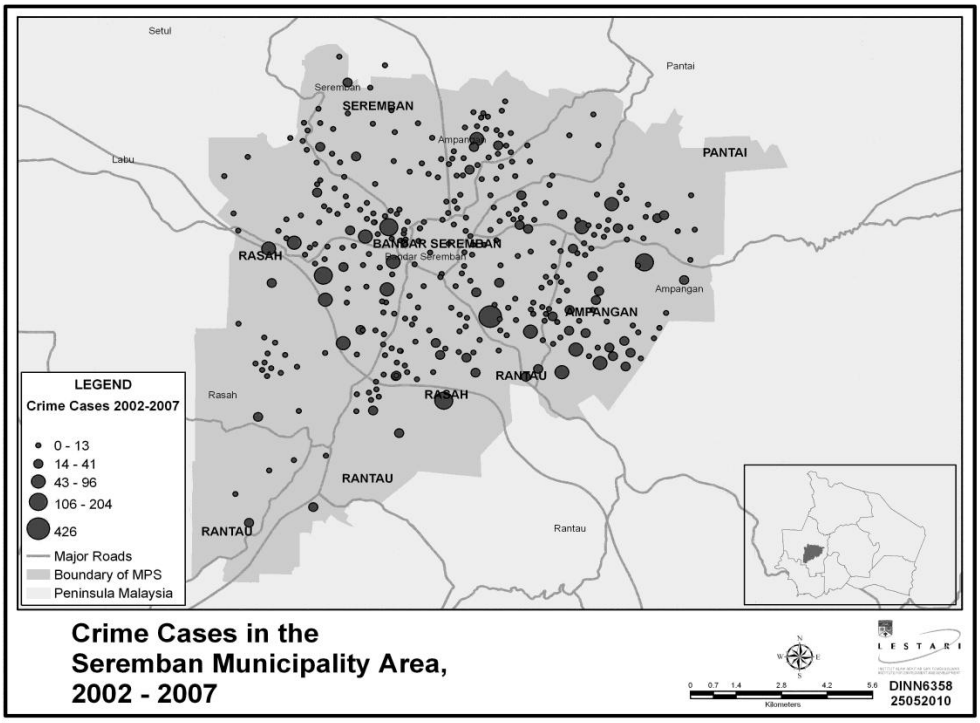

Figure 6. Cases of Crime in the Seremban Municipal Area

Source: Shaharudin Idrus et al 2012

Governance framework for the study

From the literature on governance for sustainability (Hemmati M. et al 2002; Ayre and Calway 2005; Ansell, C & Gash, A. 2007), we forward a governance framework based on the governing practices of Malaysia to locate the security issues of the local residents (Figure 1). Situated within the parliamentary democracy, the governance opportunity to arrest the local neighborhood security problems is set within the three tiers of power relations and the people in the local neighborhood have easy access to the policy makers and implementers in the second and third tier. The local initiatives in containing and hence overcoming the security are self motivated, bottom-up in approach. Once established the local group is linked to the three governing tiers that ensure support and legal protection.

It is noted that poverty was not an issue as the residents were fully employed in public and private places. Pensioners had their pensions on time. Those in self-employment earned reasonable amount monthly to enable them maintain reasonable quality of life. That all of the residents owned a house each, irrespective of housing types ensured that all of them were happy with their present level of life. The residents with growing children however, narrated possible problems in the coming years about their children getting a job, seeing that the global economy especially in the advanced countries which are markets for Malaysian products are slowing down in the last decade.

Governing and levels of response

Governance responses to the social situation in the city are summarized below. Actions being organized and the mobilized by the community in the neighborhood are located within the broader existing three administrative levels.

Three Levels of Response

The First Level- The Federal Government Level

City security is placed under the Department of Race Relations in the Prime Minister's Department of Malaysia with offices at the State and the city levels. That after more than 56 years of Independence Malaysia still grapples with nation building to create an integrated Malaysians from the multi-ethnic inherited from the colonial history is much acknowledged.

Atkinson and Flint (2004) defined gated communities as walled and gated residential developments that restrict public access. The authors also identified that residents in gated community belong to a management body or similar regulatory body through which decisions are made regarding the regulation of the community and the maintenance of shared spaces, such as the roads and shared interest such as fee for guard services and other basic infrastructures.

The Second Level and the Third Level

The state level administration extends the Federal policies with respects of security and safety to its agencies, especially the municipal administration. Information gathered from the Municipal Council in Seremban informs us that the Municipal administration has implemented aspects of the guide lines on safety city initiatives. Not only more street lighting have been put in place, CCTV in areas recognised as somewhat crime prone, and more frequent police petrol of vulnerable areas were carried out. More importantly Friends of the Police were formed among the communities. The planning section of the Municipal council has also taken steps to erect plant and iron barriers to separate pedestrians from the main roads and streets.

The Department of Town and Country Planning in Malaysia has formulated "Gated Community and Guarded Neighborhood Planning Guidelines in 2010. Guarded Community (GC) defined as a group of residents living in a fenced, guarded area. These areas can be either high-rise property such as apartment, condominium and town house or on landed properties such bungalow, terrace or detached houses. It is aligned with the provision of section 6 (1A) of the Malaysian Strata Title Act 1985 (Act 318).

In Malaysia, gated and guarded community is commonly known as a group of residents or community who reside in landed properties with Strata Titles. The guideline also explains that guarded neighbourhood referring to a residential area controlled in whole or in part of the existing housing or new land holdings with individual land titles. The schemes also provide security services. It is stipulated that any physical barriers of access to the public streets are illegal and the restriction of entry and exit to the residents and public also prohibited. These mean that gated schemes must not have physical barriers on public streets and not enforce any entry and exit restrictions to the residents and the public.

Guarded community should not hinder the access of vehicles, as local authorities have the right to enter such housing areas at any time of the day. The guidelines also defines gated community as an enclave disclosing development with security services with or without a guard house or has physical barriers (The Federal Town and Country Planning Department 2010). The neighborhood community is not in any regulation but it is an agreement among the community to form a guarded community for safety and security purposes. According to the Strata Title Act 1985 (Act 318), the land owners in a subdivided land and building, own the scheduled parcel alone. All other items and facilities are termed as common properties if they are not surrendered to local authority. The market response to the rising safety problem in its own way.

Housing developers have come forward with the gated community development in Malaysia. More high density expensive condominiums have been developed, offering attractive secured homes, guarded from criminal intrusions. Security firms meanwhile offer security guards to man temporary gates, 24 hours. Local response at the level of housing neighborhood is given a more detailed attention below.

Within the governing structure of Malaysia the neighbourhood residents themselves came together to form the Neighbourhood Watch Group; This Group is a bottom-up initiative to strategies ways to protect their families, properties and the neighbourhood against unwelcomed intrusions from non-invited outsiders to create disturbances in the form captured in Figure 3 earlier. Within three years the residents' voluntary actions have managed to turn the nagging security problems into new opportunities for collaborative work. The 'siege mentality syndrome' is rid off, bringing calm and 'life as usual' as the situation before the unwanted local security problems threatening their serene local life.

The opportunities arising from the security problems revolve around the building of a stronger bond of friendship among the residents who, as stated earlier came from many places to own houses in the neighbourhood. 'Know they neighbour' becomes the new re-embedding cultural norm as usually the practice among the traditional village community from which the majority originated.

The immediate strategy of the residents was to organize neighbourhood watch group. Concerned individuals in the neighbourhood area called for a meeting in a green open space. Anundertaking was made to start the Neighbourhood Watch nightly, seven days a week. Initially 10 volunteers would assembled at a base, two elderly persons to man the base, while the other eight were split into three smaller groups to make the rounds, complete with torch lights, batons and the Neighbourhood Watch Group vest, from 2am to 5am - the time when thief's and the bad hats operated in past months. Within a couple of months the residents could feel the general aura of safety returning to normal.

In 2011, the Night Watch was intensified, with one group of six the 11 pm to 2 am watch and another group taking over from 2 am to 5 am, to send the message to potential trouble makers that they are being watched should they enter the neighbourhood. By the first six months of 2013, the Night Watch was reduced to three nights per weeks, during the weekends and on Tuesday night, basically to send the message to intruders from outside the area that the Neighbourhood Watch was alive and very much aware about the in and out movements of people in the neighbourhood. The number people of on duty was reduced to 5 volunteers at any one time, from 12.05 to 3 am.

The immediate task of the women wing of the neighbourhood residents was to organize the women and children to support the main stream (the Night Watch) activities run by the men to ensure the neighbourhood's general welfare. Numerous so-called 'down-stream initiatives were mapped and executed stage by stage. From knowing thy neighbor action to organizing visits to other places in the country. In between more activities were put into action to foster closer interactions between elderly people using the common religious platform, young and youth activities at footsal, '*kompang*' troupe (a traditional band music) that can be hired at a small fee for local social functions in and outside the neighbourhood. More importantly, the initiatives by the women wing have brought the residents together, as witnessed at neighbourhood functions.

Overall, 'not all glitters are gold' so goes the saying; there are few residents remained aloof at the margins even though they subscribed and supported the very idea of initiatives that went to maintaining order and bringing serenity back to the neighbourhoods.

The residents of the neighbourhood averted the idea of installing guards for the reason that the housing area has too many open streets (7 streets and two main roads) to install barriers with guards. Not only that such barriers would bring a lot of inconvenience to in and out movements for school children, working people and valid visitors the setting up of barriers and hiring of guards would entail costs that will burden the majority of retired households.

Concluding remarks

From the discussion above it becomes clear that externally generated problem in the form of personal, family and neighbourhood safety has provided the catalyst for the coming together of the residents at first to flush the social ills befallen the housing area; 'One is to one's own 'adage summarizes the state of malaise in the socializing of residents in the area. The initiatives later on lead to the re-embedding of the traditional cultural norms of Malaysians.

What policy implications can be drawn from the study? That a collaborative initiative between all relevant stakeholders can initiate and then lead to a more close and meaningful social interactions in a neighbourhood, a housing area that has assembled residents from diverse areas before settling and owning a house in the study area. The residents are empowered to initiate and work for relevant solutions to their social problems.

The state, market and society at large offer a useful framework of power structure in which residents association in a neighbourhood can work out their own local solutions. The local residents have choices to resolve the security issues in the residential area.

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PERCEIVED SAFETY, COMFORT, AND SATISFACTION RELATED TO THE STADIUM EXPERIENCE

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Abstract

Football grounds are settings which often attract masses of people all over the world, thus arising safety and security issues to be adequately managed. Nevertheless, for this kind of places the influence of design features on occupants' attitudes and behaviours is yet substantially understudied. More specifically, design features of football grounds are supposed to influence users' perception of personal safety, comfort, and general satisfaction toward the stadium experience.

In order to investigate the relationship between the spatial-physical setting of football grounds and the users' behaviours, a set of measures was developed, on the basis of PREQIs (see Bonaiuto et al., 1999), concerning the perceived quality of the stadium (in terms of architectural, social, and functional aspects) and the perception of safety. This set and other dimensions related to the football ground experience were included in a questionnaire filled in by the study participants (N=306).

Results show that dimensions included in architectural, functional, and social aspects have a significant regression weight on users' perception of safety, with particular reference to the architectural aspects.

Keywords: perceived safety, confort, satisfaction, spatial setting, user's behavior

Theoretical background

In recent decades fire emergencies, walls collapsing, and violent incidents have affected football grounds, highlighting issues related to the need for crowd control and to coping with special emergencies. The presence of a large number of people in a spatially limited setting like the football ground implies management and organization issues that need to be handled both for prevention (i.e., to avoid incidents) and for intervention (i.e., to act properly when an emergency occurs). The characterization of the football grounds in terms of limited access, and reduced corridors and exit doors mirrors a structural weakness which may lower the users' level of safety and overall satisfaction.

Studies carried out in the 1980s on topics related to comfort and security in football grounds (see Canter, Comber, & Uzzell, 1989) have revealed a significant relationship among the spatial-physical setting, the users' behaviours, and their consequent perception of safety.

Following a "user-centered" perspective (see Gifford, 2002), it was shown that the absence of open spaces, the limited number of security exits, and the presence of

partition walls make the viewers feel insecure. In particular, the partition walls, which were evidently built up for separating, preserving, and protecting the occupants, can play the role of a real traps, representing one of the main limitations of modern football grounds (Canter et al., 1989).

Furthermore, the clear separation through barriers among different sectors of the stadium (i.e. Curve, Grandstand, Stand) may render more salient the ingroup/outgroup belongingness (Social Identity Theory, see Tajfel, 1978), thus arising the potential conflicts between supporters and, consequently, making more likely the occurrence of violent behaviours. In this perspective, the physical space becomes a reflection of the social dynamic, mirroring a deeper psychological distance between opposing groups.

As regards the specificity of the Italian football grounds, which are the context of the present research, they often date back to the early decades of the last century and present several limitations which are connected to specific structural weaknesses. In particular, they appear oversized, lack of adequate space and services, and are inappropriate in dealing with emergencies.

Despite the massive number of individuals which usually attend football events in most countries of the world, thus arising issues related to people safety and comfort, the concern for the quality of the design features of the football grounds is yet substantially lacking. In fact, we need to go back to the monograph written by Canter and colleagues in the 1989 in order to find a published paper addressing the effect of football ground design on users' responses. Unfortunately, the overall inadequacy of design features of football grounds in many countries contributes to make more difficult the management of (limited) spaces which are usually occupied by crowds of attendees. The accidents which sometimes happen in this kinds of places could be avoided whether the renewal or the creation *ex-novo* of football grounds follow a "user-centered" perspective.

The issue of the perceived quality of design features is included in the broader framework of the assessment of environmental quality, which has received great attention within the Environmental Psychology domain.

Since the seminal work of Craik and Zube (1976), various sets of indicators were conceived (and measured) in order to detect the assessment of the environmental quality of diverse environmental objects (e.g., the PEQIs - Perceived Environmental Quality Indicators: Carp & Carp, 1982; Craik & Zube, 1976) or settings (e.g., the PRQIs - Perceived Residential Quality Indicators: Amerigo & Aragones, 1997, the PREQIs - Perceived Residential Environment Quality Indicators: Bonaiuto, Aiello, Perugini, Bonnes & Ercolani, 1999, and the PHEQIs - Perceived Hospital Environment Quality Indicators: Fornara, Bonaiuto, & Bonnes, 2006).

Rooting on such research line, in this paper we present a first validation of scales measuring Indicators of Perceived Environmental Quality of the Stadium (IPECS).

In order to individuate the general aspects which could influence the overall perceived quality of the stadium place, we referred to the literature concerning a different

target place (i.e., the urban neighbourhood) but similar psychological patterns, i.e. the perceived urban residential quality (Bonaiuto & Alves, 2012) and the residential satisfaction (Canter, 1983; Amèrigo, 2002). In both cases, three main evaluative aspects were highlighted, namely spatial (i.e., architectural and planning), human or social (i.e., people and social relationships), and functional (i.e., services and facilities).

A specific concern related to the stadium experience is represented by perceived safety issues, which can be related both to the fear of being assaulted and to the risk of collapses that may involve the spectators, as dramatically happened in many tragic sport-related events of the recent past (e.g., the 1985 tragedy of the Heysel Stadium in Brussels during the European Champion Cup final). About such dimension, it is to note that safety represents a distinct facet included in the list of indicators of Quality of Life (e.g., see World Health Organization - WHO, 1994; Perlaviciute & Steg, 2013). Moreover, an indicator of security is included also (connected to tolerance) in the set of social PHEQIs (Bonaiuto, Fornara, & Bonnes, 2003, 2006; Fornara, Bonaiuto, & Bonnes, 2010).

Objectives

The aims of this study are substantially two.

The first aim is to provide a first validation of a set of tools measuring the Indicators of Perceived Environmental Quality of the Stadium (IPECS).

Such aim relies on a user-centered perspective in order to figure out the relationship between the spatial-physical setting and the users' psychological responses.

The second aim is to analyze and compare the relative weight of such indicators on the users' assessment of their stadium experience.

Hypotheses

H1: It is expected the extraction of reliable indicators concerning the main aspects related to the perceived environmental quality of the stadium place.

H2: It is expected a significant weight of most of the indicators, covering all the aspects (i.e., architectural, social, and functional) of perceived environmental quality, on users' perception of safety.

Method

Participants

The study participants (N=306, 233 males and 73 females) were individuals who had a stadium experience. Two third of them (67%) had experience of the S. Elia Stadium (hosting the home-matches of the Cagliari Football Club), whilst the remaining had experience of other Italian (and English) football grounds of Premier League football clubs.

The occupied sectors were respectively the Curve for the 51,3%, the Grandstand for the 7,5%, the Stand for the 39,6%, and the Guest Sector for the 1,6%.

The 86,3% of the sample had a stadium experience in the last five years and, specifically, 32,4% attended the football grounds once a year, 43,8% more times a year, 3,9% once a month, and 10,8% more times a month.

Age ranged from 15 to 81 years (M=35.4, SD=13.1) and the educational level of participants was Primary School for the 1,3%, Junior High School for the 24,8%, Senior High School for the 54,9%, and Graduation or Master Degree for the 18,6%.

Tools and Procedure

Participants filled in a self-report questionnaire including a set of scales measuring the Indicators of Perceived Environmental Quality of the Stadium (IPECS), covering the architectural, functional, and social aspects, and the Perceived Safety of the Stadium. Such scales were developed mainly on the basis of both the most recent versions of the Perceived Residential Environment Quality Indicators - PREQIs (see Bonaiuto et al., 2006; Fornara et al., 2010) used as a conceptual and procedural point of reference (PREQIs conceptual framework was also followed as a reference for the creation of tools concerning hospital environments, i.e. the PHEQIs, see Fornara et al., 2006; Andrade et al., 2012, 2013), and the outcomes of semi-structured interviews carried out with 20 individuals who used to attend football grounds.

In particular, the IPECS include the following three scales.

1) Architectural aspects scale (15 items), which are represented by items on external and internal practicability, physical attributes, aesthetics, and spatial elements.

2) Functional aspects scale (15 items), which are represented by items on emergency services, reception services, and transportation.

3) Social aspects scale (8 items), which are represented by items on rules and atmosphere.

Finally, a scale including 10 items on *Internal and External Security scale* was inserted.

Responses were provided on a 7-point Likert-type scale for each item (from “totally disagree” to “totally agree”).

The questionnaire included also socio-demographic indicators and other dimensions related to the football ground experience, such as frequency of participation and motivations underlying the choice of the sector.

Results

Principal Component Analysis and reliability analysis show interpretable factorial structures and acceptable psychometric properties for all the measures (Cronbach’s Alphas range from .84 to .77, see Table 1).

The following 4 scales and 11 factors were found.

Scale 1. Architectural aspects.

PCA extracted 5 correlated factors (61,8% of total explained variance):

I) The first factor was labelled “External practicability” and contains 4 items referring to access and exit conditions (explained variance: 16,6%; $\alpha = 0.84$);

II) The second factor was labelled “Physical attributes” and contains 3 items concerning features that protect spectators from atmospheric agents (explained variance: 15,5%; $\alpha = 0.82$);

III) The third factor was labelled “Aesthetics” and contains 3 items referring to pleasantness and beauty (explained variance: 13,1%; $\alpha = 0.83$);

IV) The fourth factor was labelled “Internal practicability” and contains 3 items about wayfinding and mobility loaded (explained variance: 8,6%; $\alpha = 0.82$);

V) The fifth factor was labelled “Spatial elements” and contains 2 items concerning distance between seats (explained variance: 8%; $\alpha = 0.81$).

Scale 2. Functional aspects.

PCA extracted 3 correlated factors (62% of total explained variance):

I) The first factor was labelled “Emergency services” and contains 5 items referring to the presence of law enforcement, ambulance, and firefighters (explained variance: 36,6%; $\alpha = 0.80$);

II) The second factor was labelled “Transportation” and contains 5 items regarding the connections with the stadium and public transport service (explained variance: 15,4%; $\alpha = 0.83$);

III) The third factor was labelled “Reception services” and contains 5 items concerning number and cleanliness of toilet, presence of restaurant, entertainment services (i.e. museums, shop), and elevators (explained variance: 10%; $\alpha = 0.82$).

Scale 3. Social aspects.

PCA extracted 2 correlated factors (59,7% of total explained variance):

I) The first factor was labelled “Rules” and contains 4 items referring to observance of norms and laws (explained variance: 41,1%; $\alpha = 0.80$);

II) The second factor was labelled “Atmosphere” and contains 4 items regarding the specific climate of the stadium in terms of arousal, aggressiveness and state of tension (explained variance: 18,6%; $\alpha = 0.77$).

Scale 4. Security.

PCA extracted 1 factor (42,8% of explained variance) labelled "Internal and external security" including 10 items referring to the number of security exits, stability of the stadium, presence of barriers, lighting, and surrounding area (α = 0.83).

Table 1. Psychometric properties of the Indicators of Perceived Environmental Quality of the Stadium (IPECS)

Scales	Factors	% of Variance		SD	N of Items	Alpha
Architectural aspects	1. External practicability	16,59	3.34	1.25	4	.84
	2. Physical attributes	15.56	1.41	1.39	3	.82
	3. Aesthetics	13.11	2.56	1.50	3	.83
	4. Internal practicability	8.56	3.11	1.40	3	.82
	5. Spatial elements	8.09	3.22	1.38	2	.81
Functional aspects	1. Emergency services	36.64	3.10	1.15	5	80
	2.Transportation	15.37	3.66	1.27	5	.83
	3. Reception services	10.01	1.66	1.32	5	.82
Social aspects	1.Rules	41.10	2.50	1.24	4	.80
	2. Atmosphere	18.61	3.53	1.30	4	.77
Security	1. Internal and external security	42.87	3.11	1.03	10	.83

Table 2. Linear regression of predictors on Perceived Safety.

Dependent variable: Perceived Safety	**Regression Coefficients**
Aesthetics	.22***
External practicability	.22***
Spatial elements	.14**
Rules	.11**
Reception services	.11*
Atmosphere	.10*
Internal practicability	Ns
Emergency services	Ns
Transportation	Ns
Physical attributes	Ns
R Square	.65***
F	55.822***

N= 306 *** p<.001 ** p<.01 * p<.05

Results show that dimensions included in all the covered aspects (i.e., architectural, functional, and social) have a significant regression weight on users' perception of safety, with a specific reference to the architectural/design aspects. The set of predictors explain about two-thirds of the criterion ($R^2 = 0.65$). In particular, Perceived Safety of the Stadium is predicted mainly by the IPECS covering Architectural aspects (Aesthetics, ß=0.22, p<.001, External practicability, ß=0.22, p<.001, and Spatial elements ß=0.14, p<.01), and secondly by the IPECS covering Social aspects (Rules, ß=0.11, p<.01, and Atmosphere, ß=0.10, p<.05) and Functional aspects (Reception services ß=0.11, p<.05) (see Table 2).

As regards the sociodegraphics (i.e., gender, age, and education), no significant differences were found in perception of safety and overall satisfaction.

Discussion and Conclusion

This study is substantially of explorative nature and provides a first validation of tools measuring indicators of perceived environmental quality of a yet understudied target place, i.e. the stadium. The components extracted from the factorial analyses run for each scale show an acceptable number of items, i.e. from 3 to 5, except for the indicator of spatial elements, which includes only 2 items, whereas the indicator of security, which represents the outcome variable of the study, includes a set of 10 items. All the factors present a good internal consistency, since the Alphas range from .84 to .77.

Following outcomes of this study provide some empirical support to the importance of design features for users' security in the stadium environment. In particular, football fans feel safer when they perceive the stadium as aesthetically pleasant and when the access and the exit from the place are comfortable. Thus, the prominent weight of design features such as aesthetics and comfort in the assessment of the stadium place confirms what found for other kinds of (mainly) built environments, i.e. the urban neighbourhoods (where building aesthetics pleasantness emerged as one of the most important predictors of neighbourhood attachment, see Bonaiuto et al., 1999) and the healthcare settings (where spatial-physical comfort resulted as the best predictor of both satisfaction toward the hospital unit and positive affective qualities, see Fornara, 2005). More generally, among the macroaspects considered as important for a positive stadium experience, the architectural domain appears as the most salient, since the three indicators which weight more on perceived safety (i.e., aesthetics, external practicability, and spatial elements) all cover such domain. Nevertheless, also the social macroaspect (covered by the indicators of rules and atmosphere) was found as significantly connected to the perceived safety, whereas for the functional macroaspect only the indicator of reception services emerged as significantly associated to perceived safety in this specific prediction set.

The primacy of the association between perception of architectural dimensions and perceived safety should provide a further proof of the importance of design elements for eliciting a positive and satisfying experience in the stadium users. This suggests

that design features should be always taken into account in the management of football events, in order to increase spectators' safety and, consequently, to promote positive feelings which can help to avoid the occurrence of negative reactions. To this end, future research should also consider the self-perception as a football fan or supporter related both to the social group of reference - i.e., the supporters of the team X or the more general football fans or the Curve occupants – and to the place experienced – i.e., the football stadium.

In conclusion, in the light of the renewal or creation *ex novo* of football grounds, the outcomes of this study highlight the need for a kind of design which follows both the "user-centered" perspective (i.e., by focusing on the direct place experience of the occupants) and the "evidence-based" guidelines (i.e., by making design decisions on the basis of the best available research findings, see Hamilton, 2003).

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HEALTHY WORKERS AND HEALTHY WORKPLACES: PSYCHOSOCIAL EVALUATION IN ORGANIZATIONAL ENVIRONMENTS

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Abstract

Environmental psychology has long been interested in the effect of different environments on the health of users (Lawrence, 2001). The work environment is also now being studied as a promoter or hinderer of health.

This paper introduces two different studies. The first study aims to explore the perception of shift-workers about characteristics of the work environment that affect their quality of life, in order to formulate recommendations that would contribute to diminishing the negative effects. Data was collected from three focus groups developed in A Coruña (Galicia-Spain) with 19 participants. The second study aims to analyze the conceptualization of a healthy organizational environment through workers' perceptions in order to contribute to the improvement of the screening methods of determining dimensions of organizational health status as perceived by Administration and Services Personnel (ASP) occupying jobs in different workplaces at the University of A Coruña (Spain). The sample of all workers attempted was 232 subjects. We collected valid data from 86 subjects in total (N = 86). A descriptive analysis of the sample and a factor analysis, multidimensional scaling analysis and cluster analysis were conducted with all the data collected.

The results obtained through multivariate analysis show relevant dimensions that characterize a healthy organization promoting healthy workers. This verifies the existence of two dimensions in relation to social perceptions of collective ASP of the university as a healthy organization, an organizational dimension, which includes aspects relating to the organization environment, and a personal dimension, which includes aspects relating to the worker. We used a multimethod approach consisting of a qualitative method of analysis in the first case, and quantitative in the second. The results entail a guide for future research on the evaluation of the intensity of psychosocial risks in organizational environments to promote adaptation and an optimal and healthy fit between employees and the organization.

Keywords: Environmental perception; healthy work environment; upward communication; workplace quality of life; shift work.

Introduction

Environmental psychology has long been interested in the effect of different environments on the health of users (Lawrence, 2001). The work environment is also now being studied as a promoter or hinderer of health. Healthy Organizations and shift-work schedules are connected in such a way that both of them could cause positive or

negative effects, and so a specific type of organization could determine how to establish more suitable shift-work schedules, and vice versa, shift-work schedule planning could affect the management of a healthy work environment.

Nowadays, the concept of Quality of Work Life (QWL) is still under progressive development, because it is a complex phenomenon. A lot of perspectives influence the concept, so a wide diversity of researchers and organizations are working on the definition. Already, authors such as Nadler and Lawler (1983) showed this situation, which has not changed at this time; there is no generally accepted definition but rather a list of the main characteristics. We can note that QWL is now a multidimensional concept that must be analyzed keeping a diversity of aspects in mind, such as employment objective characteristics, specific work characteristics, and workers' subjective evaluations (Royuela, López-Tamayo & Suriñach, 2009).

In this applied research field to work environments, the term Healthy Organization (HO), in relation to Healthy Work Environments, was developed for the first time by Rosen and Berger (1991). Using this concept they tried to identify organizations that share a group of common values in order to identify a set of environmental and organizational common practices (Pulido et al., 2009). An HO is characterized by its intentional efforts, systematic and participatory, in order to maximize employees´ wellbeing and productivity, providing well designed and meaningful jobs, social and organizational support, and accessible and equitable opportunities for career development and improvements in the quality of working life (Wilson et al., 2004).

Wilson et al. (2004) proposed and developed a comprehensive model to illustrate an HO; in their model they introduce six components or factors: Job Design, Organizational Climate, Job Future, Core Organizational Attributes, Psychological Work Adjustment, and Employee Health and Well-being. Gimeno et al. (2008) propose ten theoretical dimensions as a group of the most important components to help us identify an HO. This ten-dimensional model which arises as a reference in an HO includes the following factors: Job security; Equality and non-discrimination; Training and employability; Participation in work organization; Health and safety conditions; Competitive strength; Recognition and reward; Autonomy and responsibility; Identity and loyalty; Involvement and motivation.

The most common types of employee behaviour in organizations, such as in the public university system, are linked to both personal and professional dimensions, and causal attributions reported by workers refer to aspects of organization and the deterioration of the work environment. Workers identified aspects of psychological and emotional health as the major consequences of mobbing, and the strategy used to face it was to be passive, i.e. do nothing (Lopez-Cabarcos et al., 2008).

Moreover, it is important to study the Quality of Life (QoL) of employees inside organizations to promote healthy workers. In relation to schedules, there is a particular type of work schedule that is important to take into consideration: Shift work. Shift work has been studied as one of the work contexts in which several health problems occur. Characteristics of shift-work schedules have an influence in three different life

areas: physical well-being, mental well-being and work-family conflict. Specifically, rotating night shift work disrupts circadian rhythms and it is related to sleep disturbances (Akerstedt et al., 2002), coronary heart disease (Brown et al., 2009), gastrointestinal disturbance, reproductive dysfunction, as well as a decrease in psychological well-being (Harrington, 2001). Hence social, family and marital relationships could be disrupted (Costa, 2003). Some authors point out that people engaged in shifts and night work are out of phase with society. This kind of schedule can lead to social isolation (Table 1).

Table 1. Some relevant authors in the psychosocial perspective

AUTHORS	RESEARCH RESULTS
Costa, 2003; Bohle & Quinlan, 2000	People engaged in shift and night work are out of phase wit society, and shift work can lead to social isolation or marginalization
Gee, Polzer-Debruyne, Chen & Fernandes, 2007	Results clearly support the notion that family, shift worker and work place form and interdependent unit. The inclusion of social coping strategies combined with family involvement significantly reduced work-family conflict.
Takahashi et al, 2006	More variable workload was associated with an increase daytime sleepiness and that reduced job satisfaction and more symptoms of depression were liked to elevated daytime sleepiness
Tamagawa et al, 2007	Results indicate that tolerance of shift work was significantly associated with personality traits and mood states
(…)	(…)

In Spain, 22.4% of workers work on shifts and 8.5% of them work on the night shift or rotating schedules (INSHT, 2007). Shift work is a special schedule organization, in which the worker must do his work in 3 different rotating time periods: morning (from 6 a.m. to 2 p.m.), evening (from 2 p.m. to 10 p.m.) and night (from 10 p.m. to 6 a.m.). Shift work has negative consequences and influences, but it is necessary in some institutions, so arguments in favour are related to productivity and maximizing costs.

Below we present two different studies, with different participants and methods, but sharing a common aim: to contribute to ameliorating work conditions and increasing health levels of workers and organizations.

Study I

Aims

The aim of the present study was to explore workers´ perception of characteristics in the work environment that most affect their Quality of Life (QoL) within the context of shift work. We answered the questions "How do shift-workers perceive their labour environment?" and "How can we explore perception and access to the attributed meaning?"

We also analyzed data in order to formulate recommendations for policy-making that would contribute to decreasing the negative effects of shift work, and so we were able to answer the question "What can we do to improve the work environment, with special focus on labour health and safety from shift-workers' perspective?"

Method

Participants

This research is a part of a larger study, and the data collected is the result of 3 different focus groups we arranged with the participation of shift workers in the largest cities in the province of A Coruña (Galicia-Spain).

The sample included 19 participants shared out over three locations: 8 people in Ferrol, 7 people in A Coruña and 4 people in Santiago. The appropriate size for a focus group is from six to nine people, although small focus groups from four to six people have become more popular lasting recent years because it is easier to convene and keep all the group together (Krueger & Casey, 2000). The age range was from 25 to 61 (43.2), and the range of time that they had been working as shift workers was from 5 to 30 years (15.5). The distribution by sex was well-balanced, including 11 men and 8 women.

Procedure

We selected the participants in order to get a representative sample according to our aim. We contacted the shift workers through the most representative trade unions in A Coruña (CCOO, CIG and UGT), firstly by e-mail, and finally by phone. We met 10 or 12 workers in each meeting place, in order to guarantee a minimum attendance.

Focus groups were arranged respecting different author criteria (Canales & Peinado, 1998; Callejo, 2001; Bisquerra, 2004; Murillo & Mena, 2006) about sample, size, introduction, screenplay and the key question to begin the discussion.

Analysis

The information gathered was analyzed with the qualitative software ATLAS.ti. This software was used to simplify the group´s analysis of discourse and to get more objective information through quotes, codes and families. ATLAS.ti allowed the identification of the main dimensions of shift work and QoL.

Results

We obtained 15 dimensions (Table 2), after the analysis conducted on data from these three focus groups, considering the shift workers´ point of view. Seven of these dimensions are directly related to the work environment, and they are the key elements in this study. This dimensions will be explained in order of importance.

Table 2. The dimensions that affect the most the shift workers´s quality of work life

FAMILY	CODES	QUOTES
Familiar Life	14	72
Feeeding	8	31
Human Relationships	**5**	**19**
Commuting	**10**	**28**
Labourał Law	**11**	**72**
Performance-Productivity	**5**	**19**
Personal Variables	10	69
Psychosocial Well Being	4	19
Safety and Labourał Health	**4**	**17**
Hourly Organization	**9**	**54**
Sleep and Rest	16	62
Social Life	3	10
Well Being	6	24
Work Space and Environment	**3**	**13**

The first dimension was **human relationships.** Shift workers reported that work depends on a group of people working side by side with you; if you trust in your colleague the shift will be better, more bearable because you work with a feeling of peace. An important element for shift workers is the possibility to arrange shift changes with colleagues, but this is impossible in some factories because there is not enough staff. Specifically, the discussion confirmed the poor image that workers have about managers and the Board of Directors because workers think that "they only look for quick profits; they don´t take workers' opinion into account". As workers said, this theory is real in factories, the human capital is important because its application is well viewed, but factories do not carry it out in practice.

Commuting was the second dimension: It is important to emphasize that covering long distances from home to the workplace inplies the extension of the schedule, and the time that workers spend on the journey depends on the means of transport used. The most used transport by workers is the car, either their own or shared with colleagues. Public transport is not used because lines and timetables are not adapted

to workers´ schedules. Going to the workplace on foot or by bicycle is impossible for most workers because the distance is too great.

Workers think that having more public transport lines would be better for their lives because driving after long working hours involves a great effort .They need to clear their minds after a long day's work before driving home. When they get home they need to relax in order to have a good rest.

The third dimension was "**Labour Law**". Participants think that present legislation is really limited to protect these kinds of work conditions; legislation recognizes the night shift work as "drudgery" but it is not enough to compensate it with a salary increase. Moreover, the practical application of legislation should be under control because it is not specific and it permits a high level of autonomy for application in factories; workers said they perceive large differences between working in the public sector and working in the private sector. On this subject, it is said that "factories have no interest in recognizing the 'drudgery' due to the improvement and costs associated".

As for **performance and productivity**, the fourth dimension, workers confirm they feel under pressure because of the Board of Directors, who are always looking for better performance. Workers inform that their performance would improve if work conditions were better (for example, considering a larger size for work teams within the shift). Therefore, workers think that the Board of Directors does not pay any attention to workers´ performance, "the work approach is in the hours of work, not in the production; so many hours, more productivity. Conclusion, managers do not think about performance".

The fifth dimension, **labour safety and health**, remarks that what participants did in relation to safety in work environment was focused on the night shift. For them, it is important to be relaxed at night, motivated by the absence of managerial staff. There is an increase of injury risk perception, within the last hours of the shift, because workers are exhausted. Workers accused people implicated in the decision making process of being responsible for accidents because they scheduled too many hours for the night shift.

Hourly organization was the sixth dimension. There are clear differences between shift organization and the kind of rotating shifts that are established when the effective work timing, breaks and leisure time are assessed. Workers highlight that most of their leisure time is dedicated to resting and not spending time on other daily duties.

The seventh dimension was **work space and environment**. In some factories there are no resting and eating areas, as workers´ rights dictate. When factories did not have these special areas, participants affirmed that they would be grateful for having such an area, being able to have a rest in the middle of the schedule and relax; this break would be a great help to doing a better job in the last hours of the shift. As for the environment, participants do not know any more information than environmental actions related to the legislation, but one of the participants spoke about the organization's environmental consequences.

Finally, it is important to emphasize that shift workers spoke about the importance of personal variables for coping with shift work, because their attitudes help them to cope with this type of schedule organization.

Study II

Aims

The aim of this study was to analyze the conceptualization of a healthy organizational environment through workers' perceptions, in order to contribute to the improvement of screening methods for determining the dimensions of organizational health status as perceived by the Administration and Services Personnel from the University of A Coruña (Spain). We focused this research considering the following hypotheses:

H1 There are certain dimensions that characterize an organization as an HO.

H2 There are significant differences depending on the variable types of contract, type of working day (Continuous/Non-continuous shift) and the duration of the working week (Full/Part time).

In relation to the variables, as a criterion variable we considered the dimensions that determine the perception of health in work environments, and as a predictor variable we considered the type of contract (Indefinite/Temporary), type of working day (Continuous/Non-continuous shift) and the duration of the working week (Full time/Part time).

Method

Participants

Administration and Services Personnel (ASP) covering positions in the areas of Reception, Library, Student Bureau, the Dean's Bureau and other administrative offices and campus services in A Coruña, on the Campus of Oza, Elviña and Zapateira at the University of A Coruña (Spain). A non-probabilistic voluntary sample of 232 individuals was attempted with a collection rate of 37%. We collected valid data from 86 subjects in total (N = 86).

Procedure

The starting point of the study was the research of Gimeno et al. (2008) and Wilson et al. (2004). We used the Organizational Health Questionnaire to collect all the data, divided into three parts (Gimeno et al., 2008): Part I, Perceived importance of the elements of an HO. Part II, Perceived experience of the elements of an HO. Part III, Priority indicators in an HO.

Analysis

A Descriptive Analysis of the sample and a Factor Analysis using the Principal Components Analysis with Varimax Rotation, Multidimensional Scaling Analysis and

Cluster Analysis were conducted with all data collected. All data were analyzed using Statistical Package SPSS for Windows Version 15.0 .

Results

We conducted a Reliability Analysis obtaining a Cronbach´s α of .97 in Part I of the questionnaire, Cronbach´s α of .96 in Part II of the questionnaire and Cronbach´s α of .84 in Part III of questionnaire. These results allow us to establish and confirm that the estimated reliability is optimal.

The average age for this sample is 43.35 years, with a minimum age of 25 years and a maximum age of 63. In relation to sex, 21.18 % of individuals included in the sample are men and 78.62 % are women.

The analysis performed with data showed three main factors that characterize the university as an HO, namely - Health and Equality, Stability, Recognition and Working environment, Involvement, Excellence in management and Occupational health and safety policies, and Participation and Quality of resources. From the Multidimensional Scaling and Cluster analysis, it also verified the existence of two dimensions in relation to the social perceptions of ASP about the university as an HO, an organizational dimension which includes aspects related to the organizational environment, and a personal dimension which includes aspects related to workers (Figures 1 and 2).

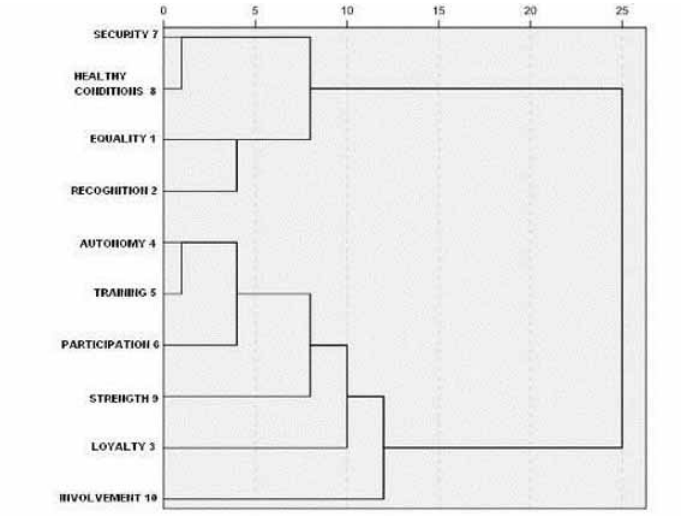

Figure 1. Perception of the importance of different variables to consider an organization as a healthy one

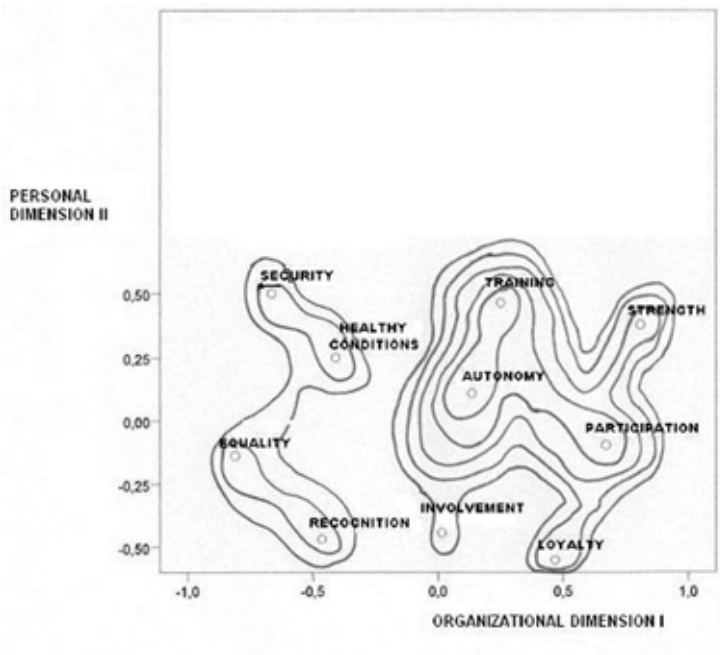

Figure 2. Common Stimuli Space

With the results obtained from the Factor Analysis performed on the data contained in Part I and Part II of questionnaire, it was possible to extract a factor structure to analyze aspects of individuals' perception about the importance attributed to the university in relation to internal cohesion, development of confidence and improvement of job satisfaction. Factor analysis of data from Part I, using the Principal Components Analysis with Varimax Rotation - we did not consider in the analysis those items with a saturation below .4 - showed three major factors (71.64% Total variance explained), which are Equality, Security and Stability (28.30% variance); Commitment, Innovation and Health and Safety policies (23.40% variance); and Quality, Participation and Communication (19.90% variance). The data analysis in Part II, using the Principal Components Analysis with Varimax Rotation - we did not consider in the analysis those items with a saturation below .4 - showed the existence of five factors (73.12% Total variance explained), which are Health, motivation, commitment and identity (21.20% variance); Promotion, quality, communication and participation (16.83% variance); Equality, security and stability (15.67% variance); Conciliation, wellbeing and recognition (12.43% variance); and Health and Safety policies (6.98% variance).

The results obtained in Part III of the questionnaire showed that the Security and stability in employment factor is the most important for workers, followed in decreasing order of importance byEquality among workers and Non-discrimination, Health and Safety conditions at work, Recognition of merit at work and fair and equitable rewards, Involvement and motivation of workers, Training and skills development for the future, Loyalty between employer and employee and Identification of common objectives, Autonomy and responsibility in the development of work tasks, Participation

of all members of the company in the organization of work, and ultimately less important for workers, the Competitive strength of the company (Table 3).

Table 3. Rating and Attributed Importance Scale

Item Best rating position Mean Standard deviation			
Security and stability in employment	1	8.05	2.541
Equality between workers and Non-discrimination	2	7.91	2.722
Health and safety conditions at work	3	7.27	2.441
Recognition of merit in the work and fair and equitable reward	4	7.12	2.831
Involvement and motivation of workers	5	6.83	2.640
Training and skills development for the future	6	6.18	2.665
Loyalty between employer and employee and Identification of common objectives	7	6.00	3.207
Autonomy and responsibility in the development of work tasks	8	5.90	2.584
Participation of all members of the company in the organization of work	9	5.64	3.038
Competitive strength of the company	10	5.10	3.488

According to the Type of Working Day variable, significant differences were found among workers who perform a continuous full-time shift and workers who perform a non-continuous full-time shift or continuous part-time shift, Pearson $\chi 2 = 0.05$ (≤ 0.05); the first group perceives Training and skills development for the future as the most valuable aspect (38.80%), while the second group (100%) and the latter (100%) consider it as a minor aspect.

We also found significant differences depending on the Type of Contract variable and Mutual loyalty between employer and employee dimension, and the identification of common goals, Pearson $\chi 2 = 0.02$ (≤ 0.05), workers with indefinite contract (49.30%) perceive it as an aspect of high importance, but workers with a temporary contract (57.10%) perceive it with medium importance.

In relation to the Type of Contract variable, there are also significant differences in the Participation of all members of the company in the organization of work dimension, Pearson $\chi 2 = 0.05$ (≤ 0.05). Workers with an indefinite contract (42%) perceive it as an aspect of high and low importance, but workers with a temporary contract (57.10%) perceive it as an aspect with medium importance.

There are also significant differences depending on the Type of Contract variable and the Competitive strength of the company dimension, Pearson $\chi 2 = 0.05$ (≤ 0.05). Workers with an indefinite contract perceive this dimension with high importance (43.50%) and low importance (47.80%) while workers with a temporary contract (57.10%) perceive it with low importance.

