

THE IMPACT OF FEAR ON SOCIO-URBAN FORMATION WITHIN CITIES

Observational case-study: Porto, Portugal

OLA SALMAN

Dissertation submitted for partial satisfaction of the requirements of the degree
of **MASTER IN PLANNING AND URBAN DESIGN**

Supervisor: Professor Doutor Paulo Manuel Neto da Costa Pinho

JÚLIO DE 2021

MESTRADO EM PLANEAMENTO E PROJECTO URBANO 2020/2021 - FEUP / FAUP

DEPARTAMENTO DE ENGENHARIA CIVIL

Tel. +351-22-508 1901

✉ mppu@fe.up.pt

Editado por

FACULDADE DE ENGENHARIA DA UNIVERSIDADE DO PORTO

Rua Dr. Roberto Frias

4200-465 PORTO

Portugal

Tel. +351-22-508 1400

Fax +351-22-508 1440

✉ feup@fe.up.pt

🌐 <http://www.fe.up.pt>

Reproduções parciais deste documento serão autorizadas na condição que seja mencionado o Autor e feita referência a *Mestrado em Planeamento e Projecto Urbano - 2020/2021 - Departamento de Engenharia Civil, Faculdade de Engenharia da Universidade do Porto e Faculdade de Arquitectura Universidade do Porto, Porto, Portugal, 2021.*

As opiniões e informações incluídas neste documento representam unicamente o ponto de vista do respetivo Autor, não podendo o Editor aceitar qualquer responsabilidade legal ou outra em relação a erros ou omissões que possam existir.

Este documento foi produzido a partir de versão eletrónica fornecida pelo respetivo Autor.

Nota: sempre que o documento é escrito em português do Brasil, deve ser indicado o seguinte:

Este documento foi escrito no idioma Português do Brasil.

To my family

And only by knowledge, nations rise.

Dr Jaber Salman

A small entity presumes in you, but truly, the entire universe lies in you...

*You are indeed the evident book, by whose alphabets the hidden becomes
manifest. What you seek is within you if only you reflect.*

Imam Ali Ibn Abi Talib

AGRADECIMENTOS

Sincere gratitude:

To whom I cherish the most, you have been my greatest supporter always:

The role model and mentor my Father, my faithful friend Mother, and my first bond Brother.

To my ultimate partner Modar Zheiry for his continuous caring and encouragement through the most challenging times during my academic study...

To each true friend I have, your presence matter.

To Professor Doctor Paulo Pinho; for his professional guidance, availability, criticisms, and encouragement throughout the dissertation development.

To the Global Platform of Syrian Students. Which gave me this high educational grant opportunity to proceed with my dreams. In particular, Dr Helena Barroco; for her continuous support, caring, patience and complete containment.

To Prof. Husein Aziz Saleh of Damascus University and Dr Giath Doun for their positive boost.

To each person who had a positive or negative impact on me during my journey of learning. My sincere gratitude.

Finally, To my country Syria, where my identity formed, and where I learned that whoever does not have a sense of belonging and gratitude to his first homeland may not build a true spatial and moral bond at any other geographical spot on this earth.

Being in Syria during the war, I experienced fear and loss; however, there was always room for safety, positivity, and a bit of happiness, hope and much gratitude. This experience made me realise that fear is not necessarily a negative scope. Instead, it might be a hint of the tremendous hidden possibilities that a place and a human have and an indicator of what we did wrong as individuals, society, and decision-makers; thus, fear can be a great tool to heal and shape a better future.

RESUMO

O medo é um aspecto fundamental das emoções humanas que impactam significativamente na formação única da natureza humana, consequentemente formando sociedades. Ele tem efeitos psicológicos e físicos poderosos sobre o comportamento humano em comunidades urbanas.

O medo é uma questão problemática significativa gerada a partir das questões sociais e da formação espacial urbana no âmbito urbano. Ele mudou para se tornar um dos motivos de isolamento, discriminação e segregação.

No entanto, o medo está principalmente associado à criminologia. Aqui está o ponto a partir do qual a dissertação começou a investigar mais definições e observar o medo em cidades comuns como um trabalho complementar para outros trabalhos de pesquisa que primeiro abordaram o termo " contexto urbano comum ". Assim, procurou-se estudar o medo fora do âmbito da criminologia, observá-lo em contextos urbanos ordinários e tentar compreender a ligação entre o medo como fator emocional ligado a múltiplas causas e a formação física urbana no espaço. Portanto, a principal questão de pesquisa era; se o contexto urbano comum que mostra um sinal de diferenciação das formas urbanas (segregação em particular) tem um impacto de medo sobre ele ou não?

A questão de investigação foi testada no âmbito do Porto- Portugal como um estudo de caso, utilizando um método observacional, tomando três amostras espaciais de trabalho de campo observacional outlook. São eles: (Partes da freguesia de Lordelo do Ouro, bairro Cerco do Porto e Rua das Flores no centro histórico), E as ferramentas que foram utilizadas na pesquisa são: a fotografia urbana como principal instrumento de documentação e a teledetecção como recurso cartográfico ferramenta metodológica de apoio para comparar os resultados do trabalho de campo observacional com a aparência cartográfica das três amostras.

Assim, este trabalho concluiu que a segregação em um contexto urbano pode aumentar a taxa de medo, o que indica um defeito na estrutura urbana em seus aspectos físicos e sociais. Um dos defeitos urbanos é a falta de serviços, o que pode causar um aumento da taxa de medo, especialmente em contextos urbanos que já são considerados problemáticos.

Por outro lado, o medo dentro de um contexto urbano pode ter uma dimensão positiva se for reconhecido e colocado como um indicador nas agendas de planejamento urbano, como a pesquisa sugeriu que:

1. O medo urbano pode se referir à diversidade urbana ou diferenciação cultural que pode ser positivamente deslocada para o desenvolvimento potencial e considerada uma força forte.
2. desenvolvendo o medo como um indicador de medição e usando-o como uma ferramenta de análise espacial, é possível criar uma forma eficiente de aplicações urbanas para resolver questões problemáticas mais profundas dentro de um contexto urbano comum.

PALAVRAS-CHAVE: Medo, Medo Urbano, Formação Urbana, Contexto Comum, Segregação, Observação De Perspectivas.

ABSTRACT

Fear is a fundamental aspect of human emotions that significantly impacts the unique formation of human nature, consequently forming societies. It has powerful psychological and physical effects on human behaviour in urban communities.

Fear is a significant problematic issue generated from social issues and urban spatial formation within the urban scope. It shifted to become one of the reasons for isolation, discrimination, and segregation.

However, fear is mainly associated with criminology. Here lies the point from which the dissertation started to investigate more definitions and observe fear in ordinary cities as a complementary work for other research papers that first addressed the term "ordinary urban context". Thus, an attempt was made to study fear away from the scope of criminology, observe it in ordinary urban contexts, and try to understand the link between fear as an emotional factor linked to many causes and the physical urban formation in space. Hence the primary research question was; whether the ordinary urban context that shows a sign of urban forms differentiation (segregation in particular) has a fear impact on it or no?

The research question was tested within the scope of Porto- Portugal as a case study, using an observational method, by taking three spatial samples of outlook observational fieldwork. They are: (Parts of Lordelo do Ouro parish, Cerco do Porto neighbourhood, and Rua das Flores in the historical centre), and the tools that were used in the research are urban photography as the primary documentation tool and remote sensing as a cartographic supportive methodological tool to compare the observational fieldwork results with the cartographic appearance of the three samples.

Thus, this work concluded that segregation in an urban context might increase the fear rate, both of which indicate a defect in the urban structure with its physical and social aspects. One of the urban defects is the lack of services, which can cause an increased fear rate, especially within urban contexts that are already considered problematic.

On the other hand, fear within an urban context may carry a positive dimension if it is recognised and placed as an indicator within the urban planning agendas, as the research suggested that:

1. urban fear can refer to urban diversity or cultural differentiation that can be positively associated with potential development and considered a strong power.
2. by developing fear as a measurement indicator and using it as a tool for spatial analysing, it is possible to create an efficient way of urban applications towards solving deeper problematic issues within an ordinary urban context.

KEYWORDS: Fear, Urban Fear, Urban Formation, Ordinary Context, Segregation, Outlook Observation.

TABLE OF CONTENTS

AGRADECIMENTOS.....	ii
RESUMO	III
ABSTRACT	V
1. INTRODUCTION.....	1
1.1. RELEVANCE OF THE THEME	1
1.1.1. THE RESEARCH PROBLEM	2
1.1.2. THE IMPORTANCE OF THE RESEARCH.....	3
1.2. THE OBJECTIVES OF THE RESEARCH.....	3
1.3. RESEARCH METHODS.....	4
1.3.1. THEORETICAL WORK: LITERATURE REVIEW.....	4
1.3.2. PRACTICAL WORK: OBSERVATIONAL FIELDWORK – PHOTOGRAPHED.....	4
1.4. STRUCTURE	5
2. FEAR AND URBAN FORMS: CONCEPTS, FEATURES, WITHIN DIFFERENT LEVELS AND CONTEXTS	7
2.1. INTRODUCTION	7
2.2. FEAR CONCEPTS WITHIN DIFFERENT LEVELS.....	7
2.3. FEAR FEATURES WITHIN DIFFERENT CONTEXTS	8
2.4. CONCLUSION	12
3. ABOUT SEGREGATION, BRIEF LITERATURE REVIEW	13
3.1. INTRODUCTION	13
3.2. SPATIAL SEGREGATION, VIEWS	13
3.2.1. CONCEPTS – DEBATES	14
3.2.2. NEW POLICIES. RAISING SEGREGATION- EXPECTED CAUSES	15
3.3. SEGREGATION IMPACTS	16
3.4. SOLUTION POLICIES.....	16
3.5. CONCLUSION	17
4. FEAR AND SEGREGATION; FIELDWORK WITHIN THE CITY OF PORTO.....	19
4.1. INTRODUCTION	19
4.2. EXPLAINING THE METHODS' TOOLS CONCEPTS	21
4.2.1. OBSERVATION METHOD.....	21
4.2.2. URBAN PHOTOGRAPHY TOOL	21

4.2.3. SATELLITE IMAGERY TOOL – SENTINEL 2 IMAGINARY	21
4.3. CASE- STUDY, PORTO CITY	22
4.4. FIELDWORK, FEAR AND SEGREGATION - SPATIAL SEPARATION WITHIN THE CITY	23
4.4.1. THE KINETIC PATH OU-OB ANALYSES - LERDELO DO OURO AND MASSARELOS PARISH, SAMPLE 1	24
4.4.2. VISUAL MAPPING COMPARISON – RESULTS.....	26
4.5. FIELDWORK, FEAR AND SEGREGATION – SOCIO-SPATIAL ISOLATION OUTSIDE THE CITY ...	28
4.5.1. THE KINETIC PATH OU-OB ANALYSES - CERCO PORTO NEIGHBOURHOOD, SAMPLE 2.	30
4.5.2. VISUAL MAPPING COMPARISON - RESULTS	31
4.6. FIELDWORK, FEAR AS AN EMPIRICAL EXPERIENCE WITHIN THE CITY CENTRE.	32
4.6.1. THE KINETIC PATH OU-OB ANALYSES- PORTO, SAO BENTO: RUA DAS FLORES, SAMPLE 3.	33
4.6.2. VISUAL MAPPING COMPARISON – RESULTS.....	34
4.7. CONCLUSION.....	34
5. DISCUSSION CONCLUSION AND RECOMMENDATIONS	37
5.1. INTRODUCTION	37
5.2. FEAR GENERATING AND ITS TIES TO URBAN FORMATION.....	37
5.3. CONCLUSION	39
5.4. RECOMMENDATIONS.....	40
REFERENCES	43
ANNEX-1	49
ANNEX-2	47

ÍNDICE DE FIGURAS

Fig. 1- Dissertation Mental Map - Defining The Research Approach.....	6
Fig. 2- Population Density Of The Parishes Of Porto Map Ref (Reot, 2015), With The Chosen Samples Of C-S.	22
Fig. 3- Kinetic Path Map -1- Lerdelo Do Ouro And Massarelos Parish. Map Base (Mapbox, 2021)....	23
Fig. 4- Rua Do Aleixo - Differentiation Of The Urban Forms. (Right Side Facade Of The Street). Ph.R-17/04/2021	24
Fig. 5- Rua Do Aleixo - Differentiation Of The Urban Forms (Left Side Facade Of The Street). Ph.R -17/04/2021	24
Fig. 6- Rua Do Aleixo - Houses Vs Walls Ph.R -17/04/2021	25
Fig. 7- Rua Do Aleixo. Urban Facades.	25
Fig. 8- Rua Carvalho Barbosa. Space Of Possibilities.....	25
Fig. 9- Rua Arnaldo Leite. Urban Differentiation Ph.R -17/04/2021.....	26
Fig. 10- Cartographic Comparison. S1.....	26
Fig. 11- Illustrated Zoning Map - R. Aleixo. R. Carvalho Barbosa	27
Fig. 12- Kinetic Path Map -2- Cerco Do Porto. Map Base (Mapbox, 2021).....	28
Fig. 13- Cerco Do Porto Neighbourhood. Entrance-Facade. Ph.R -06/05/2021	30
Fig. 14- Trafficking Mark Location-R.Alijó. Ph.R -06/05/2021.....	31
Fig. 15- Cartographic Comparison. S2.....	31
Fig. 16- Kinetic Path Map -3- City Centre. Map Base (Mapbox, 2021).....	32
Fig. 17- Rua Das Flores - Nighttime - 04/07/2021	33
Fig. 18- Cartographic Comparison. S3.....	34
Fig. 19- Sentinel 2 Bands Diagram- Bands With Spatial Resolution 10m - B(2.3.4.8) (Esa, 2021)	50
Fig. 20- Sentinel 2 Bands Diagram- Bands With Spatial Resolution 20m - B(11.12) Swir.(Esa, 2021)	51