Discussion

In light of the results of the first study, we achieved the aim: to explore workers´ perception of characteristics that most affect QoL within the context of shift work. Therefore, we can answer the previously established research questions. Firstly, how do shift-workers perceive their work environment? Workers perceive their work environment as a strange environment, unconnected with their necessities and preferences. This point of view is probably under the influence of some dimensions that we obtained, focused on two different ways, the circumstances that occur inside the work environment and the circumstances that occur outside. And from the participants' perspective these two environments engaged are disconnected, and so they are in conflict. As we mentioned above, the work - family conflict has been studied (Gee, Polzer-Debruyne, Chen & Fernandes, 2007), and according to the authors, the results clearly support the notion that family, shift worker and work place constitute an interdependent unit. Secondly, how can we explore perception and access to the attributed meaning? A way for exploring workers' perception is using a "focus group". This technique produces a specific kind of qualitative data, very difficult to obtain in a quantitative way. And finally, what can we do to improve the work environment, with special focus on labour health and safety from the shift-workers' perspective? Listening to the shift-workers and considering their perspective is a way to construct an integrative approach in general work planning and in the healthy workplace design. This particular idea has some connections with other aspects that will be explained later in the conclusions.

We obtained fifteen dimensions that never have been found before our research. This is probably because the topic is very specific, but really there are some previously similar proposals like Royuela, López-Tamayo & Suriñach (2009) and Gimeno et al. (2008), but both of them were focused on inner work dimensions, without a focused interest on the outer dimensions, so this affects workers´ perception of quality of work as much as the others. A future way to improve this research would be to explore in more detail the ponderation between those two kinds of dimensions, inner and outer, in order to know how it affects workers´quality of life inside the job.

In general, we can conclude that a hypothetically bad psychological environment of work is caused by the lack of participation in improving the factory and its processes. The study show that employees want to be more implicated in the decision making process; this is related to previous investigations that demonstrate that participation in work task organization is linked to the dimensions that characterized an HO (Gimeno et al., 2008).

According to the results obtained in the second study, the existence of two dimensions in relation to the social perceptions of Administrative and Service staff about the university as an HO was verified, an organizational dimension and a personal dimension. The ten dimensions proposed by Gimeno et al. (2008) are contained in the factors found in this study, but they are included in a more parsimonious three factors - Equality, Security and Stability; Commitment, Innovation and Health and Safety policies; and Quality, Participation and Communication - in Part I, and five factors

- Health, motivation, commitment and identity; Promotion, quality, communication and participation; Equality, security and stability; Conciliation, well-being and recognition; and Health and Safety policies - in Part II. So we could identify different dimensions through workers' perception in order to recognize an HO, and in this case a university as a healthy institution. The results obtained also show that the dimensions proposed by Wilson et al. (2004) are also included in the factors we found in this study, so we can find six different factors they proposed but in the more parsimonious three main factors mentioned before.

The Security and stability in employment factor is the one with the greatest importance for workers, while the Competitive strength of the company is the one with the least importance. According to this, workers perceive on a high level the importance attached to security and stability in employment, in order to trust the company and keep self-confidence and no worries about maintaining the position. But they perceive the lowest importance for the company having the capacity to innovate and show competitiveness, while showing excellence in its management.

It would be possible to take a broad perspective of these two studies, considering the perspective of coping to obtain a better explanation about workers´ points of view and the organization's standpoint.

Finally, the results show how the study of workers´ perception about the work environment will be a potential way of promoting transformation within the organization. The managers´point of view could be closer to that of workers than they think. We support the idea that the right way will be that one that pools all the elements studied and applies them to planning and everyday practices.

Conclusions

The first study enabled us to analyze data in order to formulate recommendations for policy-making that would contribute to decreasing the negative effects of shift work. Workers confirmed that they perceive their work environment as a strange environment, unconnected with their necessities and preferences. Hence to act accordingly, we can identify the personnel involved in the decision making process. Listening to shift-workers and their proposals is a way of integrating the workers' perspective into the general work planning and into the design of the healthy workplace. These are the keys to ameliorating the work environment. The data clearly shows that the psychological working environment was mediated by a lack of participation and employee involvement in decision-making and actions to improve the company. These results have shown to be useful for organizations, as they provide further evidence of the beneficial effects of looking at the human experience in order to improve working conditions. The conclusions will allow us to formulate recommendations to improve work environments and workers' and shift-workers' daily life.

The second study allowed us to review an assessment tool for the psychosocial perception of an HO, a tool that can facilitate the collection of information to address

the decision-making processes regarding the implementation of new models of human resources management tailored to the workforce. Currently, social movements in relation to labour organization, starting from the approach and assumptions of the quality of working life, recognize that work can have a significant effect on the level of commitment, satisfaction and health experienced by workers, which, in turn, influences the productivity and effectiveness of the organization (Murphy, 1999; Schmidt et al., 2000). The study allows us to obtain a simpler structure than the one obtained by Gimeno et al. (2008), and it seems clear that universities have an easier perceptive schema. Organizations that have focused their efforts on reaching the figure of zero accidents in the workplace, reducing the rate of occupational injuries, have realized that safety in the work environment is not a priority in the management of the organization, but it is a matter of the human values scale; therefore, the implementation of safety policies at work means taking into account these principles and values from which the relationship between organizations and workers develops and settles (Danna & Griffin, 1999; Seligman & Csickszentmihalyi, 2000).

The implications of the results of both studies may involve the guide for future research on the study and evaluation of the presence and intensity of psychosocial risks in organizational environments, and could make policy development in human resource management models more effective and efficient to promote adaptation and an optimal and healthy fit between the employee and the organization.

Furthermore, new research needs to be conducted in order to determine the relative importance of different predictors in quality of work life, and to orient the implementation of programmes to improve it.

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III MAPPING APPROACHES FOR EXPLORING SPACE

EXPERIMENTS IN MAPPING HUMAN FACTORS FOR SUSTAINABLE DESIGN AND LIVING

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Abstract

This paper explores architectural design considerations regarding challenges of sustainable living, drawing parallels to extreme environments, in relation to user-centered design research conducted by researchers at Chalmers University of Technology, University of Houston and NASA. It further discusses application in the context of a Sustainable Living Lab, to be built as student housing on the Chalmers campus. Extreme environments are here defined as places that pose significant complications and risks for people to maintain their usual everyday activities with a certain level of physical and psychological comfort. The research addresses the need for integrated solutions, and the conscious development of sustainable strategies based in an understanding of human factors and residential practices. The paper presents a theoretical and methodological background for a proposed experimental 'design/build/live' approach and results from initial studies with students on user perceptions and ideation. Findings indicate that an optimization of spatial or material use can be found for example in a reassessment of activities perceived as private or shared, as well as the spatial compatibility of different functions, informing the design of facilities and building systems, as well as social organization and demands for supporting systems. Perceptions on changing practices towards shared use, and the value of co-creation processes for enabling sustainable living practices are emphasized.

Keywords: human factors, sustainable, housing, extreme environments, user-centered

Design challenges in extreme conditions

As defined by NASA Astrobiology Institute: 'Extreme' is a relative word. An extreme environment can be characterized by conditions that are far outside the boundaries in which we humans dwell comfortably in the following categories: pH (measure of acidity), pressure, temperature, salinity, radiation, desiccation (measure of dryness), and oxygen level (NAI, 2012).

An extreme environment is oftentimes defined by its climate or weather conditions and therefore delimited by its geographical location (Harrison, Clearwater, & McKay, 1990). The definition can however also be broader than that when including a wider scope of aspects of human life or lifestyle. It is here explored in relation to increasing situations of crises around the globe, as new posed extremes can be found

in for example the deteriorating stock of natural resources, easily accessible fossil energy sources and the capacity to uphold further social development in the form of a growing economy (Murphy & Hall, 2011; Schneider, Kallis, & Martinez-Alier, 2010; Freeman, 2000). By discussing the context of the extreme, and lessons transferred to the 'everyday' in a situation of global crises, the border between the two becomes blurred.

Conditions become extreme when the environment poses special limitations and/or hardships for people to survive and maintain relative physical and psychological comfort (Bannova, Smith, & Landschulz, 2005; Nuttall, 2005). The major limitations are usually in regards to all or some of the following:

- Resources;
- Availability of services;
- Availability and accessibility of space;
- Mobility and transportation.

These challenges result in the experience of strong restrictions in the ability to execute everyday work tasks, impossibility to perform social interactions, and constraints in fulfilling necessary living needs. Perceived control and self-efficacy in situations where some or all of these conditions apply is hence impeded, further inducing psychological barriers for overcoming or adapting to these limitations, whether outspokenly defined as extreme or more abstract in nature, as in the case of climate change (Gifford, 2011). Investigating essential human needs and how those needs can be addressed in design and planning is a relevant challenge. Developing and applying sustainable design practices is essential to diminish and overcome difficulties imposed on people in extreme conditions; both in terms of physical, structural envelope solutions as well as user-derived strategies and social organization. The creation of holistically sustainable living environments is an imperative in the context of specific extreme situations such as space or the arctic (Petersen & Poppel, 1999). Much can be learned from previous projects in extreme environments or those posed in limited conditions, where closed resource and energy loops are considered, and where social organization and collaborative processes govern the design and facilitation of well-functioning, qualitative living environments.

In parallel, sustainable planning and design is an increasingly important factor for the development of living environments all around the world, as the environmental and social impact of the built environment is understood and problematized (Montserrat Pareja & Støa, 2004; Schweber & Leiringer, 2012; Sev, 2009). This has further become a critical element for the success of designing and planning for extreme environments, where construction and utilization processes developed may also be tested in terms of success rate and effectiveness. The pursuit of sustainable practices is spreading within the building industry, especially in a Scandinavian context (Jensen & Gram-Hanssen,

2008; Gluch, Gustafsson, Thuvander & Baumann, 2013). However, the *radical* mitigation of the environmental impact, distributive injustice and socio-economic segregation - to which the construction sector is a large contributor - is not yet achieved (Hagbert, Mangold, & Femenías, 2013).

As a broad concept, sustainable development is today an unavoidable mainstream connotation, with increasing implications on how we reside, conduct business and educate. Ranging from policy agreements or guidelines to pragmatic in-practice approaches, the global challenges we face in a time of rapid changes (whether climatic, financial or social) are addressed differently. The idea of sustainability can be applied practically to all aspects of human society, creating multiple facets of sustainability that include (Petersen & Poppel, 1999): 1) ecological and environmental behavior; 2) economics; 3) social habits; and 4) political actions and systems. All of these aspects of sustainability are regarded as interrelated and can benefit from each other, although criticisms and alternate suggestions regarding the ordering and hierarchy between them have been raised both within the design community and the discourse in large (Findeli, 2008; Kates, Parris, & Leiserowitz, 2005).

The overarching idea of achieving synergy effects between different facets of sustainability, as discussed by Robinson (2004), suggests an application in design and planning from the very beginning of the process, and throughout an extended period of time. Such an approach is addressed and applied in the research outlined in this paper. It is argued that an integrative comprehension in the design, build and living phases of housing not only put emphasis on user-centered and user-derived knowledge, but also the continuous re-negotiation of such processes, and subsequent need for improved design-user practices.

This paper investigates user-centered design research methodologies and practices for radically reducing energy and resource use, through a proposed ‘design/build/live’ approach in a ‘Sustainable Living Lab’ (SusLab) currently under development in the form of student housing at Chalmers University of Technology in Gothenburg, Sweden. The project involves researchers from multiple departments at Chalmers, but the specific research outlined here is the focus of the research team from the dept. of Architecture, consisting of professor Maria Nyström, assistant professor Paula Femenías, doctoral students Pernilla Hagbert and Olga Bannova (University of Houston), and visiting professor Larry Toups from NASA JSC (Johnson Space Center).

A brief overview of the project and the experimental design/build/live approach is first presented. This is followed by an account of international precedents dealing with similar experimental student settings and tasks. Methods and initial results from studies with students, to be integrated in the methodological and design development of the project, are further elaborated upon. The paper is concluded with outcomes and key points for future development.

Project background and approach

The work outlined here constitutes a part of the larger EU Interreg funded project SusLab NWE[1], studying sustainable living and innovations for the design of future residential environments. Through developing user-centered and participatory design research methodologies, along with technological advancement, the project explores how sustainable innovations are applied and perceived in everyday life and living environments. By gaining insights into the usability and acceptance of sustainable strategies, products and services regarding both spatial and material properties, the objective is to enable sustainable living practices.

The physical structure, called 'HSB Living Lab', is developed in collaboration with the largest Swedish co-operative housing association, HSB, and Johanneberg Science Park, and is being built in 2014 as student housing, located on Chalmers main campus[2].

The building will be three stories, with a ground space of around 400 m^2. It will accommodate about 25-30 students and guest researchers. The student units are designed to be flexible, with the possibility to change the layout during the course of the temporary ten-year building permit. The structure will include additional facilities like an exhibition area, a common laundry room and various meeting areas.

The overall SusLab project is structured into three phases:

1. Early insight studies with residents and users

2. Full-scale living lab studies, testing sustainable living innovations and strategies;

3. Final studies of sustainable living innovations and strategies as implemented in existing housing stock.

This paper discusses the first phase, with the intention of applying the insights in the research conducted in the Living Lab. During the course of the project development, the following objectives are expected to be fulfilled:

1. Completing a functional analysis of programming and schematic design relating to living environments;

2. Mapping personal and shared activities of users;

3. Analysing spaces in context of utilization timeframe and frequency;

4. Strategically positioning multi-functional spaces and utilities;

5. Creating conditions for sharing practices;

6. Providing means for visibility of successful sustainable practices within the community.

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1 http://suslab.eu/

2 http://suslab.eu/partners/chalmers-th/hsb-living-lab/

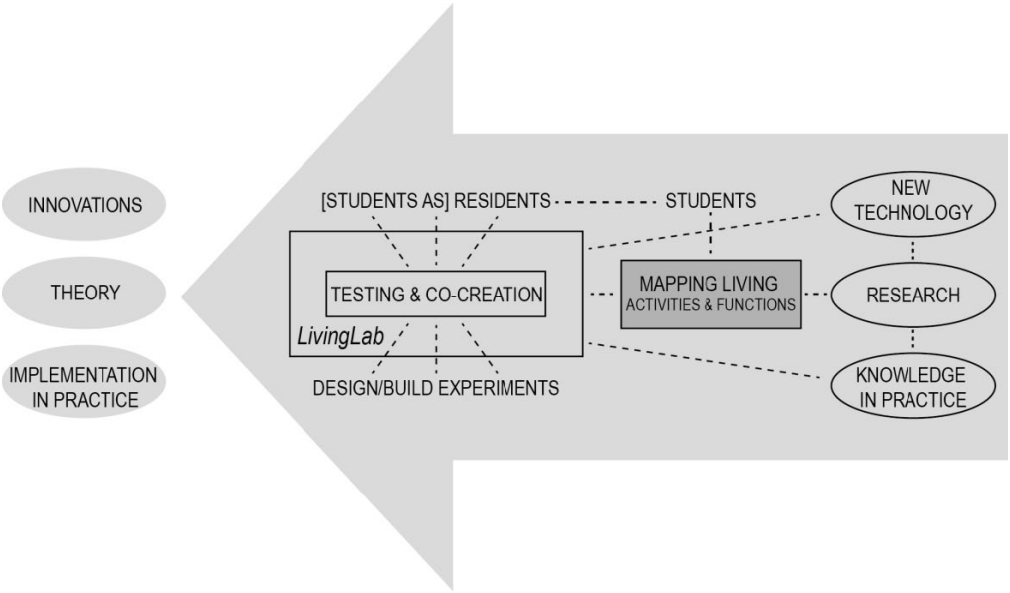

Figure 1. Diagram of proposed process, highlighting the focus point of this paper

The process is conceived to be advanced farther by incorporating an explorative design/build/live approach, where a group composed of students from different disciplinary backgrounds will be emerged in an experimental studio environment within designated units in the living lab building. The premise is that participating students, holding undergraduate degrees in architecture, planning, engineering or industrial design engineering, engage in explorations of various strategies for sustainable living, building upon a transdisciplinary research process and coherent knowledge creation (Després, Vachon, & Fortin, 2011). Moreover, it is here argued that hands-on learning and full-scale testing (Hornyánszky Dalholm, 1998) in 'real-life', process-oriented situations (Nicol & Pilling, 2000) is of relevance to complement the various learning styles associated with the design process (Demirbaş & Demirkan, 2003).

It is our opinion that sustainability should not be understood as something added, but rather an integral part of educational and professional practice. The complexity of the knowledge, skills and competencies needed to accomplish the tasks set in light of local and global challenges also demands more of design education than a conventional curriculum (González-Gaudiano, 2005; McMahon & Bhamra, 2012). Some of the skills and competencies identified as important for students to develop in order to engage in socially sustainable design are: participation, compromise, openness, engagement, reflection, critical questioning, understanding, comparison, accountability, communication, teamwork, and problem-solving (McMahon & Bhamra, 2012).These could be extended to cover multiple aspects of sustainability. The introduction of critical reflection through collaborative projects is vital. By creating a studio context where students act as designers, builders, as well as residents through constructing and inhabiting their own designs - an iterative process can be developed further as the students interact with problems in real-time as they arise.

Precedents in experimental student design and living experiences

Although there is a long history of experimental architectural education for design, technology development and behavioral research, only two examples can in essence be considered as precedents for the here outlined approach. Indeed, Alexander Pike's Aukarktic House built with students from the University of Cambridge in 1971, the Rural Studio at Auburn University pursuing community-oriented work since its establishment in the 1990s, TUDelft's co-ordination of the SusHouse project in 1998-2000, the BBC Integer House project in 2001, and others offer hands-on learning experiences. Yet they do not fully address the latter stages in the here outlined approach, where it is proposed that students inhabit, evaluate and re-build the environments they have created, during a longer period of time. Because of this distinction, the TreStykker project and SICSA's hands-on 4th year studio project are regarded as two precedents that more fully reflect the objectives of the presented project.

The TreStykker project was initiated in the summer of 2005 when students from three Norwegian universities (The Oslo School of Architecture and Design, the Bergen School of Architecture and the Master Program in Architecture at the Norwegian University of Science and Technology in Trondheim) participated in a workshop to design, finance and build a small experimental student house (Thomsen & Tjora, 2006). The project's goal was to explore the spatial experience of living in a transformable environment, in an experimental student house where only interior space was convertible. The collaborative nature of the effort added educational value and is regarded as having contributed to its success. Series of student interviews were conducted during the project and the findings were based on: 1) looking at a house as a transforming place, examining the flexibility and changeability on a daily basis; 2) studying social life as collaboration, investigating relationships between social life and privacy; and 3) studying how building residents see the image of their habitat and the importance of that image. It is argued that such experiments can be seen as a way of understanding and adapting to constantly changing needs throughout an extended timeline, and thereby approaching sustainability of residential buildings from a user perspective: "…flexibility in housing should not necessarily be seen as moveable elements but may include a 'neutral' plan solution, where no specific use is pre-ascribed to rooms, for example with all rooms of equal size" (Thomsen & Tjora, 2006:20). Flexibility may be space or time related and structured depending on different time periods. For example, some may occur in a few minutes, while others involve major efforts and resources, but would be applied much more random (Thomsen & Tjora, 2006). Qualitative research methods used during the study included both individual and group semi-structured interviews and weekly diaries that provided personal data. This methodology proved to be effective in accumulating information on an individual level, providing foundation for the overview of students' housing requirements and needs. Group interviews on the other hand demonstrated that a participant's responses may be influenced by others, and may alter his or her response based on a popular opinion.

A second precedent is the hands-on Closed Environment Laboratory for 4th year architectural students, run at the University of Houston's Sasakawa International Center for Space Architecture (SICSA)[3] for several years until 2004. Every year, a one-year project included one semester of design and research, followed by a one-semester design/build stage when students had to learn how to implement their design ideas in real life conditions and test design solutions as they are being built. The testing environment represented a mock-up of a conventional space module like those currently used in the International Space Station (Figure 2). Challenges that students had to deal with during the course included: coordinating design solutions with limitations and restrictions of confined environment of the module; investigating how living and operating in such conditions would affect person's everyday schedule and hierarchy of activities; and how and when design elements may interfere with human factors. The design had to be done in accordance with specifics of extreme environment of space and satisfy all human factors requirements at the same time. That brought uniqueness to the project and encouraged students to take their roles as designers very seriously. Every year students had to review the previous year's proposals and design their projects based on that cumulative experience. They also had to test their design solutions and submit reviews on the whole studio experience and their involvement in it. Even though the evaluation process was not an ultimate goal of the project, the reviews demonstrated that hands-on studio education is a valuable experience for the students. The students appreciated an opportunity to learn and see in real life how their design solutions affected the overall architecture of the mock-up and human factors. It also proved to be an effective method to stimulate student design research and learn cost-effective techniques.

Figure 2. Closed environment laboratory. SICSA, 2004.

The discussed precedents have demonstrated the benefits of involving students in the design process at all stages of development. The project outlined here is a step forward from these experiences. It expands and extends learning prospects and is more inclusive in design aspects and involved disciplines. It is also argued that extending the experience of students to that of being longer-term residents of the developed structure would offer better research opportunities and provides a more solid foundation for future improvements and innovations. Building upon these two precedents, an essential

3 http://www.uh.edu/sicsa/

part of the presented design/build/live approach is also to more rigorously research and develop strategies enabling sustainable practices among participating students, as well as possible follow-up evaluations after they move out of the facility.

Proposed and applied methodology in initial empirical studies

The proposed methodology for the experimental design/build/live program outlined here is based on the assumption that students are the main drivers of this aspect of the project development, and will research, design, build, live, review and subsequently advance design solutions throughout the lifetime of the facility. Key elements of that include:

- Students' involvement at all levels of the project;
- Creation of multidisciplinary student teams;
- Support from faculty and construction and management companies.

Primary elements of the process are co-creation workshops and surveys in the form of activity diaries among student respondents. Preliminary empirical data on daily living activities was gathered in December 2012, with students at the Architectural Department of Chalmers University of Technology and the University of Houston's College of Architecture, and workshops were held in December 2012 and May 2013 at Chalmers only. An understanding of the functional breakdown of student housing from these initial findings can be discussed according to: 1) Grouping of activities and human functions (Table 1 and 2); 2) Levels of private or shared use of space and resources (Table 1); 3) Defined or perceived corresponding spatial, energy and resource requirements.

Table 1. Daily activity assessment based on students' perception of degree of sharing

	SLEEPING	*EATING*	*HOUSEKEEPING/ COOKING*	*STUDYING*	*HYGIENE*	*RECREATION*
COLLECTIVE (SHARING ACTIVITY AND RESOURCES)	NO	YES	YES	YES	NOT LIKELY	YES
INDIVIDUAL/ SHARING RESOURCES	MAYBE	MAYBE	MAYBE	YES	NOT LIKELY	MAYBE
PRIVATE/ NOT SHARING AT ALL	YES	NOT LIKELY	MAYBE	NOT LIKELY	YES	NOT LIKELY

Activity diaries collected at both Chalmers and the University of Houston (n=19) outlined temporal, material and potential social characteristics of various activities. They further demonstrated differential understanding and presumptions of collective

and private values. For example, even though students belonged to same age groups and had relatively similar disciplinary background, their demand for privacy diverged, most likely based on cultural and social specifics and housing situation. This was further underpinned at two workshops held with respondents at Chalmers only.

The first workshop revolved around the students self-reported activities and understanding of functions in their living environments. Through an inductive process, using simple means (Figure 3), the students produced and organized their understanding of living activities in a current and potential 'extreme' condition. The result, although to be understood in this precise context as a qualitative method and snapshot, point to some interesting aspects regarding living functions, hierarchy of activities (and space) and home-based practices students see as more or less negotiable. The participants mapped their understanding of student living as ranging from 'basic survival', 'supportive activities' and 'life quality', as well as on a more general scale of relating to spaces inside or outside the dwelling unit. In a context of optimization, the relationships between activities were challenged, and the suggested division between private and shared functions became more blurred as activities such as showering were discussed as conditional (it was argued that students could imagine sharing showers, at a farther distance from their sleeping area, if there was a wash basin provided in the most immediate vicinity).

Figure 3. Student functionality and activities assessment workshop.

The overall results from the data analysis of the workshops and surveys were developed in a form of a 'human tree' of living functions. Through a cross-analysis, overlapping spatial, energy and resource requirements are outlined with regards to both current functional understanding and in a scenario of optimization due to posed limitations. In addition, human factors conditions - physical, organisational or behav-

ioural prerequisites (Matthews, 2000) - for the amelioration and optimization of living functions from a residential quality perspective, as well as the radical reduction of energy and resource consumption were discussed.

Data were furthermore analyzed in order to establish a pattern of compatibility, with a focus on spatial composition, functional relationship and overall layout of the facility (Table 2). It is clear that the current understanding of habits such as relating to personal hygiene remain normative, but students' changing practices also point at some interesting developments regarding, namely, new educational modes (higher degree of group work, different work loads, media used for study, etc.) or new forms of recreation (changing role of TV, online streaming and portable devices enabling flexibility as well as potential issues of conflict). The implications of such assessments for programming, layout and execution are of interest for the development and research conducted in a proposed designated facility where the users –the students – are also the designers.

Table 2. Compatibility assessment.

	SLEEPING	*DRESSING*	*EATING*	*COOKING*	*GROUP WORK*	*SOLITARY STUDY*	*HYGIENE (WATER)*	*RECREATION*	*RELAX*
SLEEPING		well	cond.[1]	poor	poor[2]	ok	poor[3]	cond.[2, 5]	well
DRESSING			poor	poor	poor[2]	ok	ok	ok	ok[4]
EATING				well	well[1]	ok[5]	poor	well[1, 6]	ok[1,5, 6]
COOKING					ok[1, 5]	ok[1, 5]	poor	well[6]	cond.[1,5, 6]
GROUP WORK						well[5]	poor	well	cond.[2, 5]
SOLITARY STUDY							poor	ok[5]	well
HYGEINE (WATER)								poor	poor/ cond.[6]
RECREATION									ok[2, 5]
'UNWIND'/ RELAX									

Notes: (1): requires easy cleaning/flexible
(2): issues of privacy/safety
(3): issues of humidity/air quality
(4): both secluded places, yet not necessarily day lit
(5): possible issues of noise
(6): as part of socializing/relaxation

Resulting from the complexity of the project, every discussion grew out of the initial scope of work and resulted in a spill-over of questions and concerns to be addressed further, but that need to be resolved prior to the initiation of design/build/live experiments. The table below categorizes and summarizes some of the issues that were discussed during the second workshop and that have to be included into the develop-

ment process based on a user-centered approach, mapping individual and joint activities and home functions (Table 3). Generally speaking, private activities may include: sleeping, washing (range), dressing and other basic activities, while sharing may include cooking, diverse hobbies, studying and other social–related actions.

Some of the issues have to be addressed and solved before the programming stage of the project begins. For example, legal agreements and budget arrangements have to be resolved before students will start signing on. Experiencing from the 'inside' and mapping such experiences based on spatial, social, economic and time requirements is essential for creating consistent sustainable practices (Yaneva, 2011).

Table 3. Design tasks.

ISSUES		*ISSUES*	
STUDENT INVOLVEMENT	who do we want to attract?	*STRUCTURE/BUILDING*	envelop elements testing: what, how, when
	only students or are friends also allowed?		including spaces for lounging for the whole building
	criteria for grouping people who will be living there		measure impact changing envelope elements on heating/ cooling
	co-gender groups or mixed		how much change/not change in surroundings
	mixed ages or different year students allowed?		what's changing with the environment? (eg. fire codes?)
ORGANIZATIONAL	type of rental contract (timing, aligning with students' needs)	*LAYOUT*	living room wasted space? if the kitchen shared – is there need for a living room?
	maintenance: who does what?		kitchen is the 'core' of home?
	insurance		neutral spaces are needed for meetings
	rules and regulations		multifunctional spaces: cooking/eating, library, something else?
	security		changeable interior walls and interior blocks
SOCIAL	living with friends: groups up to 24 / strangers: no more than 4	*LIFESTYLE*	what to share and how?
	accessible place to socialize		recycling or sharing
	creating positive and sustainable dominant living practices		challenge laziness

Conclusions and future investigations

Real conclusions and evaluations will only be made possible after the proposed design/build/live approach within the overall student housing structure will have been operational for a few consecutive years and data have been collected throughout its development and operation phases. It will also be important to conduct surveys amongst students participating in the project after they have graduated and moved out of the environment they co-created, to see if they were influenced by the experience, in terms of sustainable living or in professional practice.

Further investigations within the project are based on forming a design process where several human factors of student living are explored, both in regards to physical design parameters as well as social psychological indicators influencing sustainable practices and user perceptions in home environments. The next stages of research will revolve around four points: 1) Optimization based on human factors; 2) Informing the design of facilities and building systems; 3) Informing social organization and demands for supporting systems;4) Co-creation processes for enabling sustainable living practices.

Farther development also includes a potential expansion of the design/build/live approach, and student exchange involving students from Chalmers (Sweden), Houston (USA) as well as partners in Kisumu (Kenya), creating more opportunities to advance experimentation and research by design for sustainable living strategies. Research objectives at each location should be complimentary, creating a network of university-based laboratories (Snyder, 1984), that offer essential insights and understanding of social and cultural influences on selection of sustainable design approaches and their adjustments in relation to local specifics and availability of resources.

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AFFECTIVE MAPS: VALIDATING A DIALOGUE BETWEEN QUALITATIVE AND QUANTITATIVE METHODS[1]

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Abstract

Affective Maps is an environmental and social category related to the concept of place identity, cognitive maps, affectivity, and it is a representation of space related to any environment as an emotional territory. It intends to be a tool that shows affectivity and indicates the inhabitant's Esteem for the place. Affective Maps is yielded by a questionnaire, named Affective Maps Generator Questionnaire, which is constituted by a quantitative (including a response scale and a socio-economic profile questionnaire) and qualitative (including a drawing of the environment researched and a inquiry) method of data collection and analysis. This study aims to present and discuss the results of a study, bringing the methodological process and explaining the dialogue between different methods (quantitative and qualitative) of data collection and analysis to inquiries about the affective-symbolic relationships between people and their environments. Therefore, the questionnaire was applied with reference to the neighborhood of residence of 293 participants from high schools in Fortaleza, CE, Brazil. First, analysis of the validity and accuracy for the response scale of the questionnaire were made. Then the qualitative and quantitative parts of the questionnaire were analyzed. It was observed that the majority of the sample presented contrasting affects in relation to neighborhood of residence in which coexisted positive and negative representations about this environment. The dialogue between qualitative and quantitative analysis yielded these findings, when a way of reference and counter-reference between them was created.

Keywords: Affective map, qualitative method, dialogue, neighborhood.

Introduction

This text theoretically lies in dialogue between Environmental Psychology and Social Psychology, which has fostered the conduction of studies on the relationship between people and their physical and social environments supported by theoretical categories in a historical and cultural perspective such as Affectivity (Sawaia, 1995; Vigotski, 1998), Place Attachment (Proshansky et al 1978, 1983) and Esteem for the Place (Bomfim, 2003a, 2010), among others. These categories, in general, consider the

1 This article was produced from the results of a survey entitled "Esteem for the Place and Affective Protection indicators of young students in public schools in Fortaleza: contributions of Environmental Psychology to the understanding of socio-environmental vulnerability (2nd step)", carried out in the years 2012 and 2013 in the city of Fortaleza, Ceará, Brazil.

historical, social and cultural character of the production of affection that emerges in the person-environment relationship.

This relationship is understood in its cognitive, affective and symbolic dimensions, in which the physical space is converted to the mean space (Corraliza, 1998), once the subject turns impersonal spaces previously provided into a place of value (Tuan, 1983) with which it is involved, maintains and cares (Bomfim, 2003b). On this interaction, individually and socially, meaning is constructed for places in what consists of the symbolism of space (Pol & Valera, 1999), giving the subject a sense of group identity and transforming spaces into a social category, whereby its inhabitants, or subjects who make use of it, will be recognized by others and by themselves

Consonant with this perspective, Lynch (2010) states that each subject forms his own picture of the environment; however, there is a certain consensus among members of the same group. This symbolic construction, both individual and collective, composes - beyond the identity of the group - the subjectivity of its members, and is directly related to the welfare of the subjects (Pol & Valera, 1999) since these require a stable reference in space, which provide them with guidance and preservation of identity before themselves and others (Pol, 1996).

According to Pol (1996), spaces, beyond their functional sense, are a summary of public and private experiences of the subject and the appropriation of these spaces allows people projection in time and ensures the stability of identity. In the process of appropriation of space, a man leaves his mark on the environment, feeling comfortable by leaving something of himself at the same time as he establishes identity characteristics (Tuan, 1983). In this regard, in the appropriation of space there is a dialectic and cyclical relationship between the action-transformation which marks the subject with the places, thus constituting himself as an active process, which evokes the feeling of belonging to the place, which is effective through its possession, whether through legal ownership or use, identification and protection of these places (Pol & Valera, 1999)

We may say then that subjects establish an emotional bond in relation to places, which can be positive or negative, pleasant or unpleasant (Giuliani, 2004).This bond may arise in the subject's desire to be always close to this place, which is configured in attachment to the place, resulting from a positive assessment of the quality of the place to meet the needs of the subject; meaning that the place forms part of the identity of the person, or the duration of residence and permanence in the place. From this emotional attachment of individuals to specific places or spatial configurations, Proshansky et al (1978, 1983) explores the concept of Place Identity Studied by environmental psychology, relative to the idea that we are included in the places we have been to and the places we are.

That concept is defined as a substructure of the identity of the subject, which consists of cognitions about the physical world inhabited by the subjects (Proshansky et al, 1983). These cognitions consist, according to the authors, of memories, feelings, attitudes, values and meanings, among others, related to the physical space, which also involves the "environmental past" of the person, represented by the set of spaces and

places in which they can satisfy their lifelong biological, psychological, social and cultural needs. It is worth noting that this definition is not tight - it acknowledges the dynamics with changes in the physical environment, varying the ability to meet the needs and desires of the subjects, which derive good or bad experiences, affecting the identity of persons (Proshansky et al. 1983). Thus, the identity of place is complex and changes, differentiating and shaping based on human interactions with places and with others (Bridge et al., 2009). Thus, the concept of place identity also involves relational dimension with others, considering that space is also a collective construction (Proshansky et al., 1983). Likewise, for the authors, the material and structural properties of place identity vary according to gender, age, social class and personality, among others, suffering transformations across the life cycle. It derives, as shown by Bridge et al (2009, p. 350), while that gives meaning and direction to places, the subject "[...] In addition to building semiotic places, recognizes himself now as individuality and otherness that is 'reified', sometimes as a denial of self as an object of self and self-affirmation in the process."

Accordingly, Bomfim (2003a, 2010) brought the Esteem for the Place category to refer to the cognitive, affective and symbolic representations constructed in the routine of subjects in their social and physical environments that enhance or not the possibilities of action and implication of these subjects in their environments.

Thus, our study (Esteem for the Place and Affective Protection indicators of young students in public schools in Fortaleza: contributions of Environmental Psychology to the understanding of socio-environmental vulnerability - 2nd step) researched the relationship of esteem with the place in young high school students from public schools in the city of Fortaleza, Brazil, using qualitative and quantitative strategies for collecting and analyzing data.

Overall, this text aims to present and discuss the results of this study, bringing a kind of methodological process and explaining a dialogue between different methods (quantitative and qualitative) of data collection and analysis to inquiries about the affective-symbolic relationships between people and their environments..

The Esteem for the Place and the relationship between the person and the environment

Subjects tend to form an image of the environment resulting from all the bodily senses - hearing, sight, smell, taste and touch - which has many meanings and individual and collective memories (Lynch, 2010; Tuan, 1983). With regard to the city, this may be a raw material for the symbols and collective memories constructed, which allow communication between subjects. For Lynch (2010), the construction of the image of the environment occurs in a two-way process in which the environment provides a physical structure, distinctions and relationships that will be organized and provided with direction by the subjects. It follows that different meanings are possible and each subject and community constructs several images. This image has three components, namely, the identity of an object, i.e. its distinction from others; structure, regarding

the structural relationship of this object with the observer and other objects, and the practical or emotional meaning that this object has for the observer (Lynch, 2010).

Assuming that the city presents readability, which refers to the clarity with which the city can be read, decoded by its inhabitants, the author argues that the symbolic construction of the image of the city allows the subject to form a mental map, although fragmented, which allows you to orient yourself in the city. A legible city means, therefore, that the subject can easily identify its elements and group them into global structures. According to Lynch (2010), the formation of a clear image of the environment enables growth of the subjects at the same time as they take advantage of the orientation that it produces.

Thus, Lynch (2010) argues that the urban environment, even broad and large, can take on a perceivable form as the subjects draw their mental maps of the city. In addition to an image of the physical structure, as the author points out, in drawing the subjects express elements of their symbolic world, with regard to their interaction with the environment, i.e. the meanings that they structure for the city, the interpretation that they make and their individual and collective way of representing it become public. Therefore, in researches conducted by the author, it was found that not always drawn maps correspond to the physical reality of the environment, but to widespread generalized impressions that this reality generated in subjects. In this procedure, the construction of the drawing starts from the acquisition of information about places and attributes of urban space, which are encoded, stored, recalled and decoded by the subjects through a graphical expression. The cognitive maps studied by Lynch show that the guidance and knowledge of the city are important for the feeling of security, as well as enabling the organization of space, social and cognitive experience (Lynch, 2010).

As noted by Bomfim (2003a), cognitive maps centered on a "rational" knowledge of the city, not including the affections contained in the graphic expression of the map and the symbolic constitution of space itself, for the subjects. Thus, intending an apprehension of affection, the author proposes the Affective Maps Generator Questionnaire methodology, the result of his doctoral thesis, as a form of access to the affection of the subject in relation to the environment, although there may be intangible and outer expression to other traditional methods. Therefore, we define affective maps as an environmental and social category related to the concept of place identity, cognitive maps, affectivity, and it is a representation of space related to any environment as an emotional territory. It intends to be a tool that shows affectivity and indicates the inhabitant's involvement with the city or an environment (Bomfim, 2003a).

Grounded in the philosophy of Spinoza, which advocates that true knowledge of the world comes from reason and how the body is affected by other bodies, affectation of body and soul (2005), the instrument proposed here seeks to integrate the cognitive and the affective, considering the subject in its entirety, with regard to his environmental experience, which is complex. As stated by Tuan (1983), space and place can be considered as images of complex feelings, becoming ambivalent. They

are neither good nor bad, but ambiguous, which leads us to multidimensional spaces, which evokes the same ambiguity of emotions related to them (Sawaia, 1995).

Affection is understood here as a category of action-mediation and transformation of the human psyche, which may be positive or negative (Bomfim, 2003a), the emotional color that fills human experience with meanings and can express itself in the form of feelings - lasting and moderate with respect to the feeling of pleasure or displeasure - and emotions - intense, brief and focused on phenomena that disrupt the normal flow of conduct (Sawaia, 2011). Thus, affection can increase or decrease the power of action in the body, leading it into action, increasing its strength to exist, or passivity, this depressing force (Spinosa, 2005), also impacting the way the subject demarcates his territory (Pol, 1996) and binds him to places (Giuliani, 2004).

For Bomfim (1999) emotions and feelings mediate the identity of the subjects, the interaction with space and others, as is the uniqueness of everyday history that it constructs, and moreover, is able to reveal how the subjects know and act on the city (Bomfim, 2003a). Sawaia (2011) understands the power of action as the regulative principle that allows the individual to act on his reality, towards his emancipation. Thus, Bomfim (1999) argues that affectivity gives an understanding of the conflict between the micro and macro social, reestablishing the dialectical relationship between them, breaking the dichotomy between internal and external, subjective and objective, thus decoupling affection, activity and consciousness about the environment perpetuates the alienation of subject and attenuates the existing relations of domination in society. On the other hand, according to Sawaia (2011), the power of suffering, the passion generated by sadness, driven by bondage and passivity, since it becomes subject to another at will. We would state, based on these considerations, that spaces and places can be emancipatory or maintainers of bondage and the suffering of individuals, and we propose affective maps as a way of consistent research about how subjects interact with the spaces, such as affecting with them, because we agree with Vygotsky (1998) that affection can only be understood within the dynamics of human life as a whole, in addition to not always being the same, but differing according to the level of development of the subject. Therefore, the Esteem for the Place (Bomfim, 2010; 2013), it is worth mentioning, concerns affective evaluations, with a positive and/or negative background, which a person feels from their environment, and it is, in turn, expressed by feelings and emotions through projected images, representations and visions of a world.

The symbolism of space, built by the cultural-historical background of the subject, exerts a strong influence on attachment relationships, belonging and identifying with the place (Pol & Valera, 1999).

Thus, the environment is not then understood only as a set of material properties, concrete and tangible, but rather as an emotional territory where these things are viscerally connected by meanings, so it is liable to be appropriated and transformed by the subjects that compose and occupy it.

It is in this sense that Bomfim *et al* explains:

The Esteem for the Place refers to appreciation, valuation and attachment with regard to the place. It relies on the evaluation of the quality of housing and environmental use, i.e., security, cleanliness, organization, sophistication, aesthetic, environmental preservation, legibility, signage, accessibility, etc; in the quality of social bonds of friendship and good relations, on the social image of the place in society, and mainly at the level of the individual appropriation of space that people esteem. (Bomfim *et al*, 2013, p. 322).

Affective Maps and the the Affective Maps Generator Questionnaire (IGMA[2])

Methodologically the Esteem for the Place is diagnosed using the *Affective Maps Generator Questionnaire (IGMA)*, prepared by Bomfim (2003a, 2010), since this allows a graphical representation, a metaphorical and artistic relationship between the individual and a particular environment.

We define the affective maps as an environmental and social category related to the concept of place identity, cognitive maps, affectivity, and it is a representation of space related to any environment as an emotional territory. It intends to be a tool that shows affectivity and indicates the inhabitant's involvement with the city or an environment (Bomfim, 2003a).

Affective maps can be drawn by the graphic, artistic and metaphoric expression from images and representations that people have from a place. It can be taken as a guiding principle of the implementation of actions intended to seek the involvement of the population in urban and environmental issues.

The IGMA constitutes a quantitative and qualitative method of data collection and analysis, using interpretive synthesis compared with the scores from scale responses, evaluating the affective and imagistic production on environments from the relationship established between these and their occupants. Through people's affection in relation to the environment, they articulate feelings, evaluations and identification of the person in respect to a particular place. This questionnaire will generate the affective maps.

What we call the qualitative part of IGMA comprises a stimulation to construct a representational drawing of a particular environment (community, neighborhood, city, etc) followed by an inquiry about the feelings, meanings and qualities related to the environment and mediated by that drawing.

The psychometric or quantitative part, in turn, constitutes a 5-point Likert type scale with assertions about the environment to be answered according to the degree of agreement with these assertions, plus a Socio-Economic Profile Questionnaire.

2 From the Portuguese form "Instrumento Gerador dos Mapas Afetivos".

In summary, the complete contents of IGMA are:

- *Drawing of the Environment Researched*
- *Inquiry3*
- *Scale (named Esteem for the Place Scale, EEL4)*
- *Socio-Economic Profile Questionnaire*

After the data was collected from the people interviewed, the researcher constructs a framework like this and analyzes it by creating a subtext and sense of meaning for each one of the answers. This is the process of affective map construction. We call this process a "construction of meaning moved by affections" (Bomfim, 2003). Thus, the qualitative part of the questionnaire of Affective Maps is a method that seeks to reveal the affections considering the subtext and the sense of meaning (Vygotsky, 1995) presented in the responses of the individuals.

Bomfim (2003a, 2010) considers, then, that there are four possible representations of the environment that are more frequent. They are Belongingness, Agreeableness, Destruction and Insecurity. These categories arising from IGMA data analyze the classification of the type of place of esteem in subjects.

The Agreeableness image reveals feelings and qualifications perceived as pleasant by residents of neighborhoods, cities or communities. The Belongingness is an image in which the resident feels and describes his neighborhood or city, considering his social ties of friendship or kinship, besides presenting a deeper identification with the place. Insecurity is based on the feelings of fear, instability and inconstancy, which are opposite to Belongingness and derive directly from urban violence. The image of Destruction is the reverse of Agreeableness. Residents feel uncomfortable with the presence of destroyed, degraded and abandoned spaces.

These affective indicators from the scale compose Esteem for the Place (Bomfim, 2003), which can be more potentiating or non-potentiating. The inhabitants involved who have a potentiating Esteem for the place have higher scores on the categories of Agreeableness and Belongingness, and the ones who score less on potentiating Esteem for the place have higher scores on Insecurity and Destruction.

This is because the signs are that the feelings of fear, insecurity, frustration and anger (typical in the pictures of Insecurity and Destruction) decrease the potential of action of the individual in the city and his implication therein. Contrary to this, the feelings of belongingness and agreeableness, for example, promote a caring relationship and participation with the city and the inhabitant's increasing potential of action, which correlates with the statement by Pol and Valera (1983) that when there is a

3 The survey contains questions about the meaning of the drawing, about the feelings, the word synthesis of the feelings, what they think about the environment researched, the creating of a metaphor of the city, and about the everyday paths and participation in association.

4 From the Portuguese form "Escala de Estima de Lugar".

strong place identity, i.e. a strong identification with the city, there is also a higher level of overall citizen satisfaction. However, it is understood that both forms of esteem coexist, especially in context of complexity of large cities, producing a transverse category of analysis which is the contrast, or an Esteem for the location that goes from potentiating to non-potentiating.

Method

Building of Esteem for the Place Scale (EEL)

Considering the lack of criteria of validity and accuracy of this scale in IGMA, the need arose to include the validation of the scale within the methodological approach of the study. To this end, a survey of studies in environmental psychology that used IGMA to raise the content of future items of the new scale was performed. In other words, EEL items were constructed from the contents collected in studies using IGMA (usually containing, besides drawings and inquiries, a scale created for each one of the studies, no criteria to establish its validity and accuracy).

Thus, after the lifting of that content, even created in preliminary scale items and adjusted, they take into account the evaluation criteria of items exposed by Pasquali (2010). The construction of the items was oriented according to the expected scale factors, Agreeableness, Belongingness, Destruction and Insecurity.

The items were then reviewed for their semantic readability through a Semantic Analysis and finally subjected to an Analysis of Judges (Pasquali, 2010). The latter consists of the presentation of the items and the theoretical definitions of the factors that make up the scale to experts (judges) in the area, without, however, relating them. The duty of the judge is to link the factors and their respective items without prior knowledge, in order to demonstrate consistency of the scale theory (Pasquali, 2010). After that, we arrived at a pilot scale that was inserted into the IGMA and subsequently subjected to statistical analysis of validity and accuracy.