TABLE INDEX

Table 1- The Arguments Of Urban Fear Theoretical Fw (Abu-Orf, 2013; Tulumello, 2015).....	2
Table 2- Fieldwork Stages Structure	20
Table 3- Total Rate Of Crime Within A Timeline 1993-2020 (Pordata, 2021)	39

EQUATIONS

Eq. 1 (NDVI Index) (Kuc E Chormański, 2019).....	51
Eq. 2 (NDBI Index) (Kuc E Chormański, 2019).....	51
Eq. 3 (BU Index)(He <i>Et Al.</i> , 2010)	51

SYMBOLS, ACRONYMS AND ABBREVIATIONS

BU	-	Built-up Index
CMP	-	Câmara Municipal do Porto
C-S	-	Case Study
DEC	-	Departamento de Engenharia Civil
Dept	-	Departamento
ESA	-	The European Space Agency
Fig	-	Figuer
INE	-	Instituto Nacional Estatística
NDBI	-	Normalised Difference Build up Index
NDVI	-	Normalised Difference Vegetation Index
OU.OB	-	Outlook Observation
PH.R	-	Photographed by Researcher
PIB	-	Produto Interno Bruto
REOT	-	Relatório sobre o Estado do Ordenamento do Território (State of Spatial Planning Report)
Tab	-	Table
U.PH	-	Urban Photography

1

INTRODUCTION

1.1. RELEVANCE OF THE THEME

Fear is one of the fundamental aspects of human emotions, with a significant impact on the unique formation of human nature and consequently forming societies. It has powerful psychological and physical effects on human behaviour within urban communities.

Since the first appearance of urban life, the fear aspect was driven by the human's movements; for instance, the fear of animals motivated humans to create a small gathering; it also helped to create survival tools to maintain the life of first human clusters. Therefore, fear is one of the essential instinct feelings related to society's existence.

With the evolution of humanity, this feeling evolves too, as well as its consequences. Moreover, fear has shifted, becoming the reason for isolation, discrimination, segregation, and its increasing association with criminology. However, many researchers confirmed that fear of Crime is not linked to increased crime rates. Moreover, the victimisation status that occurred may not have an actual link to a direct crime-related incident. Nevertheless, the fear of crime might be a collective reaction driven by individuals' survival instincts, and the rumour factor influences them. (Ceccato, 2012; Tseloni e Zarafonitou, 2008; Wu, Klahm e Atoui, 2017).

Far from studying fear as part of the criminological field, the dissertation investigates more definitions and tries to observe and learn the aspect of fear in ordinary cities as a complementary work for other research papers that first addressed the term ordinary urban context (Tulumello, 2015). Moreover, it addresses fear from an urban-social perspective to better understand fear as an emotional, behavioural element with physical spatial impact on urban environments and whether there is a significant connection between this factor (fear) and spatial urban segregation. Moreover, this work seeks to present fear as an urban tool that can be developed as an urban indicator and invested as a force factor, not only framing it as a social problem in the urban context.

Furthermore, the dissertation aims to present results and proposals that view fear as a future developmental possibility for society and urban reality, drawing on research studies exploring fear's investment as a tool in political science and economics. (Bonn, 1946; Ganser, 2005; Perrotta, 2004; Schuermans e Maesschalck, de, 2010; Shirlow e Pain, 2003).

1.1.1. THE RESEARCH PROBLEM

This dissertation aims to understand fear in urban settings, specifically in ordinary urban contexts. There are no violent urban environments that have a predictable formula of producing fear as a natural consequence. On the contrary, the ordinary urban setting does not have an explicit feature to identify fear in it as a predictable result (Tulumello, 2015)

Accordingly, this dissertation established a cause-and-effect relationship between urban fear and segregation as a problematic criterion of urban formation in an ordinary urban context. This establishment relationship of the primary method in this research complements Tulumello's urban fear theory in an ordinary urban setting.

In his paper, Tulumello outlines a theoretical framework of urban fear in ordinary urban settings around three arguments: "spatialisation of fear; (modernist) spatialities and the encounter; political economies of urban fear". In addition, three geographical models present to complement Abu Orf's theory of fear in violent urban settings: "The individual; the feminist geography; the globalisation". (Tulumello., 2015).

Table 1- The Arguments of Urban Fear Theoretical FW (Abu-Orf, 2013; Tulumello, 2015).

Abu-Orf (2013)	Tulumello (2015)
Theoretical Framework	Theoretical Framework
Urban Fear in violent urban settings	Urban Fear in ordinary urban settings
Geographical Models:	Arguments:
The individual.	Spatialisation of fear.
The feminist geography.	Spatialities and the encounter (modernist).
The globalised	Political economies of urban fear.
Case-study	
Palestine - West Bank	Chelas - Lisbon - Portugal

The six arguments presented, about urban fear, whether in violent urban settings and ordinary urban settings, provide two exploratory frameworks for fear in urban planning and demonstrate fear's capability to create segregated urban forms and spaces identified by exclusion. (Abu-Orf.2013; Tulumello.2015).

This dissertation bases its form on the context term suggested by Tulumello, "The context of Ordinary Cities". He focuses more on his spatialisation of fear argument, thus, on the cause-and-effect relationship between segregation as an urban spatial form- and - urban fear. Consequently, addressing the research question: Does the ordinary urban context that shows a sign of urban forms differentiation such as segregation has a fear impact on it? What are the physical signs that indicate an appropriate environment of fear generation?

1.1.2. THE IMPORTANCE OF THE RESEARCH

Many papers have spotted fear from a criminological point of view; few studied fear as an urban indicator in the area. However, the fear element is considered one of the hidden problems within social urbanism of ordinary contexts due to the various factors, which makes fear a complex problem within the urban agglomeration of a city. The research aims to highlight the problem of fear and its relationship to the physical form of cities, especially taking the case of urban segregation as a physical spatial formation. At its end, the dissertation reviews the controversy of converting fear of an unsolvable, yet only, observed problem into a planning opportunity that can be used to read and develop the future of cities' planning reality, making it a significant investment in the future of urban decision making. Finally, the dissertation takes the city of Porto as a case study applied for practical urban observation and a data collection for urban segregation analysis by using outline observation method tending to analyse the experience of the city from an output observer (the student researcher) and urban photography as a visual documentary tool taken directly from the fieldwork of study.

1.2. THE OBJECTIVES OF THE RESEARCH

The general theme of the dissertation explores fear from a scope of urban forms, intending to observe and study fear within the scope of ordinary cities, in isolation from cities that suffer from exceptional events such as violence and conflicts, and the reflection of fear in these cities and its causes and consequences.

The fear factor was chosen because it is a double-edged sword. The presence of fear within a particular area indicates that this area has a state of social differentiation (class, ideological, intellectual). This factor may tell that difference and diversity are not adequately invested. Thus, lack of investment leads to the emergence of negative feelings such as fear that can have a physical form in the urban context. Therefore, the urban planner can play an essential role in increasing safety, the sense of belonging, and exploiting the existing diversity to achieve community development and improvement goals.