Application Procedures and Participants

The application of Esteem for the Place Scale was in young students from the public schools in the city of Fortaleza, Ceará, Brazil. The environment chosen to be searched was the district of origin of the participants. Altogether, 293 high school students from public schools of Fortaleza participated in the survey responding to IGMA. Of these, only 69 responded to IGMA in the complete form and the remainder responded to the version containing only the Esteem for the Place Scale and Socio-Economic Profile Questionnaire.

Table 1 shows the sample characteristics of participants with frequencies and percentages.

Table 1. Sample characteristics (N=293)

Variable		n	%
Sex	Male	118	43,5
	Female	153	56,5
	Total	*271*	*100,0*
Age group (years)*	14-15	22	7,6
	16-17	182	62,8
	18-19	75	25,9
	20 or more	11	3,8
	Total	*290*	*100,0*
Familiar income (brazilian minimum wages[5])	0-1	86	37,9
	1-2	67	29,5
	2-3	47	20,7
	3-4	10	4,4
	4 or more	17	7,5
	Total	*227*	*100,0*

***** *Mean age 17, 19 years (SD = 2.20).*

Data Analysis

First, considering the validation process of the EEL, we proceeded with the exploratory factor analysis of the sample. Furthermore, the data analysis methods carried out were descriptive analyses, as of standard deviation and frequencies; parametric analyses, like Kaiser-Meyer-Olkin, Bartlett's Test of Sphericity, Principal Component Analysis and Cronbach's alpha, the latter to assess the internal consistency of the scale.

Results

Validity and accuracy of the Esteem for the Place scale

The factorability of the data matrix was confirmed by a KMO = 0.88 and a statistically significant chi-square test extracted from the Bartlett Sphericity, χ^2 (1540) = 5526.53, p <0.001. These findings indicate that the data matrix was suitable for the factor analysis (Tabachnick & Fidel 2001). Hence a Principal Component Analysis showed that it was possible to verify the prevalence of two main factors with eigenvalues exceeding 1, which responds to the Kaiser criterion, and together explains 36.75% of total variance. However, in order to better evaluate how many components should be extracted, it was decided to take into account the graphical distribution of eigenval-

5 1 Brazilian minimal wage ≈ 290 USD⁄ month

ues (used as a tool for the Cattell criterion). According to this criterion, it was possible to consider also two components, as seen in Figure 1. Thus, the two-factor structure of this measure seems consistent.

Figure 1. Graphic distribution of eigenvalues of the components.

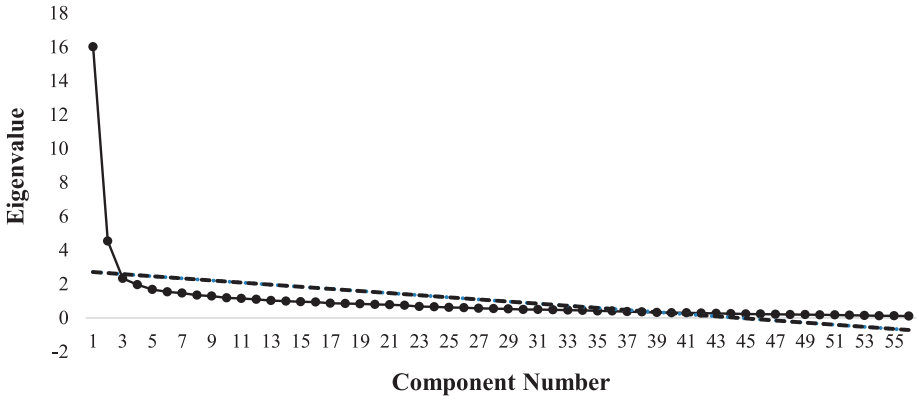

Figure 1. Graphic distribution of eigenvalues of the components

Then, this factor structure obtained was tested using a rotating type of oblimin (when there is the hypothesis of correlation between the components) for extracting factors. Out of 56 items on the pilot version, 15 items showed no satisfactory saturations in any of the two factors and were therefore excluded from the scale in its final version. Was arbitrated loadings higher than |0.40| as cutoff factor values, since values above |0.30| are already considered, as a rule, as satisfactory. It is noteworthy that two items originally belonging to the dimensions of Factor I (Items 5 and 24) obtained saturations in Factor II, but with negative charges, i.e. their contents inversely measure the construct of Factor II.

The first factor had an eigenvalue of 16.05 and explained 28.6% of the total variance, and an internal consistency (Cronbach's alpha) of 0.84, while the second factor had an eigenvalue of 4.53 and explained 8.1% of the total variance, while its internal consistency (Cronbach's alpha) was 0.88. The factors relate to each other negatively with a Correlation Coefficient (Pearson's R) of -0.45, statistically significant at the 0.01 level. It is then essential to highlight the new setting that statistical data allowed in the scale, inasmuch as four factors were expected (Belongingness, Agreeableness, Destruction and Insecurity) and only two were proven.

On the other hand, it was found that each factor proven admitted similar categories of items. The items of the factors expecting Belonging and Agreeableness were grouped in the same factor (factor I), which was termed Potentiating Esteem for Action and Involvement in the Environment. The same happened with Insecurity and Destruction, which, combined, constituted Non-potentiating Esteem for Action and involvement in the environment. In this sense, the categories that were expected as component factors of the scale will then be considered as dimensions within the definitive factors. Table 2 shows the factorial structure of the Esteem for the Place Scale, taking into account two factors extracted by the Principal Components Analysis.

Table 2. Factorial Structure of the Esteem for the Place Scale

Items	Factors I	Factors II	h²	α
56. I feel attached.	0,77		0,55	0,83
47. I love it.	0,76		0,60	0,83
50. It has everything to do with me.	0,75		0,60	0,83
39. It's attractive for me.	0,75		0,57	0,83
32. I feel that I belong.	0,71		0,49	0,83
43. It makes me proud.	0,70		0,54	0,83
36. I have pleasure.	0,67		0,56	0,83
26. If I'm not in it, I want to go back.	0,66		0,45	0,83
28. I feel identified with it.	0,64		0,51	0,83
49 I have fun.	0,62		0,45	0,90
29. I admire its beauty.	0,59		0,47	0,83
09. I consider it part of my story.	0,55		0,28	0,84
54. I would defend it if necessary.	0,53		0,30	0,83
07. I wouldn't change it for anything.	0,49		0,33	0,83
35. The things that happen to it are important for me.	0,45		0,20	0,84
01. I consider it like something mine.	0,45		0,20	0,84
23. I have opportunities.	0,41		0,21	0,84
17. I'm scared.		0,77	0,56	0,87
16. There are risks.		0,75	0,49	0,87
19. Danger is constant.		0,72	0,51	0,87
51. It's destroyed.		0,68	0,58	0,87
52. I have the feeling that something bad may happen.		0,67	0,44	0,87
11. It looks abandon.		0,63	0,44	0,87
05. I feel relaxed.		-0,63	0,47	0,90
04. I have the feeling that I am helpless.		0,61	0,41	0,87
48. I must be alert.		0,60	0,31	0,88
45. I feel insecure.		0,60	0,45	0,87
18. It's bad.		0,60	0,57	0,87
24. I feel peaceful.		-0,59	0,53	0,90
53. There is dirt.		0,58	0,31	0,87
41. I feel that I am unsafe.		0,57	0,46	0,88
21. It makes me mad.		0,57	0,55	0,87
46. It's despicable.		0,54	0,43	0,87
20. I think it's ugly.		0,54	0,58	0,87
03. It's polluted.		0,53	0,29	0,88
25. With substandard structures.		0,53	0,26	0,88
30. It makes me angry.		0,50	0,44	0,87
13. It embarrasses me.		0,49	0,36	0,87
12. I don't trust people.		0,48	0,23	0,88
33. I feel suffocated.		0,47	0,36	0,87
55. Anything can happen.		0,46	0,20	0,88
Number of itens	**17**	**24**		
Eigenvalues	**16,06**	**4,53**		
Total Explained Variance (%)	**28,6**	**8,1**		
Cronbach´s (α)	**0,84**	**0,88**		

Factor I. Potentiating Esteem of Action and involvement in the environment.
Factor II. Not-Potentiating Esteem of Action and Involvement in the environment.
Note 1: minimal factorial loading satisfactory |0,40|
Note 2: the English translation of the items has not been psychometrically tested.

Data analysis results of questionnaire

The results obtained from the analysis of drawings and inquiry of the sample that responded to the complete instrument were distributed in terms of frequency of emergence of categories of Esteem for the Place.

These results show there was a greater concentration on Non-Potentiating of Action and involvement in the environment, since the categories of Insecurity and Destruction totaled 37.7% frequency in this sample compared to Belongingness and Agreeableness (Potentiating Esteem), which amounted to 29%. However, in this analysis it is possible to identify the Contrast category in cases where there is a duality in the affective representation about the environment, i.e. esteem interposed between two polarities, totaling 33%.

Figure 2. Draw and inquiry analysis results (n=69).

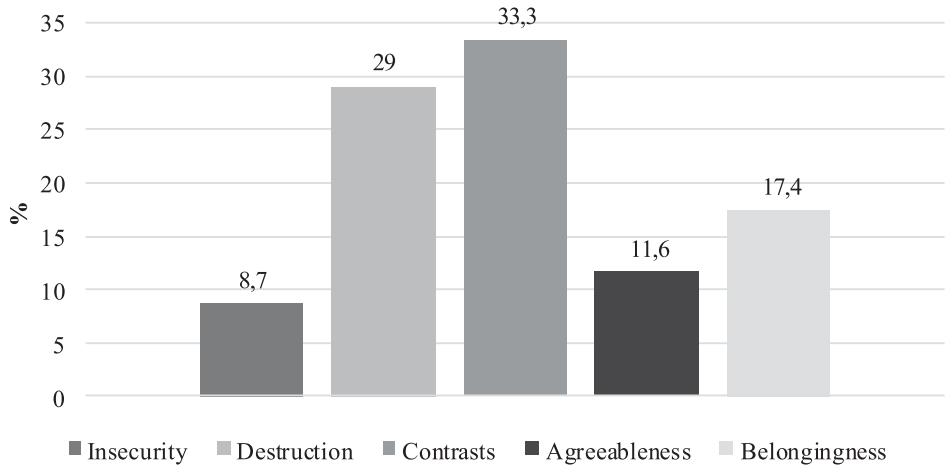

Figure 2. Drawing and inquiry analysis results (n=69).

The score analysis of the Esteem for the Place scale yielded results based on the means of all subjects for each of the factors. For the overall sample, it was found that the Potentiating Esteem for action and involvement in place had a mean of 3.42 (n = 246, SD = 0.67) and the Non-Potentiating of Action overall mean obtained 3.05 (n = 224, SD = 0.68), which did not allow us, from the statistical point of view, to infer that there is a significant difference between the two scores.

An Esteem for the Place coefficient (*e*) was then produced, calculated by simple subtraction of the individual scores from factor I (Potentiating Esteem) and factor II (Non-Potentiating Esteem) in accordance with the following formula.

$$e = Me^{\text{potentiating}} - Me^{\text{not-potentiating}}$$

This calculation produces positive results when the scores from factor I exceed the scores from factor II and negative in the reverse situation. We then traced a diagram with coefficients grouped in accordance with Figure 3**.**

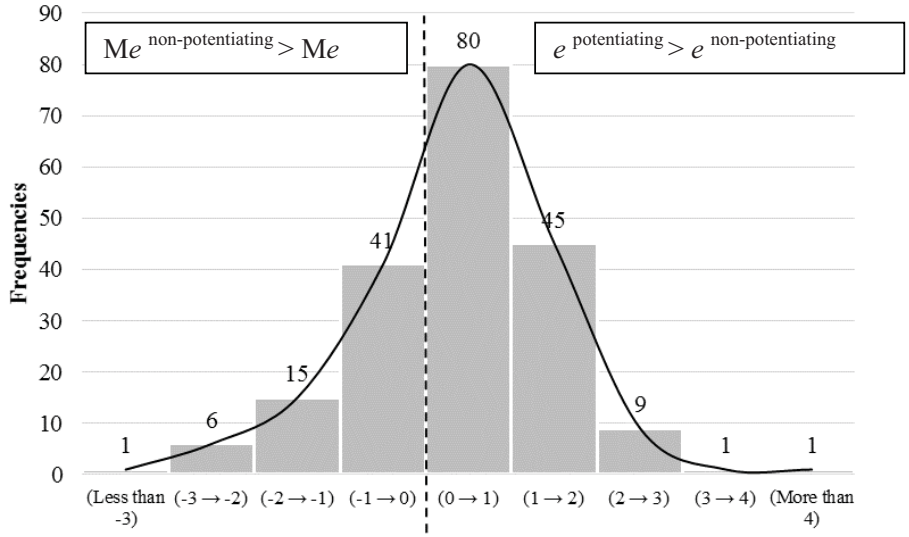

Figure 3. Distribution of Esteem for the Place coefficients by groups (n = 199).

It is easy to check that there is a concentration of Esteem for the Place coefficients (e) above 0 (zero), which could indicate that, in general, the sample demonstrated a higher potentiating esteem than non-potentiating esteem about the place. However, it is also observed that the highest concentration of coefficients is established at points very close to zero. The closer this value the smaller the differences between the means of the two types of esteem.

Discussion

The Dialogue between Qualitative and Quantitative Methods

Quantitative analysis facilitates the improvement of the generator questionnaire of affective maps towards the construction of precise and valid items, which can be used for various types of environment without the need to apply a pre-test, making the survey faster and more consistent. We confirm our hypothesis for this project that has been tested in previous research, that the categories Agreeableness and Belongingness, and Insecurity and Destruction compose the potentiating and non-potentiating Esteem for the place, respectively.

Furthermore, we note that the current results coming from qualitative and quantitative analyses corroborate previous research conducted during the period from 2003 to 2012, where categories are repeated and theoretical structure is confirmed.

The qualitative and quantitative dialogue promotes a better understanding of the phenomenon in the research when it comes to affection, feelings and emotions. The questionnaire of affective maps can be an option for that. This dialogue between qualitative and quantitative methods in the evaluation of affectivity with the environments helps overcome the dualities like subjectivity/objectivity, individual/collective, cognition/affection and social/environmental.

When we look at the results obtained from the analysis of the scores from the EEL and the proximity of most of the Esteem for the Place coefficients (*e*) to zero, we can infer that for most of the sample the differences between potentiating and non-potentiating esteem are very small. The calculation of the coefficient shows how for almost the entire sample both types of esteem coexist in the representations of each subject, generally having esteem or another aspect more relevant to the individual. However, it is likely that for most of this sample for which the result of the difference is very small, the coexistence of the two types of esteem is more even, meaning in such cases that the two exert strong influences on the construction of emotional images about people's environments.

For these cases, then, it is possible to speak theoretically of a contrasting image of the place. For this reason, we took into consideration the fact that it is not possible at the moment of the study to conclude with any certainty coefficient values which are sufficient and satisfactory to indicate a prevalence of estimates on the other. Thus, we consider that the range between negative and positive results that are very close to zero to reflect the possibility of including images of contrasts results in quantitative analyses.

This was due to the lack, so far, of more comprehensive studies that include the standardization of criteria for the interpretation of results and allows the more precise inference of what the results of the estimated coefficients indicate of the place in question.

Thus, the results of the scores could also be interpreted in the light of the results of the analysis of the design and investigation, showing the presence of the category contrasts quite significantly as shown in Figure 2. The contrast as transversality in the categories of Esteem for the Place was one of the main results of the research. In researches conducted between 2003 and 2012, the contrast category was defined just as a category of environmental assessment. It was understood at that time, that besides a theoretical category and presenting analysis mainly on the qualitative part of IGMA, the contrast refers to the coexistence of different forms of representations borne by different environments and/or opposing forces.

The contrasts in the city were first evaluated in studies by the Chicago School (Park, 1967). The authors of this theoretical field emphasized the structure and peculiar tradition in the city, in contrast to life in the village and open fields. The adaptation of the person to the urban way of life generates a more rational behavior, less emotional and more utilitarian. The youths referred to the neighborhood as, for example, insecure

and quiet, beautiful and ugly, violent and peaceful, besides bringing feelings such as love and hate, joy and sadness.

In this research, ambivalent feelings were evident with the neighborhood where they live, in terms of positive feelings involving the bond of attachment to the place, the tranquility of a neighborhood far from downtown and while lacking in infrastructures for its residents, besides the insecurity, the destruction that generates feelings of anger, helplessness, and fear.

Understanding that Potentiating Esteem for the Place promotes the involvement of youth in their neighborhood, the Contrast can be an increasing potential for action, when negative feelings do not imprison, or do not lead to suffering (Sawaia, 2009). On the other hand, the potential increasing of action, even with ambivalent feelings, leads to a solution to the problem faced, as we can see in the discourse of subject 131: "I see my neighborhood as a prison by presenting contrasting feelings of joy and happiness". However, he shows, at the same time, that the lack of opportunities can improve with the construction of leisure areas, increasing policing and improving the streets, etc.

To conclude, it could be understood that in addition to corroborating the data of the other, the dialogue between the different methods of data collection and analysis may even facilitate the interpretation of the data when a stream of reference and counter-reference is created between them. This was important to avoid possible rigidities in the forms of assessment and interpretation of the results of our instruments.

Thus, we expect that future studies involving IGMA can advance in the systematization of more precise ways of interpreting these results, through standardization from large samples, always taking into profound consideration the necessary link between the parts of the instrument to better assess Esteem for the Place. We should also consider that Esteem for the place can be a category of research and intervention that evaluates the level of involvement and participation of people in environments. It can contribute to the formation of citizen's consciousness.

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MAPS AS LANDSCAPE

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Abstract

"Maps are seen through many different eyes. As the historical study of maps has broadened and matured over the past two decades, to extend beyond the idea of maps as ever-improving representations of the geographical world, at least three approaches have been developed and championed: the map as cognitive system, the map as material culture, and the map as social construction. All three are necessary to a full understanding of how maps function in society." (Woodward & Lewis, 1998, p. 1).

However, it is difficult to find these three qualities in most maps that are in common present-day use: normally just one aspect is present. Is it possible then to find maps where all of these three approaches have emerged? We will try to answer that question after looking at very different cartographic examples: first of all, the Australian "tjuringas", that belong to the non-western traditional cartography; later on, some historical Galician maps that surprisingly have extraordinary similarities with the Australian ones.

Through parallelism between primitive Australian ´´maps´´ and some historical Galician maps, we shall try to validate this hypothesis: ´´we can distinguish between territory maps and landscape maps.´´

Keywords: map, landscape, urbanism, cartography, Galicia

> *The contrast was extraordinary: the satellite photo only showed a soup-like expanse of similar shades of green, with scattered blue-ish patches, whereas the map presented a fascinating network of picturesque secondary roads, with panoramic views, forests, lakes and mountain passes. Above the two enlargements, in black capital letters, was the title of the exhibition: ´´THE MAP IS MORE INTERESTING THAN THE TERRITORY.´´*
>
> (Houellebecq, 2010)

Introduction: the importance of maps

This paper was born of a belief in the main role that maps have played in the relation between man and his environment. "Maps have deepened and expanded the consciousness of many societies. They are the primary medium for transmitting ideas and knowledge about space. As enduring works of graphic synthesis, they can play a more important role in history than do their makers. In this sense their significance transcends their artefactual value. As images they evoke complex meanings and responses

and thus record more than factual information on particular events and places" (Harley & Woodward, 1987, p. xv)

In order to answer significant questions about the interaction of people with different environments and contexts, which is one of the ambitious objectives in this symposium, we should start with a question: how do we humans perceive, understand and represent our environment. The answer is not easy but maps have a lot to do with it.

Maps and plans are not just descriptions referring to the present and past of territories and cities, but interpretations that tell us about the concept of space and the relationships that people establish with it. This is why they have more to do with the ´´project´´, i.e. with the future, than we think, and they will influence future developments and changes. In them, the wishes and aspirations of communities appear, and even if they do not in themselves contain any specific proposal, good maps do contain the seeds of what could be, or perhaps what should be. Thus, maps are not only a valuable description of a geographical area but also a special source of information that includes essential aspects of the culture of a society.

"Somewhat surprisingly therefore, historians, even ethnohistorians, have rarely used extant maps as evidence," (Woodward & Lewis, 1998, p. 9) probably underestimating the ability of a map to transmit information, or even more, to show a particular view or interpretation of the world. "Why have maps been so clearly marginalized? Perhaps they are trivial, gross oversimplifications of the world that often stand in the way of our understanding of it". The statement "A map is not the territory" has been echoed by many writers. But all ways of knowing the landscape – speaking, writing, singing, painting – have their own subtle ways of representating reality (Woodward & Lewis, 1998, p. 10). Mapping is an act of communication about spatial relations in society, relevant information about man and his environment is transmitted by this way, "in some respects – even after the development of a more sophisticated vocabulary of cartographic signs - maps are no less imprecise than written language. Although a key or legend may be provided, a line, a dot, a colour, for instance, may have had several meanings, both manifest and latent, and it is unwise to assume that identical cartographic signs have similar meanings, or even common origin, when found in different cultures. (…) maps remain a complex language … whose properties we know very little about." But we could say that this complex language "involves both art and science." (Harley, 1987, p.3).

"As mediators between an inner mental world and an outer physical world, maps are fundamental tools helping the human mind make sense of its universe at various levels. Moreover, they are undoubtedly one of the oldest forms of human communication" (…), "maps constitute a specialized graphic language, an instrument of communication that has influenced behavioral characteristics and the social life of humanity" (Harley, 1987, p.1). A map can be a mental construction thanks to which we understand the world, a system which allows us to understand our environment - but also to organize a territory and to transfer a social structure to a particular place; finally, as an object, it is in itself a cultural "artefact", a scientific document and/or a work of art

(Woodward & Lewis, 1998). These three approaches to maps of course overlap and complement each other, and their importance goes far beyond mere geographic description: "maps – like books - can be regarded as agents of change in history" (Harley, 1987, p.5), in so far as they propose a particular way of understanding our surroundings. And we should not forget that "anything that can be spatially conceived can be mapped" (Robinson & Petchenik, 1976, p. 15)

We will look at the Australian *tjuringas,* an example of non-western traditional cartography where these three approaches: "the map as cognitive system, the map as social construction and the map as material culture" appear as a whole. The Australian *tjuringas* are mythical representations of a territory, and the languages used to represent this landscape are multiple: music, painting, poetry etc.

The australian *tjuringas*: an example of non-western traditional cartography

When the first westerners arrived on the Australian continent, they found an Aboriginal culture that "imagined" their territory furrowed with hundreds of routes which criss-crossed the land in all directions, forming a network. Apparently these routes could be sung, so they were called "songlines". This poetic image of a territory crossed by hundreds of "musical" lines is the one that inspired Bruce Chatwin's journeys across the Australian deserts to deepen his knowledge of Aboriginal culture. Journeys which he would later on narrate in his book *The Songlines*. This vision of a territory furrowed by lines and music is not unique to the traditional culture of the Aboriginals of central Australia. For the Yoruba of western Africa "the phrase *this country has become civilized* literally means *this earth has lines upon its face*" (Woodward & Lewis, 1998, p. 7). In Melanesia, the Latmul people *map* the landscape orally, through sequences of rhyming couplets that are recited and sung in ritual ceremonies. (Kline 1998, p. 426)

The Songlines is not an essay, nor a scientific text: it was written as a travel book and "contains several amateurish flaws resulting from a very brief and largely vicarious experience of the subject. Nevertheless, some may find it a useful introduction to a difficult subject. It is, however, a fictionalised mix of travel experiences and restatements of conclusions already published by others, specially T.G.H. Strehlow, and is not the simple traveler´s account it purports to be" (Sutton, 1998, p.361). Precisely because of the narration being presented as a "lived experience", the book is extremely suggestive - in spite of the caution with which one has to evaluate some of its conclusions. Chatwin himself explains the inspiration for his journey by telling us that he begins by investigating the labyrinth of invisible paths which the Australian Aboriginals call the Traces of the Ancestors or the Track of the Law; Europeans give them the name Songlines, or Trail of Dreams. The Aboriginals believe that the totemic ancestors of each species were created from the clay of their primordial well out of which they stepped, and sang their names which are the first lines of a song. A second step served as a gloss of the first line and completed a rhyming couplet. After this, they went out to

explore the land, footstep by footstep, bringing the world into existence as they sang it: rocks, hills, sand-dunes, rubber trees, etc. (Chatwin, 1989).

"The paths along which Dreamings (ancestral beings) traveled are commonly known as Dreaming tracks, some passing through the countries of dozens of groups (…) much of the Australian continent is, or used to be, overlain by such pathways or Dreaming tracks. Although not all such lines have songs associated with them, many do" (Sutton, 1998, p.360-361).

To translate these concepts from the Aboriginal languages is difficult: *dreaming tracks* is an approximation that tries to transmit the image of totemic ancestors who originally awoke and began to walk; their actions – of which traces or remains still exist – are those which brought the world into existence by establishing order over chaos. Now the concept is not exactly equivalent to *dream*; but it is difficult to find a better word.

These traces or trails on the land are "recreated" by means of a musical structure, to which is associated a mythological fable that explains a fragment of the "genesis". In their turn, these "musical itineraries" are transcribed, as if they were musical scores, on a piece of bark or stone called a Tjuringa, (Churinga, or Tjurunga). So, in this way, the Tjuringa is a map of a section of itinerary, but at the same time a musical score and a passage of the genesis. It represents not only the form of the territory, but also its history and its origin.

It is a case of a vision in which the territory and its representation identify each other totally, to the extent that the world cannot exist if it is not sung. The song – i.e. the map (tjuringa) - is the origin of the world. In this sense, "the man who organizes a territory repeats, by marking it out, the creative action of the divinity, as he establishes order over the primitive chaos, and he thus becomes the mythical founder of the community that occupies that configured territory.(…) The maintaining of the memory of the founder, frequently deified, constitutes the legitimating basis of the occupation of the space by each community" (Soria y Puig; 2000, p. 41)

According to the Aboriginal explanation of the genesis, in the ancient period the ancestors awoke, came out onto the surface of the Earth and paced it, "engendering everything by the imposition of names and intertwining those names in lines of verse. The patriarchs walked the whole Earth, singing. (…) Wherever they went, their footprints left a trail of music. They enveloped the world in a mesh of music; and finally when the world had been sung, they felt exhausted" (Chatwin, 1987, p.87).

The Song follows the itinerary of the genesis, of the creation; to sing the ancestors is to "re-create" them. The rhythmic structure of the music has geographical references and shows us the path that the "ancestor" - the patriarch - followed in his epic journey. At the same time, the "score" of the "Song" is the Tjuringa –the piece of bark or stone on which is represented a stretch of song. It is a map of the "path", but at the same time it is the sacred text of the genesis. This "pattern" of territorial organization also implies a complex social organization. Each one of the lines of "Song" corresponds to a totemic Clan and each member of the clan is a custodian of a "tjuringa", i.e. of a stretch

of song, only when all the members meet, and all the pieces are arranged one after another, is it possible to sing the complete song, to read the complete map. The map is therefore a sacred item of knowledge, and the responsibility of its custody is on each one of the members of the clan. We could say that each tjuringa is the piece of a puzzle that allows us access to the "creation", and grants certain rights over that territory.

These social structures are not exclusive to the Australian continent; in certain ethnic groups in Melanesia, similar relationships are established: "many of these groups, typically lineages and clans, trace their genealogy to totemic ancestors who engaged in cosmic creation.(…) Society and its constituent social groupings are locally understood to rest on inherent cosmological divisions that partition the world into discrete categories. Each category of the world was created by a totemic ancestor.(…) These acts of creation occurred though the power of toponymy (naming). By calling totemic names during their primeval migrations, culture heroes created the topographic features of the world" (Kline,1998, p. 423-426)

This brief explanation of Aboriginal culture does not include the many types of "topographic representations" that are used in various areas of these traditional societies, nor is it generalizable to all the regions of the Australian continent. "A wide range of media were, and in some regions still are, used by indigenous Australians in representing sites and landscapes and their totemic and mythic figures.(…) It is a solid assumption, but an assumption nevertheless, that by and large the symbolisms of such poorly documented past works were frequently, perhaps predominantly, focused on land-based themes such as site-specific totemic beings and traveling Dreaming narratives" (Sutton, 1998, p.354)

Rock paintings and engravings, stone arrangements, earth and sand sculptures, decorated tumuli, elaborately geometric sand and vegetation "monuments", weapons and utensils geometrically decorated, the *toas* or waymarkers of the Lake Eyre, the cylindroconical stones of the Darling River region and, of course, the engraved stone slabs or *tjuringas* of Central Australia are some examples of the variety of representations associated with these topics.

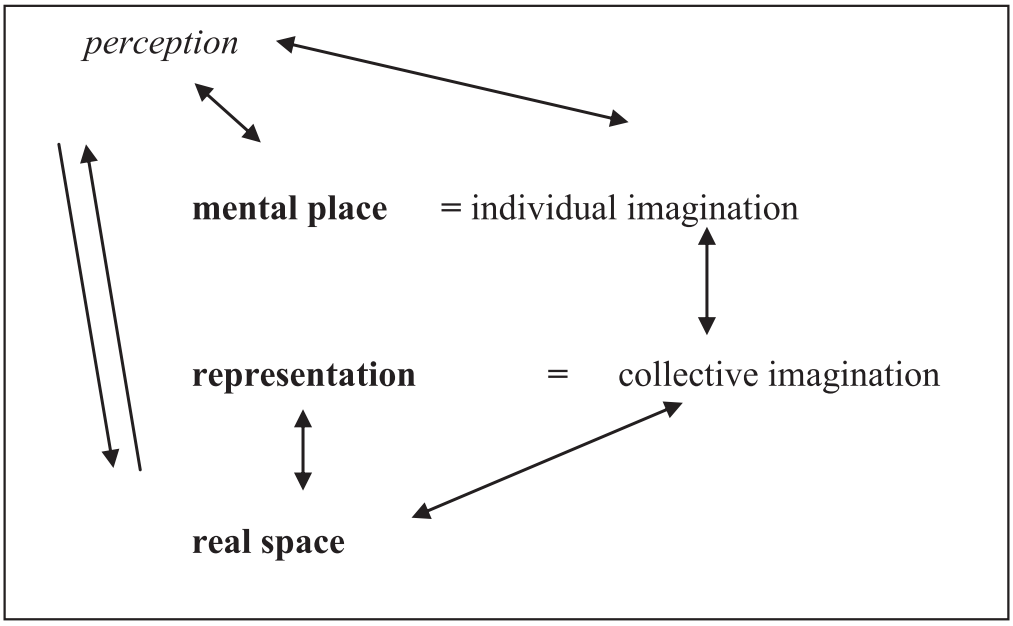
Chatwin's travels in Australia are limited to the central region, taking Alice Springs as a starting point. Therefore their interest is greatest in relation to the *tjuringas* characteristic of these desert areas. For us, they serve as illustrations of a certain "*non-western"* cartography which plays a fundamental role in the culture of these traditional societies. In these *maps* the three points of view that we outlined at the beginning coincide totally: they constitute a cognitive system fundamental for survival in a hostile environment; they are artistic or religious objects with a great symbolic value and which even come to be regarded as sacred; and they are the basis for a complex social organisation and the establishment of territorial rights.

Traditional Aboriginal culture is intimately linked with its territory, and is based on the construction of a mythical landscape. The arts and techniques that are used for representing them are many: music, fables, drawing, sculpture, etc. These representations include not only the spatial dimension of a land, but also the temporal one, as-

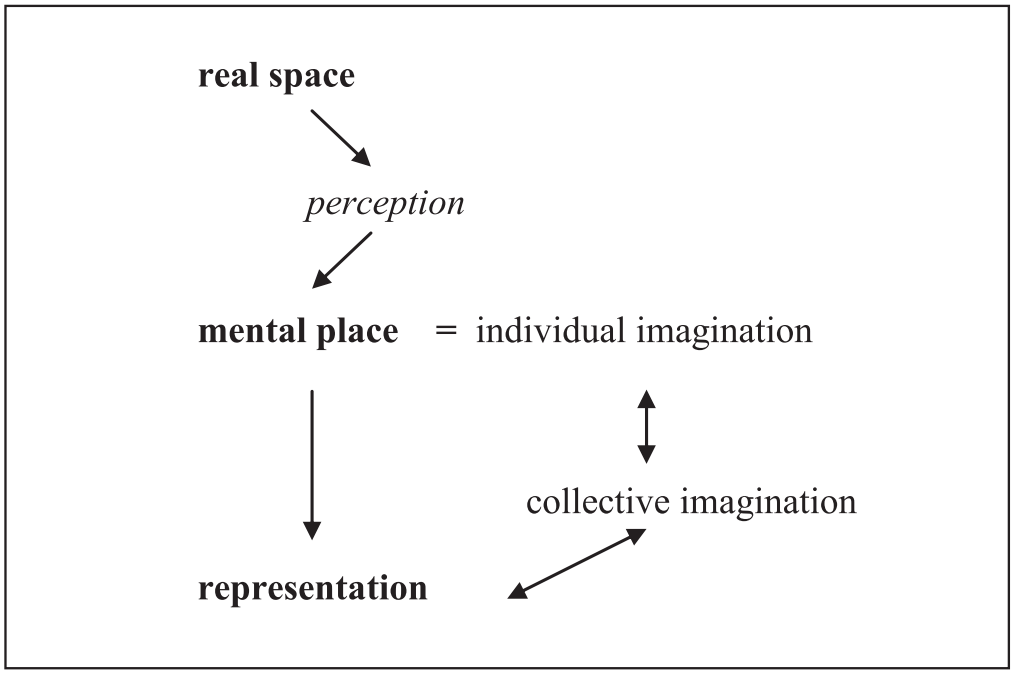
sociated with its narrative and symbolic component. Obviously the nomadic style of life favours the establishment of clear space-time relations, since a journey is always at the same time a spatial and a temporal event.

Differences and similarities between the Australian "tjuringas" and western traditional cartography: three ancient maps of Galicia as examples.

There is no doubt that there is a distance between these traditional Australian maps and *western* cartography. While the former try to "construct" the world by means of establishing an order, and in many cases have a clear religious and ceremonial function, western maps try to "explain" or describe the land. These differences are due to the ways of perceiving our environment, which can be summarised by means of two frameworks, one for "magical knowledge" and one for "scientific thought". The principal difference between the two lies in their structures: one is circular and one is lineal. The mythical landscape of the Australian Aboriginals is based on the cyclical repetition of some natural processes which are legitimated by actions of the first ancestor in the times of the Dream Genesis. On the other hand, our concept of the world is lineal, historical, and related with the idea of "progress".



"magical knowledge"



"scientific thought"

However, in spite of the cultural gap, there exists a clear parallelism between the ancient Australian maps and some ancient maps of western tradition, such as for example the "Mapa Relativo a la Traslación del cuerpo del apóstol Santiago: 1610/ según D. Mauro Castella Ferrer, Didacus de Astor Fecit." (Map relating to the transfer of the body of the apostle St. James: 1610/ according to D. Mauro…), a little jewel of Galician cartography which gives a geographical description of the city, and at the same time narrates the transfer and burial of the body of the Apostle St James, the genesis of the idea of pilgrimage and therefore of the city itself. On this map is described the route followed by the disciples Atanasio y Teodosio from their landing, where the river Sar joins the river Ulla, having come from Haffa (in Palestine) with the body of St James, and we can follow the adventures of the disciples as if it was an "old comic":

1- The arrival of the boat with the body of St James on a slab of stone, near Iria Flavia, (The name of the town of Padrón comes from "piedra", i.e. stone.)

2- The visit they paid Queen Lupa at her home (Castro Lupario, now Angueira de Castro)

3- Queen Lupa sends them to visit the king of Dugio (coastal town north of Cape Finisterre; the area includes, among other remains, the parish church of San Martín de Duio).

4- The disciples flee, suspecting that the king wants to kill them, and they save their lives by demolishing a bridge after crossing it (bridge of Ons), delaying their pursuers.

5- Queen Lupa tries again to trick them and sends them to Monte Ilcino (now called Pico Sacro), where she supposedly has some oxen that will help the disciples to transport the body. The disciples climb the Mountain, where they meet a winged snake (dragon) and some wild bulls. The disciples defeat the dragon and tame the bulls.

6- Queen Lupa, in the light of the heroic deeds of the disciples, is converted to Christianity and grants them the burial place, to which they transport the body of St James, with the help of the tamed bulls.

7- St James is buried in the sepulchre, and later, Atanasio and Teodosio die and are buried by his side.

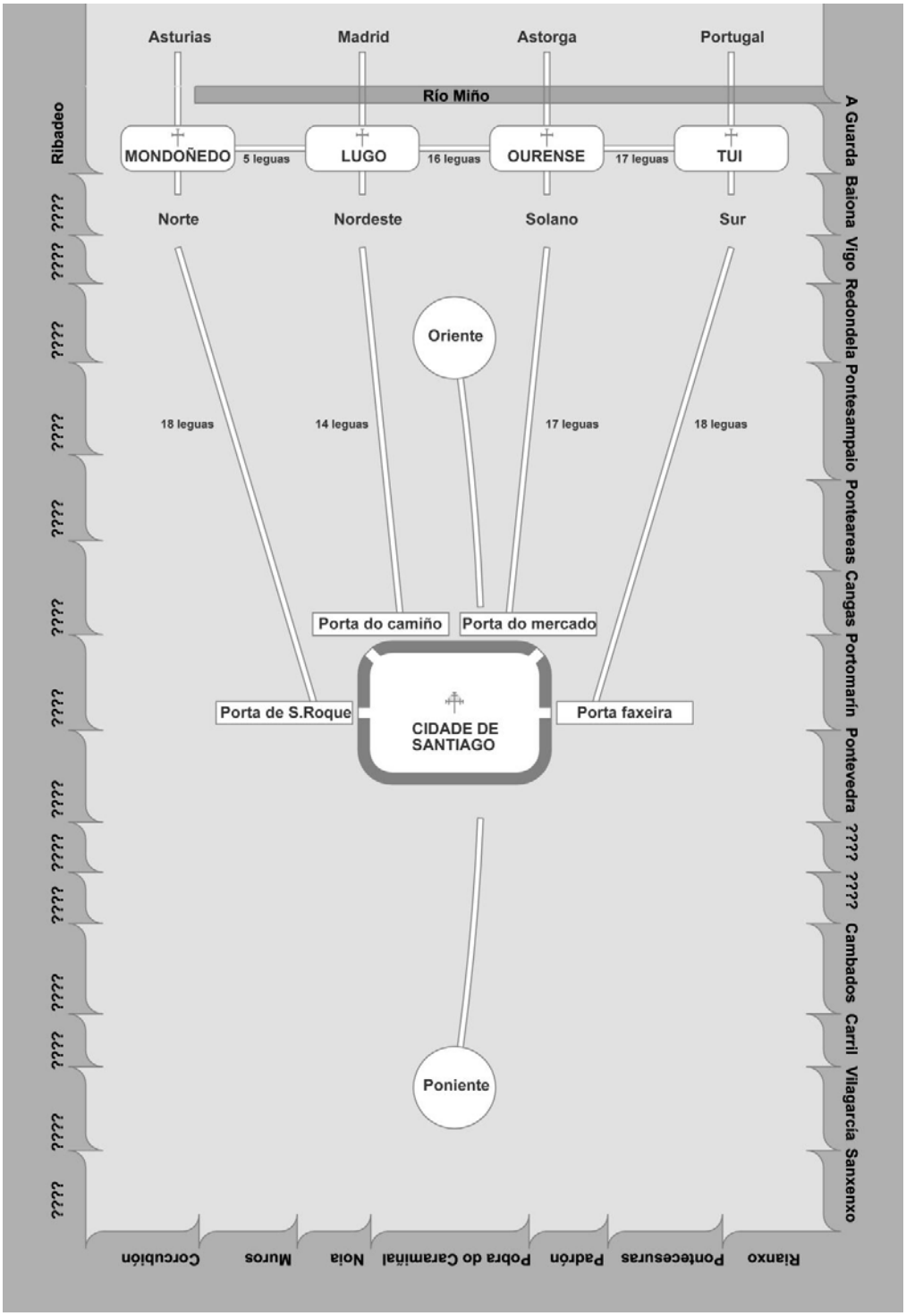
Map relating to the Transfer of the Body of the Apostle St James: 1610
according to D. Mauro Castella Ferrer, Didacus de Astor Fecit.
"Cartografía de Galicia [ss. XVI ó XIX], colección Puertas-Mosquera, (2000). Santiago: Universidade de Santiago de Compostela.

Obviously, it is a map with a clear religious and symbolic content, which narrates the founding moment of the town of Santiago de Compostela through the epic journey of the disciples, where the representation of the geography distorts its dimensions in order to adapt itself to some aesthetic and geometric patterns - in this case a circle inside a square, which recalls the composition of medieval world maps. There is no doubting that the similarities with some of the Aboriginal representations are noteworthy. Of course, it is not in every ancient "western" map that we find so clearly the three approaches we mentioned.

Another example, which focuses attention on maps as being cognitive systems, is to be found in sketches sent to Tomás López, as information for producing the maps included in his "Diccionario Geográfico-Histórico de España" (Geographical and Historical Dictionary of Spain) –a work that was left unfinished. These sketches created in the eighteenth century by ecclesiastic and civil authorities, who were by no means professional cartographers, constitute a magnificent "experiment" of how people "build" mental maps in order to know our surroundings. If we take as an example the one made to describe the town of Santiago, we find some "territorial sketches", represented on the obverse and reverse of a drawing -preserved in the Biblioteca Nacional de Madrid (Madrid National Library)-, which provide us with an extremely interesting spatial interpretation of the town and its relationship with the territory.

The archiepiscopal town of Santiago appears as the centre of a rectangle which has three sides of coast and a fourth side representing the course of the river Miño, in the valley of which lie the other four episcopal towns of Mondoñedo, Lugo, Ourense and Tuy, connected with Santiago by the most important roads, each one of which enters by one of the four principal gates of the town. It is evident that in this case the author of the map is an ecclesiastic authority, since the five episcopal towns constitute the fundamental "skeleton" of the "map". However, not only does it represent the Galician territorial organisation, based on an ecclesiastic administration inherited from the Roman structure, but also Santiago is situated at the centre of an organisation where the coast and the river Miño mark the cardinal points.

With the information contained in this map, I have drawn up my own interpretation which tries to highlight the geometric "clarity" of the spatial conception of the sketch sent to Tomás López.



My own Interpretation of the sketches of the city of Santiago de Compostela sent to Tomás López

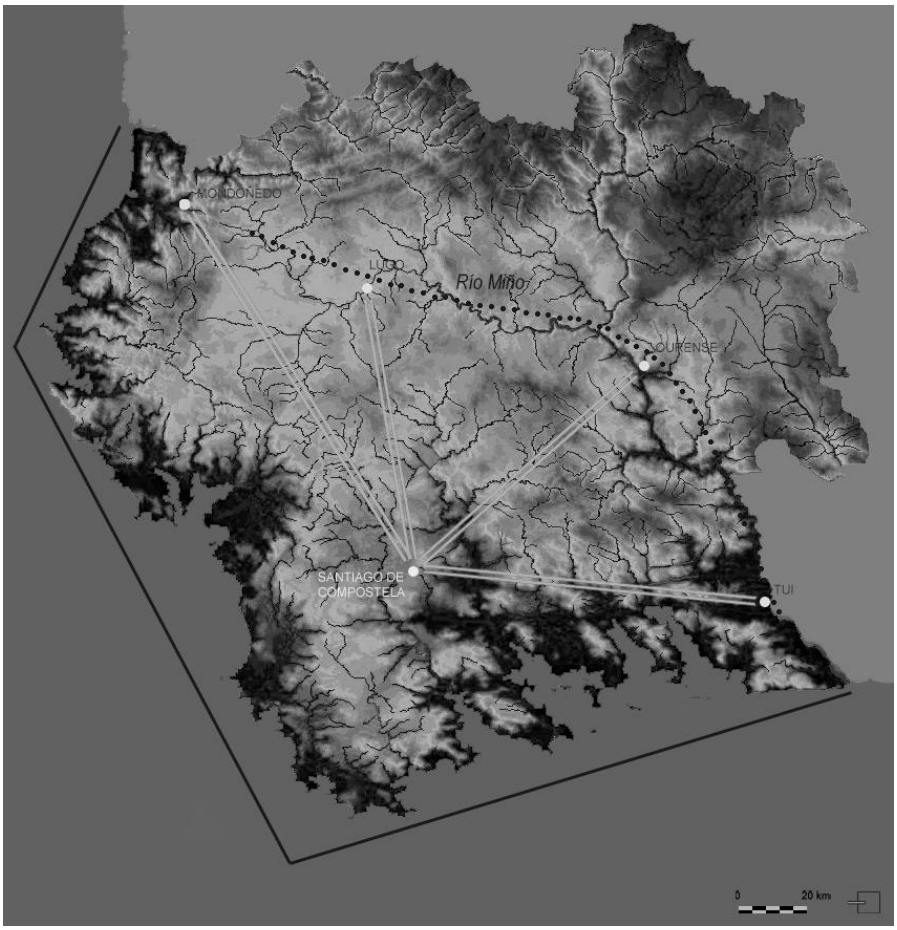
If we observe the preceding image it may seem to us that the geographical location of Santiago in Galicia is completely "out of focus"; however, if on a present-day map of Galicia, pointing to the east in the same way as the previous sketch, we mark the most important places and lines, we will see that the ecclesiastic author of the schematic map had a very clear mind when it came to establishing relationships:

1. Mondoñedo, Lugo, Ourense and Tuy are joined by the "line of the river Miño".

2. The Miño is the limit between Galicia and other territories in the peninsula. And from Santiago to the east we find this river that flows mostly from north to south.

3. Just as is explained in the sketch itself: *"As we go westwards, it is all rough sea (...) and now for more clarity we shall add the harbours that Galicia has, or the parade grounds, and I shall begin with the river Miño, until we reach the town of A Guardia; as far as Ribadeo it is all rough sea..."*

4 The Galician coast can be divided into three segments that run in different directions.



Representation over the geographical map of Galicia, of the "topology" of the sketch of Santiago de Compostela, sent to Tomás López.

We could say that even if it is not true to the topographic dimensions, it does maintain the topological relationships, ordering them according to a simple geometric pattern, in the same way as the Australian "tjuringas" do.