Few studies deal with fear from an urban planning point of view, and most of the literature deals with fear factors from a criminological aspect. In addition, the presence of social diversity in any society indicates the possible capacity of communities related to its depreciation, which can be turned into a strength in the urban planning process of cities.

This research sheds light on the fear factor and its connection with the concept of urban segregation as an example of a particular urban form. Thus, it is possible to invest in the existing capabilities. In addition, it may help transfer urban planning to a more experimental stage related to dealing with human emotional effects (fear) within an urban structure. Therefore, this dissertation explores and studies the relationship between fear and segregation in urban planning as an urban form sample.

The dissertation's main problems:

- Urban fear is considered a cause and effect of urban segregation.
- Segregation as a problematic criterion of urban formation in cities plays a significant role in producing fear in ordinary urban settings and vice versa.
- Fear caused as an urban physical form in cities can be transferred to an empowering feature of society within its urban environment.

The dissertation's Objectives:

- To research the term of fear and segregation among different literature reviews.

- To examine the fear element within several spatial contexts, depending on similar studies and research, which addressed the fear as the main issue and discussed its varied study cases world-wide.
- To investigate various fear impacts depending on the possible triggers from a different point of view, such as the economic, social, or political views.
- To use some applied research methods, such as the observatory fieldwork at the city of Porto, as a case study to determine the fear in different spots and parishes in this city by analytical observation
- To apply a cartographic comparison using remote sensing satellite data images- Sentinel satellite-2A products.
- To evaluate the possible connection and interaction between fear and segregation depending on the data analysis results.
- The research aims to suggest planning solutions that define fear as a fundamental problem, which must be considered within the agendas of decision-makers and planners.

1.3. RESEARCH METHODS

The main methods used in this dissertation are the descriptive approach as a theoretical methodology and the observatory fieldwork approach that depends on the Outline observation method and the Urban Photography tool.

1.3.1. THEORETICAL WORK: LITERATURE REVIEW

The theoretical section of this dissertation reviews the literature that has been presented concerning the issue of fear and segregation, adopting the descriptive approach. It reads the concept of fear within several specialised levels, including studies that explored fear in clinical psychology and studies that address fear from a social point of view within the fields of philosophy and sociology or an economic point of view as per economic studies.

Then, the theoretical section in the second chapter of this dissertation reviews the studies that dealt with fear in the field of urbanism within several urban contexts and from different problematic aspects

In the second part of the theoretical section, which is considered the third chapter of the thesis, a brief literature review of urban segregation and its dimensions was presented, using the descriptive approach.

1.3.2. PRACTICAL WORK: OBSERVATIONAL FIELDWORK – PHOTOGRAPHED.

In the practical section of the dissertation, two main approaches were used, the observation method and urban photography too in an attempt to analyse the interactive impacts between fear and the physical form of the city of Porto, through these questions:

What is the role of fear element among the physical, spatial, formation of the city?

Discussing the probabilistic relationship between fear and urban segregation as a physical form of the city through this question. Is fear considered to be a result of urban segregation, or contrarily?

The type of data used: the type of data used to achieve the aim of this research is qualitative data, represented by selecting a case study, adopting a fieldwork monitoring method and cartographic

observation to detect the element of fear and identify the spatial form of the case study, whether it is segregated or not.

Quantitative: represented by collecting secondary statistical data, then apply an attempt to analyse these data by connecting with the result of qualitative data analyses.

The results of data analysis are identifying multi-causal segregation within the inhabitant population of the case study.

Using this data collection analysis to detect segregation and fieldwork and cartographic observation as a tool to detect Urban fear, the cause-and-effect relationship between urban segregation and urban fear will be extrapolated based on the final results of both processes.

The tools used in the research are urban Photography, Cartographic tools: Satellite image, Erdass, open street map, Analytical tools: visual analytics, urban photographs, Adobe programs.

1.4. STRUCTURE

The dissertation is structured into four main chapters. Chapter one contains the introduction, research problem and questions, and a brief description of the dissertation's theoretical and practical work methods.

Chapter two and chapter three represent the theoretical descriptive work of the research, in which Fear concepts among different levels, fear features among different contexts, and a brief review of the urban segregation concept have been explored.

Chapter four includes the practical part of the research. Whereas we address the research problem within the empirical fieldwork, taking three main kinetic paths to observe and analyse as samples from the case study, city Porto-Portugal.

The discussion section analyses results, recommendations and conclusion are part of chapter four.