These similarities between some "western" representations and certain "prehistoric" maps lead us to think about how the meaning and the role of maps in our culture change with progressive "technification". For "magical knowledge", human perception constructs reality, and so representation and reality are on the same level, and there does not exist any difference between man and nature. "Scientific thought" is lineal, historical, and it supposes a "rational" and "objective" description of reality that arises from a clear differentiation between the "I" and the environment.

This distance established between the "subject" and his/her territory is bridged by the "modern" concept of landscape. The latter refers to an area of land but not one considered in isolation; rather in relation with another person who perceives or imagines or represents it. "If there is a reality that does not exist other than by our looking, it is certainly the landscape" (Leblanc & Coulon, 1993, p.4).

The notion of landscape appeared "recently" in our Western culture. According to some authors, it was in "the year 1462 that for the first time a Dutch text used a term translatable as our word 'landscape'." (Fernández de Rota, 2008). However, Petrarch's epistle relating his ascent of Mont Ventoux, in the company of his brother and two servants, (Petrarca, 1353) is considered as the narrative that marked a new way of understanding territory, by placing the aesthetic consideration of nature, the sensory pleasure at the sight of the surrounding geography, as the protagonist.

Nonetheless, Petrarch himself recognises that the inspiration for his adventure comes from an earlier Roman text: "Driven only by the desire to contemplate a place famous for its altitude, today I have climbed the highest mountain in this region which with good reason is called "Ventoux" (windy). (…) That mountain, visible from anywhere in the area, has almost always been before my eyes. The impulse to finally do what every day I had thought of doing, took hold of me, especially after re-reading, a few days ago, Livy's Roman history, when quite by chance I came across that passage in which Philip, king of Macedonia –(…)– climbs Hemo, a mountain in Thessaly (…) (Petrarca, 1353)".

Thus, even if the concept of landscape as such does not appear in western culture until the Renaissance, this does not mean that it did not exist implicitly in other cultures previously. Many texts by classical authors such as Homer or Virgil contain what could be considered landscape descriptions.

Such is the case of Australian Aboriginal culture which, as we have seen, establishes poetic (and thus aesthetic) appraisals and explanations of their territories. This apparent contradiction is interesting since it allows us to establish a parallelism between the primitive explanation of creation for the Australian Aboriginals, and their belief that perception is a necessary condition for existence; and the concept of landscape that needs to be seen; that is, the landscape is closely connected with perception, to the extent that without perception there is no landscape. "It is an experience in which sub-

ject and object are inseparable." (Colot, 2002, p. 7.) "Landscape plays a role of "mediator" in the relationship between the inhabitants and the territory, and appears as an essential element in the affective and aesthetic link that the inhabitant maintains with that same territory, and that participates in its appropriation." (Domingues, 2008.)

In the same way that for the Aboriginals the world and its representation are on the same level, we can understand the concept of landscape either as a "natural" environment or else as a representation of it. Given that the Aboriginals do not establish a conceptual distinction between "I" and the "world", nor between the world and its perception or representation, for them the notion of landscape has no sense, or rather it is already included in other categories. While we establish a conceptual difference between the word landscape, which for us is full of subjective meaning, and the word 'territory', which refers to a reality "independent" from us, for the Aboriginals reality only exists to the extent that it is perceived, so that for them the conceptual difference between territory and landscape is not necessary. To put it another way, the modern idea of landscape is nearer than we think to the primitive Aboriginal's vision of his surroundings, since both appear to us as a cultural construction: if the landscape is a mediator between man and territory, this will not be necessary unless these two concepts are clearly separated.

Peter Sutton raises a doubt about these primitive maps, when he questions whether in fact we should not consider them as "maps of maps" or "transformations". If we consider that the landscape is a cultural transformation of the territory, i.e. a mental construction of it, we could answer that we mean ***maps of landscape***.

It is clear that some ancient maps have many of the characteristics of "landscapes". The difference is that while a "landscape" (painting) captures the perception of an instant, these maps "condense" the successive perceptions and the accumulated knowledge of a territory in an image, in a mental place, which is later represented on the map. The views of the Spanish coastline produced by Texeira for King Felipe IV are a magnificent example, since they show a possible landscape, from a viewpoint which is unreachable, or rather unreal, as it is constructed from sightings and precise measurings that Texeira accumulates, and that enable him to construct these landscapes which are imagined but, precisely because of that, tremendously effective when it comes to "interpreting" the territory. The observer in this case becomes immersed in the map, as the latter appears to us not as a codified abstraction but, intentionally, as a natural perspective. A "natural image" although not quite, since in order to draw it, there has had to be a transgression of the laws of perspective (which are altered so as to permit a sufficiently detailed representation of all the elements of interest, independently of distance), and of human nature, as they grant us the power of flight. (Texeira, 1634)

From this point of view therefore, we might establish an important preliminary classification, saying that there exist **maps of territories and maps of landscape.** Obviously, as we have already commented, almost all maps reflect to a greater or lesser extent the two characteristics. Both the views by Pedro Texeira and the plan of Santiago by Mauro Castella clearly show the qualities of "landscape maps". The views, because they are deliberately intended to generate the illusion of a landscape

seen from the air, and the plan, because it condenses into an instant the mythical epic foundation of the town, both images only being possible as mental places, since "the landscape not only represents for us the world as it is, but also is, in some way, a construction of this world, a way of seeing it. (Nogué 2008)"

Engraving/plate 45: ***Corunna***

TEXEIRA, P. El Atlas del Rey Planeta. La "Descripción de España y de las costas y puertos de sus reinos" (1634) (The "Description of Spain and of the coasts and harbours of its kingdoms")*, Felipe Pereda and Fernando Marías (eds.). San Sebastián: Nerea, 2002. P.326. The only known original of the atlas is in the Hofbibliothek of Vienna*

In “landscape maps”, the “cartographer” considers himself part of the map, he situates himself “inside it”, and thereby introduces naturally elements of subjective, perceptive and cultural judgment, while in “territory maps” one chooses a greater codification in an attempt to transmit the information with more “rigour”, in a supposedly “objective” manner, which means that the author situates himself “externally”.

The “subject” always forms part of landscape maps, while in territory maps he is a mere “observer”. A territory only “converts itself” into a landscape by means of experience: “there is no landscape discovered from the top of the mountains if nobody has climbed up, because that landscape is not a spectacle but reward for your effort. And if you have been carried up on a stretcher, all you see is an ordering of more or less boring objects, but how do you expand them by your physical and active presence? Because the landscape, for him who folds his arms in satisfaction, is a mixture of panting and resting the muscles after the effort, and the blue colouring of the evening, and he is also content with the established order; for each one of his footsteps has slightly ordered the rivers, lined up those peaks, and re-adjusted the sand of the village. That landscape has been born through him,(…) (De Saint-Exupery, 1948)”.

If however we consider a standard present-day map made simply by cartographic techniques from aerial photography, the instrument is the main player in the whole process. The operator in charge of drawing only has to implement a technical procedure by means of a machine, and he does not even need to know directly the territory that is the object of his “study”: he simply codifies the information, to which he has access via the aerial photographs. It is clear that this first “map” does not have to be the final result, but will be the beginning of a cartographic process in which more parametres will come into play, i.e. the basis for an eventual *interpretation.*

Thus, the landscape map arises fundamentally from a personal and cultural experience, from direct perception (even if certain tools are used for this). While territory maps are produced in a more technical way, using information obtained mechanically. All maps share to varying degrees these two characteristics, but we could say that i**n landscape maps perception and the cultural imagination are more important**: “when we speak of landscape, we basically refer (…) to a portion of the Earth’s surface which has been modelled, perceived and interiorized (Nogué 2008)”; while i**n territory maps technical methods and codification are more important**.

We are not stating that ancient western maps were a transition from the period in which maps were representative of value systems and traditional legends, towards technically sophisticated cartographic maps, but rather that it is a question of concept: **landscape maps** are constructed from experience while **territory maps** correspond more to a systematic global abstraction. Of course **these two approaches can be mixed, to be used jointly**.

Conclusions

In conclusion, in territory maps the *representation* of reality is a conscious process which takes place as a result of the systematic analysis of the data obtained, while in landscape maps the *interpretation* of reality is associated with our *perception* itself, with our bodily, physiological relation with the territory, and with the collective imagination that is associated with the territory. It is this process of interpretation, which distances the map from mere description, that gives truth to the statement: "the map is more interesting than the territory". (Houellebecq, M. 2008).

For Aboriginals, man is nature and nature is part of being human (Roberts, 1977). The earth does not exist if it is not perceived. Its existence is based on a cultural process (Chatwin, 1987, p. 23) which ´´interiorizes´´ the territory, which ´´constructs´´ it from the mythical epics of ancestral beings who have left their mark, their traces, over all the Australian continent. These traces weave a web of paths, which are known as ´´songlines´´ because each one is associated with a legendary story about the genesis, about the birth of that land, but also a musical structure. In these early maps of the Australian aborigines the three approaches to the concept of map that we mentioned earlier: "the map as cognitive system, the map as material culture, and the map as social construction", complement and overlay each other with absolute clarity.

Given that ´´the landscape plays a mediating role in the relationship between people and their territory, and appears as an essential element of the affective and aesthetic bond that the inhabitant has with that very territory and participates in its ownership´´ (Domingues, 2008), this concept (the landscape) is not necessary until a distinction is established between resident and territory, between man and nature, i.e. between the ´´I´´ and our environment. However, this distinction is recent in human evolution and Australian Aboriginals do not establish it. In modern terms we could say that for Aboriginals, territory does not exist, there exists only the landscape.

The distinction between landscape maps and territory maps is not a question of different points along a single line of evolution but different ways of regarding our world. Maps of landscape can be an efficient tool if we want to understand better our environment by reasserting the place of imagination in mapping, which is what John K. Wright entitled aesthetic imagining: a cartographer may portray a place or a region, either with conscientious but unimaginative attention to all details, or with aesthetic imagination in order to select and emphasize aspects of the region that are distinctive, or that belong to human beings and the collective imagination (Wright, J. K. 1947). From all this emerges the idea of **"maps as landscape"**.

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IV ENGAGING USER'S BEHAVIOUR IN MANAGEMENT: PARTICIPATION, APPROPRIATION AND COHESION

USERS' BEHAVIOURS, MANAGEMENT AND TECHNICAL SOLUTIONS: A FUNDAMENTAL INTEGRATION FOR LOW CARBON BUILDINGS. THE CASE OF ROMA TRE UNIVERSITY

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Abstract

Considering that buildings are responsible for more than 40% of energy consumption and that the energy situation is critical and European legislation is more and more restrictive, a good way to reconcile economy and sustainability logics seems to be the "bearable" management of existing buildings. This is possible by monitoring building performances and energy consumption and by evaluating management strategies and users' behaviours. This paper presents a web platform for performing such procedures. Based on the British platform *Carbon Buzz*, developed by Aedas and UCL, a new version was designed to meet the Italian situation and detect "proofs" of the actual effectiveness of design solutions. An early database of case studies enabled us to carry out a double investigation: on the one hand we compared building parameters with consumptions/CO_2 emissions in a sample of buildings with the same end use, and on the other, we compared design and in-use data for single buildings. An enquiry was made in one of the buildings as a pre-test of the tools devised for surveying and observing both technical and management aspects and users' opinions and behaviours. Using a specific procedure, the collected data were processed and assessed. On the basis of these first results, a comparison was made between subjective and objective evaluations of some wellbeing conditions. Moreover, causes of dissatisfaction and consequent symptoms of ailment were detected.

Keywords: energy performance, sustainable buildings, occupant feedback, web platform, post-occupancy evaluation.

Introduction

Thanks to the European legislation on the energy performance of buildings[1], innovative tools which do not consider only theoretical estimations are finally being developed in Italy. However, in addition to updating the legislative frame of reference[2] and technical standards[3] further commitments have become necessary to sustain actions in this sector (Fasano, 2011).

1 Directive 31/2010/UE on '*nearly Zero Energy Buildings'*; European Action Plan for Energy Efficiency 2011; EU 20-20-20 Strategy, the so-called "climate and energy package", requiring each member state to reduce emissions of greenhouse gases and energy consumption by 20% and to increase the use of renewable energy by 20% by 2020.

2 In Italy the referential regulations are D.lgs 2005/192, D.lgs 2006/311, D.lgs 2008/115, DPR 2009/59, D.lgs 2011/28 and the latest D.L. 63/2013 and L.90/2013.

3 Technical Standards UNI/TS 11300 - *Energy performance of buildings* introduce standards, methodologies and innovative tools for new construction and refurbishment.

In Italy, the assessment at the design stage is supported by certifications[4] issued at different stages of the building process (Boffa et al., 2012). These tools however are only theoretical[5] and do not consider the building management and users' behaviour.

There is a sharp difference indeed between the performance a building could offer, as appraised at the design stage, and those it effectively offers in use. Well-organized information, based on the comparison of data gathered by monitoring buildings in use, could reduce the difference between what the standards and energy certificates state and the actual situation.

The described research within the Internationalization project: "From design to management: a benchmarking process for the energy efficiency of buildings" carried out by University Roma Tre[6] together with UCL[7] and AEDAS[8], which is still in progress, tries to fill, at least in part, such gap.

Theoretical background

The environmental degradation and low quality of life standards signal that the well-balanced relationship between building and dwelling has been jeopardized.

An operative approach, more pertinent to the real situation, considers that scientific and technical data should be combined with occupants' and users' opinions and assessments (Gupta & Chandiwala, 2010). The study of their perceptions and behaviours could in fact enable designers and producers to make a systematic choice of solutions and technologies that meet users' requirements better and, by so doing, induce them to behave more correctly. This could help to reduce the gap between expected and actual building performance, if also accompanied by virtuous and positive management systems (Stevenson & Leaman, 2010). The users' participation in the process encourages them to build a stronger link with the premises, have a sense of belonging and consequently feel responsible for maintaining the appropriate behaviour (Risser et al., 2006).

In comparison with other countries, e.g. the UK, Italy suffers from a lack of appropriate procedures, such as Monitoring & Evaluation or benchmarking, aimed at monitoring comparative performances or protocols of Post-Occupancy Evaluation (POE) for evaluating building performances after a period of occupancy (Preiser & Vischer, 2005). A POE includes a mix of quantitative and qualitative methods. It involves the

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4 The Certificate of Energy Qualification (AQE), issued at the end of building stage, and the Energy Certificate (APE), issued at sale or refurbishment stage. They rate buildings in classes from A to G.

5 They refer indeed to assessment by software, based on linear equation and on stationary state and moreover they are set on average seasonal temperatures.

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8 Research and Design: arch. Judith Kimpian

building occupants through questionnaires, interviews or focus groups in order to collect their opinions on the existing facilities and environmental conditions. The users' feedback may be supported by monitoring temperature, noise and lighting levels, indoor air quality and so on. More recently, POEs have tended to include sustainable measures such as energy consumption, waste levels, and water usage. POEs are carried out pre- and post-project and are conducted at regular intervals to monitor how the building facilities are currently supporting the occupants. The correct POE procedure may be used to: measure project achievements, get feedback and feed-forward, set a baseline and establish benchmark data, "inform" the design process and the management program, and, thanks to the 'lessons learned', make sure that best practices are applied in future projects.

The evaluation enables one to understand the occupants' perceptions, identify the causes of their dissatisfaction and from this establish the environmental factors that need to be improved.

The capacity of defining needs and the ability of translating them into a congruent design can be found in a building approach drawing from the suggestions of Evidence-Based Design, whereby decisions are made assuming the responsibility of the results and being aware that, to do so, it is necessary to have a solid basis of knowledge and a constant support of information (Watkins, 2008).

Starting point

The Italian research starts from the British experiment with *Carbon Buzz9*, carried out by AEDAS R&D, UCL and other important partners (such as RIBA, CIBSE, BRE, TSB), with the aim of developing a similar tool. The British web platform, through a benchmarking activity on design solutions, products and technologies, supports architects and engineers, producers and builders in making choices, in the awareness of the real contribution to the improvement of the energy performance of buildings. By sharing data on energy consumption of existent buildings, both estimated and real, the platform contributes to individuating "proofs" of the real effectiveness of design solutions in reducing energy consumption. Being an online application accessible to everyone with just a user name and password, the platform can be used even by people who are not technicians, but simply users of the buildings entered in the database. In this way, it becomes a useful tool for getting feedback on building use and management: a very important issue in the era of crowd science.

The platform is based on a database enabling a double comparison: on the one hand, within a sample of buildings belonging to the same category, building parameters are compared with consumption/CO_2 emissions; on the other hand, within a single building, design data or data related to certificates compiled before building occupancy are compared with in-use data as reported in bills. Using a more in-depth analysis, it is possible to separate energy final uses and then understand where and how to act in

9 For more info www.carbonbuzz.com, www.aedas.com

order to improve the efficiency of the buildings considered. Thanks to the systematic comparison of solutions and technologies, designers and constructors using this tool are led to confront with the best cases and, above all, to learn from them in order to improve.

The British experiment shows that the gap between the levels of performance appraised at the design stage and those measured at the "in-use" stage are mainly due to unregulated energy uses, namely those not considered in the mandatory calculation required by the standard[10] (heating, cooling, ventilation and lighting consumptions for the scheduled period of operation and maximum occupancy level). Such unregulated energy uses come mainly from non-considered equipment and facilities (alarm system, server, computer, elevator, special socket, etc.), from periods of intermittent occupation and occupants' number, and above all from building management.

Research structure

The research is currently organized into four phases. This paper outlines all of them, showing the topics developed, the operations carried out, the methods applied, the objectives set and the results achieved. Given the chosen theoretical approach, the applied methodology uses both scientific, technical methods, based on quantitative analyses, and methods typical of the social sciences, based on qualitative analyses. In the first and second phase the approach is very technical; in the third phase both approaches are used, and in the fourth phase they are integrated.

First phase

Starting from the British platform, the first phase of the research was devoted to analysing its content and application followed by gathering aspects in common with the Italian context, in order to understand which operations are necessary for developing the Italian version. In this aim, after analysing European Directives and their implementation in the member states, the British and Italian legislation for energy was studied, focusing on differences and the need for adjustment.

Analysis of British and Italian legislation

On the British platform, the purpose of data entry is to verify that the emission of CO_2, with regards to the consumption data calculated at design and in-use stage, is lower than a benchmark[11] set according to the building's category and use. In Italy, the present law does not yet consider CO_2 emissions and defines the limits based on the

10 In the UK the application of EC Directive 2002/91 and subsequent modifications and additions is the responsibility of the Department for Communities and Local Government (CLG), supported by the Department for Environment, Food and Rural Affairs (DEFRA) and by the Department of Energy and Climate Change (DECC). The latest British standard on energy saving is in the "Building Regulations" (2010) and in particular in part L - Conservation of fuel and power.

11 Calculated in CO_2 Kg/m^2/year

index of Energetic Performance – the Epi limit[12]. This law requires that the building to be assessed has an Epi lower than a stated minimal value.

In order to homologate the complex Italian calculation procedure to the British concept of benchmarking and to the EC legislative trend, the objective of the new version of the platform was to convert the Epi lim, with regards to the building input data, into the related emissions, using the conversion factors of the employed energy based on the fuel and electric factor applied in Italy (Bianchi et al., 2009). In this way it was possible to create a sort of benchmark for the Italian version to allow the comparison of data inserted in both platforms, at least from the viewpoint of units of measurement.

Analysis of British parameters and possible integration

Transferring the British version of the platform to the Italian reality, the parameters inconsistent with the Italian legislation or geographical conditions were modified and some new ones, tailored to the context and therefore more useful to Italian users, were added.

In both versions, the platform structure is made of two sections subdivided in various panels on project and annual energy details.

For the project details, a series of general information to locate the building and understand its consistency was added. In particular it was necessary to add parameters regarding the climatic zones and considering the Form Ratio[13] (Romani et al., 2011).

Concerning the annual energy consumption, the main difficulty was in splitting the so-called "energy vectors", that is to say in identifying consumptions depending on final uses (heating, cooling, lighting, other loads etc.) as on the British platform. In fact, it is usually very difficult to read these detailed values in the bills, since the specific consumption, electrical or non-electrical (gas heating and hot water), is not shown in dedicated meters. This situation calls for the involvement of the Energy Manager, where available, or of the Supplier, who can provide the consumptions per hour or per quarter of hour of every day, month or year for every specific use. This process needs a more specialized operator and takes longer than consulting bills, but it allows a deeper analysis and a more detailed assessment for making more informed choices of intervention, by identifying anomalous consumptions.

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12 This Index is evaluated in kWh/m²year (for residential buildings) or kWh/m³year (for non-residential buildings) and deals with winter heating only. It depends on two basic factors, shown in tables by ranges: the heating degree-days HDD of the climatic zone where the building is located and the form ratio of the building (S/V). Italy is divided in 6 climatic zones representative of different existing climates: the Italian regions, being largely non-homogeneous under climate, have specific laws and decisional power on energy issues. To each climatic zone corresponds a range of heating degree-days (HDD); the HDD (heating degree-days) is the sum, extended to the days of a conventional heating period, of daily positive differences between inside temperature and outside daily mean temperature. Form Ratio (S/V) is a coefficient, depending on the ratio between S, the surface enveloping the warmed volume and lost energy, and V, the gross heated volume; it varies from 0,2 and 0,9 and indicates compactness levels: buildings with very articulated and complex forms, with protrusions and recesses, have a form ratio higher than others with the same surface but are more compact, so the more compact the building, the lower the heating loss and the better the energy performance index are.

13 Please see Note 12.

Second phase

The aim of this phase was to build the framework of the Italian database, in order to collect case studies and related data, to make analyses and comparisons among buildings and between consumptions appraised at design stage and surveyed in use, and finally to extract information, collect comments and complete some first outputs.

The work was organized into six steps: choice of the case study buildings, collection of data from University Technical Office, survey in the case study buildings, collection of consumption data from bills and electrical consumption data directly from the energy supplier for all the selected buildings, data entry on the platform, and dividing consumption into energy end uses (Tab.1).

Table 1. Italian Database: six steps to collect case studies and related data

1. Choice of the case study buildings	Six buildings housing some departments of Roma Tre University, characterized by different periods of construction, morphologies, plant systems and classified into three macro groups, following a criterion related to the current plant system: a) non-electrical sources for heating and no cooling or mechanical ventilation systems; b) non-electrical sources for heating but electricity for cooling and mechanical ventilation; c) electricity both for heating and for cooling (heat pump) or mechanical ventilation.
2. Collection of data	Information on the chosen buildings from University Technical Office concern: - architectural and morphological features; - constructive-technological features; - plants and governance of energy performance; - early analyses on design data and deduced by energy certificates.
3. Survey in the case study buildings	Visits to verify the collected information and gather more specific data about plant and technological systems; compilation of an incisive form about energy use concerning: - electrical devices; - artificial and natural lighting; - heating/cooling systems; - water use; - natural and artificial ventilation.
4. Collection of consumption data from billings	Electric energy and methane gas bills pertaining to a reference year (2011) have allowed us to consider consumption and to draft a comparison between theoretical data with regards to the project and 2009 energy certificates, and data due to actual energy use.
5. Collection of consumption data from energy supplier	Electric consumptions obtained directly from the electric energy supplier (values gathered hour-by-hour for kW supplied every day of every month in the year of reference, for every analysed building) have allowed us to understand the trend of energy use and the partition of the different "loads" of various "energetic vectors": heating, cooling, lighting together with other non-regulated loads, during the reference year
6. Data entry in platform	A first separation of final uses was possible and some conclusions about the energy management of these buildings could be drawn.

Some considerations on the platform and certification system

At this point it was possible to underline some positive aspects and critical features of the database and platform.

The tool is easily accessible to every user and allows sharing online consumption data, comparing CO_2 emissions per classes of buildings and between design/certification data and in-use data for each building, analysing the partition of various energy end uses and identifying unregulated consumptions, viewing best practice solutions as input for future design. More data needs to be entered, however, such as: envelope and construction characteristics, which are important for understanding the performances offered by the single building or the differences among the performances offered by buildings within the same class of use; occupancy data (times, spaces, way of use) in order to understand how great the effect of occupants' appropriate behaviour in weighing on unregulated loads can be.

The actual reliability of design and energy certification data was then verified, showing that they often result too far from or not complying with reality (envelope thermal transmittance values too high, values of energy performance indexes not considering the system intermittence, etc.). These facts show that national laws are underdeveloped and local technical standards are fractioned; aspects that do not allow the design tools to be competitive regarding the anticipations on actual energy consumption. All this confirms the opening considerations motivating this research, and namely the existence of a gap between energy consumption design data and in-use data.

Third phase

The research methodology described so far was applied to all the buildings chosen. The methodology that is shown below was tested on only one of them, next it will be applied also to other buildings, possibly also testing some variations. Some of the technical analyses made in the second phase of the research were resumed and deepened by other enquiry tools.

The methodology applied in this phase is based on the contextual analysis of subjective and objective aspects (Martincigh, 2009). Subjective aspects are associated with the perception building occupants have of the objective situation and existing wellbeing conditions, depending also on their behaviours, more or less conditioned by this setting. Objective aspects are strictly related to the building environment, its structure, construction, management and performance. The aim is to prepare and apply tools that make it possible to understand the correspondence between requirements and performance and then to identify which aspects need to be modified in order to improve people's opinions on comfort. Various tools were adopted:

- questionnaires for students, professors and employees, to collect both users' perceptions and opinions, and their assessment of the existing situation;

- forms to report the results of the instrumental survey, measuring and assessing objective parameters, that is environmental characteristics of the spaces where the questionnaires were administered;

- technical files to note specific features of the spaces in question;

- forms for observing users' behaviours, to be completed together with the technical survey.

Because of the methodology applied, in preparing these tools it was very important to maintain a strict relationship between the topics constituting the questions and the objective aspects that were measured and observed in the technical survey.

The use of questionnaires, in line with what was done in the first research phase for the development of the web platform, allows us to:

- deepen the evaluations of building performances, individually or per class. This enables us to obtain useful feedback since by using the questions asked to occupants it is possible to identify which aspects need to be improved, both from architectural (technical solutions, components and systems) and operational (way of use and management) viewpoints (Zagreus et al., 2004);

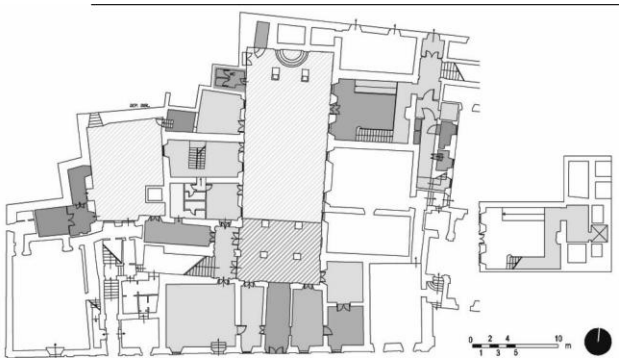
- build a database of the opinions expressed and assessments made by users on various environmental comfort features characterising the building analysed. This database can become a useful reference system for designers and managers in making their choices for new building design. By consulting it, it is possible indeed to understand the actual congruence of specific technical solutions, potentially representing reference benchmarks (Leaman et al., 1997).

This methodology was tested in the Faculty of Architecture of the University Roma Tre. Currently, only the results of the enquiry carried out in classrooms were analysed and processed to obtain some first results, validating the choice of the methodology.

The sample building: Argiletum

The chosen building, the historic premises of the Faculty of Architecture, is located on the ancient path of Argiletum, named today Via Madonna de' Monti, in Rome's historic city centre (Tab.2).

Table 2. Short Description of Faculty of Architecture - Via Madonna de' Monti - Rome

Floor Plan	
Photo	 
Date of construction	Seventeenth Century
Building halls	Seven large halls (six used for teaching lessons and one as meeting hall), offices of the head of department, library and computer laboratory, open air meeting hall
Structure	Tuff stone bearing walls, 60-100 cm thick, plastered
Floor area	2.975 m^2
Volume	17.625 m^3
N° of levels	Three levels accessed by an elevator
Heating System	Seven gas methane boilers, with different heat power, located at almost every floor
Heating Terminals	Iron radiators and fan coils (in offices and in some classrooms)
Cooling System	No cooling system but in some rooms there are portable air-conditioning units, while in others some wall splits
Mechanical Ventilation System	No mechanical ventilation system

Questionnaire

The questionnaire administered in classrooms and offices was aimed at analysing the different typologies of occupants, using the building for diverse purposes and in different times and ways. Respondents completed a self-administrated, paper questionnaire in two parts. The first part contained general information about the interviewees

(identification code, gender, age, role) and the context (time, classroom, location). The second part, the core, concerned five defined enquiry fields. The questions were formulated to allow respondents to indicate if they were more or less satisfied with different aspects characterizing the actual situation and how important these aspects were for them. The responses can be expressed by a Likert-type scale, featuring four values in the case of satisfaction: 4 points when the user was "very satisfied" and 1 point when he/she was "not satisfied at all", and five values of importance: 5 points if the item was "very important" and 1 point if it was "not important at all". The intermediate points were used for expressing other nuances of evaluation. The format of the questionnaire did not allow for open-ended comments.

Understanding what people expect from the building environment and what importance they give to it is very important to properly improving the situation. According to the main assumption of the ASI research, i.e. if society provides preconditions that satisfy citizens' requirements, their preparedness to co-operate will improve[14]; then, if to improve the energy efficiency of buildings cooperation from citizens is needed, chances to get it are higher if citizens are satisfied with what society offers them (Martincigh, 2009).

The questionnaire concerned wellbeing conditions during two different period of time: the first concerned the heating period (November, 1st – April, 15th) for understanding causes of dissatisfaction and consequent physical problems experienced by occupants; the second concerned the time and place (May 2013, classrooms) in which the questionnaire was administered, to compare subjective opinions to objective surveyed data.

Five enquiry fields were provided related to thermal comfort, air change, air quality, natural lighting and environmental comfort. Each group of questions on satisfaction and importance related to the two abovementioned periods of time.

Forms for the observation of users' behaviours

While respondents answered the questionnaires, those administering it filled in forms aimed at clarifying the answers given by respondents and at tracing, in a more immediate way, their possible motivations. The forms were organized in three parts. The first reported the same general data given in the questionnaire. The second and third reported some notes on the observation of the behaviours of users inside and in the vicinity of the analysed space, concerning both objective data (No. of persons, type of activity, etc.) and activities, allowed or not, performed in the observation time (people opening/closing doors or windows, switching on the light during the daytime, smoking etc.).

Survey: by instruments and by observation

While the questionnaire was administered, some measurements of environmental parameters likely to be associated with the enquiry fields of the questionnaire were carried out together with some observations of the building.

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14 ASI- Assesses implementation in the frame of the Cities of Tomorrow, was funded by EC in the VFP. The assumption was developed on the basis of the communication theory of Watzlawik and the Palo Alto school, expounded during the eighties of the twentieth century.

Environmental parameters were measured using specific instruments: temperature, measured in °C by a probe with a range from -20 to +70°C; speed of air, measured in m/s by a combined helix thermo anemometer probe with a range from 0.04 to 0.40 m/s; relative humidity, measured in % U.R. by a probe with a range from 0 to 100% U.R.; illumination measured in lux by a photo-radiometer. The instruments and professional staff conducting the survey and developing the form for reporting the data, led by Professor Francesco Bianchi, are part of a specialized Laboratory of the Department of Architecture.

The form is organized into two parts: the first concerns some general data (time, date, instruments used for measurements and their position regarding the orientation and structure of the building reported on a map, thermo-hygrometric conditions of outdoor air); the second concerns unit, value, spot (height from the ground and distance from a specific, distinguishable point) of the measurements taken for each parameter (temperature, air speed, relative humidity, illumination) and shown in tables together with possible notes by surveyors.

While an architect filled in a form reporting the observed technical characteristics of the space in which the environmental parameters were measured, the questionnaire was administered and the users' behaviour observed. This form was organized in three parts: the first, as usual, reports the same general data present on the questionnaire (plus positioning regarding building and orientation); the second and third report some notes consequent to the observation of the space concerned and of the adjacent areas (description of wall and floor finish, types and technical characteristics of doors and windows, possible outside and inside sun/light screens, type and location of furniture, plant system terminals and lights).

Data processing

As individual needs can be in conflict with common needs, the opinions expressed individually must be related to a hypothetical common opinion. To this aim, the sum of all individual scores is considered, assuming that it indicates a societal level (Martincigh, 2009). Arithmetic means were then used to assess the satisfaction and importance scores given by occupants (156 respondents for classrooms) for each enquiry field considered in the questionnaire (Tab.3).

Table 3. Satisfaction-Importance analysis: means of the assessments for wellbeing conditions in heating period

		Mean Level of Satisfaction	Mean Level of Importance
Thermal comfort		2,41	4,73
Air change		2,26	4,38
Air quality		2,43	4,48
Natural lighting		2,35	4,46
Environmental comfort		2,43	4,51
	Mean of means	2,38	4,51

These means were represented in two Cartesian planes, taking into consideration satisfaction and importance at the same time. The first reports the assessments on the environmental conditions related to the heating period (when the system is in operation); the second reports the assessments on the environmental conditions as perceived when the questionnaire was administered (when the heating system is off). This representation of data can be used to quickly observe evaluation changes in the two analysed time periods.

Cartesian planes are subdivided into four quadrants by axes drawn on the basis of the means of the two variables. In this way a customised reference system can be built. The satisfaction level is reported on the x-axis (given the variable range from 1 to 4) and the importance level on the y-axis (given the variable range from 1 to 5). The fields that users consider as unsatisfactory and important are located in the fourth quadrant. The positioning of each indicator in the four quadrants helps then to understand the area in which it is more important to act and the priorities for this action. This allows one to address the issues that are most urgent and relevant for users and then to focus on possible improvements (Martincigh, 2009). In the analysed case (concerning the heating period), the most meaningful quadrant, the fourth, is empty, but the third quadrant shows that some fields are not satisfied even if they are not considered very important (Fig.1).

In the questionnaire, when the respondents declared their dissatisfaction for the wellbeing conditions in the heating period, they were invited to respond to other specific questions, choosing among various possible causes of dissatisfaction and pointing out their level of importance. Moreover they were invited to choose among possible consequent symptoms (i.e. headache, nausea, attention difficulties, sleepiness, burning eyes, etc.).

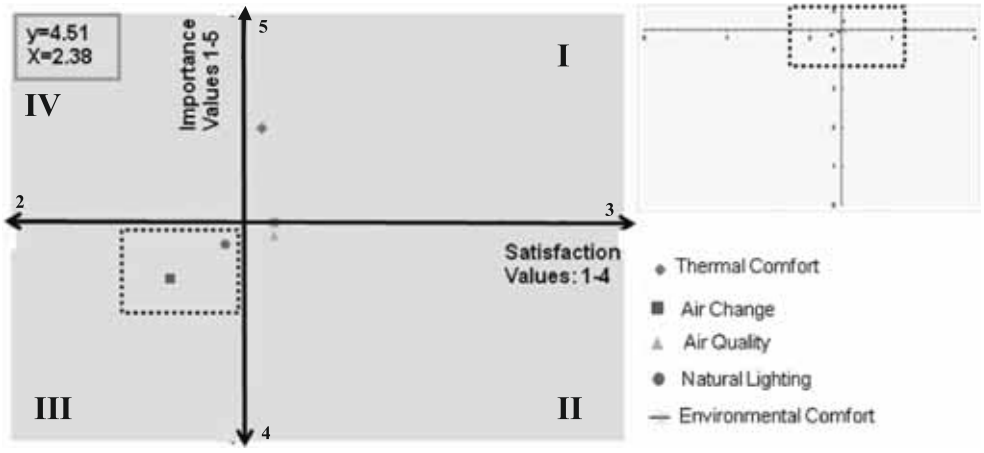

Figure 1. Satisfaction - Importance chart for classroom users, reporting the assessments on the environmental conditions related to the heating period

For the inquiry fields that were located in the third quadrant of the Cartesian plane (unsatisfying and quite important) some histograms were made that report causes of dissatisfaction and number of respondents split the causes according to the level of importance attributed to each. In the figure below is shown, as an example, the histogram for "Air Change", since this field was considered unsatisfactory by the respondents, both in the heating period and in the period when the questionnaire was administered; and the speed of air, which is the objective parameter connected to it, was null in most of the classrooms (Fig. 2).

Data were processed for each enquiry field and in the aggregate to show the recurrence (by percentages of answers) of the symptoms related to the causes of dissatisfaction (Tab.4). It is to be noted that the symptoms that were reported by the highest percentage of respondents attention difficulties, sleepiness and burning eyes — are connected to the unsatisfactory and quite important field of Natural Lighting (Fig.1).

Fourth phase

In this phase, the results obtained from the satisfaction/importance assessments expressed by the respondents on the wellbeing conditions at the time and at the place in which the questionnaire was administered were compared with the results of the instrumental survey of the environmental parameters made at the same time. This procedure enables us to understand the congruities and incongruities between perceived and measured conditions.

Method

The environmental objective parameters, measured using specific instruments, were associated with four of the five enquiry fields considered in the questionnaire and assessed subjectively by occupants using specific scales: temperature to thermal comfort, speed of air to air change, relative humidity to air quality, illumination to natural lighting.

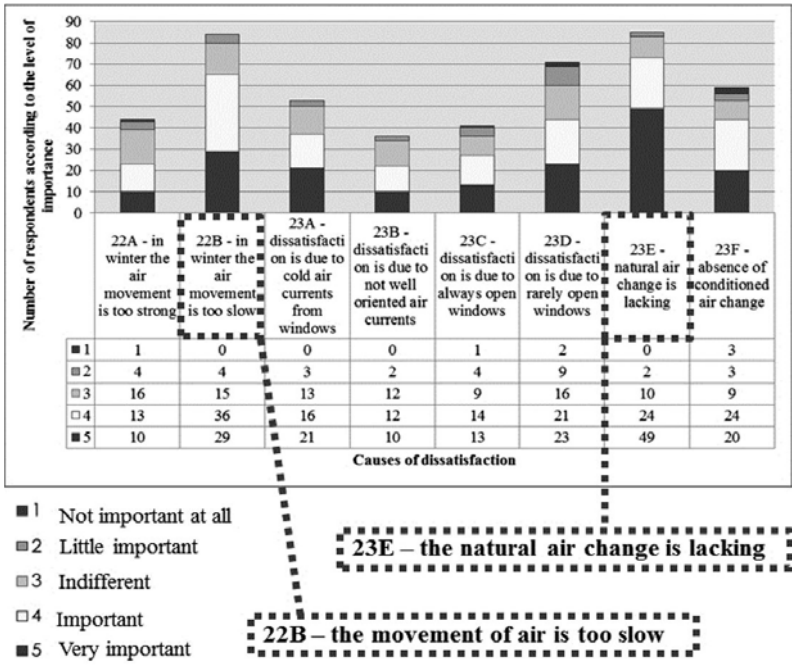

Figure 2. Causes of dissatisfaction related to the heating period for the enquiry field: "Air change"; the focus is on the two aspects respondents regard as most important

The measurements describing the actual performances offered by the analysed spaces can be evaluated by comparing to thresholds. These precise values, to be defined for each parameter, can be reported as ranges of values, indicating the quality level offered.

Table 4. Symptoms and percentages of answers per enquiry field and in all

Symptoms	Percentage of answers per enquiry fields				
	Thermal Comfort	Air Change	Air Quality	Natural Lighting	Total
Headache	14%	16%	14%	16%	15%
Dry throat	8%	10%	10%	1%	8%
Allergy/Asthma	3%	3%	6%	2%	3%
Tearing	2%	2%	4%	8%	4%
Burning eyes	4%	5%	6%	19%	8%
Respiratory difficulties	2%	9%	12%	1%	6%
Nose secretion	13%	7%	6%	2%	8%
Attention difficulties	21%	16%	14%	24%	18%
Sleepiness	18%	17%	13%	19%	17%
Cough	13%	8%	8%	3%	8%
Nausea	1%	4%	5%	2%	3%
Dizziness	1%	2%	1%	2%	1%
Other	0%	1%	1%	1%	1%

By processing the questionnaire data, the percentages of users expressing different levels of satisfaction for each enquiry field can be deduced. These single numerical values can be assessed by comparing them to reference values, expressed as ranges, indicating the level of satisfaction reached.

By turning precise values into similar synthetic ranges of values, representing quality and appraisal levels — low, medium and high — both for the objective and the subjective evaluations, a comparison is possible.

The comparison between the measured objective parameters and the users' subjective perceptions allows understanding if users' opinions are grounded on actual facts or if other elements interfere to condition them. It also makes it possible to check to which objective parameters perceptions are bound and to what extent. Above all it allows one to determine the fields where it is more important to take action, not only because users perceive them as problematic but also because they are lacking (Martincigh, 2009).

Definition of thresholds

For each enquiry field, the percentages of satisfied and very satisfied respondents (values "3 - satisfied" and "4 - very satisfied" of the Likert-type scale) were considered and aggregated in order to compare them to defined reference values, expressed as ranges: low (0-25%), medium (25-75%), high (75- 100%).

For each objective parameter, different threshold ranges, described below, were defined. A table shows the percentage of classrooms to be considered satisfactory with respect to each threshold. These percentages of classrooms offering a satisfactory performance were then compared to defined reference values, expressed as ranges: low (0-50%), medium (50-85%), high (85-100%).

The threshold taken as the reference value for inside temperature, considering summer comfort, is the range 23-26°C (this value is based on Baruk Givoni's bioclimatic diagram). The values between 23-26°C are then considered to be in the high quality range. Consequently, those between 21-23°C and 26-29°C are in the medium range, and those less than 21°C and more than 29°C in the low range.

The threshold taken as reference value for the speed of air is the range 0,15-0,25 m/s (this value comes from the technical standard UNI 10339). The values between 0,15-0,25 m/s are then considered to be in the high quality range. Consequently, those between 0,05-0,15 m/s are in the medium range, and those less than 0,05 m/s and more than 0,25 m/s in the low range.

The threshold taken as reference value for relative humidity, considering summer, is the range 30-70 %UR (this value comes from the technical standard UNI EN ISO 7730). The values between 30-70 UR% are then considered to be in the high quality range. Consequently, those between 18-30 %UR and 70-88% UR are in the medium range, and those less than 18%UR and more than 88%UR in the low range.

The threshold taken as reference value for illumination is the range 500-700 lux (this value comes from the technical standard UNI 10380). The values between 500-

700 lux are then considered to be in the high quality range, those between 300-500 lux are in the medium range, and those less than 300 lux and more than 700 in the low range.

Bars are used to represent the qualitative and quantitative results, obtained by parameterization as explained above, respectively positioned depending on the defined three ranges (Fig. 3). The two bars placed side-by-side enable a quick visual comparison.

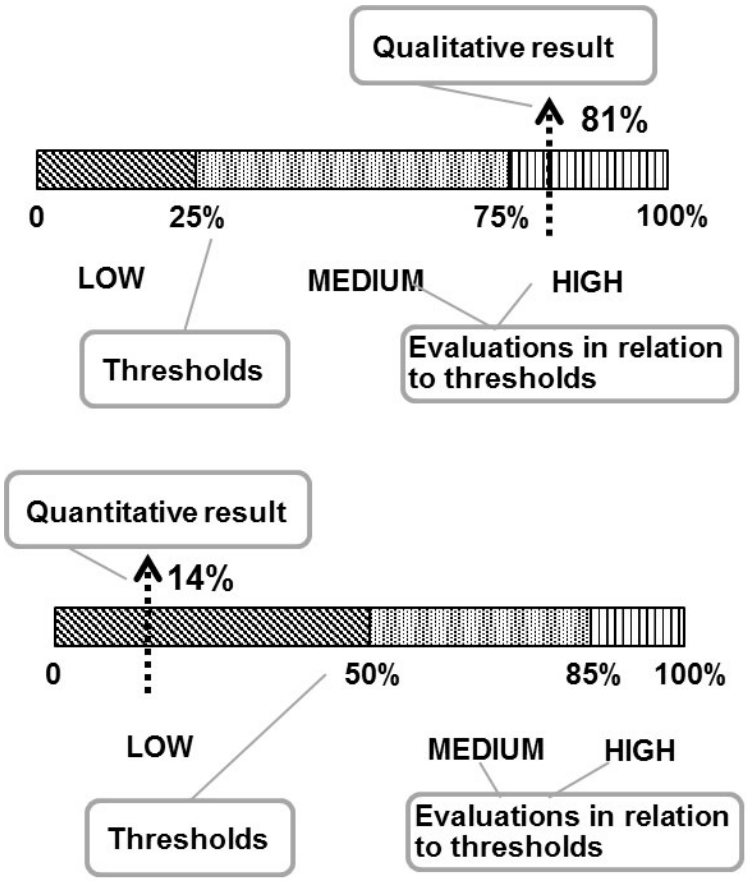

Figure 3. Bars representing the objective and subjective evaluations in relation to thresholds

Comparison and results

A further step considered all the enquiry fields simultaneously using a histogram, showing for each of them the percentage of satisfied users (subjective evaluation) and the percentage of spaces performing in compliance with thresholds (objective evaluation), with respect to the defined ranges of values (Fig. 4).