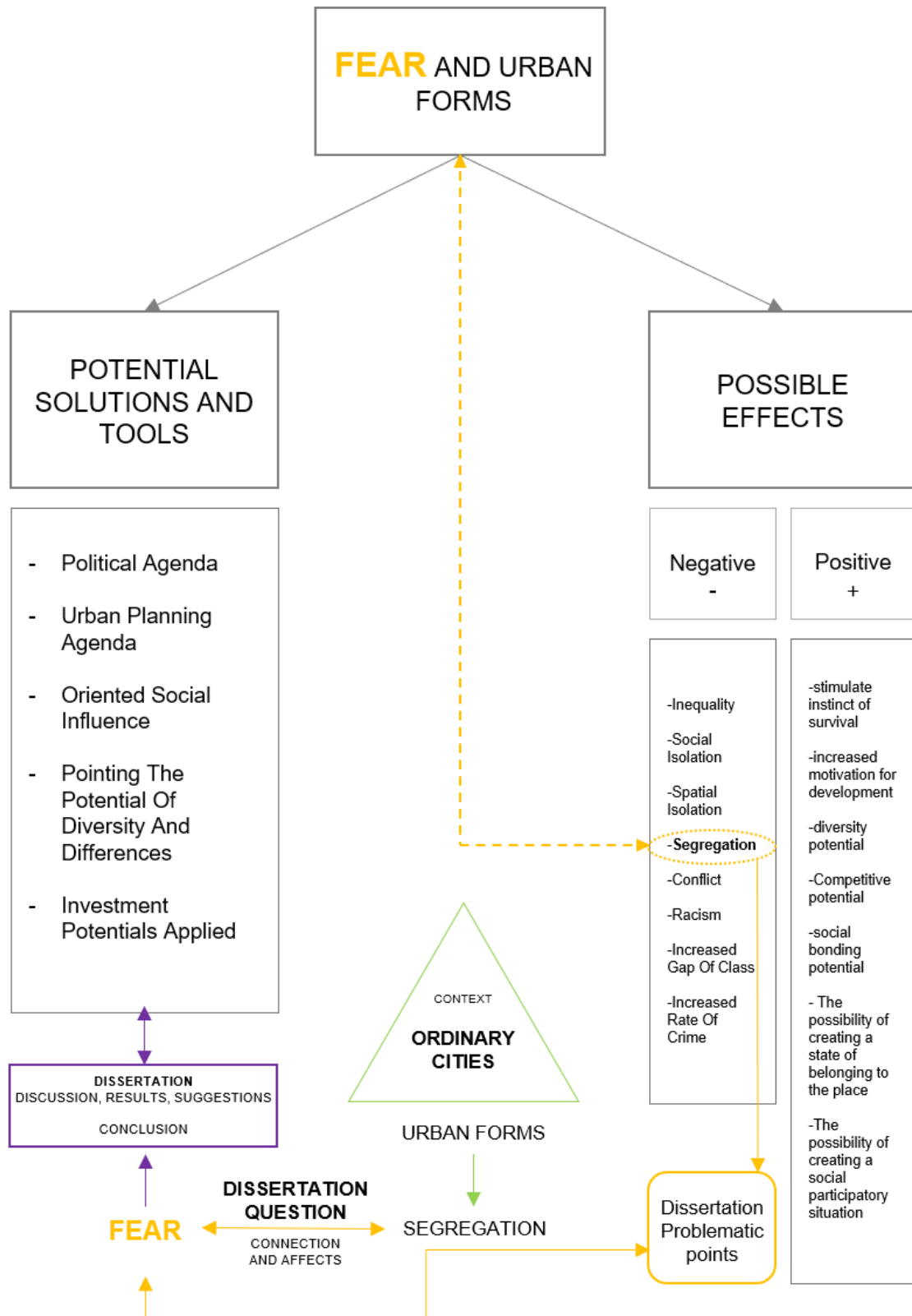


Fig. 1- Dissertation Mental Map - Defining the Research approach

2

FEAR AND URBAN FORMS: CONCEPTS, FEATURES, WITHIN DIFFERENT LEVELS AND CONTEXTS

2.1. INTRODUCTION

this dissertation focuses on studying and observing fear and its reflection on the socio-urban formations of cities. Thus, structuring the theoretical section starting with a review of the concept of fear in several scientific contexts (psychology, philosophy, economics, geography) due to its rooted impacts in human nature and its environment. Then the concept of fear was framed to be limited to the urban-spatial dimension to achieve a more accurate understanding of fear as a factor affecting the individuals and their urban spatial surroundings.

2.2. FEAR CONCEPTS WITHIN DIFFERENT LEVELS

Several clinical psychology and philosophy studies reported that fear is an emotional feeling caused by influencing factors, not necessarily external or visible factors or having a tangible and direct effect of actual insecurity. It might be caused by an inner influence that can create a fearful illusion without any reasonable indicators for fear in reality (AX, 1953). Hence, it creates motivational feelings that aim to overcome danger by finding capacity against the possible threat. Whereas according to Nicol (2011) in her book (Social economics of Fear and Desire): "Emotions are felt incapacities and capacities that structure agency". Subsequently fear, desire, anger, or other human emotions, all have a standard functionality of working as motivational emotions towards surviving, development or empowering, but they can either be positive motivations with positive behaviours or negative motivational behaviours, thus, if we understand this principle characteristic of emotions, fear, in particular, it is possible to transform the negative motivational emotions like fear into positive motivational emotions that have the ability to change the spectrum of a whole society, and by looking deep into urban details and urban planning agendas, it is highly possible to use the urban tools as practical tools to transform fear into positive social motivation that creates positive social behaviours, instead of letting it as a blurry problematic issue that influences the urban environment with all its components.

The notion of exploring fear as an influential tool within the agendas of urban planners still does not have that many research studies in urban planning. However, the presumption itself as fear investment was studied and applied in economics and politics.(Evrigenis, 2007; Kern, 2010; Saville, 2008; Schuermans e Maesschalck, de, 2010; Shirlow e Pain, 2003; Skoll, R, 2010).

2.3. FEAR FEATURES WITHIN DIFFERENT CONTEXTS

The crime and fear of it have become a stereotyped image attached to the crime rate, or social differentiation in an urban area such as isolated community with its cultural characteristic as in some clustered communities in America, or a social class with a limited income living in one spatial scope, as social housing in some neighbourhoods of European countries. In contrast, the end of the 20th century showed a decline in crime rates within numerous urban centres. Further, fear of crime became an inherent problem. Although the crime was considered the leading cause of fear; however, both were the sources of a significant threat to the economic and social aspects of the urban fabric. Thus, shifting the cities from their vital substance based on diversity and difference is dangerous and affects cities' dynamic developmental factors.

According to many literary studies written about crime and fear, it was clear that the effects of fear of crime on individuals and society may match the psychological impact of the crime itself. The factor of crime fear can cause weakness in individuals' mental structure, generating social fragility and creating a sense of isolation from their society. Thus, it may be a reason for the emergence of isolated and closed individuals within the structure of one community. Consequently, it was notable that fear of crime is considered a cause of social division when the primary urban structure-function is supposed to be a gathering of individuals (Bannister e Fyfe, 2001).

Consequently, several questions were raised about the nature of fear and the leading causes of it. For example, is it a reaction to criminological behaviours or a mental state accompanying urban life, and how could fear impacts a city's economic, social, and political elements (Bannister e Fyfe, 2001)?

Many researchers studied the fear issue in criminology using statistical tools for analysis and measurement collected based on crime rates in each region. However, these methods are considered outdated compared to the size of studies that construe the state of fear in this field (Bannister e Fyfe, 2001; Brunton-Smith e Jackson, 2012; Stein, 2014). In contrast, more studies plot the impact of fear of crime on the social and individual levels. Furthermore, the researchers frame the fear of crime as a significant problem that threatens urban features' socioeconomic and political structure, both tangible and intangible, and raises individuals' sense of insecurity and vulnerability (Hale, 1996). Consequently, fear of crime impinges upon the Spatial index of the urban environment and its function, bypassing the scope of direct crime victimisation to encompass the entire biosphere of the crime site and its neighbourhood (Bannister e Fyfe, 2001; Stein, 2014).

In terms of the spatial context of the problem, fear of crime has been covered widely across scientific research, as many studies highlighted this problem within the European context, such as Brunton-Smith e Jackson (2012). They explored the spatial formation and its impact on social behaviour, which could occur fear of crime due to several neighbourhood characteristics in England and Wales. However, other European researchers plot the issue from different spatial scopes and perspectives. Such Tulumello (2015, 2015) argued the spatial element of fear, urban fear's political economies, and the effect of planning practice. In contrast, he explored urban fear within ordinary contexts. He emphasised the importance of taking fear into perspective as a rising problem that needs to be considered in urban policies and the urban planners' agendas.

From a different context, some American researchers speculated on the fear of crime from a narrow scale exemplified by neighbourhoods and the social impact of fear within it. They tried to explore the effect dilemma of fear as a cause for many social symptoms (Friedmann, 2002; Matei, Ball-Rokeach e Qiu, 2001; Stein, 2014). Further, fear of the other, the sense of threat generated by the state of diversity and difference, and the post 9/11 era syndrome that swept American society have been studied in an analytical approach by several types of research (Wu, Klahm e Atoui, 2017).