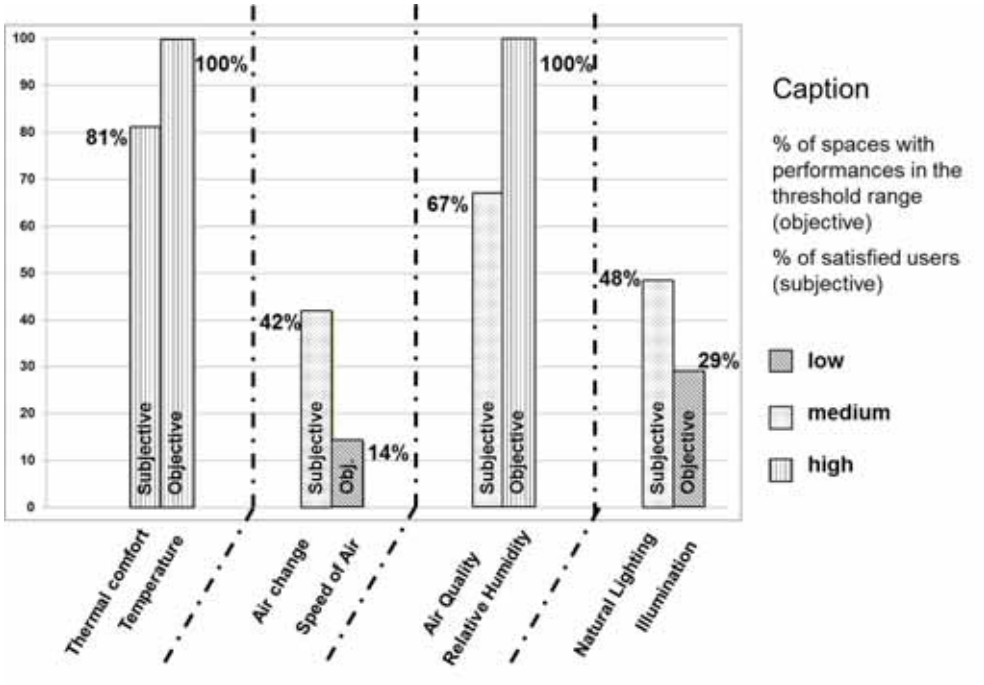

Figure 4. Comparison between subjective and objective evaluation ranges

The overall comparison shows that the level of subjective satisfaction is congruent with the objective performances offered by classrooms. In particular thermal comfort and temperature are consistent. In the other cases the differences are small and explicable. Speed of air and illumination are in the low range. The subjective evaluation isn't completely satisfactory (medium) for the associated fields. Its higher range can be ascribed to the Italian students' ability to adapt, as they are used to low conditions in buildings. The slight difference in the evaluation of the air quality field can probably be ascribed to the relationship between the questionnaire and the measurement, which must be fine-tuned.

Conclusions

The research, aimed at identifying how building performances are related to management and consumption, architectural and plant system characteristics, users' perceptions and behaviours, is still in progress. The first results, in addition to what is described in the previous pages, concern congruities and incongruities with predicted consumptions and possible gaps, problematic aspects regarding the design phase (choice of materials, location of functions, volume morphology compared to available surface area, lack of renewable energy sources, etc.) and in-use phase and management (lack of thermoregulation systems, lack of an energy manager, extreme discretional way of switching on and off plant systems, quality of available technical documentation, etc.) emerging from the analysis of the buildings already entered in the database.

Methods and results of the first phases of the work have already been published (Di Guida et al. 2013; Kimpian et al. 2013).

The analysis of the data collected in the enquiry, carried out on the sample building in the last two phases, proved to be very useful and therefore will be deepened to analyse and relate users' behaviours to their opinions and evaluations, building and plant system characteristics, measurements and management. Particular attention will be paid to incorrect behaviours negatively influencing building performances and to defining guidelines, aimed not only at better satisfying users but also at encouraging proper behaviours. Based on this experience, similar analyses will be carried out also on the other buildings entered in the database.

The further steps of the research process will systematize data in order to propose indications for intervention apt to decrease the CO2 emissions, supported by a database on best practice intended to improve technological choices. To this aim building features will be compared both to data resulting from user enquiry and to gas and electric bills in order to define possible relationships among satisfaction levels, building characteristics/plant systems/management and billing.

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PUBLIC PARTICIPATION IN WATER MANAGEMENT THE IMPLEMENTATION OF THE WATER FRAMEWORK DIRECTIVE IN GALICIAN RIVER BASIN MANAGEMENT PLANS

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Abstract

The Water Framework Directive (Directive 2000/60/CE), which establishes a common framework for EU water policy, sets forth public participation as one of the basic principles of water management. The Water Framework Directive emphasizes the importance of informing the audience in order to ensure or rather facilitate their participation in the planning process. According to this, the Directive prescribes three main forms of public participation: access to background information; consultation in three steps of the planning process; and active public involvement in the planning process.

In Galicia (the region in the northwest of Spain) there are two different basin districts, Galicia-Coast, which includes the internal basins in Galicia and the Minho-Sil River Basin, which integrates the international basins of the Rivers Minho and Limia. This article describes the active involvement experiences developed in both Galicia-Coast and the Miño-Sil River Basin, making a brief introduction to the objectives of public participation in the water management plan and describing the methods and activities carried out in information, consultation and public participation in both basin management plans. Finally, the article analyzes and evaluates the results of public participation, the impact of that process and proposals for future participative processes.

Keywords: River basin management plans, public participation, water management, Water Framework Directive, social learning.

Introduction.

Public participation in UE water management policy

The European Union (EU) Water Framework Directive (Directive 2000/60/CE) establishes a common framework for European Union water planning and introduces Integrated Water Resources Management principles which take economic, environmental and ethical issues into consideration.

According to the Water Framework Directive, the River Basin Authorities should draw up the new River Basin Management Plans under water use sustainability criteria. WFD objectives involve the promotion of the integrated management and long term protection of water resources; the prevention of the deterioration of water status,

the protection and the improvement of the aquatic environment and aquatic ecosystems and reduction of pollution; the prevention of floods and drought effects; and, finally, information and public participation.

Public participation can generally be defined as allowing people to influence the outcome of plans and working processes (Ridder et al, 2005). The Water Framework Directive (WFD) sets forth public participation as an integral part of the management process and requires Member States to base their actions on transparency and public participation. According to this, the new Draft Basin Management Plans would be the result of intense public participation processes, with the main purpose of improving decision-making and ensuring that decisions are soundly based on shared knowledge, experiences and scientific evidence.

The WFD defines stakeholders as any natural or legal person who has an interest or involvement in a problem either because they are directly affected or because their participation may influence the outcome. Stakeholders could be identified by several criteria such as proximity, economy, use and social values. We can usually distinguish between stakeholders who have an economic interest and those motivated by principles or values. In any sense, public decisions ought to be influenced and accepted by the views and experience of those affected by them.

There is a need for better understanding and trust in decisions on public issues and developing social learning (Luyet et al., 2012; Pahl-Wostl et al, 2007). The European Union establishes that all parties interested in water issues (stakeholders, users, public authorities) should be involved in planning processes, together with the general public. Active participation improves water management and resolves conflicts through dialogue, achieving greater strength and social support water governance (CIS, 2003; Ridder et al, 2005).

The European Commission, through Guidance Document No 8 Public Participation in Relation to the Water Framework Directive (CIS, 2003), has established certain recommendations about how participatory processes should be carried out. First of all, citizens must have the time, space and resources needed for participation. Secondly, that participation should occur at all stages: preparation of the initial diagnosis, determination of objectives, action plan design, implementation and monitoring. Finally, participation must be a transparent process and ought to be accompanied by actions of environmental education and awareness.

Finally, the European Commission establishes the need to report on the outcome of the public participation process, not only to the Commission but also to participants involved previously. Hence several quality indicators have been proposed in order to evaluate participatory processes, such as the information provided, selection of participants, the level of participant satisfaction, contributions made by the participants or proportionality of resources for participation in relation to the resources for the planning process (CIS, 2003).

Developing participatory processes in Spain

The Water Framework Directive (European Commission, 2000) is an important and ambitious piece of legislation which required member states to develop a new way of European governance. The implementation process turned out to be slow and difficult in Europe (Bourblanc et al, 2013) and Spain (Hernández-Mora et al, 2010; Spluga et al, 2011; Spluga & Subirats, 2010).

There are few studies that analyse and compare the quality of participatory processes, including the last phase of the planning process in Spanish river basins (Prat, 2012; Marquez & Gámez, 2013; Hernández-Mora, 2012). Most of them highlight the fact that the implementation of WFD in Spain has constituted an important step forward toward the democratization of water management in Spain and developing more transparent processes with more information available to the public (mainly on the Internet).

Although in Spain there is a time-honoured tradition of user participation in water management, through the representation of stakeholders (irrigators, industrial users, hydroelectric firms, municipalities), in several consulting organisms like the "Water Council", it seems that the water decision-making arena has not been open enough to non-economic users or the general public, which have had limited access to decision-making processes (Espluga-Subirats, 2008). Authorities have promoted private interest over social values or altruistic interests such as environmental conservation and cultural values (Mora & Ballester, 2012).

On the other hand, in several Spanish water management offices, participatory processes have not been well integrated in water management and have no relevance in the political agenda. In other cases, there is a lack of political commitment to supporting participatory processes during the implementation of the Plan (Hernández-Mora, 2012). These circumstances might have produced a lack of credibility for some potential participants, "as well the persistence of an institutional setup for water decision making that strongly favours the long-standing relationship between Basin Management Agencies and traditional water users" (Espluga et al, 2011).

On the other hand, several studies point out that some public participation processes are held in short periods of time and in the later phases of the process, which does not enable a real discussion and common diagnosis about water issue management and means that the public is not actually concerned or involved in decision making (Espugla & Subirats, 2008; Hernández Mora & Ballester, 2012; De Stefano, 2012). Nevertheless, it should be pointed out that in Spain there are several recent social networks made up of individuals and organizations like "New Water Culture", which have been promoting public debates about the current model of water management towards common goals in water issues.

In Galicia (northwest Spain) there are two different River Basin districts: Galicia-Coast and Miño-Sil (Figure 1). Galicia-Coast (reporting to the regional government of Galicia) includes the intraregional basins in Galicia. It covers an area of 12,988 km^2 where a total of 2,036,770 inhabitants are settled (156 inhabitants/km^2). On the other

hand, the Spanish part of the International Minho-Sil River Basin (reporting to the Government of Spain) covers an area of 17,619 km^2, with a population of 858,310 (49 residents/km^2).

The planning process started with the transposition of the Water Framework Directive into the Spanish code of laws. Following the WFD, Galicia-Coast and Miño-Sil River Basin Authorities drew up the Initial Planning Documents (timetable, work programme and public participation plan) and submitted them to public consultation.

Afterwards, the outline of Significant Water Management Issues was published and approved by the respective authorities (the Regional Government and the Ministry of the Environment). Finally, the documents that correspond to the Draft Basin Management Plan were submitted to the official public consultation period in 2011. After the public consultation, the final documents were approved in 2011 (Galicia-Coast) and 2012 (Miño-Sil).

Figure 1. Division of Galician territory into 2 river basins: Galicia-Coast and Miño-Sil

Galicia-Coast and Miño-Sil river basins developed public participatory processes for water management at the same time in Galicia, from 2007 to 2012. Both water authorities established a difference between *Public Information* (the official documents and the informative publications to facilitate the compression of the water management plan); *Public consultation* (reference documents of the Water Management Plan

submitted to the public consulting and allegation process); and *Active involvement (conferences, workshops and sectoral meetings in treated uses and problems relevant to each region or sector)*. At present there are no published studies that analyze the two participatory processes developed in Galicia by the water management offices or the results of said participation.

Methodology

This article analyzes the objectives, methods and activities carried out in the information, consultation and public participation process on the Galicia-Coast and Minho-Sil River Basin Management Plans. We try to analyze how policy-makers have involved citizens' experiences, opinions and interest in Water Planning processes in Galicia and taken them into account,. Secondly, we evaluate whether the two management offices have fulfilled the objectives set in the WFD for public participation processes.

The methodology used consisted of an in-depth analysis of the documentation provided by the two water planning offices, in particular from 2010 to 2012. There was a detailed review of public web sites to obtain information about both Public Participation Processes. Finally, we contrast this data with the documentation published by the two public offices once the Management Plan had been approved in 2012 (Galicia-Coast) and 2013 (Minho-Sil).

The process was further analyzed in terms of: (1) information for public participation, (2) selection of participants, (3) participatory process design, (4) public contributions to management plans and (5) public satisfaction with the participation process and results.

Analysis of the public participation process in two Galician river basins

Information provided by water management offices

Information regarding the water planning process in the Galicia-Coast and Miño-Sil river basins was provided mainly through the public web sites of the two offices, where they incorporated all the regulatory and public documents published in all the phases of the water management process.

In order to adapt the content of the draft water plan at different levels of depth, a synthesis of these reports was published by the management offices while disclosure documents were published in the last phase in the process, when fundamental decisions had already been taken, and only by the Miño-Sil River Basin (see table 1). This management office did a mass mailing of the Draft Basin Management Plan (on a memory stick) addressed to over 500 public institutions, stakeholders and social organizations involved in water issues. At the same time, two public presentations were held in 2010 and 2011 in order to provide the mass media with information about the consultation period.

Although information is fundamental for effective public participation, the lack of documents that could be easily understood by non-technical audiences, the sheer volume of information to be processed and the difficulty in obtaining the background studies made it hard for stakeholders and the public to actively participate. A greater effort would be necessary from both agencies to communicate the contents of the management plans in an attractive way.

Stakeholder selection and citizen participation in the water debate

Management offices identified potential stakeholders in three categories - public authorities, economic users and civil society - and invited specific agents and stakeholders to participate and contribute in the debate. Stakeholders' opinions were taken into account, especially those people or firms whose activities or interests were affected by the plan (water management companies, local authorities, irrigation communities, hydroelectric companies). They also took technical and expert opinions into account, such as the scientific community.

The Miño-Sil River Basin tried to open up a participatory process for specific agents whose activities or interests were affected by the plan at the same time as the general public (workers, employers, farmers and consumer environmental groups affected by infrastructures, researchers, individuals) but only in the last stage (2009-2011) of the process.

Table 1. Informative and participatory actions held in the Galicia-Coast and Miño-Sil river basins.

Informative and participatory actions		**Galicia-Coast**	**Miño-Sil**
Information sources	Website public information	x	x
	Press releases and public reporters	-	x
	Reports	x	x
	Management Plan Summary	x	x
	Final Plan dissemination document	-	x
	Participatory Process Summary	-	x
Participatory actions developed in 2010-2012	Single stakeholders workshops	2	5
	Open sessions about Management Plan (territorialized)	-	6
	Multi-Stakeholder Workshops (sub-basins)	10	2
	Thematic workshops	3	3
	Plenary presentation	-	1

The participatory process held in the last phase of planning

Before the formal consultation processes, the Galicia-Coast and Miño-Sil river basins promoted active participation activities in the territory, dividing the basins into smaller sub-basins or counties for participation purposes.

As for Galicia-Coast, during the last phase of the planning process, with the drawing up of the draft basin management plan and consultation period (2010-2011), the

Galicia-Coast management office held several stakeholder workshops (with public authorities and economic users) in order to inform participants about the main aspects of water planning, inviting different authorities, companies, groups and associations to debate and contribute to the process (see table 2).

One milestone was the organization in 2010 of *"The Water Conference"*, which brought together many experts in different areas of work and study related to water issues. Over the last two years of the participatory process almost 550 people were involved in several conferences and nine territorial workshops organized in the three main cities of the North, the centre and the south of Galicia (A Coruña, Santiago and Vigo). Participants were mainly representatives from public authorities, stakeholders, civil engineers, scientists and few social agents.

On the other hand, the Miño-Sil River Basin was subjected in 2008 and 2009 to a process of division of the former North River Basin in the current Miño-Sil. After this process, the water management office promoted an open participatory process in the territory, holding multi-stakeholder workshops and forums (see table 3). Six *"open conferences"* were held in the different cities and counties of Galicia and Leon (Valdeorras, Ribeiro, A Terra Chá, Bierzo, Sarria-Terra de Lemos and Baixo Miño) to inform and encourage public participation in the water planning process. Secondly, in order to discuss specific aspects of the Plan with stakeholders, Miño-Sil organized nine *"separate workshops"* with economic users, researchers and environmental NGOs.

According to information published by the Miño-Sil River Basin (2011), during this participatory process (2009-2012) around 800 people participated in open conferences or workshops, contributing with about 150 proposals and suggestions. Those participants were representatives from the local government, business associations, trade unions, farmers, the wine sector, irrigation communities and the hydroelectric and mining industries. Among social institutions, environmental NGOs, cultural organizations and user communities were the entities with most involvement.

Involvement and satisfaction with the participatory process

The Water Framework Directive requires reporting on the public participation process in order to bring transparency and give feedback to the participants. This implies a report about the participatory activities carried out, the responses received from participants and the implications of these responses and contributions for the Management Plan. In Galicia, both water management offices measured the results of these activities through several *"satisfaction surveys"* filled in by attendants at participation actions.

Galicia-Coast distributed two "public participation questionnaires", before the start of the public consultation and during the last public consultation period. The first one was filled in by 19 people who attended different workshops. 50% were stakeholders and 35% belong to a public authority. When asked about their satisfaction with public participation actions, most of them (51%) expressed medium-high satisfaction but 49% did not answer this question. The second inquiry - distributed during the consultation process - analyzed participants' perception of the degree of influence of multi-

stakeholder workshops in the planning process. The 25 respondents considered it as a first step in the dissemination and development of a consensus about water issues.

The Miño-Sil River Basin distributed an anonymous satisfaction questionnaire to all participants in every workshop or open conference held in the last phase of the water planning process (2010-2011), in order to obtain feedback about the process, before and during the formal consultation period. 70% of almost 800 people filled in the survey. Results show high scores in all the items, which evaluated organization issues (publicity, time, participants, place), the holding of the open conference or workshop (objectives, information provided, technical data) and results (comprehension, usefulness, interest in joining in other meetings, etc).

Contributions and proposals provided by stakeholders and civil society in the formal consultation process

During the formal consultation of the "Draft Basin Management Plan and Environmental Sustainability Report" (2011-2012) the number of proposals and submissions received in the process was quite similar in both river basins. Galicia-Coast received 54 proposals and Miño-Sil 74. Most of them came from different public authorities, companies and business associations, environmental NGOs, culture and neighbourhood associations and individuals.

Table 2. The public participation process in the Galicia-Coast River Basin during the last phase of the water planning process (Draft Basin Management Plan)

Galicia-Coast public participation process about Draft Basin Management Plan (2010-2011)			
Name of tool or method	**Action**	**Location**	**Number of participants**
Multi-Stakeholder Workshops	"Water Planning Conference"	Santiago de Compostela	200
	"Water issues Confence"		100
Multi-Stakeholder Workshops (territorialized)	Conference "water, environment and public participation"	Abegondo	60
	Workshop: "Information about water management in North Galicia-Coast"	A Coruña	24
	Workshop: "Information about water management in Center Galicia-Coast"	Santiago de Compostela	13
	Workshop: "Information about water management in South Galicia-Coast"	Vigo	15
	Workshop: "Water Isssues t in North Galicia-Coast"	A Coruña	20
	Workshop: "Water Isssues in Center Galicia-Coast"	Santiago de Compostela	19
	Workshop: "Water Isssues in South Galicia-Coast"	Vigo	11
	Workshop: Workshop: "Solutions about water issues in in North Galicia-Coast"	A Coruña	14
	Workshop: "Solutions about water issues in Center Galicia-Coast"	Santiago de Compostela	15
	Workshop: " Solutions about water issues in in South Galicia-Coast"	Vigo	11

Galicia-Coast public participation process about Draft Basin Management Plan (2010-2011)			
Name of tool or method	**Action**	**Location**	**Number of participants**
Thematic separate workshops	Public Administration workshop	Santiago de Compostela	20
	Coast and Harbours Workshop	Santiago de Compostela	20
	Enviromental wordkshop	Santiago de Compostela	20

Table 3. The public participation process in the Miño-Sil River Basin during the last phase of the water planning process (Draft Basin Management Plan)

Miño-Sil public participation process about Draft Basin Management Plan (2010-2012)			
Methodology	**Action**	**Location**	**Number of participants**
Multi-Stakeholder Workshops	*Environmental flow regime* for the Miño-Sil hydrographical demarcation	Lugo	25
		Ourense	55
Open Conferences about Management Plan (territorialized)	Open conference about River Basin Plan and public participation process	O Barco de Valdeorras	72
	Open conference	Ribadavia	66
	Open conference	Cubillos del Sil	34
	Open conference	Guitiriz	100
	Open conference	Sarria	225
	Open conference	Tomiño	55
Thematic workshops	"Workshop: Quality, management and treatment of water resources "	Santiago de Compostela	10
			12
Plenary presentation	Open Conference "Responsible water management for a sustainable future"	Ourense	170
Single Stakeholder Workshops	"Workshop with *slate industry*	O Barco de Valdeorras	9
	"Workshop with vine *industry*	Ribadavia	7
	"Workshop with scientist and researches"	Ourense	24
	"Workshop with environmental NGO"	Ourense	10
	"Workshop with irrigators communities	Ourense	11

Results.

In Galicia, the two water management authorities distinguished three levels of participation: information supply (providing public access to information on decision-making processes), consultation (improving the opportunities of the public and interested people to react to proposals drawn up by the authorities) and active involvement (stakeholders actively participating in the decision-making process).

The Water Framework Directive (WFD) implementation process has contributed significantly to the improvement of the quality and quantity of information available about water management plans. Information is fundamental for effective public participation. It provides content to public debates and influences the construction of public opinion when information is adapted to the capabilities and needs of users, in a friendly and brief format, and updated regularly. Galicia-Coast and Miño-Sil made an interesting effort in providing non-technical information and friendly summaries about water management issues and draft plans. However this has not necessarily led to better knowledge and understanding of planning goals or the water management process by stakeholders and laypeople, because the general public was not included by policy-makers in most active participation activities.

According to the WFD, water is a public issue that concerns everybody, and so the range of stakeholders should be open to citizens. Traditional dialogue taken by public authorities came with key stakeholders (power companies, irrigation communities). Only on a few occasions were they open to organized citizens and the general public.

The Galicia-Coast and Miño-Sil management offices identified potential stakeholders in three categories - public authorities, economic users and civil society - and invited specific agents and stakeholders to participate and contribute in the debate, especially those whose activities or interests were affected by the plan (water management companies, local authorities, irrigation communities, hydroelectric companies).

Both held several stakeholder workshops in order to inform participants about the main aspects of water planning, but only Miño-Sil tried to open up the participation process to society (workers, employers, farmers, consumers, environmental and cultural associations, researchers, citizens) and only in the last stage (2010-2011) of the process.

Nonetheless, in Galicia as well as in many other Spanish management plans, the participatory processes were put into practice in short periods of time and in the later phases of the process, which did not allow for real discussion about water issues, because of the lack of commitment that water authorities and policy-makers have had within the implementation and results of public processes.

In consequence, citizens' contributions in the formal consultation period for the "Draft Basin Management Plan and Environmental Sustainability Report" (2011-2012) were almost inexistent. Actually, the number of proposals and submissions received in the process was quite similar in both river basins (Galicia-Coast: 54, Miño-Sil: 74). Most of them came from public authorities, business associations and environmental NGOs.

The results of the "satisfaction surveys" drawn up by the Galicia-Coast and Miño-Sil River Basins in the last phase of the participation process (2010-2002) show a high level of satisfaction about the activities carried out, although in the case of Galicia-Coast, the questionnaire was filled in by just 51 people, in contrast with the Miño-Sil process, where the questionnaire was filled in by nearly 400 people**.**

Conclusions

The implementation of the Water Framework Directive in Galicia meant an important step in public participation in water managing plans, especially regarding information and formal consultation, but there was no **real active involvement of Galician society in the planning process. P**ublic participation should be a long-term commitment which will open the decision-making arena to citizens and develop more transparent and participative strategies.

Involving society in environmental policies is also a social learning process that implies the need to improve the quality of the environmental information provided. In this regard, public participation also requires a social communication strategy that takes into account the mass media and Information and Communication Technologies available. The media is the first and the most relevant source of information and education for general people about environmental issues (García Mira & Lema Blanco, 2007), mostly when sustainable public behaviour is required (Lema Blanco, 2005; Lema Blanco & Meira Cartea, 2007).

Secondly, maximizing the potential for social learning requires considering the processes of communication and participation (Moster et al, 2007) in actor networks and the appropriateness and the implemented institutional setting for processing information and managing knowledge (Pahl-Wostl et al, 2007). In water management cases, experience has shown that it is important to design flexible and coherent processes. It is necessary to reform existing formal participatory structures and include new stakeholders, active interest groups and citizens in long-term intensive public debates.

It is well known that effective public participation only exists when active, rich and extended processes are developed. Only in this case are we able to involve citizenship in water management, trying to resolve conflicts through dialogue and achieving social support for water governance (CIS, 2003). Consequently, policy-makers should make stronger efforts to reform existing formal participatory structures, involving society in public policies and management debates (Tippett et al., 2005; Ridder et al, 2005).

These requirements may also involve changes in attitude, organizational structures and political commitment in order to support new decision-making methodologies. In this regard, Social Psychology can play a key role in the area of public participation, and more specifically, in the introduction of participatory strategies and methods (García Mira et al., 2007). Planning and mediating skills may be necessary to manage conflict or institutional rivalries and to encourage the development of mutually beneficial solutions (Tippett et al., 2005).

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STUDY OF THE APPROPRIATION OF SQUARES IN FLORIANÓPOLIS, BRAZIL

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Abstract

This paper presents an analysis of environmental and behavioral conditions of three different squares of Florianópolis (SC, Brazil). This is an exploratory study which aimed to analyze and compare the different appropriation of open spaces, seeking to raise factors that influence the behavior of the users. The methods used were visual mapping and behavioral mapping. They are typical methods used in Post Occupancy Evaluation and are considered Systematic Observations of spaces with the goal of understanding the dynamics of appropriation. The final results of each method were registered in the form of georeferenced thematic maps using the program GvSIG. With this program it was possible cross the information of the two methods for pre-defined areas of the three squares. Relevant aspects concerning the appropriation of each square could be analyzed from the crossing of the data, since the physical characteristics of the environments influence people's behavior in space, as well as establish associations between the relationship of different users and the activities performed at the environment. It was noticed for example that the areas with the largest number of users performing activities of permanence were the best evaluated by the visual mapping and were also where the playgrounds were.

Keywords: Appropriation, open space, behavior, post-ocupancy evaluation.

Introduction

Open spaces are configured as important urban elements, either because they contribute to the environmental quality and landscaping of the cities (BARTALINI, 1986), or because they are environments that encourage socialization and practice of leisure activities of citizens, very important factors for the life quality and well being.

Therefore, such spaces should have good environmental conditions, in order to allow the permanence and effective appropriation of the people in a democratic way.

Scannell and Gifford (2009) define appropriation as the link between an individual and places that have emotional and symbolic values for him, creating feelings of attachment, identification or possession belonging to the site.

When the space awakes safety and comfort for users, creates this connection, encouraging the permanence and appropriation of these in space.

Thus, the research presented in this paper aims to analyze the physical conditions and appropriation of three different squares in Florianópolis looking for assess factors that influence user behavior in open spaces.

To perform this analysis, characteristic methods of Post Occupancy Evaluation (POE) were used. The methods used were Visual Mapping for systematic observation of the areas and analysis of environmental quality, and Behavioral Mapping, in order to understand the dynamics of appropriation.

The final results of each method were recorded in the form of thematic maps georeferenced using the program gvSIG. With this program it is possible to cross the information of the two methods by pre-defined sectors of the three squares.

From intersection of data, it was possible to analyze the relevant aspects regarding the appropriation of spaces assessed, since the physical characteristics of the environment influence the behavior of people in the spaces, and establish associations between the relationship of different users with different activities performed on the environment.

The quality of open spaces

According to Gehl (2010), the quality of open spaces is directly responsible for the existence and diversity of life in the city because good spaces attract more people and thus promote more opportunities for the occurrence of its appropriation.

In accordance with Hunt (1991), human beings have many needs that influence their interaction with the environment and with other people, called spatial needs.

These needs can be divided into three categories: **physical needs**, related to physical health, safety and comfort of users in the environment; **informational needs**, relating to how the information is determined, subdivided into perception and cognition, and **social needs**, related to the promotion of privacy control and / or social interaction (DORNELES, 2006 apud HUNT, 1991).

Such needs can influence the appropriation, as they are spaces characteristics that humans require for their use and sense of well being, so were used to define the categories evaluated in visual mapping method, which will be explained later.

Case studies

Open spaces are public streets, squares, sidewalks, parks, beaches, among others. For this study, it was decided to analyze squares since they are the most common spaces with function of appropriation and permanence in urban contexto and also have intermediate scale for the application of the methods, since it is possible to have visual control of different positions .

Then three squares located in the city of Florianópolis were chosen as study objects, each of which having different urban contexts and spatial configurations, and are presented below.

Square Getúlio Vargas

The Praça Getúlio Vargas is located in the central portion of the city of Florianópolis, in an area dominated by residential buildings and small businesses.

With much vegetation, the square has a playground, a snack bar and a central fountain, with predominantly gravel floor and presenting minimal depressions.

Square Santos Dumont

The square Santos Dumont is located next to the main entrance of the campus of the Federal University of Santa Catarina, in the district of Trindade.

It has many levels and staircases, which divide their living areas, playground, stretching station for the elderly and a bar (now disabled). It is also heavily wooded, although with major maintenance problems.

Besides the closeness to the university, in its surroundings there are the two main shopping centers of the district, which concentrate many offices, shops, supermarkets.

Square Bento Silvério

Located in the district Lagoa da Conceição, the Square is known for the Bento Silverio handicrafts fair that takes place there every weekend.

The district, being farther from the center of Florianópolis, has its own centrality, which concentrates services and trade, and the square is located studied in this area.

The square, that is too little wooded dn with not much readable boundaries, has playground, and a few seating areas.

Method

To relate the spatial conditions of the objects of study with its appropriation, it was chosen two commonly used methods in Reviews Post Occupation: Mapping and Visual Mapping Behavior, the first focused on the observation of the environment and its environmental quality, and second, the analysis user behavior.

As mentioned in the introduction, the data obtained with the application of the two methods are organized in the form of maps, generated from the gvSIG (free software Geographical Information Systems). This software is a tool used for digital GIS that allows the realization of complex analysis, integrating data and enabling the crossing of such information in a cartographic way.

Visual Mapping

The visual mapping, according to Rheingantz et al (2008), evaluates the adequacy of space and its equipment and identify positive and negative points in the spaces. For this research, the assessment was made from categories, subdivided into criteria, de-

veloped by the authors to evaluate the physical, sensory and social spaces that together represent qualities of the environment necessary for public spaces.

To apply this method, the evaluation was made by sections to facilitate the visualization and therefore the evaluation of the spaces that make the square (see figure 01). The definition of the sectors was performed according to the physical or functional environments, for example, a sector corresponding to the facility access and elderly, that have the same type of flooring and visual language.

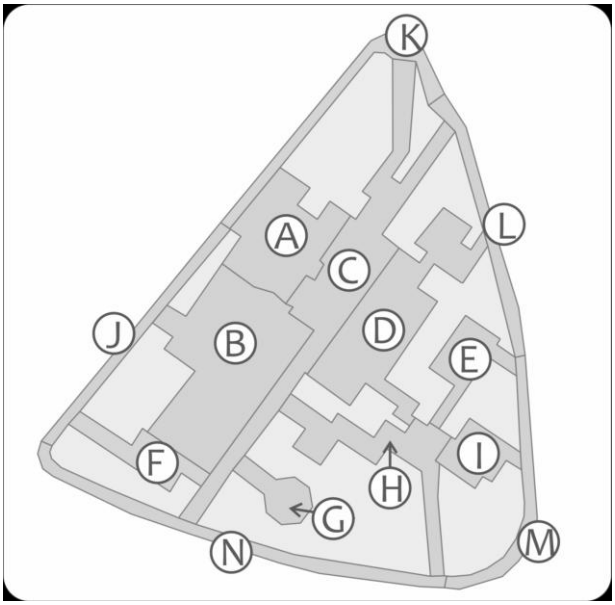

Figure 1. Example of sectorization of the Square Santos Dumont.

To conduct the evaluation of each sector, were made registration tables of the perception of the researcher, as illustrated in Figure 02. For each square were made 3 tables, one for each category (physical, sensory and social). To evaluate each criterion, initially it was thought to use the Likert scale, however the use of this scale conditioned the definition of positive notes. So it was decided for a graphic scale, as suggested by Ribeiro (2000), where each criterion is painted in a linear space determined by the feel of the researcher / user, where the left side represents a bad perception and right side a good perception. Researchers must record their perception painting the placeholder during its evaluation in place, and after, for the treatment of this annotation data is checked with a ruler and measure your registered on a scale of 0 to 10, in order to give a score for each sector . When the measure had fractions of millimeters was considered as a note the further value. This assessment is related to the sense of well-being and comfort of the user, being classified as bad a space that has characteristics that cause discomfort or disturb the user-evaluator. It is worth noting that this analysis is a completely qualitative approach, which is up to the researcher / user assign values according to each criterion for each sector according to

their perception. For this reason it was chosen a preference scale that could suppress the importance of the score assigned and value the opinion of the researcher / user.

The following are explained the categories and criteria that were used and the points evaluated in the observation.

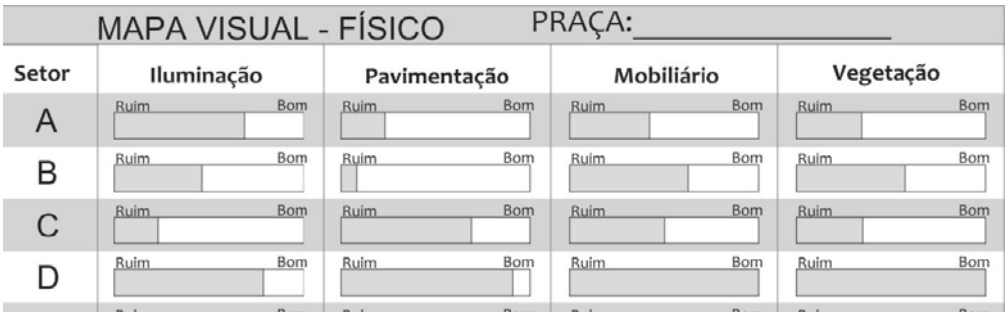

Figure 2. The auxiliar table for the application of visual mapping - physical criteria.

The physical category is subdivided into criteria: lighting, flooring, furniture and vegetation, and sought to assess the condition of the infrastructure of the square. Were observed if the spaces had good natural and artificial lighting if the paving was regular, non-slip and comfortable (an example of uncomfortable floor is the gravel, which hinders the mobility of wheelchair users and makes many of gaps and holes) if the furniture was in good condition and well distributed (large areas without living spaces commit rest during shift), or if the vegetation allowed visual control, shaded seating areas and had no roots exposed or low branches in areas of displacement.

The category sensorial evaluated smells, sounds and visuals, which also influence the well being of the user, a more subjective. It was observed if there were pleasant odors, such as blooms, or unpleasant, such as sewage or waste if there was any positive sound stimulus such as, for example, fountains, or whether vegetation could spread the noise of the surroundings.

The social category is linked to the sense of security in place and co-presence of people. It was observed characteristics such as the visual control of space and the presence of other users in the square.

For each of the nine evaluation criteria it was developed one map. After this, another map was drawn for each of the three categories with the average value of its attributes, generating more 3 mappings. At the end, it was created a mapping synthesis with an overall average, by sectors. Altogether 13 thematic maps were generated by square.

Behavioral Mapping

The behavioral mapping aims to assess appropriation and territoriality of the users in the environment (Moore, COSCO, 2010). In this experiment it was sought to verify the types of users and their activities at different periods of the day.

To observe whether there were changes in the appropriation according to time, the mappings were made on weekdays and weekends, morning and evening shifts, and different schedules for each period, totaling 12 records per square.

To perform the mapping it was counted with the participation of at least two investigators on site. The registration was carried out in a graphical and manual map previously developed by the researchers for each observation period, based on the work developed by the group GAE of Federal University of Rio de Janeiro. (AZEVEDO; RHEINGANTZ; TÂNGARI, 2011).

In this way it was recorded each type of user (child, man, woman, old or older) noting also the activity that the user performed. Thus, maps were created by classifying users activity, gender (see Figure 03) and age, who assisted in the evaluation and comparison of the use of the square as time and day of the week.

Figure 3. Behavioral Mapping by gender (child, woman and man) from Square Santos Dumont. Graphic scale in meters.

With the support of software gvSIG it was also possible to develop maps of user counts by sector, to verify which sectors were more appropriate. Thus, there have been three types of crossing data: overall count of users (see Figure 04), user count in activities of permanence and user count in displacement. These mappings helped in the visualization of the sectors most used and appropriate and also to distinguish which sectors had more activities permanence and displacement, since the transportation activities consist not necessarily in an effective appropriation of space.

Figure 4. Example of map of user counts by sector in Square Santos Dumont. Graphic scale in meters.

Results

The results obtained with the two methods explained above consist of maps represented in GIS for better visualization of the data collected. Thus for visual mapping maps were performed for each category and then conducted a synthesis map that represents the average value for each category assigned by sector. The intent of this synthesis was to provide an overview of the environmental quality of each sector of each square analyzed, where darker colors correspond to better environmental quality in relation to sectors with lighter colors.

For the method map behavioral maps were made according to each type of user and their activities.

The following will be presented brief comparisons between the maps of the synthesis method of visual mapping and map for behavioral activity of permanence for each of the squares, from which it was possible to establish a relationship between the issue of environmental quality and ownership of open spaces analyzed.

Square Getúlio Vargas

Comparing the two mappings of the square, it was revealed that the most used sector was also one of the best evaluated. In this sector is located the playground.

Square Santos Dumont

Comparing the two mappings of the square, it was revealed that the two most used sectors also had positive evaluation in visual mapping. The mostly used sector

is where the playground is. However, another sector that is one of the best valued had few users, a remarkable feature, as it is where is the stretching station for the elderly. It is believed that the lack of shading limits its use for the periods of early morning and late afternoon.

Square Bento Silvério

Comparing the two mappings of the square it was possible to note certain homogeneity in the analysis, both in mean visual mapping as the number of users at all times.

The most used sector, where the playground is, was one of the best evaluated, although no sector has achieved average score above 5.0.

Conclusions

From the crossings of the maps was possible to see that the sectors best assessed by visual mapping, in other words, those considered the most pleasant by the evaluators were effectively the most used by the users to activities of permanence.

It is also important to note the unanimity of the playground areas being the most used. This may be related to better furniture conditions and shading.

Despite the area dedicated to children being the most used, the mapping by age revealed that users of adulthood are the great majority of users, which indicates that the best conditions and maintenance of furniture attract these users.

Among the members in activity of permanence, the majority are male, which may indicate that women feel insecure in such spaces, and therefore do not appropriate the squares.

The extremely small number of elderly users also drew the attention of the authors, showing that the poor condition of the squares end up inhibiting the appropriation of users in this age group.

Regarding the application of the methods, it was found that the behavioral mapping could be recorded in a more dynamic way, indicating the displacement of people, for example, and visual mapping could include aspects of environmental comfort and configurational characteristics of squares.

Despite these limitations of the research, it was possible to verify that some of the main problems of appropriation and identify space “playground” as main attractor of users for the three case studies and that the maintenance and quality of the pavement and furniture are major influencers in the appropriation of spaces.

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PUBLIC FACILITIES AS ELEMENTS OF TERRITORIAL COHESION

Case Study of University and Hospital networks in Galicia

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Abstract

In the present context of economic and urban crisis, this study proposes an analysis and a reflection about strategic investment in planning public facilities. After years of development of large facilities and infrastructures without the planning of territorial cohesion, we propose a status analysis and looking at the sustainability of the territory. The case study is located in Galicia, a region in Spain. The public facilities that we analyze are Higher Education (Universities) and Health Facilities (Hospitals). These facilities make up networks, systems and nodes, and the role they play for territorial, economic and social cohesion is essential.

The key aspects in the research are territorial identity, position in the landscape, sustainability, viability and the urban assemblage of these public facilities. The focus is on the functions and roles of the institutions from within the institutions and their impact on their context, urban structure, social cohesion, economic relevance and other aspects.

Comparative cartographies are the tool that show how they are located in relation to the city and the territory. Form, size, urban connectivity, occupation of land, sustainability and ecological footprint are some of the parameters compared. A model that is different from the territorial planning of large facilities is under pursuit. Accessibility must be equitable, without any distinction between rural and urban populations. In order to keep what we have as a society, in a sustainable way, we should reflect on justifying the necessity of these facilities as drivers of change.

Keywords: University campus, hospital, public facilities, territorial planning, urban planning.

Introduction

The last 30 years have been very important for regional development in Spain. The process of decentralization of competences from the central government to the regional authorities has had a great impact on territorial development, especially of the most peripheral regions. The case under study is one of those peripheral regions, Galicia. It is located in the northwest of the peninsula, a sort of European Land's End.

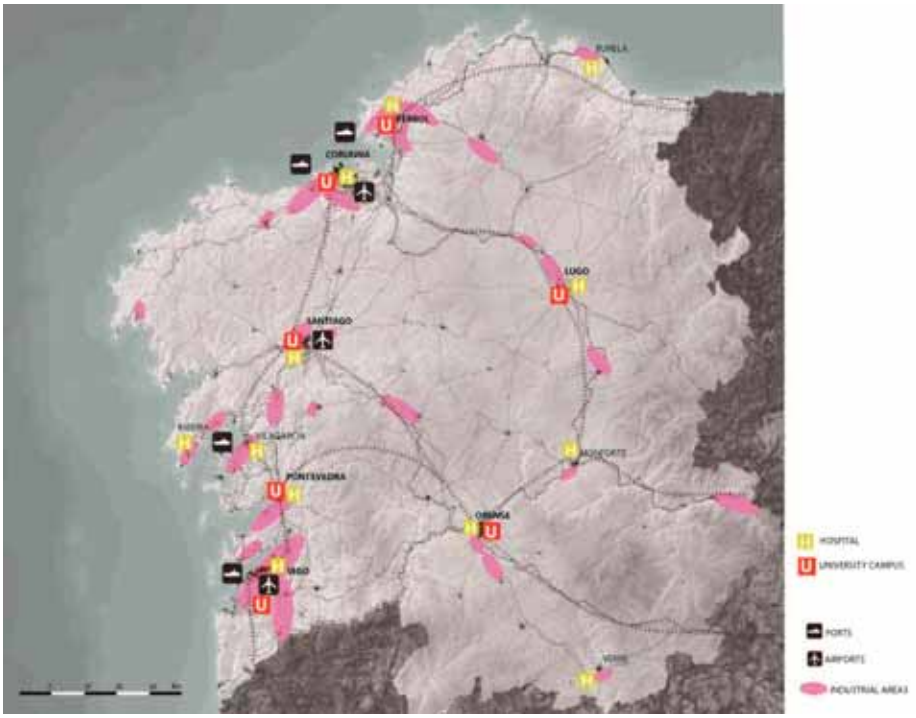

Figure 1. Galicia, main cities and facilities

In 1981 Self-Governance Statute of Galicia was approved, including land management, the coast, town planning and housing as exclusive competences. The first Land management law was approved in 1995 and the first Territorial planning was approved in 2011, although the dynamics of city and metropolitan area growth did not stop to wait for the documents.

From 1981 to 2011, most of the public facilities were created, developing a great amount of housing estates, and the most important territorial infrastructures were built. All of this was done without territorial planning; apart from the sectorial planning, the only planning instrument that existed was municipal planning.

In this paper we will analyze the public facilities of major impact on a territorial scale, universities and hospitals, from the comparison of cartography..We believe that they are the two largest systems that are implemented, and that have had the largest impact on the quality of life and social cohesion in our territory. Moreover, both facility systems were created in 1989 - the Galician University System and the Galician Health Service.

Historically, Galicia (a territory with 2,778,913 inhabitants) has been disadvantaged, due to its peripheral situation, as far as public facilities are concerned. This has been manifested on a minor index of higher education graduates in relation to Spain and Europe. Furthermore, it is one of the Spanish regions with the highest aging population, a low index of industrial development, etc.

Universities and Hospitals

In 1991 the model of centralized universities was transformed into the Galician University System that started from a university of medieval origin in Santiago de Compostela to a system of 3 universities spread out over seven campuses: the University of A Coruña, (A Coruña and Ferrol), the University of Santiago (Santiago and Lugo) and the University of Vigo (Vigo, Orense and Pontevedra). The same cities also receive the main hospital facilities (see Figure 1).

The effort that was made in the 1990s to relieve this deficit by creating 2 new universities is expressed positively in the number of graduates. It goes from 124,848 graduates in 1991, to 250,535 graduates in 2001. Therefore the insertion of these facilities into the territory has had an impact. Let us now see how this growth has been demonstrated physically.

At the end of the 1980s and the beginning of the 1990s, new university campuses were built in all the cities. The development of new campuses depended directly on each university institution, and were placed in areas granted for the most part by public institutions, municipalities and provinces. The campuses of Vigo and A Coruña were also supported by banks and private foundations.

The position of these campuses in the urban environment presents all the variables indicated by Pablo Campos (Campos Calvo-Sotelo, España 2000), and that are similar to those indicated by (den Heijer 2011). Both established mainly 3 types of campus, namely: far from the city, in the periphery of the city and integrated in the city (see Figure 2).

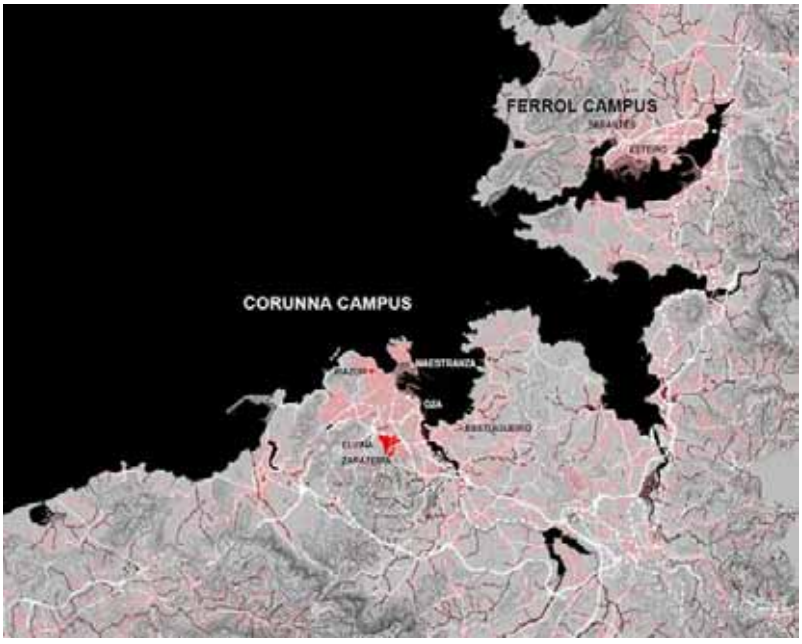

Figure 2. University of A Coruña regional distribution

Planning approach

The majority of the campuses were built under partial plans approved at the beginning of the 1990s. This was the only planning instrument available at that time. This instrument, designed mainly for the development of residential areas, turned out to be inappropriate for the development of a changeable and almost undefined facility at the time of its creation. Another problematic aspect was that even though the public authorities contributed great amounts of land, they were responsible for the expropriation of the total land that was marked out, something that could not be materialized in most cases (see Figure 3).