Due to the 9/11 syndrome, an increased fear from cultural and religious differentiation in American society occurred. Thus, it was possible to detect a similarity between fear generated by the 9/11 syndrome and fear generated by the conflicted reality at the occupied Palestinian context in the middle east (Jabareen, Eizenberg, e Hirsh, 2019). Although the two contexts are massively different; however, fear as Justification for racist behaviours was collectively adopted by society. Hence this behaviour was similar in both contexts. Furthermore, it was essential the impact political actions and urban policies practices, especially the urban-political practices applied against the West Bank area- Jerusalem, Occupied Palestine.

Few research papers went far from the criminological aspect of the fear study. However, they searched more within a city's urban form and the emotional impact – fear in particular -on society and the connection between those two variables (fear and urban forms). Some of those research papers relate to the unique conditions that their case study has, which might not be connected to criminological reasons. However, the general characteristics of the place itself are considered violent or problematic (Kirmani, 2017), or with a conflicted type such as Jerusalem city and west bank area in Occupied Palestine, which is considered an ongoing conflicted urban context for 70 years. (Abu-Orf, 2013; Jabareen, Eizenberg e Hirsh, 2019). Other researchers rely on urban studies built within violent urban environments to provide a theoretical approach to fear. However, within typical "Ordinary urban contexts" (Tulumello, 2015), other research papers discuss fear away from its stereotypical image related to crime and study it as an issue connected to urban practices. In addition, they emphasise the urban policies capacity for reducing or producing fear (Tulumello, 2017).

The element of fear in the city spreads in several levels of urban life, revealing numerous aspects of its social and economic behavioural motivations, considering fear as an emotional reflex and a possible result of it. The image of a city based on experiencing diversity, which was the ideal vision of cities with modern life and coexistence, may pose an urban threat (Bannister e Fyfe, 2001).

Accordingly, it is possible to transform social diversity from an ideal state that can build a good urban life to an element that might be misused as an urban threat. This transformation is caused by strategies that entrench social isolation among urban groups and impose a state of mutual urban fear among society or economic policies that entrench social class differentiation, generating crime exporting environments. Thus, the diversity transformation and its causes shift to a primary generator of fear within the urban area.

There are some attempts to explore urban fear and its connection with the urban practices and policies in the literature, from an urban perspective, far from the criminological aspect. For example, Tulumello (2015) discusses the reason for fear in a specific society that might be different from the main reasons that caused the action of fear. He emphasises that spaces of fear in urban cities are created by factors different from the threat held in these spaces. Due to the author, an extended concept of fear (fear scape) addressed depending on two central notions:

- in the first notion, he emphasises urban fear as a result of spatial practices and dominant policies which might transfer urban life into less urbanised, in addition to the fact that fear itself has a vast range of influence that exceeds the place limits.
- in the second notion, he addresses the causing elements of space fear that could be different from the actual causes that a place holds. He emphasises having generated elements of fear with a broader range of effects that exceed the place itself and works beyond the place characteristic as a spatial location for fear.

As an integrated point of view, Tulumello (2015) approaches a discussion about the mechanisms of fear creation and the effect of planning practices within this process. The author emphasises the importance of taking the fear and creating problems as part of the policies and planners' agenda. He suggested that fear is a spatial practice resulting from urban applications and policies, which will trigger less civic urban lives.

Nevertheless, the paradoxes of fear among European contexts have been addressed, such as the contradictions of an increased sense of fear among contexts that show a good range of violence decline and victimisation decreased rates. Moreover, most fearful groups may not be targeted or endangered.

For instance, it is familiar to label women and older people as victims of violence and fear. In addition, it considers ethnic minorities and the homeless as dangerous groups that might generate environments of violence and fear (Tulumello, 2015). However, it is essential to mention, based on Tomino's readings, articles that talked about the paradoxes and contradictions of fear were few, which consider being a weak blot as missing questions to discuss in urban planners' debates.

From a different perspective, Alexander (2008), in her article (Safety, fear, and belonging) approaches the issue of fear from a social aspect, based on the concept of citizenship, the relationship and the impact of this problem on the practice of citizenship among the young generation of society. Considering the young people as a targeted study case for observing whom they experience challenges such as exclusion, identity, safety, and belonging. According to Alexander (2008), spatial formation spread the elements of safety and fear, which are essential to creating civic identities, thus suggesting new ways of citizenship expressions and practices characterised by the accessibility to the young generation today.

In Alexander's paper, the concept of fear was studied as a component of the civil identity within the European context, a case study in the UK, which leads us to note the link between the importance of the civilian identity components and the way it formed and the impact of policies used as solutions for fear. To sum up, researchers have studied the political aspect of fear in spatial contexts, as Schuermans e Maesschalck de (2010) blots fear as a problem that can be exploited politically and how some policies may be a reason to generate and deepen unjustified fear within societies. It is essential to realise the impact of policies in creating fear and how political decision-makers can deepen the social differentiation gap, thus generating fear. For instance, in the case of Belgium, political actions manage to deepen the gap between rural Belgian society and immigrant communities in the major Belgian cities, which has led to an increase in racism and transformed the state of social diversity into a fearful and undesirable factor for a large group within society (Schuermans e Maesschalck, de, 2010).

The wrong political mechanism of dealing with crime, racism, and immigration has transformed society's strengths into weaknesses and deepened urban segregation at both spatial and social levels.

The economic dimension as a tool of solutions to the fear issue is less complex, more direct, and easy to use, and its results seem to be fast emerging. Nevertheless, it is essentially connected with the political mechanisms because of the need to create a cycle of decision making to apply the economic and social tools within the cities since those two dimensions (economy, social) tend to be practical and applicable. However, the controlling point most of the time is political.

Consequently, the economic tools pull out the attention of scholars from different parts of the world; some addresses the effects of economic behaviours on reducing or producing fear, such as Heath (1997). Others address economic practice's importance as a targeted political tool (Bonn, 1946; Schuermans e Maesschalck, de, 2010; Shirlow e Pain, 2003).

Heath (1997), in his paper, tended to focus on the approach of the night-time economy to apply the concept of the 24-hour city for a safer city Centre among British cities, aiming by this suggestion to transfer the death hours in a city centre to a continues active hours.

He points out the time gaps of city centres due to lack of activity, which begins after the end of the estimated work duration that is considered one of the possible reasons for fear in city centres. The reason for adopting this strategy concluded in those points: first, adapting a safer atmosphere in the city centre, second, reviving investments and regenerating economy. Thus, Heath's suggestion which can be traced to "Comedia's Out of Hours report in 1991¹ and Manchester Olympic bid and ran the More Hours in the Day initiative-1993² seems to be reasonable.

To conclude, fear as a general concept traced in Europe from various approaches is considered a fundamental problem, not just to be treated as a result of simple behaviours. However, it can also result from more complex situations in different levels, either economic or social. Thus, the policies play a leading role in adapting actions that can reduce or produce fear. However, among the urban planning community, the practical strategies concerning fear are still vague and unclear.