An excess of ambition at the time of delimiting the surfaces destined for university use led to some of them still being involved in urban development processes of management that were not solved. Due to the inflexibility of the partial plan, the campuses were subject to numerous modifications that did not serve to solve the abovementioned problems of management.

From 1995 and due to the approval of the Galicia Land Law, the figures for the supramunicipal project and sectorial plan were established, supposedly better adapted to the planning of this type of public facilities. Using these figures, only the last campus belonging to the University of Vigo was built - the ETEA Campus. These sectorial projects were also used for the planning of the last hospitals in the region, the Hospital of Lugo and the Hospital of Vigo.

Analyzing the cartographies we can see the great surface that these facilities occupy in relation to the size of the cities. We will see the different areas compared with the totality of the urban scale of the city and we believe that taking advantage of the synergies of these two large facilities might improve many aspects of the quality of life in the cities.

City	Inhabitants	University Students	University workers	Hospital Beds	Hospital workers
Corunna	246.028	16.571	1.914	1.448	5.408
Ferrol	72.963	2.766	323	438	1.952
Santiago de Compostela	95.207	20.950	2.966	1.181	4.835
Lugo	98.007	5.275	324	814	2.708
Vigo	297.241	11.864	1.837	1.650	5.349
Pontevedra	82.400	3.603	160	623	2.906
Ourense	108.002	4.533	257	852	3.475
TOTAL GALICIA	2.778.913	65.562	7.781	7.764	29.652

Figure 3. Some regional data

Relations between the University and the Hospital

The relation and complementarity between Hospitals and Universities has been historically proven. Santiago de Compostela is a good example of this, as the hospital and the university were placed one in front of the other in the Plaza del Obradoiro in the sixteenth century, and they are nowadays once again close to each other in a more peripheral position.

Another good example is the case of the university location in Orense and Ferrol, renovating former pavilion hospitals from the eighteenth century into faculties and other university facilities.

Shifting functions and positions, the complexity of those facilities from the medieval era until now is interesting (Shane 2011). Universities and Hospitals have been transformed from enclaves into heterotopias (Foucault 1984).

Taking the creation of own cartography as a fundamental tool, the performance of these public facilities is studied on two different scales: a) metropolitan; and b) urban

The search for a cartographic representation method is considered crucial for urban research, and demonstrates the need to create tools and cartographic bases to be able to investigate other urban and territorial phenomena at a later date.

The production of this cartography involves a synthesis of the territory. Though it intends to represent reality, it is used as an object of study in itself. With the intention of carrying out a comparative analysis of the establishment of Universities and Hospitals on an urban scale, it was considered to be the search for two scales of approximation. One scale was more general: 1:40,000, which provides a vision on the metropolitan scale and works in all cities. The other urban scale is 1/10,000, which contributes more information on morphology and urban fabric.

The method proposed for the territorial analysis and urban scale has to formulate the minimal elements required to design a cartography to faithfully describe the morphology of the cities. This also provides the keys for a reading of the public facilities on the urban and local scale. The representation is a method for understanding the very complex reality and will constitute a base for reflection in itself (Desvigne 2011).

From the analysis of this cartography we can obtain relevant conclusions and it is also possible to see the diversity and complexity that analyzed in relation to these two public facilities (hospitals and universities). They are not prioritized in the same way in all cities or metropolitan areas.

Figure 5 to Figure11 show this more territorial approach on a scale of 1:40,000. University campuses are shown in red and hospitals in yellow. The surface area taken up by the universities and their peripheral position stand out on the position of the hospitals. Figure 11 to 17 show in more detail the urban fabric of each university campuses in seven Galician cities.

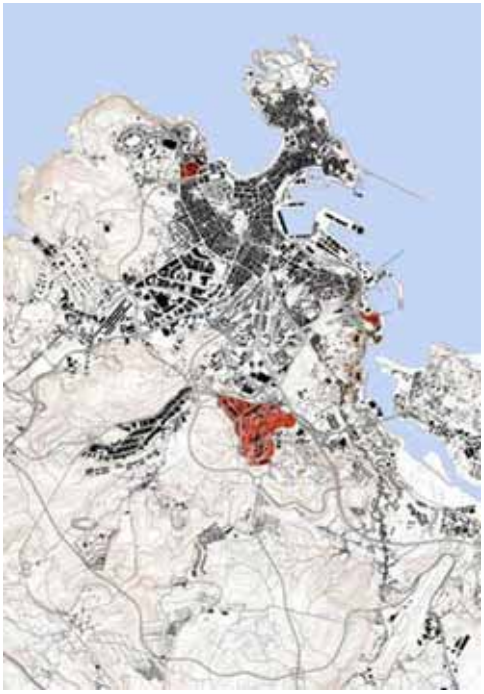

Figure 4. Corunna Universities and Hospitals

Figure 5. Ferrol Universities and Hospitals

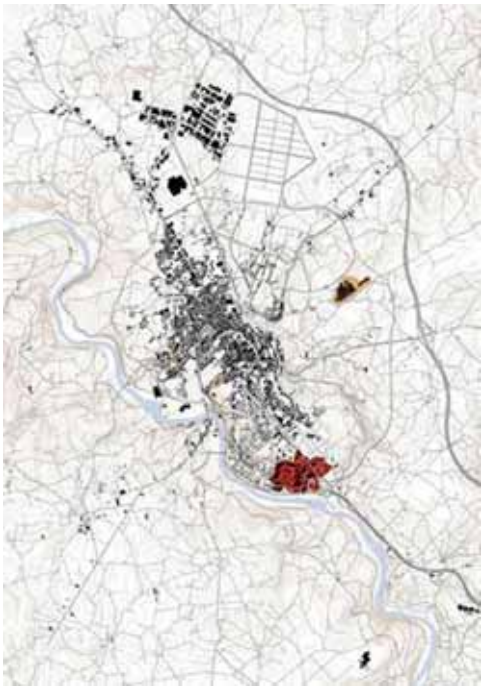

Figure 6. Santiago Universities and Hospitals

Figure 7. Lugo Universities and Hospitals

Figure 8. Pontevedra Universities and Hospitals

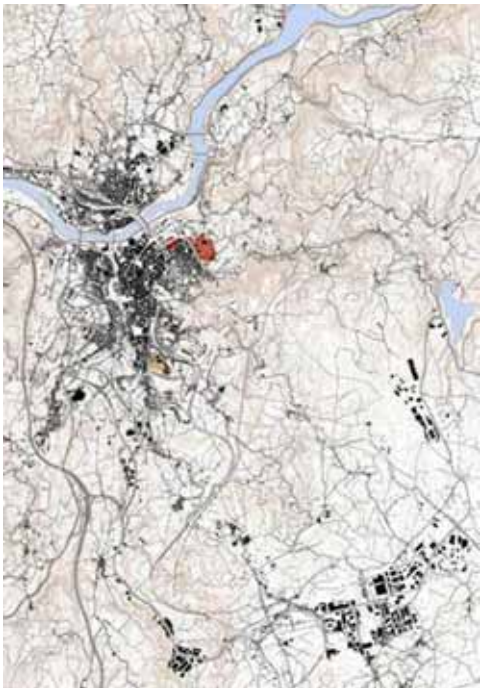

Figure 9. Orense Universities and Hospitals

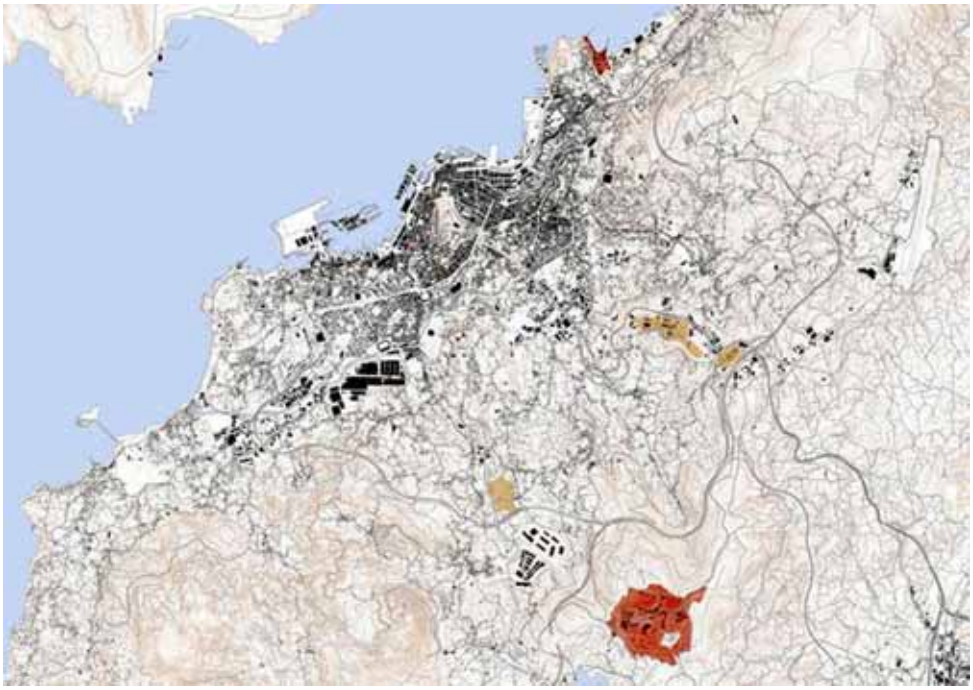

Figure 10. Vigo Universities and Hospitals

Figure 11. University of Corunna Campus

Figure 12. Ferrol University Campus

Figure 13. Santiago University Campus

Figure 14. Lugo University Campus

Figure 15. Pontevedra University Campus

Figure 16. Orense University Campus

Figure 17. *Vigo University Campus*

Position matters

The opportunity and the immediate possibility were the main aspect in placing universities and hospitals in the territory, without giving priority to criteria of sustainability, accessibility or suitability. The hospitals and the universities that had been historically present in central places of the city were moved to peripheral and similar positions in order to obtain more surface area. The loss that took place was a minor visibility on the urban scene. The segregation of functions and the creation of large buildings, almost mega structures, did not relate either to the urban scale or the surrounding environment.

The way of building the city has been lost by having set up these fixtures in closed impermeable fragments, without the multiplicity of functions that are necessary to create a *city*.

Universities and hospitals are facilities that in their recent typological versions take up a great quantity of land, and the value of urban land increased significantly in the 1990s in Spain. The positions that they adopted in the peripheral locations can be catalogued in two:

- The facilities that are located in places with very steep slopes or on the top of hills, with topography that is not adapted for their insertion, but the land was cheap.

- Those which are placed in zones of environmental fragility, the product of landfills in estuaries or maritime zones.

Nowadays they are not in privileged places but in the worst and least accessible places in the territory.

Galicia has a disperse land occupation and fragmentary land property, which makes it complicated to obtain the large surface areas required. But are such areas necessary to place a few dispersed buildings on?

Vigo is the paradigm of the facility dispersion. The university is 10 km from the city center and is not easily accessible. Its position was inherited from 1970s planning. Hospitals .re also on top of hills.

Conclusion

In 1990 the surface area dedicated to University facilities was 797,443 m^2, distributed in 3 cities. In 2012 the University surface area in our region (figs 11 to 17) was 4,094,171 m^2. The ratio m^2/student ratio is 63 and growing, and due to demographic reasons there are 10,000 students less than ten years ago. In the case of hospitals, the figures are more contained in terms of land surface but the built-up surface area increased more than three times in the last 20 years but not always in the appropriate place.

Table 1. Ratios University surface and building surface by student in the seven campuses of Galicia

City	Surface University Campus (sqm)	Builded Surface University facilities(sqm)	Students	Ratio US/S	Ratio BS/S
A Coruña	1.152.871	250.912	16.571	69,57	15,14
Ferrol	43.828	44.217	2.766	15,85	15,99
Santiago	884.461	379.163	20.950	42,22	18,10
Lugo	475.769	104.370	5.275	90,19	19,79
Vigo	1.527.753	211.267	11.844	128,99	17,84
Pontevedra	117.752	59.321	3.603	32,68	16,46
Ourense	306.988	71.664	4.533	67,72	15,81

The fact is that the dispersion of the facilities is more accessible for the population, and in the last 20 years territorial and social cohesion hyas been increasing. But things can be done better. The main lack is the capacity to produce qualified public space, besides the space for cars.

The peripheral situation of these facilities has confronted them directly with rural villages that have been excluded from their limits. Rural villages have remained as islands inside university campuses or near hospitals, without connections to their lost historical ways, without their territorial references, etc. This problem could be transformed into something positive to make sense of many aspects of free space in these institutions. They take up land of great agricultural productivity or former forest zones linked to the cores and that have made villages lose their sense of being rural.

Now we have the opportunity to enhance free spaces, recovering the historical memory of an ancient land full of history, which for the sake of development changed suddenly, without considerations, because people were in a hurry. In short, it is necessary to integrate them better in the territory that they lie in.

On the other hand, the impact they lost on the urban scale was recovered in landscape. The goal should be to integrate the natural areas that surround these facilities, to make them a driving force and emphasize landscape values in an attempt to find the identity of the place.

Though all these facilities have master plans for their internal management, it is necessary to retake outstanding questions concerning the territory and the environment.

It would be necessary to make landscape plans and environmental protection plans. These would be important instruments and that would help to improve the image and territorial identity. Landscape should be understood as a generator of territorial identity.

The current crisis is questioning the model of current territorial mobility based on the use of the car. In many cases accessibility for public transport is insufficient. This can modify the concept of what until now was considered to be accessible.

We also have the opportunity of using these points of the territory, academic centers, to propose compatible uses. This would allow for a more efficient use of time and space, especially in the case of universities.

In the frame of uncertainty we find ourselves in, it is difficult to venture a solution to the chaos generated by planning growth that seemed to be unlimited. This way of planning generated urban voids, disconnected fragments, taking up more and more land. There no limits, and what was even worse, there was no goal.

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V ORGANIZING THE URBAN SPACE: INNOVATIVE APPROACHES

CONSTANT CRISIS? INNOVATIVE APPROACHES IN OLD INDUSTRIALISED REGIONS IN CENTRAL EUROPE

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Abstract

Uneven development in late capitalist society has various spatial consequences. For long such "old industrialised regions" in Europe and worldwide have been at the fore-front of processes of crisis, but also have searched for innovative spaces and practices in order to overcome the economic, social and environmental outcomes of structural changes. This paper looks deeper at some European examples, highlighting problems and successes on the way to find innovative approaches for more sustainable futures in such places.

In recent decades, many traditional European centres of the old industries, i.e. mining and steel production have been rendered unprofitable, through various processes. These changes have had a profound impact on such regions: the complete closure or substantial down-sizing of industrial production sites have triggered difficult processes of de-industrialisation, high unemployment and out-migration. Additionally negative connotations and images of the industrial past and the (post-) industrial present hamper development efforts in such regions.

This paper discusses approaches and challenges to overcome the difficult transformation processes of old-industrialised regions in central Europe. The paper asks specifically about approaches that include potentials related to the industrial past, which can be reutilised in different, sometimes innovative ways, changing inward and outward perceptions of such places.

Keywords: Industry, unemployment, space, landscape

Introduction

Uneven development in late capitalist society has various spatial consequences. Probably one of the most analysed and researched in regional sciences - but nevertheless persistent forms -, has been the appearance of regions whose former growth paths have been interrupted and which now face an uncertain future regarding their economic and social development. For long such "old industrialised regions" in Europe and worldwide have been at the fore-front of processes of crisis and the search for innovative spaces and practices in order to overcome the economic, social and environmental outcomes of structural changes (Cooke, 1995; Müller, Finka, & Lintz, 2005).

In the last decades, many traditional European centres of the old industries, i.e. mining and steel production have been rendered unprofitable, through various processes, such as the transformation from state-led to market economies or the in-

creasing competition on world markets. These changes have had a profound impact on many industrialised regions: the complete closure or substantial down-sizing of industries have triggered difficult processes of de-industrialisation, causing high unemployment and out-migration. Especially regions outside of agglomerations face multi-dimensional challenges to make the transformation from an industrial past to a (post-) industrial future. Here a lack of economic alternatives, coupled with missing organisational, financial and conceptual capacities often overtax local and regional decision makers (Wirth & Lintz, 2007; Harfst, Wirth, & Lintz, 2012; Harfst & Marot, 2013).

One dimension of problems has been the inward and outward perception of old industrialised regions: At the heyday of production these places were often associated with production sites, big infrastructures and pollution, but also with work opportunities and growth. With the closure of industries the image has changed towards one of unemployment, derelict industrial sites and housing, outmigration and devastation of social infrastructures (Short et al., 1993), despite sometimes positive associations by the younger inhabitants (Marot & Cernic-Mali, 2012a).

This paper discusses approaches and challenges to overcome the difficult transformation processes of old-industrialised regions in central Europe, with a specific view on the image such places evoke. The paper asks specifically about approaches that include potentials related to the industrial past, which can be reutilised in different, sometimes innovative ways. The paper will discuss some examples from regions predominantly characterised by small and medium-sized towns, as here the problems of change and the opportunities for new development are especially difficult due to the limited capacities (human and financial resources) such territorial units possess (Harfst & Marot, 2013).

In the following section a short introduction into the challenges of old industrial regions is given, along by a description of what kind of potentials from the former industrial production might play a role in the transformation process. It will also shed a light on how the project SHIFT-X utilises such potentials, in order to change images and self-perception of such regions. In a third chapter some examples from central Europe will be highlighted to illustrate the assumptions made in chapter two. The fourth section will discuss the examples and asking what kind of possibilities and limits such an approach might offer. Finally a conclusion will be presented.

The background for this abstract is formed by research carried out in the SHIFT-X project (www.shiftx.eu), an Objective 3 ‘Territorial cooperation’ project (Central Europe), that has been co-founded by the European Regional Development Fund (ERDF) from 2012 to 2014. The project deals with the transformation processes in old industrial regions in central Europe, providing a unique insight into processes of regional development across various European countries. Main aim is the utilisation of cultural heritage in order to manage the transformation process in such regions.

Challenges and opportunities in old-industrialised regions

There has been a variety of literature dealing with the outcomes of structural change in old-industrialised regions around the world (Cooke, 1995; Ache, 2000; Hassink & Shin, 2005). Western Europe has seen waves of deindustrialisation across various sectors, especially in the textile, shipbuilding, steel and mining industries since the 1970 (Baeten, Swyngedouw, & Albrechts, 1999; Cho & Porter, 1986; Hudson, 1998), while in Central and Eastern European countries heavy industries shrank since the 1990 after the fall of the Eastern bloc (Gorzelak, 1998; Eckart, 2003; Müller, Finka, & Lintz, 2005). Despite the processes taking place under different framework conditions, the situation in the affected regions is quite similar: Decline of their economic role, unemployment, shrinking of tax-base, outmigration, especially of the skilled labour force. But not only the economic and social futures of such places often look bleak, but also the processes of closure are accompanied by the discovery of risky environmental legacies on the former production sites (Bridge, 2004). Overall the (post-) industrial future of such places is often perceived as one of decay, disinvestment and black and polluted industrial wastelands – both from the point of the inhabitants, as well as from the outside world. These images have been among other factors identified as a hampering element in the economic development of such places (Joly, 2003; Sucháček, 2009; Benneworth et al., 2009).

Nevertheless, so far research on this topic has mainly focused on major cities and their restructuring efforts, such as the much discussed examples from the North-East of the UK, and the German Ruhr Valley show (Hudson, 2005; Shaw, 2002). While the transformation efforts of such regions are well documented and have seen worldwide attention and political backing, regions with predominantly small and medium-sized town have been outside the academic focus (Vaishar, Lipovská, & St'astná, 2012). This marks a significant gap in the research field, as especially smaller industrial towns are usually hit hardest by factory closure, as they are often mono-industrial places, depending on one company or sector, as well as being overwhelmed by the rapidly evolving processes of change, that were overtaxing the small administrations in place (Lintz & Wirth, 2009). Additionally in most of such regions issues of brown field rehabilitation and development issues are playing a key role. While in the past, the European Union in combination with national governments has tackled specific structural problems of coal and steel regions through programmes like RECHAR and RESIDER, now such regions often face severe competition from other regions (e.g. rural areas) for support from European funds, like ERDF. In this context, such regions are relying increasingly on their own capacities and potentials to master structural adjustment, something especially scarce in regions outside agglomerations (Harfst & Wirth, 2011; Marot & Harfst, 2012).

Table 1. Dimensions of hampering development factors in old-industrialised regions

Dimension	Features
Economic	Monostructures, value creation below national average
Social	High unemployment rates, low educational background
Environmental	Environmental damages, altered landscapes
Demographic	Shrinkage, outmigration, high percentage of elderly people
Image	„Black“ image
Additional factors in regions with small and medium sized towns	Declining economic and functional importance Low organisational capacities Low political attention

One approach in affected regions has been an “erase-all-traces”-approach that would clean up all reminiscences of the industrial past, fostering a process of collective “forgetting” about the industrial past in some places (Jonsen-Verbeke, 1999). Alternatively affected regions have sought to actively utilise their industrial past as a stepping stone into the future. Some of these examples have been well documented in recent literature, with different kind of potentials and utilisation being discussed (Kirkwood, 2001; Kilper & Wood, 1995; IBA-Fürst-Pückler-Land, 2010; Harfst, Lintz, & Wirth, 2012). In this text, the focus is on cultural potentials left from old-industrial heritage, both as tangible and intangible elements. This can mean buildings, infrastructures, industrial products, skills, traditions and human knowledge following the analysis of Wirth, Cernic-Mali, & Fischer, 2012 on this topic. Some of these elements are usually preserved in the form of museums or exhibitions, but many other utilisations are possible, ranging from event locations, to arts installations or tourism products. Some examples will be highlighted in the following chapter.

While the utilisation of such potentials can serve many different aims, i.e. economic growth, fostering of tourism, improvement of infrastructures etc., the focus in this text lies on how such potentials can change the traditional, unfavourable image of old-industrial regions. This is achieved by incorporating the legacies into a future development plan, instead of demolishing and denying them outright. Further such examples have been collected in a “good practice” databank by the ERDF-funded ReSource project (2009-2012) (www.resource-ce.eu) (see also Marot & Cernic-Mali, 2012b).

In the following the text will highlight some examples from across Central Europe where industrial remains have been used to create something new in old space, changing the image of place from “black” and wasted brownfield sites to new greener and more sustainable utilisations.

Examples

Background of this research is the ERDF-funded project SHIFT-X that employs cultural heritage as a promoter of the economic and social transformation of old-industrialised regions in Central Europe. Six regional and two academic partners work together in three thematic work packages that cover different aspects of utilising heritage, dealing with aspects of heritage management, development of heritage-based products such as tourism offers or design products, as well as regional marketing. The involvement of academic partners is based on an "action research"-based agenda, that involves universities in the running projects tasks, but also allows to reflect on the overall management and the single examples (Howells, 2002; Greenwood & Levin, 2007). The project offers the participating academic institutions a unique insight into the development issues of old-industrialised regions in central Europe. The following three examples are derived from the regions covered by the project. The text will not extensively cover all the framework conditions in the regions, or all aspects of potentials possible, but are thought to give a more general understanding about the issues laid out above.

Utilising landscapes and events - Erzberg (Austria)

The Eisenerz region is a part of the Bundesland Steiermark (Styria) in South-Eastern Austria. The area has been marked by mining and processing of ore and coal since the 11th century. From the 19th century onwards it was part of one of the industrial centres of Austria, namely the Mur-Mürz-Furche (Ortner, 2009). While mining and steel processing are still on-going today, the importance of industrial production around the Erzberg ore mining site has lost its importance due to rationalisation processes and a considerable downsizing of the workforce (Moser, 2011) . In this rather peripheral and Alpine region, the effects on the communities have been severe – a persistent, above the average unemployment rate, and an especially pronounced population loss due to outmigration have been constant problems, despite the fact, that the region has profited from various state-led regeneration programmes (Zimmermann & Janschitz, 2004). The closest town to the Erzberg mining site, Eisenerz has lost almost 50% of its inhabitants between 1981 and 2008, numbering 2012 around 4.800 inhabitants (Statistik Steiermark 2012).

Being situated in a mountainous, alpine setting, the region has suffered from a peripheral location and a rather negative image due to the industrial downturn and the outmigration. Despite being set in attractive alpine scenery, tourism in the region is rather underdeveloped, especially, as basic infrastructures, such as hotels, are missing and the region has to face the fierce competition on the Austrian tourism market. The area today is still being more associated with being the heart of Austrian industry than with being a holiday destination (Osebik, 2012).

Nevertheless the region has managed to incorporate some of its (industrial-)landscape features into the marketing of a new regional image (Fischer & Stranz, 2011). One central aspect of these efforts is an annual motocross event that takes place in the

region since 1995. The "Erzberg-Rodeo" (see Figure 1) is located in the active open cast iron ore mining site at the Erzberg. Against this spectacular scenery, 1800 participants from 38 nations competed in various disciplines in 2013; with around 40,000 spectators following the event on the site. The event is also transmitted live via the internet and television. It is the biggest event of this kind in Europe and has developed into a major economic factor for the region (www.erzbergrodeo.at).

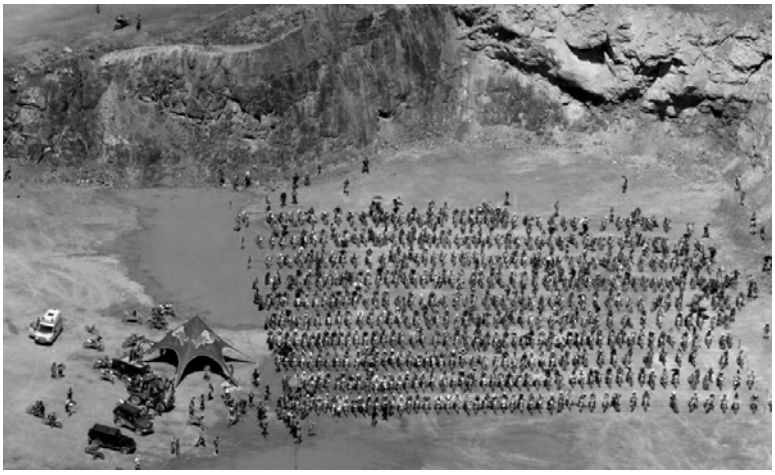

Figure 1. Erzberg-Rodeo (Source: Steirische Eisenstrasse)

The local stakeholders, such as the regional LEADER management "Verein Steirische Eisenstrasse e.V." have realised the potential of the event for the wider region and have included this feature into their regional strategy. One strand of the regional development efforts, as laid down in the LEADER strategy 2007–2013, includes the element of "adventure sports", tapping in on the image of the event and fitting it also into the mining history of the place. Other activities in this field include climbing and rafting, as well as other outdoor sport offers (Pizzera & Osebik, 2012). Additionally to this strand, other event-based actions are taking place that also aim at breaking the traditional image of the region. One event that wants to attract especially young people to the region is the "Rostfest", an alternative music and urban arts summer festival held in the town of Eisenerz (www.rostfest.at).

Creating new landscapes and landmarks – Lusatia (Germany)

Lusatia is an Eastern German region on the border between the Federal States of Saxonia and Brandenburg. The area with its rather dispersed settlement structure is known for its extensive open cast brownfield mining that took place there in the German Democratic Republic, being officially declared to "energy region" of the GDR (Wirth & Lintz, 2006). After 1990 its role in the field of mining and energy production has been significantly reduced by the closure of most of the mines and the connected industries (Harfst & Wirth, 2011). Due to these economic changes the region has experienced persistently high unemployment rates and a strong population loss due to

outmigration in the last 20 years. Today the region is marked by a developing "lakeland", where the former open-cast mines are being filled with water, creating 21 lakes, which open new regional development options, namely in the field of tourism. The region still profits substantially from federal funding for the reconversion of former Eastern German brown coal industries and had a major development input by hosting an International Bauausstellung (IBA) between 2000–2010, providing a major influx of ideas and attention to the region (www.iba-see.de). The IBA managed to incorporate some of the remains from the industrial heyday into new utilisations (IBA-Fürst-Pückler-Land, 2010), creating museums and infrastructures that give the region a new image, more suitable to attract visitors. While the region had no real image in the years after the 1990 – only being a rather beaten-down industrial hinterland with devastated and altered landscapes - the federal funding, the creation of the lakeland and the ideas of the IBA, have created a more positive image, where the industrial heritage (and sometimes ongoing present) plays a positive part in the new perception of the region (Lintz, Wirth, & Harfst, 2012).

Three iconic images materialise the new attitude: A viewing tower at the lakeland's centre in Senftenberg, called the "Rusty Nail" (see Figures 2 and 3), has become an iconic image of the new, developing landscape. The former waste-water treatment plant in Plessa ("the Bio-Towers") and the F60 conveyor bridge in Lichterfeld ("the lying Eiffel Tower"), form both impressive "living monuments" from the industrial era, preserved for new touristic utilisations, that mark the development of the region in the last 20 years (Harfst, Wirth & Lintz, 2012).

Figures 2 and 3. Landmark "Rusty nail" and F60 museum (Sources: IOER)

Utilising skills and traditions – Sokolov region (Czech Republic)

The Sokolov region is situated south of the Ore mountain range near Karlovy Vary in the Czech Republic. It is a traditional open cast coal mining region, with porcelain, glass, chemical and other industries also present. Brown coal mining is partly on-going today, although the region has seen a reduction of its industries since the 1990s, with rising unemployment one of the negative developments of structural change (Harfst, Bieberstein, & Wirth, 2009). The landscape is marked by active and inactive open-cast mines and industrial sites, resulting in a traditionally rather negative image in the rest of the Czech Republic. As in the Lusatian example above, some of the open cast mines have been converted into lakes (e.g. Medard lake), other are still left open, as the present economy of the region is still strongly connected to mining industries (Lipovská, 2011).

Nevertheless some elements in the development of the region show efforts to break with the image of a heavy industries and to "re-invent" itself by utilising former brown field sites as golf courses and promoting the touristic potentials of the region (Lipovská, Vaishar, & Stastna, 2012). One of the focal points of these efforts has been the centre for traditional crafts "Bernard's Grange" (see Figure 4), established in 2006. The institution combines a visitors and exhibition centre with workshops on various craft products, often connected to (former) industries of the region. The crafts reflect the traditional industries of the region, which range from candle making, glass products to pottery – mirroring the region's paraffin, glass making and porcelain traditions. The centre is interesting because it shows and preserves the making of traditional products for a wide range of visitors. Regional industrial culture becomes in this way practically interconnected with new generations, utilising industrial skills and traditions (www.statek-bernard.cz). Building on these element, regional stakeholders have started to think about to strategically utilise their mining heritage in order to promote to region in the Czech context (Mikroregion Sokolov-východ, 2011).

Figure 4. Bernard's grange (Source: IOER)

Discussion

The introduced examples in this text show the wide variety of different utilisations possible, when thinking about potentials connecting industrial past to the present and the future. The cases chosen here illustrate also the various elements can be used from the past – ranging from events in the background of industrial landscapes as in the Austria case; to the creation of new landmarks by industrial infrastructures in Lusatia; to skills and traditions in the Czech example.

All three examples show the different impacts the utilisation of such potentials can have: While in the Austria case a globally broadcasted event has been created - attracting 50.000 visitors to a rather remote area -, the visitor's numbers in the Czech Republic and Germany are substantially smaller. On the other hand the latter two examples are available during the whole of the year, providing a regular offer to visitors. The German example especially highlights the importance of arts and aesthetics when thinking about the re-utilisation of old-industrial landscapes and infrastructures, showing the innovative character that these ideas possess. The Czech case addresses especially younger generations and tries to interconnect them with the region's industrial history, that otherwise would be lost. Here also the incorporation of other leisure activities seem to been especially fruitful.

Correspondingly the utilisations all mirror the new economic activities in the regions, namely tourism development. This is especially visible in the Austrian and German examples, where a new tourism image is a pursued, to find alternatives after industrial closure. The two cases have also created landmarks that stand symbolically for the region, which are both partly connected to the industrial past. Thereby they materialise the image change of the whole region. All three examples - each in their own way - aim at the changing perception of the regions, altering persisting stereotypes of the places. Especially in the Austrian, but also partly in the German case the utilisation of the potentials have been strategically used to create a new, more dynamic and younger image of the region, especially to the outside world. Here the efforts have been "officially" enshrined either in LEADER planning or in the organisational structure of the IBA. The Czech example is so far not so much strategically embedded, also lacking a strong iconic landmark. This could be due to the fact that a substantial industrial sector still remains in the region.

Regarding the impact of these measures towards the inward perceptions of change in the regions, the Czech and German example both include strong aspect of the industrial past into present utilisations, providing thereby focus points of remembrance for local inhabitants, and an exchange between younger and old generations. If the Austrian example with the highly specific event is able to provide that seems nevertheless rather doubtful. Additionally all the utilisations provide a dynamic element that offers (economic) opportunities by not outright denying the industrial past but by retaining it, utilising them as aspects of future developments. This is already a positive aspect for the regions in focus, as they are more often caught in a negative spiral of unemployment, disinvestment and outmigration. Nevertheless the real economic and

social impacts of these measures remain hard to quantify. In all three examples discussed here, the effects on jobs and growth must be seen as rather limited.

Conclusion

The paper has discussed some examples from regions predominantly characterised by small and medium-sized towns and showed that such old-industrialised regions possess a range of different potentials that can bring about various positive aspects in the transformation process.

As a first positive aspect the change of the outward perception can be named. With the traditional "black" image of old industrialised regions being identified as a hampering factor in the development of such regions, the utilisation of post-industrial potentials offers the opportunity to show a different picture of such places, breaking or playing with some of the stereotypes. Some of the measures can create a more "greener" image of these "black" places, while others can use the "rough" image in order to promote specific "adventurous" leisure activities. This forms an important step to explore new economic possibilities after the structural changes.

The cases discussed here show that the utilisation of potentials is used to identify and promote new economic developments in the regions, namely by focusing on tourism. Hereby the creation of a new image through aesthetic landmarks or specific events that underline the new picture to the outside world seems to be especially important. Here old industrial legacies can serve as an important backdrop in order to creating more sustainable economic opportunities by providing an interesting interplay between old and new utilisations.

Such elements form not only an important picture that can be communicated and marketed to the outside world, but also offer a vital link between past and the future for the inhabitants of the regions themselves. The preservation of industrial legacies, which in their heyday formed an often important part of self-reference for the people, can be seen as an important anchor point in a changing society, connecting the memories of older generations with the future of younger ones. Nevertheless the change in perception among local residents is harder to assess, and would need more scientific research in order to assess the psychological and social impacts, i.e. on migration patterns.

Having illustrated the different aspects of use-value, one might ask if an "erase all traces" approach preferred by other municipalities and regions is really a worthwhile option to explore. But despite the efforts described here, the structural deficits in many of those regions remain. While tourism might be an option for some regions, it nevertheless cannot replace the workplaces lost with the industrial restructuring, especially as many old-industrial regions are ill-equipped to make a larger impact on the highly competitive tourism markets. Therefore it remains to be seen if the efforts make a larger impact on the general development of these regions. On the other hand such utilisations do improve outward and inward images and can equip regional stakeholders and decision makers with new organisation skills and capacities.

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UNDERSTANDING THE TRANSFORMATION OF LOW-RISE APARTMENT HOUSING UNIT PLANS IN ISTANBUL:

An interpretation model and analysis of the changing syntax and semantics for housing space organization

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Abstract

The issue herein is the theory and factors that influence changes in the meaning and spatial organization of housing plans. This study also addresses the use of analyses to interpret domestic spaces. Housing plans of İstanbul's expanded downtown neighborhoods were analyzed to support this aim. The semantics of housing plans, which are affected by the physical structure of apartment plans and their spatial arrangements are studied.

This study involves certain key factors that affected Istanbul apartments' social and structural transformation or revolution process. Certain laws and regulations of building construction and zoning in Istanbul, which were changed several times since 1930s, may reflect the transforming morphology of apartment-housing unit spaces. So, it is relevant to discuss transforming and developing domestic space in Istanbul in this context. This research aims to discern the phenomenon underlying this change by focusing on its defining moments. Connections with policy are discussed at those points at which laws and regulations critically influence transformations of domestic spaces that are addressed by this study.

Syntactic and semantic reflections on housing production and occupation in relation with domestic space that is affected by the variables technology and law are analyzed. Changes in apartment living spaces through technological advances, such as contributions from mechanical heating systems and TV, compose certain specific turning points in this process.

Keywords: Spatial organization, housing, domestic space, syntax, semantics.

Introduction

The aim of this study is to discuss the key theoretical factors that affect the development and meaning of low-rise, apartment-style urban housing unit spatial organization in relation to housing policies determined by the authorities. Housing units can emerge from and reflect both spatial and social organizational structures on multiple scales. This structure mainly consists of when and where the housing units are constructed as well as their social and physical structures. This study also examines space syntax in this context. The discussion is directly related to policy because laws and regulations are critical in transforming domestic spaces for the context herein.

Theoretical background for the interpretation model and an analysis of the changing domestic space organization syntax and semantics in Istanbul

Semantically based theories related to transforming housing unit spaces

The issue discussed herein is the semantic relationships between houses and their theoretical infrastructure in different contexts, which may affect house plans, as may the physical, sociological, psychological, cultural and many environmental dimensions that are similarly significant. The context should always be considered in investigations of changes in housing space associations, planning, and organization.

In the context of ecology-based theories, it is noteworthy that the organizational, environmental and technological components of human ecology are also the most important components in changing and developing housing spaces. Behavior setting theory, which asserts that behavior is shaped by the physical components and sensory effects perceived as well as the action patterns in a space, should be considered. Moore (1985) states that one of the most important bases for constructing behavior settings is the physical elements therein; however, sensory perceptions of such physical elements and the emerging reactions therefrom are significant. Physical elements affect housing space configurations and association levels and determine the environment generated by the behavioral modes that arise from intra-residential needs in daily life and various additional requirements. Spatial behavior comprises mental and intellectual cognition; temporal, social and physical dimensions of identity; and social and cultural status. Behavior setting theory suggests that spaces in the apartment and each point in such spaces have a physical and semantic value and are a site of change and specialization for a space. The feeling of belonging of the people living in the spaces as a physical environment affects the behavior, configuration and level of use.

In the context of culture-based theories, Altman (1975) emphasizes the structure of privacy, which also identifies and distinguishes the interspatial interaction areas and order. Via this dimension, privacy is important in the creation of spaces and inter-spatial relationships, and in subsequent changes to such construction. Aiello and Thompson (1980) and Altman et al. (1980) assert that personal space and spatial behavior relationships should be considered in cultural phenomena. In addition, culture always directly or indirectly affects changes to and the development of spaces. According to Michelson (1976), people move to a new environment out of necessity. Similarly, the desire to change an existing environment out of necessity may also be another consequence. Alexander (1966) approached the culture association by classifying cultures' habit of generating forms into two fundamental points.

Environmental perception- and cognition-based theories are crucial because they explain cognitive schematics and cognition regarding the uses of and changes to housing spaces. The result is that if Lynch's (1960) theory that addresses reference points in an environment is approached with a different perspective, then the television is a reference point on a space scale or areas with an increased syntactical integration value are a reference area, which is important. Kaplan (1987) states that perception, cogni-

tion and the physical environment are related in structuring, defining and developing the environment. As a pioneering theoretician who addresses perception within a socio-cultural context, Rapoport (1977), in studies on perception, distinguishes changes in the structural environment and emphasizes a spatial structure according to physical, temporal and social arrangements.

Spatial changes are also an important factor in forming mental schematics, and reciprocation between the processes that affect spatial changes and mental schematics should be re-emphasized. In research by Kaplan (1989), openness emerged as the strongest variable that affects preferences for environments and facilitates predictions, whereas locomotion ease and smoothness remained weak variables, ranking second and third. While the unknown and interesting space variable emerged strongly, coherence, complexity, and clarity were emphasized as weaker variables.

In the semantics-based theories context, Gifford et al. (2000) emphasized aesthetic theory, wherein examining the outstanding objective features of a structured environment yields a direct prediction, especially through ex-ante aesthetic evaluations. Additional research by Kaplan (1983) defined supportive, controllable and restorative environments in a human-environment and space relationship context. A supportive environment is clear, with a structure that provides information and different potential alternatives based on preference. A controlled environment is distinctive because it provides the feeling of progress in a mechanism and order under human control rather than personal control, which suggests order via its organizational flow. Supportive environment targets are emphasized as more humane and practical compared with a controllable environment. A restorative environment has a predominantly sentimental value based on intuition.

A body of constraints always affects space designs. Addressed on a small scale, it is important to understand the factors and dynamics underlying living space configuration with various social, semantic and physical rules. All spaces are generated in response to various constraints and can be analyzed. Understanding the interrelationships among the dynamics that compose the space is an important milestone in understanding the space (Hillier, Hanson 1984). In this context, changes in physical and social meanings as well as their co-transformation due to changes in the space associated with technology, zoning, plot structure and construction are addressed from this perspective. An important expression in space syntax is “the order, hierarchy of the interspatial relationship in buildings is actually in association with the order and hierarchy of the interpersonal relationships”.

Space syntax-based theories related to housing unit space transformation

Cultural identity and semantics are concepts based on function and significance in the space syntax theory context. The function and space allocation of buildings is also an important cultural aspect in the spatial transformation of apartment plans.

Creating vacant spatial volumes and transforming their layout from a physical object to a texture dimension is important. The purpose of buildings is to order space,

to consider the space with an order concept and to approximate the space (Hillier and Hanson, 1984) (Hanson, 1994) (Hillier, 1996) (Hanson, 2003). Syntactic analyses related to space order and conducted with several parameters that are addressed later in detail yield spatial transformations of plans. The relationship between environmental behavior and space syntax theories is key to this study but should be investigated beyond the scope of this article.

Privacy, territory and defensible space theories, all of which consider the defense of a given area or a pattern of behavior that defines and defends a space as a distinct expression of social reality, affect architecture at many stages, such as in understanding, designing and altering the space. According to Altman's (1975) approach, privacy is an organizational mechanism that describes interpersonal interactions. Proshansky, Ittelson and Rivlin (Proshansky et al., 1970; Proshansky et al., 1976) state that privacy increases the freedom of choice associated with high-level behaviors; thus, relationships are important to understanding the transformation of apartment plans in Istanbul over time. Privacy is crucial to change.

Individuals act on certain instincts to claim and defend a particular space; this notion is emphasized in Oscar Newman's (1972) defensible space theory. The approach from cognition-based theories is insufficient to understand the social logic underlying space (Hillier and Hanson, 1984), but Kaplan's (1987) studies are outstanding because they recognize the relationship between cognition-based theories and the physical environment. Kaplan (1987) discerned a low-level awareness cognitive state wherein we think fast to assess spaces by obviating our judgments, which indicates a perception-cognition-physical environment relationship in structuring, defining and developing an environment.

Buildings express social meaning through their appearance and planning. Space syntax theory defines this social relationship by associating space with its physical relations (Hillier and Hanson, 1984). Hillier and Leaman (1973) discuss in "The Man-Environment Paradigm and Its Paradoxes" that the artifactual physical world embodies a social behavior through its control over spatial organization.

In space syntax research, it is stated that individuals' "use of space" and "motivations" are irrelevant to the space concept. According to Penn (Penn, 2003), individuals' motivations and clues to their cognitive states may be found in space syntax theory and related analyses; thus, this theory and analyses may contribute to a better understanding of individual-level mechanisms by excluding the former concepts. When space syntax theory is considered as a social theory, such exclusion may better elucidate the mechanisms analyzed.

In conclusion, space syntax theory is fundamental to the social structure of a space by representing structures through form. It contributes to understanding a space and its many physical and semantic parameters through its concepts; it comprises a strong systematic and basic analysis relationship and facilitates analyses of changes in space over time. Space types that differ in location and time can be quantitatively examined through such analyses.

Theoretical background is important for understanding the interpretation model for the changing semantics of housing space organization. Suggestions on changes to a space can be generated by considering the relationships of materials, techniques, needs, climate, food and other factors with their opposites (Mugerauer, 1994). Dialectic apprehension is important because it can be understood in this context. "The relationship patterns consisting of opposites involve balanced associations; the tension among them brings dynamism to the structure (Mugerauer, 1994)." An example of this relationship pattern is the important tension between global and local values and their position, which provides such an integral balance. The space-time compressions in modern cities (Harvey, 1990), semantic shifts, urban space detachment from human values, and the gradual human alienation from the environment all affect the space level.

Within the scope of the study, it is appropriate to analyze such changes and consider the social, economic, technological and zoning structures of 1930-1980.

Previous domestic space investigations related to space transformation in apartment-based Istanbul housing units

Turkish domestic space was previously investigated by Guney (2005), focusing on the visibility of structures in nineteenth century spaces using multiple tools. She used the space syntax methodology to discern the underlying genotype and transformation over time. She analyzed Ankara houses through different periods. "Transition-space-centered organization" (Guney and Wineman, 2008) was the defining spatial structure. "The control of permeability and visibility that serves the need for privacy to regulate interpersonal interactions" (Guney, 2007) was a key concept, and based on permeability analyses, a longitudinal series of house plans were grouped into three genotypes: houses from the 1920s with no sector differentiation and one entrance; houses from the 1930s-1960s with different sectors and multiple entrances; and houses from the 1970s-1990s with different sectors and single entrance (Guney and Wineman, 2008). Analyses show that the most integrated spaces from each group overlap spatially and visually. "The findings of the research indicate that visibility analyses is more sensitive then the permeability analyses as it is able to account for variables that permeability analysis is not able to do so, such as the size of the openings between spaces" (Guney, 2005; Guney, 2007; Guney and Wineman, 2008).

Luiz Amorim (1997) previously showed that modern Recife houses are arranged by a classification and grouping procedure, which arranges domestic life into sectors that are interconnected by transitional spaces. A fundamental modern perspective on function is discussed as a concern. "A paradigm that the sectors were an idea, which architects thought with" (Hillier, 1996) was the focus. A sample composed of 140 modern houses in Recife, Brazil constructed between 1950 and 1970 was studied. Houses are assessed by their "sectors' organization" (Amorim, 1997), which inspired the research on different Istanbul sectors herein. In Amorim's (1997) study, "Social rules seem to have defined the precise set of suitable architectural schemes to attend the conceptions and preconceptions of house use. If that is true, modern architects'

houses were not only an expression of individuality, which is generally affirmed, but also carried in themselves genotypic information as significant as in vernacular manifestations". In another paper, Amorim studied changes in domestic space organization over time in Recife, noting that "House organization has changed through time, constantly adapting to respond to requirements imposed by social relations, codes of behavior and family structure, as well as to express advances in building technology and to absorb new home appliances" (Amorim, 2001).