Fear takes different shapes of expression among different contexts, such as the gated community, which is considered one of the Urbanic physical formations for specific isolated communities with cultural characteristics. This physical formation within a spatial location might produce fear within the general social structure and the urban fabric. In the American urban context, as in other urban contexts around the world, in which the context is considered to be ordinary without any hence of conflict or political violence, various problematic causes or behaviours that create fear exist, such as racism, gender inequality, classes differentiation, clustered communities;

According to Low (2001) in his paper, *The Edge and the Center: Gated Communities and the Discourse of Urban Fear*; The middle and upper-middle class in US societies tend to express fear from the lesser class (e.g., immigrants, poor, and workers), therefore they use walls and security to "protect themself"; those kinds of practices increase the visual landscape of fear. Nevertheless, it discourages social interactions and frames them with class, race, ethnic exclusivity, and gender limitations.

Jabareen, Eizenberg, e Hirsh (2019) address fear within an ongoing conflicted urban environment Jerusalem-Palestine. In contrast, the study explains the normal relations between perceptions of fear, spatial practices, and the formation of specific urban spaces through a sample of 625 participants who live in Jerusalem and creating their concept of fear and spatial practices. The study reached that perceptions of fear dissolve specific differences within an ethnic group while enhancing differences with the other. However, the conflict between Palestinians and Israeli Jews started over 60 years ago. The characteristic of this conflict is unique in itself; thus, it is possible to return the fear to the armed conflicts.

In another urban context within Asia, Kirmani (2015), in her social study (*Fear and the City Negotiating Everyday Life as a Young Baloch Man in Karachi*), focuses on fear and insecurity as emotional practices that structure the spatial and social relations in the city of Lyari-Karachi. The study illustrates that fear as emotional practices in violent urban landscapes set many spatial bunds on disadvantaged populations, increasing their social, economic, and spatial marginalisation within the city and strengthening the power of violent men to act as "the protectors" of marginalised groups.

From another approach within the literature, fear is determined as a resulting reaction for three main categories: fear as a stereotypical action against the stranger, or "different-other" such as "emigrants".

¹ Comedia's Out of Hours report – 1991; is a study of economic, social and cultural life in twelve town centres in the UK. Written by Comedia and Calouste Gulbenkian Foundation.

² Manchester bid Olympics and Paralympics; is a investment campaign, first presens was on 1 february 1993.

Furthermore, fear from terrorism as a significant safety threat and a radical violent act, and fear of imminent urban catastrophes; as for the first type, the strangers may output anxiety due to a difference between various social values and lifestyles. Also, the author mentioned that strangers are generally the party that tends to exhibit greater fear if only because strangers are denied the same rights accorded to citizens. Moreover, he discussed terrorism fear and the consequences on the urban atmosphere of constant fear. Moreover, the fear of the imminent urban catastrophe may lead to significant security issues caused by unequal economic wealth distribution, increasing anxiety, and increasing fear (Chan, 2019).

In another study, the reason which caused the tension and stress in society was explored. The researchers noticed that the sensorial-artistic dimension in the urban cities expresses all the significant cultural tensions of a modern city. A modern city's visual and emotional environment, such as the atmosphere's aesthetic and affective states, impacts individual behaviour more than other government regulations or applied actions. Therefore, secure and entertainment environments also increase the comfort level in the society, hence less fear from different aspects (Mubi Brighenti e Pavoni, 2019). Accordingly, it is logical to state that the urban formation in a modern city significantly impacts its users as individuals and society. Hence, this notion that is already applied within a limited scope is highly possible to function in more large scope such as cities. Thus, certain urban forms can generate fear in the users, besides the other tangible causes, such as crime, socio-economical differentiation and segregation (Luisa Maffini e Maraschin, 2018).

2.4. CONCLUSION

In conclusion, social, criminological, psychological, and urban studies fear outcomes or results among different experimental contexts. Whether a result of inner indications or outer indications, fear is an emotional trigger that not only affects the behaviours of an individual but might generate problematic collective behaviours within the social structure as well. Therefore, with the problematic behaviours, reactions and stereotypical social mentality, the reflection of fear within the urban formation as a physical action appears. Therefore, in this particular point, the urban planners should fill this gap to reduce the physical aspect of fear within cities.

There was no focus on the connection between fear and urban formation, specifically segregation, among the literature that outlines fear—instead, some analytical and observational attempts to explore fear within a specific study area. The methodological approach used is surveys, documents analyses, and photographic observations.

This dissertation attempts to complement other research papers that debate fear within ordinary urban contexts. Thus, it focuses on observing urban forms, segregation as part of these forms, and its relation to fear without neglecting the importance of social formation within some specific spatial samples taken as a case study in Porto, Portugal.

It uses an observational methodology, and there is an initial attempt to use remote sensing techniques as a visual aid method for observational fieldwork. Whereas the tangible measurement of fear, new scopes such as satellite image analyses or statistical studies approach physical urban formations and emotional reflexes, such as fear, are relatively rare in the literature.

3

ABOUT SEGREGATION, BRIEF LITERATURE REVIEW

3.1. INTRODUCTION

In this chapter, a brief literature review is conducted on segregation within urban environments to understand the concept of urban segregation spatially and socially.

Several types of segregation have been observed by researchers, some of which are limited to physical spatial segregation. However, others go beyond the place, causing social deprivation, class and urban differentiation, inequality conjugated with other associated problems that have psychological results such as fear. Here comes the role of this dissertation to try to shed light on The link between spatial segregation in some samples of the case study and its forms and between the fear factor, which is the primary research problem.

3.2. SPATIAL SEGREGATION, VIEWS

Due to Musterd (1998), spatial segregation is a problematic issue that becomes an essential part of European political agendas. Furthermore, the rise of segregation as a problematic negative concept is highly associated with poverty, cultural differences, and ethnic minority clusters in poor residential areas. Therefore, the literature noted that urban segregation linked to social deprivation is viewed as a political issue within the European context. Although the reality of divided cities results from the isolation of prosperous societies and poor societies alike when studying spatial segregation, the concept of richness and isolated societies are not considered problematic. Nevertheless, the focus is only on the factors of spatial segregation associated with isolated poor societies.

It is likely to link the concept of spatial isolation of the upper class within closed societies with apartheid. Therefore, politicians focus their attention on deprived areas to promote the idea that the spatial dimension of deprivation is not the essence of the problem, but the deprivation itself is initially a relative problem that depends on many other factors such as the economic situation and education; hence the spatial dimension is not one of them. Accordingly, the spatial dimension of segregation represents a space that brings together the largest possible number of deprived social groups. (Musterd e winter, 1998).

3.2.1. CONCEPTS – DEBATES

According to Musterd e Ostendorf (2005): "the concept of segregation only refers to spatial distinction, spatial separation of different population categories, or other phenomena", whereas the main elements that define segregation are the spatial element; corresponds to this notion Smets e Salman (2008), due to their readings, they define urban segregation as the "spatial outcomes that indicate 'separateness' per se" (Briggs, 2005) (Souza Brigg, 2005, p. 235).

Thus, they emphasise that segregation's nature has differences from questions of choice and discrimination regarding the causes of separateness actions. The complex syndromes of segregation appeared by defining particular isolated groups or individuals due to spatial segregation.

Smets e Salman (2008) also argue the notion of deep interactions between spatial segregation and the socio-cultural, economic, financial, political and judicial exclusion of the deprived parts of society.