Research by Cunha (2005) also shows the function sectors and sector configurations in Brazilian domestic spaces. Apartment living was analyzed in the 1950s, 1970s and 1990s in such studies. Certain striking findings include "the split between a 'social' and a 'service' entrance", as well as the change in service-related spaces. Service-related spaces became less important from the 1950s to 1970s; spaces for meal arrangement, servants' bedrooms and utility areas decreased in number. Cunha's (2005) findings are similar to the conclusions for Istanbul herein. A recent study by Cunha (2012) also investigated middle class apartment spatial organization in Rio de Janeiro, Brazil, from the 1930s through the end of the 20th century, examining how different apartment plans can express numerous social changes during the time period investigated. The study was developed through relationships between the service and social sectors; a transition between such sectors was identified. The genotypes were investigated in that context.

Housing changes and specialization during the 20th century in Turkey, especially in Istanbul: milestones in apartment development

Turkey was undergoing zoning shifts, arrangements and changes in the 1930s. In this study, investigation and analyses related to the first phase begins with 1930s and includes 1930-1954. A later investigation phase included 1954-1980, during which laws and regulations were developed for flat ownership in 1954 and differentiated by multiple-housing development, the emergence of small scale property developers, and, afterwards, municipality-arranged parcel allotment. Syntax changes and domestic space planning evolution are addressed later through analyzing two phases after researching space specialization (Eruzun, 1980), differentiation, order, and sector changes in housing plan structures.

Milestones from the socio-economic and social changes in Istanbul

In the 19th century, Beyoğlu's city-center state reflected Istanbul's cosmopolitan structure; its population increased due to the rising number of non-Muslims (caused by the large number of embassies), which enhanced housing development. Such development in the 1930s initiated the first phase addressed herein. Whereas the population increase in Istanbul during the 19th century was threefold, the Muslim segment continuously increased; however, accommodating the population ethnically also became more important (Tekeli, 1993). This situation was the precursor to zoning shifts in Istanbul and one of the most explicit indicators of spatial change and transformation.

Beginning in the mid-1950s, the social and economic dimensions changed. The second phase began in the mid-1950s, wherein socio-economic changes and milestones due to technological and zoning arrangements overlapped. The rapid urbanization period (1950-1960) and Menderes zoning were also defining moments in this process.

The effect of zoning shifts in Istanbul: emerging milestones

The city was rapidly transformed into a western city profile between 1939 and 1950 by Mayor Kırdar, but expropriations increased housing problems (Unal, 1979). Istanbul's population rapidly increased after World War II, and the characterization of Prost's plans as leading to a stagnant city resulted in his being laid off in 1950. Afterwards, the rapid urbanization period (1950-1960) and Menderes Zoning Operations affected the city (Tekeli, 1993). Insufficient zoned land and housing supply were also important to this process (Edgu, 2003). Rapid urbanization also increased the urban land prices (Edgu, 2003); the "Possibility of the urban middle-class to pay the price of a parcel and construct a house gradually decreased" (Tekeli, 1997). Such conditions indicated a misperception in housing construction as well as arrangements in flat ownership and title. It is also important to address housing policy such that it overlaps with the house ownership (Tapan, 1996). Moreover, housing was approached as an investment, not necessarily a shelter. Such converging processes resulted in flat ownership (Edgu, 2003). The amended Article 26 of Land Register Law No 6217 in 1954 and the 1954 "Flat Ownership Law" generated the current conditions. This was the primary defining moment for the studies herein and began the second phase.

The effects of intra-residential technological changes: emerging milestones

One of the most important intra-residential technological changes affecting housing space in the scope of this study is the television, which has been observed in living or social spaces, such as the lounge, dining room and living room. The television has altered behavioral patterns and modes. With changes in use, space syntax and semantics also began to change; for example, television was watched in crowded groups in living rooms and lounges that were previously only used for guests since black and white televisions first entered homes (Tokgoz, 1979) (Avci, 2008) (Bilgili, 2009).

TV development also yielded new consumption patterns for city residents. In the mid-1980s, color television entered Turkey (Aydın, 2003). Accepting a new communication instrument that appealed to the masses, such as the television, as a component of socialization defined a new approach for this period (Becker et al, 1975; Tokgoz, 1979). Television was also examined scientifically as a component of socialization after the 1970s (Chaffee et al, 1970).

Television entry into the domestic space affected design decisions and inter-spatial relationships for the entire house plan due to the frequent use of the space where the television was located. Located in lounges or living rooms, television stimulated more frequent use of these and related areas, which affected the relationships among other

spaces in the house. The television was a technological innovation that affected spatial integration through space syntax.

Another important intra-residential technological change that affected multi-housing domestic space was central heating systems and the prevalence of central radiator installations in apartments. Doors inside the home were opened in houses with central heating. Spatial boundaries were lifted, and the organization defined by the stove-heated period was altered.

Apartmentalization in Istanbul from 1930-1980, its changes, and analyses of its significance

Analysis method

Space syntax provides significant data for an analysis method and is an important theory used to define the structural environment.

As a syntactic measurement method, the "Syntax 2D" software developed by "University of Michigan" was used, which was constructed using "Isovist" vision fields (Benedikt, 1979; Batty, 2001; Conroy Dalton, 2001; Edgu et al., 2012). The convex space concept used to analyze interspatial relationships through space syntax theory reduces different-size plans, which include spaces with relationships that are analyzed, to cellular spaces. The relationships among such cells and convex spaces are analyzed; Syntax 2D was used for such isovist analyses. In an isovist analysis, walls, furniture and other systems that obstruct sight in a space are considered to be walls and to affect the visual field (Benedikt, 1979; Turner and Penn, 1999; Batty, 2001; Turner et al., 2001; Conroy Dalton, 2001; Unlu et al., 2009; Edgu et al., 2012).

The parameters for an analysis using "Syntax 2D" are key for such research on relationships among different samples from 1930-1980. The "smallest grid cell" was defined to compare different plan samples using the software, which operates through grid fragmentation and wherein plans are digitally illustrated in the AutoCAD format (.dwg), then transferred to the "Syntax 2D" program in proportion to the real plan sizes. Consequently, the "smallest grid cell" was standardized for the program calculations using the net used area inside the domestic space in proportion to active grid cell number that have an impact on visual analysis in each plan sample.

Discussion on relationships using the concepts underlying the analysis method, assumptions and research method

An important decision related to the analysis method is to identify three distinct intra-plan areas (sectors) in different configurations of each plan and to analyze the syntax values for each area. Using the plan types and convex spaces inside such sectors, intra-plan space cells were identified and analyzed. These three sectors were differentiated as the "bedroom area", "living area" and "service area". The bedroom area included the bedrooms, bathrooms and interconnecting area spaces and related bal-

conies; the living area included the lounge, dining room, living room, apartment entry spaces, hall, related balconies, interconnecting area spaces and related extensions; the service area included the halls, hallways outside the first two areas, the kitchen, maid's rooms, cellar, office areas related to the kitchen, related balconies, restrooms and shower areas, and related intermediary spaces. This analysis structure is important for the analysis method and model.

Domestic space plan samples were selected from the Turkish Architecture Journal "Arkitekt", which was published from the end of the 1920s through the beginning of the 1980s. The samples were selected considering that apartment plan samples are designed based on one floor plan, which can demonstrate the development direction for a city and similar income-level households. The samples were from such neighborhoods as Nişantaşı, Cihangir, Ayaspaşa, Taksim, Maçka, and Harbiye through 1950. After 1950, Moda, Bomonti, Şişli, Bebek, Elmadağ, Etiler, Çiftehavuzlar and Suadiye were also included.

The syntax data used included Isovist area, Isovist perimeter, circularity, compactness, connectivity, depth and integration.

These data were calculated separately for each plan, including values for sectors differentiated as "bedroom area", "living area" and "service area". Bathroom and kitchen values were also calculated for each plan. The mean syntax values were calculated for the six aforementioned concepts by dividing the total data value for each plan by the grid count (Table 1 and Table 2). Provisional calculations were generated by arithmetically averaging the grid values for areas or a single space.

Analysis results

In phase 1, analyses were performed using 24 plans from 20 apartment samples; 13 plans from 11 apartment samples were analyzed in phase 2. Table 1 and table 2 show the data for phase 1 and phase 2, respectively. Figures 1 to 3 show the underlying logic from the plan analyses using a sample plan. The syntax trends from the analyses are discussed below.

Table 1. Selected Apartment Housing Plans and Syntax Analysis Results – Period 1 (1930-1954)

Construction Year	Name & Neighborhood	Net Used m2 / plan	Mean Isovist Area (+E6) m2	Mean Isovist Perimeter (+E6) m2	Mean Compactness (+E6)	Mean Circularity (+E6)	Mean Connectivity	Mean Depth (+E6)	Mean Integration (+E9)
1931	Park Apartment - Nişantaşı	164	285652	4124	58,85	63,01	662	2,33	1135
1932	Nan Apartment - Nişantaşı	95	241977	3476	67,81	53,25	562	2,10	659
1932	Hüsnü B. Apartment - Nişantaşı	132	272976	4019	66,64	63,48	636	2,22	946
1932	Mühendis Dervi Bey Apartment - Cihangir	121	245047	3509	67,70	55,18	569	2,34	760
1932	Bosfor Apartment - Ayaspaşa	135	280441	3549	78,75	49,41	656	2,31	922
1932	stiklal Apartment - Taksim	149	348980	4375	77,11	59,54	814	2,17	1434
1932	Melek Apartment - Nişantaşı	120	219102	3665	59,03	67,37	512	2,23	735
1933	Pertev Apartment - Taksim	151	283867	3587	76,85	51,44	656	2,52	854
1933	Ceylan Apartment - Taksim	216	423339	6029	67,49	92,44	990	2,19	2518
1933	Agop Efendi Apartment - Taksim	66	189903	3364	55,52	64,52	439	1,99	408
1934	skece Apartment - Maka	95	211039	3285	65,21	55,30	496	2,15	548
1934	Şeref Apartment - Nişantaşı	169	316005	4741	65,23	76,99	858	2,20	1998
1939	An Apartment - Taksim	108	228952	3577	64,99	61,09	533	2,35	557
1940	Doğu Apartment - Taksim	163	273152	3768	75,06	55,72	634	2,52	893
1946	An Apartmanı Maka 1	175	400738	3990	91,15	47,65	933	2,34	1802
1946	An Apartmanı Maka 2	97	225265	3019	71,79	42,88	520	2,39	525
1946	An Apartmanı Maka 3	120	298265	4017	70,76	58,77	692	2,01	1207
1949	Başaran Apartment - Harbiye	186	270806	3833	68,33	59,32	629	2,65	951
1950	Birgiler Apartment - Moda	100	203344	3175	62,82	55,89	474	2,27	507
1951	lbay Apartment - Bomonti	84	190004	3153	60,27	55,77	448	2,20	439
1951	Sadıklar Apartment - 5 li 1	160	265720	3274	81,77	46,78	624	2,64	817
1951	Sadıklar Apartment - 5 li 2	179	261289	2402	77,99	48,89	608	2,57	939
1951	Sadıklar Apartment - 5 li 3	187	345627	4066	80,57	53,81	801	2,34	1582
1951	An Apartment - Nişantaşı	198	332044	4466	72,47	67,20	767	2,42	1497
Period 1 Average		140,46	275647,29	3769,33	70,59	58,57	646,38	2,31	1026,83

Construction Year	Name & Neighborhood	Bathroom / Mean Depth (+E6)	Bathroom / Mean Integration (+E9)	Kitchen / Mean Depth (+E6)	Kitchen / Mean Integration (+E9)	Bedroom Area / Mean Depth (+E6)	Bedroom Area / Mean Integration (+E9)	Living Area / Mean Depth (+E6)	Living Area / Mean Integration (+E9)	Service / Mean Depth (+E6)	Service / Mean Integration (+E9)
1931	Park Apartment - Nişantaşı	2,27	779	3,05	297	2,35	996	2,20	1583	2,47	825
1932	Nan Apartment - Nişantaşı	2,41	138	2,17	294	2,40	273	1,93	922	2,22	249
1932	Hüsnü B. Apartment - Nişantaşı	2,43	445	2,65	257	2,25	715	2,10	1329	2,50	360
1932	Mühendis Dervi Bey Apartment - Cihangir	2,65	193	2,26	369	2,50	353	2,08	1043	2,36	334
1932	Bosfor Apartment - Ayaspaşa	2,55	209	2,54	248	2,40	665	2,18	1305	2,62	216
1932	stiklal Apartment - Taksim	2,69	239	2,53	234	2,35	723	2,02	2060	2,39	508
1932	Melek Apartment - Nişantaşı	2,48	173	2,65	172	2,32	478	2,01	1194	2,60	208
1933	Pertev Apartment - Taksim	2,85	228	2,82	289	2,68	493	2,31	1338	2,77	285
1933	Ceylan Apartment - Taksim	2,70	584	2,80	443	2,37	1228	1,96	3920	2,58	681
1933	Agop Efendi Apartment - Taksim	2,42	91	2,38	74	2,09	287	1,87	536	2,40	68
1934	skece Apartment - Maka	2,49	112	2,45	140	2,21	438	2,05	751	2,44	143
1934	Şeref Apartment - Nişantaşı	2,57	469	2,33	840	2,22	1620	2,07	3019	2,48	605
1939	An Apartment - Taksim	2,42	271	2,48	259	2,45	414	2,23	767	2,45	268
1940	Doğu Apartment - Taksim	2,50	355	2,55	412	2,58	749	2,41	1217	2,58	555
1946	An Apartmanı Maka 1	2,69	403	2,67	583	2,65	578	2,06	2971	2,55	708
1946	An Apartmanı Maka 2	2,59	197	3,19	99	2,44	363	2,07	808	3,37	85
1946	An Apartmanı Maka 3	2,56	174	2,30	500	2,19	641	1,78	1814	2,42	424
1949	Başaran Apartment - Harbiye	3,69	144	2,81	264	2,83	546	2,44	1657	2,68	506
1950	Birgiler Apartment - Moda	2,29	224	2,65	133	2,35	310	2,13	649	2,72	150
1951	lbay Apartment - Bomonti	2,39	144	2,45	154	2,27	333	2,08	625	2,33	263
1951	Sadıklar Apartment - 5 li 1	3,04	271	3,10	278	2,71	541	2,37	1474	3,07	271
1951	Sadıklar Apartment - 5 li 2	2,71	434	3,56	253	2,47	999	2,40	1185	3,07	279
1951	Sadıklar Apartment - 5 li 3	2,97	278	2,64	403	2,61	651	2,16	2178	2,69	384
1951	An Apartment - Nişantaşı	2,86	517	3,08	334	2,56	818	2,22	2382	2,57	885
Period 1 Average		2,63	294,67	2,68	305,38	2,43	633,83	2,13	1530,71	2,60	386,40

Table 2. Selected Apartment Housing Plans and Syntactic Analysis Results – Period 2 (1954-1980)

Construction Year	Name & Neighborhood	Net Used m2 / plan	Mean Isovist Area (+E6) m2	Mean Isovist Perimeter (+E6) m2	Mean Compactness (+E6)	Mean Circularity (+E6)	Mean Connectivity	Mean Depth (+E6)	Mean Integration (+E9)
1959	Birkan Apartments--Bebek	225	509322	4851	95,30	55,96	1198	2,46	2813
1960	Kervansaray Apartment--Elmadağ	156	365119	3650	93,56	41,67	850	2,42	1306
1962	An Apartment--Nişantaşı/1	132	282001	3533	75,51	49,44	655	2,22	1011
1962	An Apartment--Nişantaşı/2	164	351758	3911	85,48	50,74	824	2,18	1650
1966	Günaydın Apartment--Nişantaşı	177	315625	3952	77,28	53,86	707	2,50	1142
1973	Türksan Housing Complex--Etiler/1	96	229132	2870	77,93	42,18	535	2,23	557
1973	Türksan Housing Complex--Etiler/2	56	126285	2151	56,20	41,27	300	2,40	169
1976	Tekül Apartment--Çiftehavuzlar	113	240783	3320	75,07	50,62	563	2,20	750
1976	Tahincioğlu Apartments--Çiftehavuzlar	272	403795	4770	83,40	62,45	939	2,40	2494
1978	Yapı Kredi Bank Welfare and Pension Foundation Valikonağı Housing Complex--Teşvikiye	172	387668	4018	87,74	50,93	896	2,33	1775
1979	Sazak Building--Çiftehavuzlar	142	199839	2753	66,91	44,98	459	3,07	436
1979	Spot Building with Circulars Plan--Suadiye	108	209977	2758	74,26	41,38	493	2,33	534
1973	Tura Apartment--Etiler	124	300500	3457	83,00	44,54	707	2,15	1213
Period 2 Average		149	301684	3538	79,36	48,46	702	2,38	1219,23

Construction Year	Name & Neighborhood	Bathroom Mean Depth (+E6)	Bathroom Mean Integration (+E9)	Kitchen Mean Depth (+E6)	Kitchen Mean Integration (+E9)	Bedroom Area / Mean Depth (+E6)	Bedroom Area / Mean Integration (+E9)	Living Area / Mean Depth (+E6)	Living Area / Mean Integration (+E9)	Service / Mean Depth (+E6)	Service / Mean Integration (+E9)
1959	Birkan Apartments--Bebek	3,75	312	2,65	795	2,85	924	2,09	4902	2,73	721
1960	Kervansaray Apartment--Elmadağ	2,77	233	2,51	356	2,58	542	2,12	2224	2,67	322
1962	An Apartment--Nişantaşı/1	2,31	522	2,36	454	2,29	611	2,01	1592	2,58	275
1962	An Apartment--Nişantaşı/2	2,71	277	2,42	653	2,36	724	1,89	2965	2,44	638
1966	Günaydın Apartment--Nişantaşı	3,29	317	2,59	436	2,61	768	2,31	1623	3,03	265
1973	Türksan Housing Complex--Etiler/1	2,56	140	2,39	230	2,35	303	2,07	876	2,39	230
1973	Türksan Housing Complex--Etiler/2	2,43	69	2,47	96	2,50	82	2,19	271	2,45	89
1976	Tekül Apartment--Çiftehavuzlar	2,59	183	2,47	290	2,34	469	2,03	1106	2,44	317
1976	Tahincioğlu Apartments--Çiftehavuzlar	2,52	1107	2,50	1328	2,38	1764	2,21	3579	2,74	976
1978	Yapı Kredi Bank Welfare and Pension Foundation Valikonağı Housing Complex--Teşvikiye	3,03	244	2,31	969	2,65	602	1,99	3188	2,37	882
1979	Sazak Building--Çiftehavuzlar	3,63	118	3,82	136	3,20	222	2,71	813	3,82	136
1979	Spot Building with Circulars Plan--Suadiye	2,59	150	2,40	362	2,49	283	2,13	870	2,40	362
1973	Tura Apartment--Etiler	2,55	207	2,34	439	2,37	569	1,87	2117	2,37	393
Period 2 Average		2,83	298,38	2,56	504,15	2,55	604,85	2,12	2009,69	2,66	431,23

The arithmetic mean was calculated based on syntax concepts and considering the syntax grid values for relevant singular spaces or differentiated areas. The sample plans demonstrating grid fragmentation and area structure are provided below (Figures 1 to 3).

The intra-residential "net used area" average phase value was between 140 - 150 m^2 when phases were averaged separately. The average "net used area" for the 1930-1954 samples was 140,46 m^2 and 149 m^2 for 1954-1980.

The closeness of average net residential m^2 values for each phase upon averaging the samples from two phases is an important assumption used for such analyses that enables their significance. The closeness of the average values for the plan sizes from different phases facilitated a comparison between these phases, which feature plan types with various sizes. The closeness of the average values for plan sizes also enabled a comparison between approximate sizes that were directly proportional to the "23 grids per m^2 value structure/smallest grid cell" for analyses. Thus, such values facilitated interpretation via such comparisons using many calculated values, especially the mean integration and mean depth values.

Figure 1. Example Plan Analysis, 1933 Pertev Apartment, Taksim (Phase 1), illustrating the division for the three primary areas (through different colors). 1-service area, 2-living area, and 3-bedroom area, wherein the syntactic analyses were performed

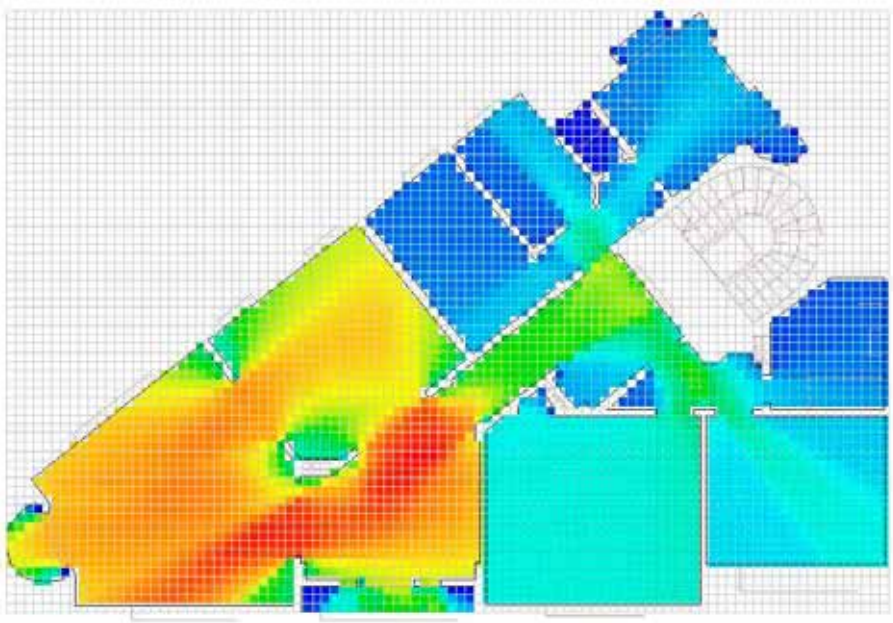


Figure 2. 1933 Example Plan Analysis, Pertev Apartment, Taksim, illustrating the allocation of the 23 grids per m^2 for the syntactic analysis, which is superimposed with the visual representation from the integration analysis

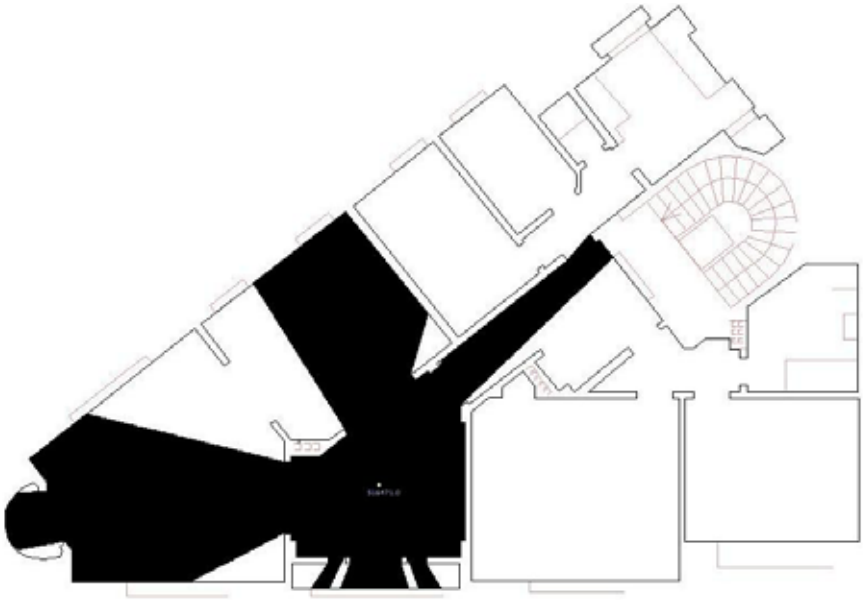


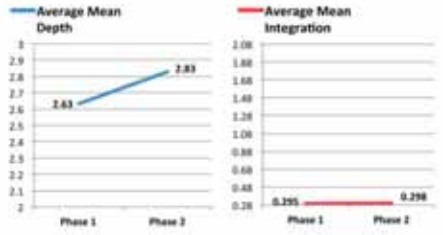
Figure 3. 1933 Example Plan Analysis, Pertev Apartment, Taksim, illustrating an example Isovist point and its visual field area

For the analyses, the average values for the first and second phases were compared using the mean values based on space syntax concepts, and the study tried to understand how the variation trended between these distinct phases. Diagrams addressing the variation tendencies of the mean values between the two phases are provided below (Tables 3 and 4). These diagrams and the above charts (Table 1 and Table 2) were considered together to better understanding the results herein.

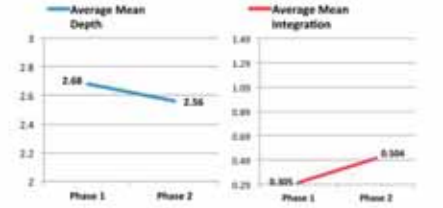
The trends indicated in these charts involve results that compose the essence of this study. Shown in Table 3, the average mean integration value (considering the average for each space in a plan and then average for all plans) rises from 1026 to 1219 during the transition from the first to second phase, which is an extremely important finding. When the reason for this rise was investigated, it was observed that the effect from the mean integration value for living areas rose to 2010 during the second phase, whereas it was 1531 level during the first phase, which indicates a significant effect. The living area comprising the lounge, living room, and housing space entry transformed into more integrated spaces, which can be interpreted as a result of the changing state of lounges. Living area rooms were used extensively due to the television, which began broadcasting in 1952 in Turkey, and became commonplace in spatial construction by the 1970s . Of course, television is not the only reason for this change: heating systems were as influential as television; inter-spatial boundaries were removed, which opened doors and supported such conditions. In addition, due to the increased population and socio-economic changes, the living area became more integrated. The depth value for the living area remained almost unchanged during the second phase, whereas its integration was stronger, which was due to less change in its allocation within the plan.

Table 3. Changes in Syntactic Values Between Phases 1 and 2. The Plan Averages for the Average Mean Depth, Average Mean Integration, Average Isovist Area (m2), Average Isovist Perimeter (m), Average Compactness, Average Mean Circularity and Average Mean Connectivity Values.

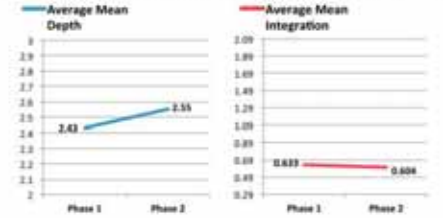
Table 4. Changes in Syntactic Values Between Phases 1 and 2. Averages for the Bathrooms, Kitchens, Bedroom Areas, Living Areas and Service Areas for the Average Mean Depth and Average Mean Integration Values.



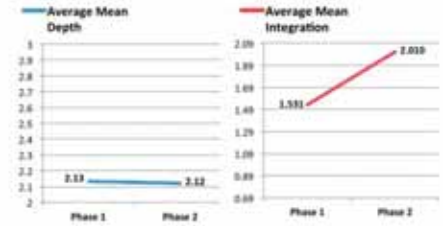
Change of syntactic values between the Phases 1 and 2 | Average of Kitchens



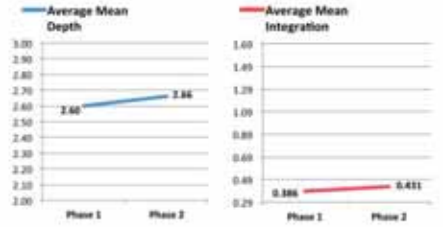
Change of syntactic values between the Phases 1 and 2 | Average of Bedroom Areas



Change of syntactic values between the Phases 1 and 2 | Average of Living Areas



Change of syntactic values between the Phases 1 and 2 | Average of Service Areas



Among the phases shown in Table 3, the mean plan depths, which showed an increasing trend from the first to the second phase, were not strong but provided evidence for gradually deeper areas. If we consider that the mean integration (Table 3) increased sharply by shifting from 1026 to 1219, the mean depth increase for the entire plan during the second phase shows strong deepening in certain areas. The increase in the mean depth for the service area (Table 4) and bedroom area (Table 4) shows a general deepening in the plan. Despite deepening in these areas, the trend was more shallow/integrated (Table 4) only for the kitchen space during the second phase, which is notable; the trend for the mean depth value decreased from 2,68 to 2,56. In the second phase, integration increased significantly for the kitchen space (Table 4), which is an important result and is demonstrated in the shift from 305 in the first phase to 504 in the second phase. In this case, it is important to note that the integration for both the kitchen and the living area spaces significantly increased in the second phase. Importantly, in the second phase, the kitchen space transformed into both a shallower space through the decreased mean depth value and a more integrated space within the full plan through an increased integration value. This situation stems from the varied spaces included in the service area, which shifted away from a closed internal setup, thus creating a deeper space, in the second phase.

Whereas service area spaces composed a greater m^2 during the first phase and included maid's rooms, internal hallways, office rooms and restrooms, the space decreased during the second phase; even though the kitchen space became shallower, the plan separated restrooms and service rooms, and singular deep spaces emerged.

Considering the bathroom space, although integration values in the plan were similar for both phases (Table 4), it gradually deepened (Table 4) due to the deeper bedroom position (Table 4) in the second phase.

Conclusion

When the relationships between the two phases are analyzed in the context of spatial changes, the convex spaces change in the second phase where the dimensional data are gradually differentiated. Such conditions can be interpreted as evidence of change and the shifting of fields comprising many different spaces in the first phase towards a single space in the second phase. The circularity value gradually decreased during the second phase; in the first phase, the plan structure included entry fields or hallways; the results support a trend wherein the center was near the hall, which was the most important dispersion field in the bedroom area in the first-phase samples. The living area space comprised three, four or more convex spaces in the first phase; importantly, this area shifted towards a singular living area in the second phase, and the integration valued significantly increased. Due to changes in zoning rules and different parcel widths and lengths, we observed a shift away from convex spaces with dimension data towards convex space geometries with different dimension values consistent with such rules.

We also noted a general trend wherein the mean circularity value decreased in the second phase due to diverging areas and connecting areas with narrow interconnections in the plan organization. For the second phase, we observed a structure wherein convex space fractures in the plan continuity decreased the mean circularity; the mean circularity tended to decrease for structures wherein the interconnecting areas tightened, narrowed and concentrated at a single field with a high mean integration.

Finally, bathrooms showed similar trends in the first and second phases through their integration value; a deeper structure through the mean depth value and increasing connection with the bedroom area yielded a deeper structure in the second phase, likely due to privacy considerations.

Revealing relationships between space and socialization, the space syntax theory facilitated discussions on social changes via numeric analyses. Space syntax enabled us to analyze different morphologies quantitatively, and the differences, similarities and changes in the samples between two phases and among each other were analyzed. Isovist syntactic analyses were used herein.

Finally, the relationships that affect housing space development are physical organizations, such as technological development, environmental factors, a zoning change or a set of changes, and developments in sociological organizations related to human ecology over time. The framework for the conceptual infrastructure comprised five primary sections, which were determined by analyzing the relationships and additional theories in this context. Ecology-based theories, culture-related theories, environmental perception- and cognition-based theories, semantics-based theories, and space syntax theories form the basis for such sections. Configuring housing space is based on the reciprocal relationships of the factors emphasized in the theoretical background.

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UNEXPECTED CHANGES AS A PRINCIPAL FACTOR OF URBAN DISORGANIZATION

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Abstract

This research compares two significant moments in the population evolution of Buenos Aires: immigration from Europe, straddling the nineteenth and twentieth centuries, and immigration from interior provinces in the middle of the twentieth century. The idea is to compare the rhythm of immigration in the last years of the nineteenth century and in the first years of the twentieth: people with a European cultural background occupied plots of urban land to make their houses on, and immigration originated in the 1930s, when due to the economic crisis in Argentina in the countryside and the national industry, there was a massive migration of people from the countryside to the capital. This comparison seeks to draw conclusions: in the same social, cultural and urban context, close in time, there are two phenomena of mass migration to the city of Buenos Aires, with quite different results. In the first case this increase in population means an integrated settlement built from the standpoint of the social and the urban, while in the second we talk about the slums: "*villas miseria*".

The method of analysis is to make a systematic search in the vast literature on the growth of the greater metropolitan area of Buenos Aires and the planning and sequential mapping. Research is completed with direct input from researchers and active participants in the growth processes. We believe it is interesting to compare these two moments of Buenos Aires' convulsed growth. The intention is to compare the form of the city, the occupation of land, the density and the management of the problem. The typology of housing and the form of the public space that is generated are also considered important. The goal is to see the similarities and the differences between these two processes and to see if it is possible to apply some conclusions to provoke the transformation of these unfortunate settlements, "villa miseria", and making them an integrated part of the city.

Keywords: Greater Buenos Aires, slum, villa miseria, urban disorganization, urban process

The migration process and occupation of land

Immigration to Buenos Aires in the middle of twentieth century was not planned by the government. It was the consequence of economic changes that cause the migration of people from land in provinces to Buenos Aires. It was a natural migration and the city was not prepared for that increase of citizens; they came from less developed areas in cultural and economic terms, and the increment of citizens happened in a very short period of time. Society and government were not prepared to solve problems derived from this immigration. The growth rate of the urban population was higher than the growth of the industrial population, prompting a mass marginalized production process or an unstable position. This brought about a rapid expansion of the metropoli-

tan area, along with the consolidation of precarious forms and 'illegal' habitats, as well as the villas (see Table 1).

In the decade of the 1930s there was a worldwide financial crisis and then immediately after, the Second World War, from 1939 to 1945, profoundly modifying the Argentine economic structure. Agricultural exports finish the cycle and a stage of substitution of imports for local goods begins (Torres, 1993). In this process, Buenos Aires was the pole where the centers of production are located. The city and the bordering areas of the province constitute the Greater Buenos Aires.

In the period from 1940 to 1960, the period under study, we see that there is a new recovery immediately after the end of the war, and a new immigrant quota of the rate of population growth for European immigration. But there was also an immigration of Argentine settlers who generated an exodus of the population from the interior to the Capital, and because of the Capital's saturation and the facilities of acquisition of lands in the area of the Greater Buenos Aires, they settled in that area.

Between 1944 and 1948 the manufacturing production increased by 40 %. In the period 1935-45 the percentage of the population of Buenos Aires was 19.3 % and it happened to be 14.8 % in the period 1945-60, while the Greater Buenos Aires was 10 % in the period 1935-45 and 18.9 % in the period 1945-60. A new phenomenon started in the immigrant population who had been purely European even in the 1940s. The population of bordering countries was increasingly absorbed - 4% of the immigration in 1947 and 8% in 1960, as the beginning of a migratory movement, which since then has become even more accentuated.

Table 1. Population of Buenos Aires from 1869 until 1970, the evolution of the relevance of the Capital Federal versus Great Buenos Aires."

YEAR	CAPITAL FEDERAL	TOTAL GREAT BUENOS AIRES
1869	180.308	197.633
1895	662.198	732.375
1914	1.575.814	2.011.862
1947	2.981.043	4.718.766
1970	**2.972.435**	**8.468.674**

These economic processes and the growth of the population in a very short period of time, a phenomenon that was not foreseen, not only in Argentina, found a country lacking housing policies for these masses that arrived in the area of Buenos Aires and especially in the Greater Buenos Aires. The former city was already saturated because of the previous housing policies. People with low incomes had to found an alternative. At this stage, Buenos Aires modified the building code to be able to absorb more density, but except for certain actions of housing policies, this was to lodge population with a medium or high income.

Immigrants' new quotas occupy zones of fiscal lands, especially in the southern area of the city, bordering on the Riachuelo, flooding zones that were not still devel-

oped and the zone bordering property of the Retiro train terminal, also near the port of Buenos Aires, a free band between the train routes and the luxurious constructions of the Avenue Leandro N. Alem.

The characteristic of these urban emplacements that differentiates them from the urban structure of the city is the disappearance of the grid and the "*loteos*" of 8.66m that characterize both the city of Buenos Aires and the Greater Buenos Aires. The emergency villas, with a higher density than the plot that surrounds them, were located closer to the work areas than those who settled in the ring around Avenida General Paz, the boundary of the Capital. The housing was, at this time, made of wood and cardboard and they did not have water services that the "*colectivo*" form of the network adopted when it was near and they obtained electricity by getting hooked up to the public network.

Villas Miseria

The organization of "villas miseria" began as spontaneous neighbourhoods inside the city (see Figure 1). This phenomenon increased until today because of new migrations from poorer frontier countries. The urban process was so rapid that society and the city could not build a proper housing development to shelter these people. Urban dysfunctions must be foreseen before the problem begins. If not, it is impossible to solve. Those neighbourhoods, almost cities, are politically, socially and technically very difficult to integrate inside the city of Buenos Aires. When society is able to understand what happens, problems are approached spontaneously, without being integrated in the planning of the city.

Figure 1. The Villa 21 – 24 - NHT Zavaleta is an informal settlement placed in Buenos Aires. It is the biggest and most populated "villa miseria" in the city.

The evolution of the city

The first period refers to the influx of Europeans, visible from the 1880s, which intensified in the last years of the century and the first years of the next. As we have seen, the planning of the city, which covered 4,000 hectares, in 1889 added 14,000 hectares more. At this time, except the 30,000 hectares covered by London County, these18,000 hectares exceeded the jurisdictions of the great European capitals: Paris, Berlin, Vienna ... cities, on the other hand, with a lot more people than Buenos Aires (See Figure 2).

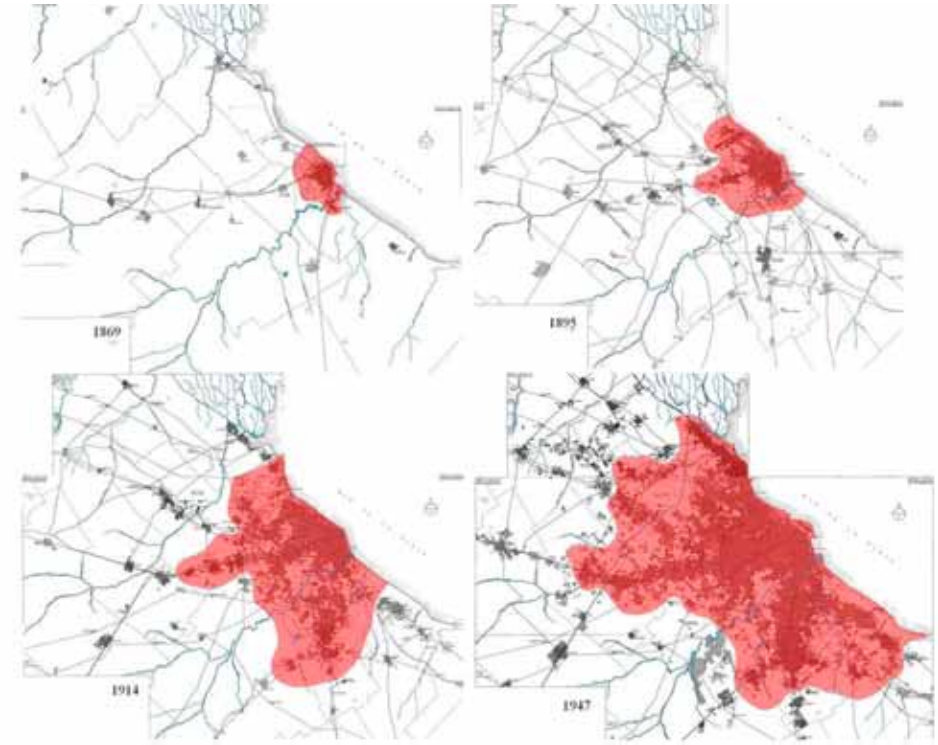

Figure 2. The growth of the city in surface from 1869 until 1947.

The city "[...] grows more and more, it seems that you see it growing up, or rather that you hear it growing: plain going forward filling the huge board, aligned straight to infinity, numbered to infinity ... and it feels so great, that there comes a time when you see it does not seem like a big city, but a city map on canvas done by a surveyor dreamer" (Rusiñol, 1910).

It grows, opposite the European urban experience, a city emerging from nothing: the endless pampas. A grid layout abstract, with square blocks 120 m^2 and lots measuring 10 varas wide - 8.66 m - with variable background depending on the location, to the center or the corner of the block. The grid plots and gives meaning to all the new city, as a powerful invisible warp, giving a unity of form, the block which contains all the social and cultural heterogeneity (see Figure 3).

Five decades later, in 1936, this territory wass already completely developed, and so the annexation was not perceived. The same principle of the regulator checkerboard is applicable outside Buenos Aires Federal District, forming an emerging metropolitan region (Gorelik, 1998).

In the 1940s, the government of Perón tried to solve the problem of inhabitants' arrival in Buenos Aires by promoting the division into plots of the Greater Buenos Aires. The lots could be acquired in quotas and practically without interest. The subdivision of those enormous pieces of land was highly profitable for the former owners.

There was a previous urban structure inherent in the property; the front of the lot measured 8.66m (10 yards), forming regular square blocks. The streets were in general made of soil, except those prepared for the circulation of "colectivos", a versatile transport that, at that moment, took care of communication with the capital.

At that time the proliferation of villas was halted. In time the streets were improved with paving, but still today, there are zones without municipal supply of water or sewers – they use wells and individual septic tanks.

As time went by, streets were becoming more urban and in those neighbourhoods certain basic social facilities appeared, such as schools, the municipality and the church.

Besides the service of "colectivos" the trains that went to Buenos Aires completed the system of transport.

At this stage, some plans of housing appeared, but they just relieved a small part of the problem. In addition, the population of the country was increasing and 50% was concentrated in Buenos Aires and the Greater Buenos Aires; today there are almost 20,000,000 inhabitants.

In 1955, with the military government, the housing policy changed and in 1970 the military government cleaned up the "villas miseria" in Buenos Aires.

But when the democratic government returned the Villas returned as well to be increasingly populated. Besides, the mass of population who commuted through the Greater Buenos Aires towards the Capital collapsed the scanty systems of public transport and needed more and more time for their journey, and the new inhabitants coming from the countryside filled up the villas.

The evolution of housing

Plots measuring 8.66 m on the street side appeared, known as the "middle courtyard house", "*casa de medio patio*", or "sausage house", "*casa chorizo*". The plan was the result of half the minimum Colonial Courtyard House. Rooms were 4 m^2, 4 m high with another 4 m for the yard and gallery between the yard and the rooms. There were two or three yards, and two or three rooms per yard. The access door from the street was asymmetric. The kitchen and toilet took up the bottom of the house to ward off odors and smoke. This type of formal composition remained stable for over 40 years. It was the benchmark for a variety of collective housing types in the city (Díez, 1996).

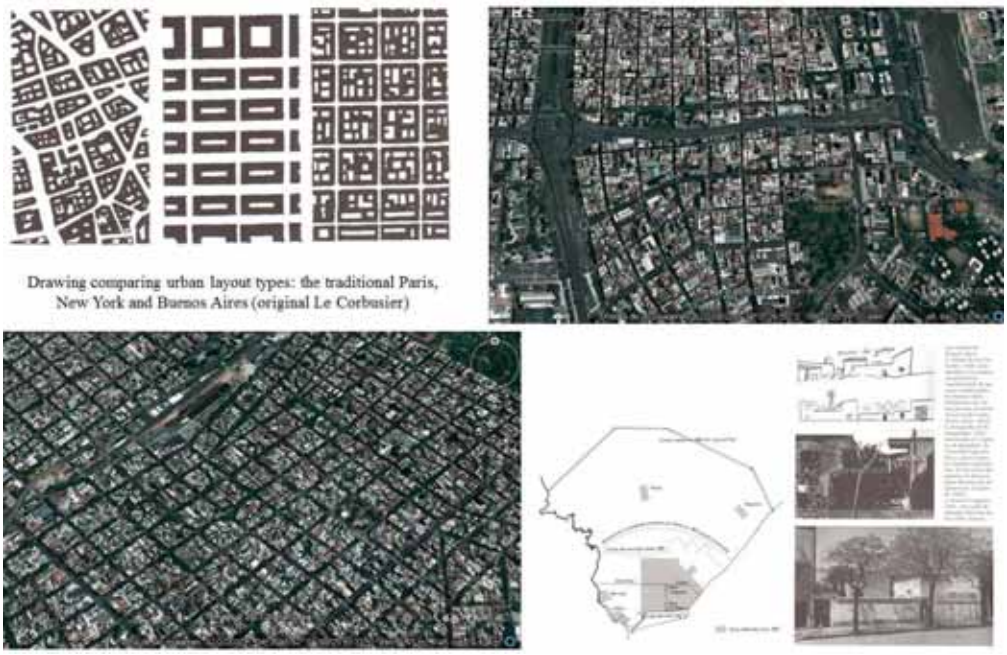

Figure 3. Comparison of several patterns of urban tissue.

This detached house evolved with the demand for housing and width restrictions and minimum in row housing. It reduced the size of the housing and was aligned along a corridor. Now every house had only a courtyard and two rooms, a kitchen and toilet. These services were smaller, 2 m high with a service room above them with access from the courtyard.

So far we have talked about single-storey houses. The process also thickened vertically on the ground floor as houses overlapped one or two floors of houses. "Overlapping sausage houses" - "*Casas chorizo superpuestas*" -it had become a collective house.

This provision arose simultaneously with the "tenement sausage" "*conventillo chorizo*" (1880-1915). With the same setup, it worked as a tenancy, where every room was occupied by a different family sharing the kitchen and toilet.

The densification process incorporated the stacking elevator (1895-1920) bringing the number of plants to five, "rental sausage building", "*edificio chorizo de renta*". There was usually a business on the ground floor and four apartments above.

The suburban plots of Greater Buenos Aires underwent a similar process of densification but which usually maintained the property of the house in one family. The front of the plot measuring 8.66 m resulted in the "middle garden house", "casa de medio jardín", a medium-sized building surrounded on the front, back and one side by a garden (see Figure 4).

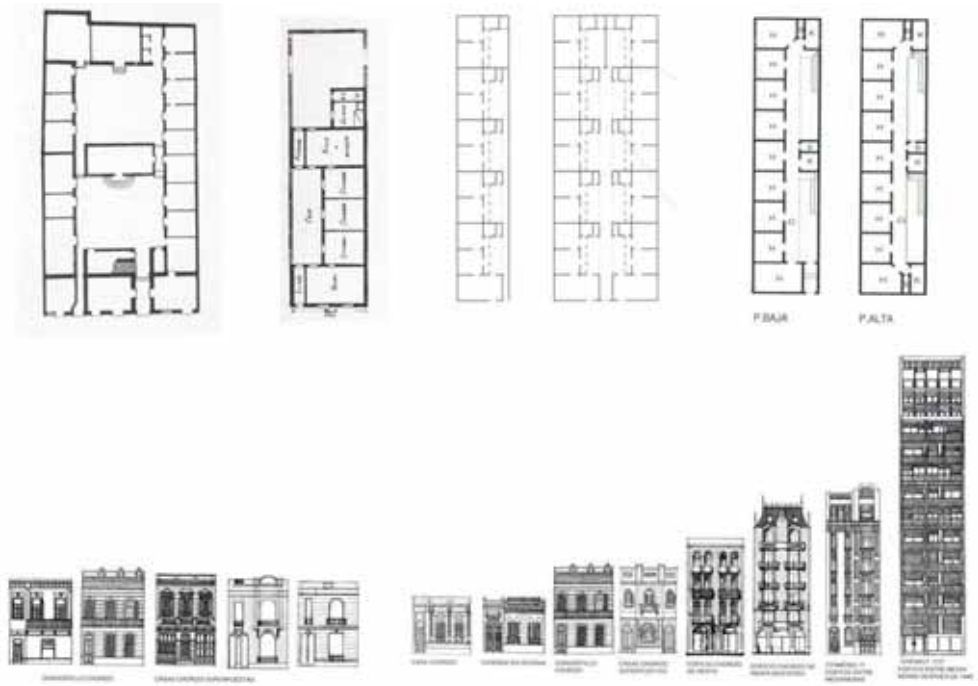

Figure 4. The evolution of the building typology at the original plot.

The result was heterogeneous since it developed in direct relation to the future of the owners, but there was a willingness and integrated regulation, both social and urban. This order and scale identification, pampa-checkerboard-block-lot-house, resulted in a valuable combined portfolio of residential architecture. Today the rehabilitation of the "sausage houses" - "casas chorizo" - is an important real estate business.

Decrees were also promulgated at this time to facilitate access to housing: 1948 / Law 13,512 / NATION: concerning Horizontal Property, allowing for the first time the subdivision and separate sale of different units in the same multifamily property. The purpose of this law was to "facilitate access to private property for all Argentines".

This is an important difference in comparison to the next period, comparing housing legislation found in 1967 / Law 17,605 / NATION: Plan to Eradicate Slums "Villas de Emergencia" (PEVE). While it focused on the problem, it resolved merely ministerial organization, objectives and planning at national level which did not derive in any effective action.

In the "slums" - "villa de emergencia" – the relationship of building typology and urban morphology was not evident, since a model city had not been proposed. The settlement occurred with no order, no beam to support it ... The emergency situation in 1930 was the same as in 1880, fifty years earlier.

In time, many houses of sheet metal and wood became brick houses, self-built, with a room added vertically. In some villas, the inhabitants managed to have the basic services of water, sewers and electricity installed.

We have seen some similarities and differences between these two processes, so now we are going to see if it is possible to apply some conclusions to provoke the transformation of these unfortunate settlements, "villa miseria", and making them an integrated part of the city. The city was not prepared for that increase of citizens, they came from less developed areas in cultural and economic terms, and the increment of citizens happened in a very short period of time.

It does not seem that housing is the worst thing in these marginal urban spaces. The common spaces, the services, the integration with the city, the work of the company for education and integration are the most relevant aspects to solve.

From 1930, the"villas" grew inside the city and outside in the metropolitan area, where the problem was actually much more important because of migration from other countries.

This information was obtained by direct interviews with the actors involved in these transformations of the city, planners and citizens, as well as written documentation of processes. The information was also obtained from the comparative study of the photo-mapping planes and demographic data reflecting the evolution of the city in these periods.

Conclusions

There was a theoretical discussion on the need for a supra-municipal planning for Greater Buenos Aires (Della Paolera) in 1929, while proposing this type of planning for New York and London. But the problem of Buenos Aires is different. There is no territorial hierarchy outside Buenos Aires, which means that there is no type of centrality, and it is not generated because it is not planned.

London and New York raise the generation of new neighbourhoods or small new towns. In Buenos Aires only subdivisions were made for the construction of housing blocks, 120x120m, without gaps or fixtures. The urgent thing was to accommodate the mass housing of immigrants who arrived in less than 10 years. Everything that was built outside Buenos Aires planned in 1925, "Organic Project for the Development of the Municipality. The Master Plan and Federal Capital Reform" (Noel Plan), answers to this spontaneous grid.

This massive occupation of Buenos Aires prevented the collapse of migratory mass housing outside the Federal Capital, while the checkerboard urban services only appeared decades later. But there was a complex self-organized transport system "*los colectivos*", supporting rail. The founding purpose of the train had been to take goods to the harbour, but it was used to transport suburban workers.

In the capital, as everything was developed, in the urban voids "*villas de emergencia*" sprang up - "slums". Pockets of soil in the creek flooded in the south of the city and village 31 near the harbour and the train stations reaching Retiro. This was the inevitable response to a failure of management and a lack of interest in planning any-

thing for people with low income and low culture, something that contrasts with what happened in the city in the early twentieth century with European migration.

The grid subdivision provided results in an order that supports changes and overruns and the ability to host good architecture. It is very difficult for slums without any imposed order (chaos) to form a city and transformations, when possible, are complicated by the possibility of generating quality urban spaces If we leave the development and planning of cities to chance, the result is chaos: disorganization, disintegration, marginalization and exclusion. The extreme case is presented by the Kowloon Walled City: City of Anarchy.

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CONSTRUCTING ALTERNATIVE SPATIALITIES IN KAMPALA CITY: TWO CASE STUDIES

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Abstract

Central Kampala, like many colonial cities, was modelled on modernist planning ideals of functionalism and visual aesthetics of science, logic, and order, to be reflected in its physical form, its life and functioning, and in its citizenry. These ideals pre-supposed a formal, elite, un-emotive and logical being, with a Western outlook, as opposed to cultural man that assigned meaning to place.

The modernist city resisted alternative spatialities by enforcing strict planning and zoning laws, which assigned functions and people to specific areas in the city, directed public life, and excluded people who did not fit the definition of modernist citizenry. But by subverting these laws in countless ways, the previously fringe city in all its diversity embedded itself in the space of modernist Kampala, becoming ever more central, and making of the modernist city something other than its surface presentation.

An ethnographic study explores how two people from alternative poles encounter the city, negotiate its rules, and construct different spatialities out of diverse but interconnected practices in the space of the one physical city.

It emerges that these practices which are often invisible and fluid, are of a more complex logic and order than has previously been acknowledged and that the physical, functionalist, city is but only a medium for those diverse practices.

Keywords: Public Space, Kampala, Diversity, Spatialities, Urban Practices

Introduction

It is often assumed in modern non-western cities that people experience the city in the same way, and that one account can represent the experience of all the people. This arises when the physical aspects of the city which are an "*expression of function, structure, technology, construction and materials"* are assumed to comprise its total experience and perception and since the physical does not change regardless of the person who is looking at it, it is thought that the city is the same to all people at all times (Malik, 2001:875). On the contrary, people's experiences will vary depending on which places in the city they inhabit and how they mentally and physically structure the parts. Moreover individual social, cultural and economic positions affect the understanding that each person attaches to specific spaces and to the city as a whole. This paper is based on a study that explores how people *from* (not people *of*) different social and economic groups in Kampala experience and perceive the city, and how

they therefore construct their spatialities of the city[1]. Two of the case studies in the research are presented and discussed in this paper[2].

The study is located in the Central Business District of Kampala. Present-day Kampala developed as a township of European colonial settlement adjacent to the *Kibuga* which was the administrative capital of the indigenous Buganda Kingdom. Although the Kampala Township as a whole was more formal in its appearance and outlook, there was diversity in the physical, economic, and social character of its districts. The diversity has grown out of a century of colonial and post-colonial modernist planning ideologies that reinforced separation of trading, commercial, and administrative functions, and segregation of the races and social classes according to their designated roles (Southall & Gutkind, 1957).

Bands of green belts, swamp and wasteland, stretches of industrial areas, and zones of Asian settlement and economic occupation were used to buffer the Kampala township from the adjacent *Kibuga,* and to give access only to those spaces where the presence of other races did not threaten the privacy, security, and exclusivity of the Europeans, and where for administrative and economic reasons, it was necessary to interact with the other races. Africans were not allowed to own shops, or businesses in the city. They resided mostly in areas outside the city in a semi-rural setting or in the slums that had sprung up outside the European city to accommodate immigrants to the city (Southall & Gutkind, 1957).

Today the city has expanded to incorporate the trading towns and residential neighbourhoods that had previously been outside its original boundaries. The formerly colonial Township has however retained its role as the core of the city, and still the place where people of different social, and economic groups come each day to work. The territoriality of this part of the city remains evident in its spatial demarcations and in the spaces that different social and economic groups predominantly occupy. While the administrative, commercial, and residential zones (Nakasero) have a predominantly, formal, educated, well off, and elite population of professionals and civil servants, the zones around the main public transport terminals, markets, and trading zones (Nakivubo), draw a daytime population that is predominantly uneducated, and poor. The latter is located at the fringes of what was previously the colonial Township, bordered by the *Kibuga* on the other side.

The conceptual framework

The purpose of the study was to explore how people drawn from different social and economic groups construct their spatialities of the city. The study used the conceptual framework of place which according to Relph (1976: 61) is defined by the physical aspects of place, activities, and by the meaning that is assigned to a place. However

1 In Namuganyi (2011). Four cases were studied. The four cases were a hawker, two ladystreet vendors, a lady banker, and a boutique and beauty salon entrepreneur.

2 The two cases that are presented in this paper are Ssewava the Hawker, and Barbara the Banker.

Lynch (1960) observed that because a city is so big it is not perceivable as one unit at any one moment. Rather the perception of the city is gathered by experiencing fragments which are physically and mentally structured together and assigned meaning. The model of identity, structure, and meaning that is developed after Lynch may thus be seen as a variation on Relph's model.

Kevin Lynch's idea of fragments that are mentally and physically structured together converges to some extent with De Certeau's navigational city. However fragments, trajectories, and simple meaning alone are not sufficient in defining the intricate and detailed everyday practices by which its inhabitants[3] construct the city "*because a trajectory is drawn, and time and movement is reduced to a line that can be seized as a whole by the eye and read in a single moment, as one projects onto a map a path taken by someone walking through the city*" (De Certeau, 1984:35). Rather, beyond fragments and trajectories, spatial practices are defined by the many hidden, ephemeral and detailed acts and thoughts of "consumption", or "*secondary production hidden in the process of* [*its*] *utilization*" (De Certeau, 1984:xiii), (which De Certeau refers to as tactics), that manipulate, subvert and makes use of the conversely more static, more regulated, and imposed systems (which he calls strategies).

By their very relationship to one another and by their manner of functioning, the two modes of operation, the strategy and the tactic which, though the latter embeds in the former, are defined by differing characteristics. De Certeau (1984:29) accordingly observes of strategies and tactics, that:

> Although they remain dependent upon the possibilities offered by circumstances, these transverse tactics do not obey the law of place, for they are not defined or identified by it. In this respect, they are not any more localisable than the technocratic (and scriptural) strategies that seek to create places in conformity with abstract models. But what distinguishes them at the same time concerns the types of operations and the role of spaces: strategies are able to produce, tabulate, and impose these spaces, whereas tactics can only use, manipulate, and divert these spaces.

He notes that the strategy "*postulates a place that can be delimited as its own and serve as a base from which relations with an exteriority composed of targets or threats can be managed*". (1984:36). He refers not only to physical places, but also to places of power (the property of a proper), and to theoretical places (systems and totalising discourses) (1984:38) that articulate those physical places. In the sense of a city these might be correspond respectively to the physical space of the city, the institution of the city including the technocrats of those institution, and thirdly, systems, mechanisms and procedures of the city (1984:94).

The characteristic of being located or anchored and having exteriority is important because it enables strategy to "*capitalise acquired advantages, to prepare future expansions and thus give oneself a certain independence with respect to the variability of circumstances*" (1984:36). This implies growth, stability, and autonomy. Moreover

3 Lefebvre (1991 [1974]:43-44) is averse to this term because it implies passive use.

its being thus placed affords strategy a "panoptic", overall distant view, plan and control of the whole. The strategy hence suggests discipline, power, and cold, objective, disinterested knowledge at one with science. The strategy aligns with the modern city, with the city of planners and technocrats, with the abstract.

By contrast, De Certeau argues, the tactic lacks a place of its own. It operates in, not away from the space of others. It therefore does not have a wide overall view. It is short-sighted and lacks a long-term plan. It acts as it goes along and takes advantage of the opportunities offered by the moment, action by action, in close view. Because it does not have the space to stand back and examine the whole, it selects fragments. It is as such mobile, flexible, and unpredictable. It aligns with the "the pack donkey city" (Le-Corbusier, 1927), with the social and cultural city, with the lived city, and with bricolage. De Certeau (1984:31) observes that:

> [A] rationalised, expansionist, centralised, spectacular and clamorous production is confronted by an entirely different type of production, called "consumption" and characterised by its ruses, its fragmentation (the result of circumstances), its poaching, its clandestine nature, its tireless but quiet activity, in short by its quasi-invisibility, since it shows itself not in its own products (where would it put them?) but in an art of using those imposed on it.

De Certeau's revelation of the view from a skyscraper in Manhattan, and of the renaissance perspective drawing of the city (1984:92) demonstrate the ideology of a totalised panoptic outlook, that in the first instance, puts the city at distance for contemplation as one might an object, aloof, and that in the second instance, creates a fiction or a utopia, a picture, arguably possible, but quite disconnected from the reality of being on the ground where the detail, the individual beings and their action are visible, where those in the scene, on the street cannot see the whole, but rather must in their movement piece together the fragments. De Certeau (1984:93) reveals something of the city of a spatial practice.

> The ordinary practitioners of the city live "down below," below the thresholds at which visibility begins. They walk – an elementary form of this experience of the city; they are walkers …whose bodies follow the thicks and thins of an urban "text" they write without being able to read it. … The networks of these moving intersecting writings compose a manifold story … shaped out of fragments of trajectories and alterations of spaces…
>
> These practices of space refer to …"another spatiality" (an "anthropological," poetic and mythic experience of space), and to an opaque and blind mobility characteristic of the bustling city. A migrational, or metaphorical, city thus slips into the clear text of the planned and readable city.

De Certeau likens the spatial practice of walking the city to writing. He likens it to writing "*another spatiality*" – a story, a poem that generates a poetic experience. It is important here to note that the poem and the poetic experience differ. The story, or the poem is the trajectory of the walk; the words are the fragments of the trajectory and of alterations of the spaces. We that are not walkers cannot know the entirety of the experience. We stand outside of it. But from a distance, we can read the words and so map

the routes and spaces of the journeys. The walker cannot read the story in its entirety. They are too close. But they can feel, smell, and hear, and they can see the fragments. They engage in the practice of walking. They choose and discard fragments. They are in the space of the city. And by this, they know the experience. This is the migrational, or metaphorical city that slips into the clear text of the planned and readable city. Both the operation of walking, and the routes and spaces of the trajectory into which the operation is transposed, together, constitute the space of the practiced city.

Methodology

In order to see the detailed and ephemeral acts and in order to understand the relationships and encounters that contribute to the metaphorical city, one must be on the ground, and see the city through the eyes of the walker as they select the fragments moment by moment. For this reason, the study was conducted using ethnographic methods. The research was conducted over a period of about eight months with each case participant. The first task was to sketch out the background of the informant-participant based on their account. This was crucial given that the threads of the past weave into the present and influence the progress of place. Further their childhood and past experiences determine the cultural baggage that a person brings to a current experience. Therefore an understanding of the informant-participant's background gives an insight into the world that is accessible to them.

Through participant observation the research maps out the fragments, the general structuring of these parts, and the meaning that each case participant assigns to the city. The researcher shares and gets involved in the lives of the informant-participants with the aim of getting as close to their experience as possible and observing this experience from the inside.

The third and last part of the study is conducted from the informant-participant's perspective. It tests the experiences of the researcher-participant through interviews based on photographs of places in the city that are taken by the informant-participant, secondly, through the informant-participant's listings of people and narrative about their social interaction, and thirdly through drawing of mental maps accompanied by narrative. The two perspectives – that of the researcher and that of the informant-participant, do not stand alone. They augment each other, fill the gaps, and allow the informant-participant's spatialities of the city to emerge.

Ssewava the hawker

Ssewava is about forty years of age. He was born in the rural countryside to peasant farmers. Being one of a family of thirty six siblings, he had to share the little resources among many, and at the age of fifteen, he left school and came to live in the city. He stayed with a friend of the same age who had preceded him into the city. They run a small business making samosas. A few years later Ssewava started vending at a stall on the ground in Nakivubo and eventually hawking goods in the City Centre. At

first he worked only in the Nakivubo area, but he gradually extended his journey to the Nakasero area. He had first been attracted to sell his goods in the Nakasero by the ladies of the country's Central Bank, who he had observed many times as they stood outside the gatehouse to the bank. He thought that they looked quite elegant and he longed to sell his merchandise to them.

Ssewava buys his merchandise in the Nakivubo area of the city which is the district for trade and where many of the city's warehouses and wholesale shops are located, and sells it in commercial and civic Nakasero, where many of the city's government, organisations, and international commerce and business offices are located. His targeted clients are the white collar elites of that part of the city. Ssewava's work is illegal and informal. He is subject to be arrested by the Kampala City Council enforcement officials, who often patrol the streets in their characteristic green and yellow pickup trucks and make surprise swoops into an area. Sometimes the enforcement officials are camouflaged in plain civilian clothes and mingle with the pedestrians on the streets. Ssewava must work out strategies to evade arrest.

These described factors of his life and work affect his choice of spaces and how he uses them, how he physically and mentally structures the spaces, the significance of those spaces. The circumstances of his work affect the form and scale of his city as well as the sequence and timing of his journeys which he plans so that he sells his merchandise, but minimises the possibility of encountering the enforcement officials. He uses different modes of transport, but mostly foot. The circumstances also affect the relationships that he forms in the city.

Ssewava is of two worlds in the city. He recognises the area in and around Nakivubo and the area in the vicinity of, and including the administrative district of Central Kampala, as two entities that are distinct and separate. Further his identity with the two places differs. Ssewava's identity with place not only defines the nature and degree of his connectedness, it also defines the relationship between the two places, and consequently, the mental structuring of place. Relph (1976:49-55) has discussed to some length the various ways of identitifying with a place. Ssewava has been nurtured by the main trading area of the city in and around Nakivubo where he worked for some of his earlier years in the city. He knows the area well. He knows the people well. He has been one of them. His is an existential insideness with the place.

Yet over the years, in a gradual process, through his work of hawking, Ssewava has come to know other parts of the Central city, particularly the area around the administrative zone, at the same time as he has, to some extent, withdrawn from the area around Nakivubo. But he is neither civil servant nor employed in the formal sector. He does not have the education they have. He is barred from many of the buildings where they work. And so he is only of the place in a precarious way, as an incidental outsider where "*places are merely backgrounds for other activities*", or at best as a behavioural insider of merely a "*physical presence in a place*" (Relph, 1976, 50), save for those few pockets of places and spot locations of meaning. Ssewava is aware of the distinct characteristics of each place and of its people. His work requires that he be conscious

of these differences. In his mind, he juxtaposes, overlays, and connects the two worlds. And in his work too, by moving goods from one area into another where they would otherwise not be available, he superimposes and links.

Ssewava's journey in the Central City is linearly sequential and consists primarily of two parts, linked by a short matatu[4] trip (Figure 2). The journeys within each of the two parts are undertaken on foot. In the area where Ssewava buys merchandise, the journey is targeted particularly as he will have determined beforehand what he is to buy and where it is to be purchased. But sometimes the journeys are explorative, seeking to discover new items on the market and new happenings. The main role of the path in this case is therefore to link the various location points (shops or shopping areas) within the district. In the area where he sells, Ssewava has a rehearsed and established route, occasionally with a little variation. Here, the path is as much to move and link as it is a space of encounter and interaction with the people of the place who are his customers.

Along the path in the civic area are point locations where he gets information, particularly of how favourable the city is for him. The points provide intervals and tempo in what would otherwise be a long undifferentiated journey in a hostile environment. They are points of pause for re-composure. These points are kiosks, security gatehouses, doorways with guards or attendants, stationed special hire taxis, and manned telephone booths.

The space inside the kiosks is private while that around them can be interpreted either as private or semi-private since it is within the range of the personal distance of both the attendants and their customer. A hawker quickly converts the few items in their possession from commercial merchandise to private personal belongings by depositing them inside the kiosk, thereby averting the confiscation of the goods and his arrest by City Council enforcement agents.

A third feature of the journey is the places of rest. The spaces are either open and public or private spaces that are used by the public. The four identified spaces in this category differ in significance and intensity. At the National Theatre grounds Ssewava puts down his guard. He has a meal and interacts with other hawkers and people of other trades.

4 A matatu is a public taxi van which carries about fourteen passengers.

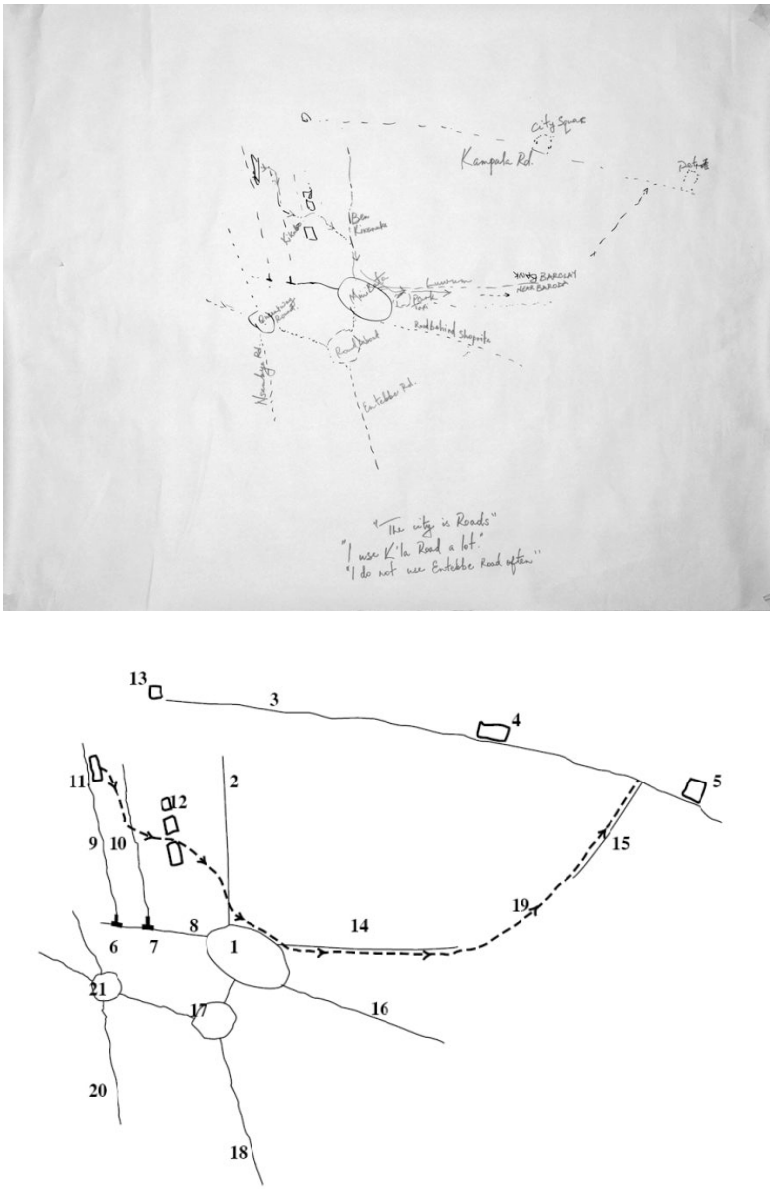

Figure 1. Ssewava's mental map of the Central City shows his path from where he buys to where he sells and covers the area of Kampala that he knows well. The figure at the bottom has been redrawn by author for clarity.

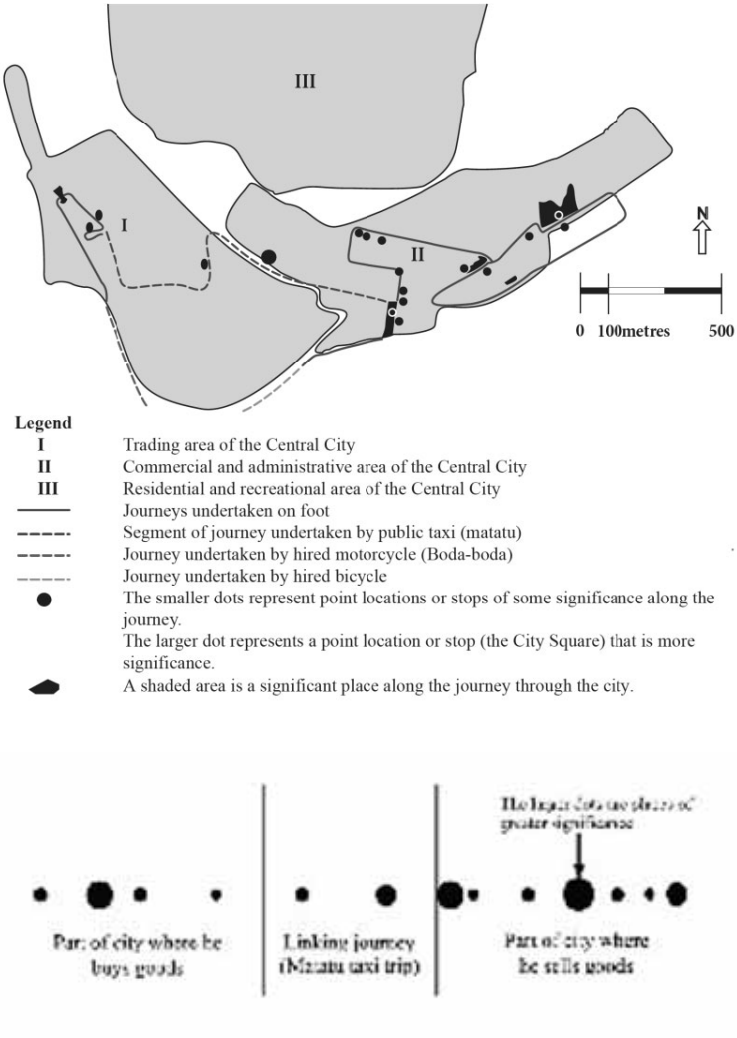

Figure 2. Ssewava's habitual journey through the Central City (top), and a diagrammatic representation of the same journey (bottom). The diagram shows that Ssewava's journey is linear.

Ssewava's journeys are scheduled to coincide with the time that the employees of the civil service and other organisations in the area are more likely to be out in the streets. This is mainly between 11.00 a.m. and 1.30 p.m. The journeys are also scheduled to avoid the patrolling law enforcement agents. Often, by 11.00 a.m. the City Council law enforcement agents have done their morning rounds. Ssewava sets out at this time knowing that the chances of encountering the enforcement agents are significantly reduced. At around 1.30 p.m. Ssewava has his lunch. By 2.00 p.m. many of the civil servants would have returned to their work stations. Ssewava will rest in the National Theatre grounds until about 4.00 p.m. when the employees will begin to leave their offices and go out onto the streets. By 4.30 p.m. many of the City Council

enforcement agents will have finished work for the day. By 7.00 p.m., many civil servants will have gone home. Ssewava retires for the day at about this time.

The span of Ssewava's Central City is relatively big when compared to Barbara, the bank official's. The simple extent of his Central City is approximately two kilometres, but in reality Ssewava travels approximately seven kilometres everyday on his circuit routes around the civic area (Figure 2). However he takes in less detail of his environment than perhaps a street vendor who is stationed in one place. This may be because the focus is on the wider scale and also because he is in motion and does not take in as much detail of his environment as he would if he was stationed. Perhaps for the same reason, his city is less intense. He moves through the busy and intense parts of the city and is not consistently exposed to movements, sounds, as for example a vendor in the same study, who is stationed in such an environment for the whole time she is in the city[5].

Ssewava generally identifies with the area of Nakivubo, notwithstanding, according to his own testimony, that he is unfamiliar with the individual Kampala City Council enforcement officers who operate in this area, and that his constantly being on the lookout for them keeps him feeling ill at ease. This is the area where he started out as a small trader in the city, and he has since maintained some presence here. In particular he maintains relationships in places of meaning such as in the Nakivubo Traders' Building[6], and as is clearly indicated by his mental map (Figure 1), his photo-interview, and his lists of relationships of meaning. The traders in Nakivubo Traders' Building previously owned stalls in the now demolished Shauriyako market. Ssewava has been buying goods from them for over ten years.

Nakivubo Traders Building is a three storey building that houses several small shops which sell an array of items including, general hardware, and an assortment of building material. The shops are arranged around small internal streets and a well-lit triple volume that gives the space a sense of being outdoors. The building is quiet and reposeful compared to the bustle in nearby Nabugabo and Ben Kiwanuka Streets.

Ssewava often wanders and shops for merchandise in Kikuubo Lane and its network of small alleyways. The defining character of Kikuubo Lane comes from the fact that it is a backstreet to two main streets – Nabugabo Road and Ben Kiwanuka Street. The back alleys were originally warehouses and enclosures for the shops along the main streets. This gives Kikuubo Lane the feeling of being in a labyrinth behind the much more open streets and facades. Furthermore, the alleys are filled with bustling businesses of different sizes, and crowds of people including men who lift heavy good to various destinations.

In the commercial and administrative zone Ssewava identifies with those places where he meets other hawkers. These are the space between Uganda House and Cham Towers, and the National Theatre grounds. He talks about them in the photo interviews and in his list of relationships of meaning. Both of these spaces are open, and secondly

5 For the case of the stationed vendor see Namuganyi (2011).

6 Nakivubo Traders' Building is number 11 in Figure 1

they lie at the edge between public and private. The space between Uganda House and Cham Towers is a wide public side street. It is surrounded by private shops, and a private car park (Private in the sense that they are privately owned space). The National Theatre grounds are an open private space that is open to the public. Furthermore, both spaces have several private kiosks and for the latter case, also a little more established businesses. This aspect of ambiguity makes the spaces attractive to hawkers since they can easily cross among different roles and statuses of citizenry, and privacy, to evade the law or to sell their merchandise.

Barbara the banker

Barbara is about thirty eight years old. She was born in the city to a diplomat father and a housewife mother. She spent six years of her childhood abroad. She joined university in Uganda where she met her husband. Later she was employed in the banking sector, gradually rising through the ranks to become the manager of the loans assessment and management division. Her work is located inside an institutional building. Unlike the hawker who walks through the city a lot, she travels to work and moves through the city by private car, seeing much of the city from behind a screen. This insulates her from the city and distorts the physical reality of the city.

Barbara's city is confined to a few locations within the administrative area of the Central City. Furthermore, her city is comprised of locations – her children's school, the theatre where she attends prayer, the bank where she works, the bank's advocates' offices, a shopping arcade. The journeys in between the destinations is incidental – only a means to get from one destination to another – made so by the insulating effect of the private car that moves people quickly from one place to another, skipping over much of what lies between, allowing little for the physical, experiencing body to engage with the sensory and social life of the city.

Barbara's mental maps suggest that her mental city might be even smaller. The map is limited to a small segment stretching no more than three quarters of a kilometre between her place of work and her preferred shopping arcade. When she draws, she refuses to include the place of prayer where she goes every morning despite some prompting, saying that "We do not go beyond here" (indicates her place of work).

Carmona et al (2003:169) argue that most car-based movement is about pure circulation as opposed to the social experience of getting from one location to another. He adds that

> … trips may often involve climbing into a car at home, travelling, then getting out in the secure car park of the final destination (i.e. transferring from the sanctuary of the personal private realm, to that of private self-contained attractions – malls, theme parks, multiplex cinemas, sports stadia, etc). As the urban experience is essentially discontinuous, primarily involving arrival at – rather than the experience of travel between – particular destinations, the continuity of urban space is less important for car drivers.

Indeed, the issues highlighted by Carmona et al – the issue of private destinations, reached in a private capsule, and that of discontinuity of urban space emanating from

an obliterated transit space are evident in Barbara's case. The bank, the daughter's school, the theatre, the bank advocates' offices, the shopping arcade, are all private spaces, and even though Barbara does walk a few tens of metres through public space and into the buildings, the main journeys are made by private car. For her, the destination point – the inside of the building – and the activities she is to undertake there are far more important than the social experience of getting there.

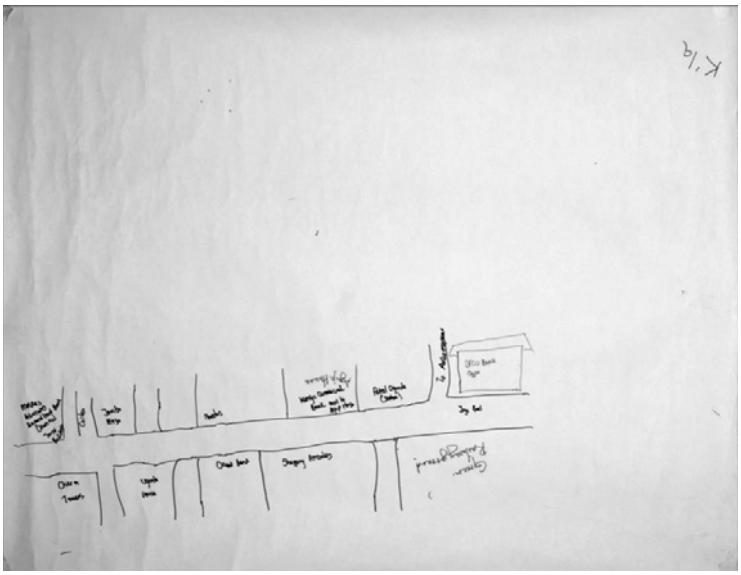

Figure 3. Barbara's mental map of the Central City showing a small stretch of road from her place of work (right) to "end of the city" which is also the "centre of the city" (left). The figure at the bottom has been redrawn by author for clarity.

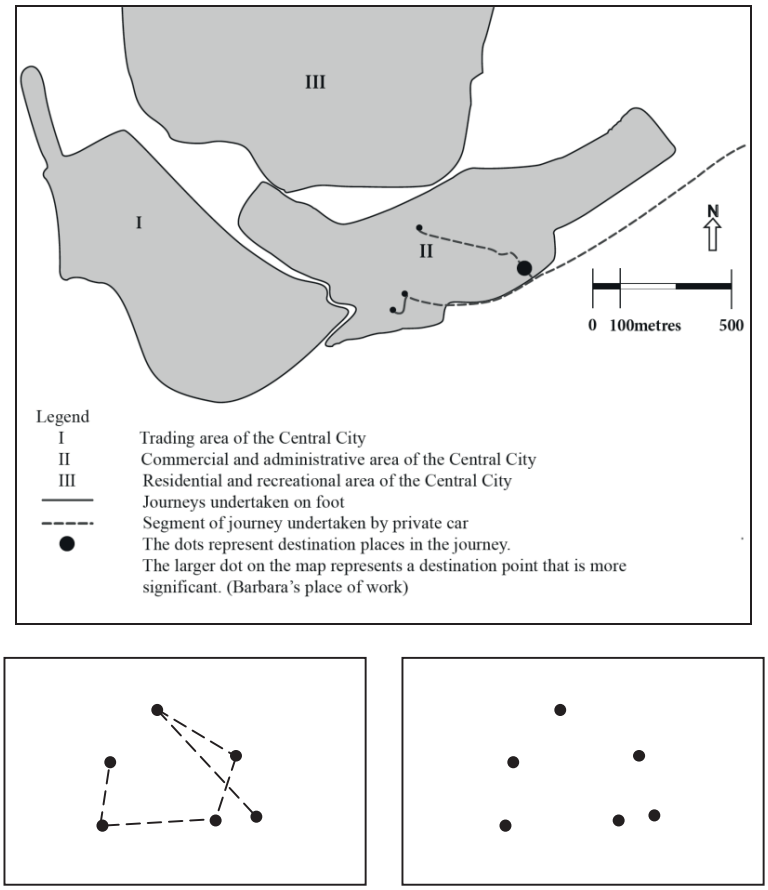

Figure 4. Barbara's habitual journey through the Central City (above), and the diagrammatic representation of the same journey (below).

Barbara spends much of her time in the city in her office, in other corporate offices, shopping for her family's needs, or in the Theatre La Bonita attending early morning prayers. What is common to all these places is that they are private indoor spaces that accommodate formal and professional functions. The spaces are all located in or close to the administrative area of the city. Barbara's place of work is located close to the Houses of Parliament on Parliament Avenue, City Hall, and Kampala City Council and its gardens. On one side of the bank building runs Kampala Road which is the city's main high road. Kampala Road is lined with several 1950s buildings housing shops, and other businesses. Barbara identifies strongly with this short stretch of road up to Diamond Trust building which area she refers to as the "centre of the city" and the "end of the city". Here, in the "centre of the city" is Cham Towers[7] where Barbara does her shopping, and Diamond Trust Building[8] where she conducts some bank business.

7 Cham Towers is number 14 in Figure 3

8 Diamond Trust Building is number 13 in Figure 3

Barbara's city is constructed around a domain of professional elites, close family, relatives and friends. This is indicated by her list of people that she knows in the city. Some of these people also share her religious convictions, and family and child-rearing concerns. Barbara constructs meaning around her family. She and her husband must wake up early to drop her son and her neighbour's children to school by 6.45 a.m. Barbara's neighbours often pick her up from work. Other friends pray with her at the theatre. She has also formed friendships with people at work with whom she shares religious beliefs.

Barbara's is a corporate and formal world from which others that are not like her are largely excluded. This and the fact that she gets around the city by private car means that not only is she removed from the shared public space of the city, but also that the space to which she is removed (for example the car, and her office) gives her panoptic views and imagery, and selective encounter with only a few friends and family.

She does not have a direct and sustained interface with the street. She does not engage in the immediate social and sensual experiences which furnish an intimate knowledge of place. Her encounters with the street vendor from whom she buys roasted groundnuts are brief and impersonal. She is oblivious of the vendor's and the hawker's lives, or of the enforcement officers who regulate their lives. If one is removed or distanced from the concrete world (in terms of their physical and/or conscious presence), their knowledge of a place can only but bias towards a mental construct, a vicarious outsideness that refers to a secondary and fictitious experience of place "*through novels and other media*" (Relph, 1976:50), and an incidental outsideness, "*a largely unself-conscious attitude in which places are experienced as little more than the background or setting for activities and are quite incidental to those activities*" (Relph, 1976:52), regardless that on the other hand, these places – the Bank where she works, the prayer hall, and are for Barbara also, ironically, places of some emotional significance.

Further, her extensive use of the telephone to communicate with many of her friends and family, and the nature of her work that deals with abstract knowledge, such as of mergers and indices, makes for a virtual world. For example she has also told me that she does not often see many of the people on her list of acquaintances in the city, but she regularly talks to them on the telephone. I have observed her make many social telephone calls. She constructs an invisible city that compresses time and space into a moment. It is a city that is difficult to grasp. Yet as Graham (1997:114) concurs, it is a realm that is as real as a city that is tangible and visible, as real as a city of roads and buildings.

Barbara's city borders towards the conceptual, the mental, and the illusory as opposed to the concrete and sensual. It is a city of imagery and poetics. In the wider sense, imagery simply refers to *mental images collectively or generally* (Oxford English Dictionary, 2010) as pictures of the mind or their formation. Imagery replicates in the mind the equivalent to the concrete sensual and perceptual experience. The mental pictures may be mentally sensual, that is, of the mind's eye, taste, sound, smell and touch. They may also be those that stir meanings and emotional response.

Contrast, paradox, analogy, irony, metaphor and simile, drawing on memory, recall, association and comparison evoke mental imagery. Poetry also employs these means to create imagery, and indeed much of mental imagery is poetic.

Conversely, imagery may also refer to the "*representation of ideas with image"* or to the "*portrayal or visible representation"* of an idea (Oxford English Dictionary, 2010), such that a tangible, sensual or visible situation can itself be imagery for an invisible, less accessible idea or mental construct. Situations can, using similar tools, evoke mental imagery of such poignancy as that evoked by verbal poetry. Likewise words, objects and sound can be poetic, as can actions, settings and events. Anne Whiston Spirn (2000:216-239) demonstrates the language of imagery and poetry in the experience of landscape. Although Spirn gets nearly all the vocabulary which highlights the imagery from set-piece landscapes, where people and activity are at the periphery (the illustrated landscapes do not have people in them), the same vocabulary can in fact also be found in lived landscapes and situations. For example as a landscape can be surreal, so too can a situation. Paradox and irony can exist in both form and lived situation. We might juxtapose things as we might conditions.

When Barbara rides from her place of work in the Central City to her home, the imagery in the situation plays on the juxtaposition of two scenes – one inside and closed, the other outside and open; one intimate and warm, the other public and distanced; one familiar and cosy, the other less known. A backdrop of ever-changing frames is contrasted to the scene inside the moving car. The pane of glass accentuates the here versus the there and the separateness and disparity between the scene inside the car and that outside. Above all, the pane has the effect of rendering the situation illusory and dreamlike, not unlike De Certeau's (1984:112) description of a train journey.

> The windowglass and the iron (rail) line divide, on the one hand, the traveller's (the putative narrator's) interiority and, on the other, the power of being, constituted as an object without discourse, the strength of an exterior silence.

In her office on the third floor of the bank building, Barbara views the city from above, at a distance through a window that is tinted and lined with grey film. She does not see the detail and reality of the street. Far different from the life on the street, the office is air-conditioned, and smells of clean freshness, coffee, and light perfume. The people are clad in smart, restrained, and well tailored attire. The grey-tinted window-framed view might be compared to a romanticised and distorted airbrushed or sepia photograph. Barbara's disconnection from the city scene, her panoptic view, the distortion of light, and colour (and consequently of time, weather, and mood), and the idealised setting of the office, all contribute to the imagery of the situation. Again De Certeau (1984:91-92) examines a similar condition of the city seen from above.

In another situation, parallels are drawn between prayer at the Theatre la Bonita, and drama and performance. As in a performance drama, the prayer is the set in a theatre, and like drama, it has crescendos – points of climax that develop from one scene to another, and which are choreographed by rising and ebbing music and lighting. The imagery is all the more powerful because it contradicts one association of prayer with

solemnity and quiet reflection. The line between prayer and drama is blurred. After the prayer, the audience emerges from the fictitious space of the theatre into the day-lit reality of the street.

The bank where Barbara works is authorised for commercial use. The staff refectory in the bank's complex is also authorised. The Theatre La Bonita where she prays is formally designated for public gatherings and functions. Cham Towers Shopping Arcade is officially sanctioned for trading. And she uses the street as designated to move from one location to another. She does not stow away the tools of her trade as the hawker and street vendor do. Hers is a stable city. She will return the next hour, the next day to find the street, the offices, the shopping arcades, and the other buildings with more or less the same assigned purpose as she left them the day before.

Barbara's mental city is small and comprises only a small segment of road between her place of work and the bank's advocates (Figure 3). The map suggests that she is largely excluded from the space of the city. Notable is the absence of narrative of places or events that place her in the space of the city. Barbara lives her life in a formal setting behind the facades, away from the street. The street has very little social and economic significance for her when compared to the significance it has for the hawker and the vendors.

Analysis and discussion

Kampala, like many modern African cities, aims to replicate a European modernism characterised by a rigid and abstract separation, specialisation and ordering of space, for the functions of industry, trade, commerce, and administration, recreation and residence and a model citizen that is rational and free of tradition, culture, and emotional bias.

The modernist city is strategically planned, implemented, and managed by organisations of or associated with state power and apparatus, and within the same urban setting, the ordinary citizens engage in many small and commonplace social and economic acts that sustain their everyday life. Further they perceive and attach emotional value to these acts. And so by these means – through theirs acts and through their thoughts, all cases subvert the strategic city.

Those like the hawker that do not fit the definition of the formally accepted model citizen, must get round the rules that hinder their sustenance. They do so by taking advantage of ambiguities and crevices (De Certeau, 1984:53) in the laws – for example that there is not a law that prohibits a citizen to buy an item or to walk with that item on the street. Indeed it is impossible to differentiate between an item of personal belonging and one that is for sale especially if it is not carried in numbers.

The informal also subvert by exploiting the unintended implications of strategy – that a zone or enclave planned for the elite may, at the same time have the unintended outcome of a self-imposed siege that excludes them from areas of the city, a situation that is exploited by the hawker who moves goods across boundaries to supply to the elite on the other side.

Further, those at its edge may remake the strategic city without any incursion to it. The hawker enlists a support system and spy network of newspaper vendors, kiosk operators, taxi drivers, and security guards. Other hawkers look out for his security and wellbeing. Traders in the formal sector supply him with goods. He has a clientele base of white collar workers. On the face of it, to the innocent spectator, the social relations are no more than ordinary encounters – they are passive, they do not have a tangible presence, and they make no discernible impact to the surface presentation of the strategic city.

At the formal end of the spectrum, the need to circumvent the strategic city may not be urgent. Still, everyday practices associated with the private individual's mundane everyday life – family matters, religious practice, remain, as indeed does the visual dimension of the city. What's more it is perhaps impossible to gaze upon the city and not assign it some value, depending on the standpoint of the observer. For one that does not ordinarily operate in the public space of the city, except temporarily in transit, as indeed is intended of the strategic city, the sleep-walker's surreal understanding that is associated with a vicarious outsideness (Relph, 1976:50) must, in addition to the abstract institutional perspective, be part of the inventory of practices that contribute to the spatiality of their city.

Whether operating within or at its margins, the re-working of the strategic city is a logic and order of fragments, scraps that are pieced together moment by moment. It is a city of micro-logics of the people's social and especially economic survival – many small thoughts and actions of many people, woven into the detailed space of the city, unpredictable, never static, ever mutating. In reality there is not a cleavage between the two cities, for within the formal order of the strategic whole, at a tactical level, the modernist city's rigid plan provides the very context for the its mutation and a richer, more diverse, more democratic and meaningful city.

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