According to Pfirsch and Semi readings, the long term open debate about conceptualising segregation suggest two primary integrated approach; the first one is the word developed definition by the Chicago School in the 1920s which emphasises on the institutional role due to the physical and social distancing of a minority group, usually based on 'race', and the second broader approach which has developed in Europe since the late 1960s pointing to (the state of any given social group's residential concentration), whereas, "segregation specify any form of physical and (or) social exclusion of a group (dominant or not, based on class, 'race', family status), whether the latter is extreme and institutionally promoted or partial and vague" (Pfirsch, T. And Semi, 2016).

Due to segregation debates, the main focus points in segregation and exclusion are socioeconomic uniqueness, ethnic distinctions, and household type or other demographic distinctions, though this last focus point is considered to be infrequent. However, despite the separated nature of segregation and its exclusion effects of social debates, there is another part of debates regarding this matter, which focuses on inclusion and participation as an essential element in which the lack of it could cause separation.

The reasons for spatial separation and social exclusion could be due to lack of jobs, which cause insufficient qualified income to actively participate in society, moreover, the lack of interactions with colleagues. There is a common assumption that socio-spatial formation is an essential result of ethnic exclusion in social and spatial appearance. Consequently, it is a result of existing strict ethnic divisions that prevent interactions between ethnic groups (Musterd e Ostendorf, 2005).

Musterd, in his article, emphasises the possibility of demographic exclusion and its harmful long term impacts on society and place. Further, he explains that exclusion could also be passed on composing the population in specific neighbourhoods according to different age groups or lifestyles.

Therefore, the segregation and exclusion debates must be containing both problems and solutions. Thus, due to this assumption, the author argues the historical global causes of segregation, putting on table debates the impact dimensions in this regard. However, Smets e Salman (2008) argue the assumption of countering urban segregation and highlights the solution policies made in this aspect.

Due to Pfirsch e Semi (2016), segregation composition is changeable according to the spatial nature of the social component in a city. Therefore, regarding this changeable formation of the problem, it is important to identify the characteristic of the segregation area.

Thus, Pfirsch and Semi main focus were on the Mediterranean segregated cities and their different nature compared to south European cities, arguing regarding different readings the notion of lack of segregation studies for the Mediterranean cities and the notion of different characterisation of those cities in this regard.

3.2.2. NEW POLICIES. RAISING SEGREGATION- EXPECTED CAUSES

With the raising of the segregation problem, there was a need to identify and analyse the reasons and causes. Thus it addressed within the political agendas to find solutions and apply initiative action towards reducing the segregation whether spatially or socially or like so many cases in Europe, both.

3.2.2.1. Segregation Causes

According to Musterd e Ostendorf (2005), Due to their literature readings, globalisation is not the leading cause for all types of segregation in the world; however, it could be the main reason in specific segregation cases. Therefore, they define the theoretical dimensions that raised segregation and exclusion, thus viewing different critical views in this regard.

3.2.2.2. Economic Restructuring

Over the past decade, the economic restructuring process was sweeping through the advanced industrial countries in the world that are considered strongly connected with globalisation. The growing interconnectedness and internationalisation of firms and economic processes resulted from improved technological conditions, causing the accelerated growth of people, money, and goods worldwide.

Although this massive economic growth led by increased population flow showed a developmental movement in the industrial world; however, these new changes were accompanied by the growth of the demand for services and thus for service jobs for skilled labour, which be required in particular. Therefore, it is consensus that the global economic restructuring process also brings unemployment issues and low-skilled or unskilled jobs.

The most common result of the global economic restructuring process is the increased social polarization resulting from the ends of the socioeconomic distribution, such as the increased share of moderate skills or low-income households. At the same time, the impacts also show an increased share of highly skilled or high-income households, which causes an increased social inequality and deepening the classes gaps resulting from an integration of part of society at the expense of the isolation and exclusion of another part of society. This separation is the leading cause for more and more problems such as (loss of opportunities, the participation ability in society, reflected on the market involvement, a weak position in the housing market, little or extreme-wing political participation, and finally, few signs of socio-cultural integration).

These major divisions in society and markets will be reflected in spatial patterns such as wealthy-poor residential separations called socioeconomic spatial segregation (e.g. Sassen 1991, read by Musterd, 2004). However, due to other critical readings done by Musterd (2004), globalisation is one reason which could be applied as the main reason according to the place of segregation and its social-spatial and economical type and nature. And the differentiation of the demand side, besides the supply side of the labour market.

3.2.2.3. Race, Ethnicity and Immigrants

Due to Musterd, apart from class divisions, there are also ethnic, racial, and immigrant divisions, which must be considered one of the causes for spatial segregation expression. An example of that type of segregation; the black ghettos in the USA- the immigrants in Europe and the USA. First, it is interesting to look at some excluded segregated groups in their spatial political context. The applied policies played a significant role in deepening segregation, such as France's segregated immigrants' sectors. Whereas the connection between racial and immigrant divisions on the one hand and the socioeconomic divisions on the other appears to be strong, regarding the employment position which considers being weaker

opportunities for immigrant, racial groups, compared to other population groups (Musterd e Ostendorf, 2005).

Still, this example could not apply in some Middle East countries, Syria, where there is an equal employment opportunity between the Palestinian immigrants and other Syrian population groups.

Considering European countries and North American situations, it is notable that inequality and spatial segregation seem to be lower in European countries than in others. Therefore, due to the authors' Opinion: (Loic J. D. Wacquant, 1993; Musterd, Ostendorf e Breeba, 1998), the ghettos issues that exist in many European cities, still far from being a significant segregation and exclusion problem despite the ferns of the development of ghettos issues. However, that assumption does not necessarily reduce the complexity of this issue in the long term, mainly if the diverse European context does not aim to include those isolated groups into society and increase the sense of awareness, belonging, and cooperation among society.

3.2.2.4. The welfare state

The welfare state is a notion that appeared after the Second World War in many European cities, experiencing massive welfare expansion between 1945 and the mid-seventies.

The primary aim is to reduce the social risks of illness, disability, and unemployment, helping society achieve welfare; on the other side, progressive and high-income taxes must be applied.

However, according to 'Musterd', "it is not only the structure of the welfare state we should look at but also the restructuring which occurs over time". In contrast, he refers to historical changes that formed the structure of the welfare state starting after the second oil crisis (1979), in which many European countries with well-developed welfare systems suffered from relative decadence as a result of economic restructuring processes parallel to rising problems.

The welfare state was an idealistic liberal notion; however, any notion, in the context of it wasn't taken into consideration, will cause increased problems, some of them, the segregation issue, inequality, and exclusion.

Further in this regard, 'Smets and Salman' mentioned the role of Neoliberalism in deepening the segregation and exclusion issues.

3.3. SEGREGATION IMPACTS

Due to Musterd's readings (2004), the infection of segregation, if it has not been solved, could create a fertile environment for kind development counterculture in which a job, good education, and solid connection and relations between people are no longer part of the social system of values and principles.

He emphasises the harmful impact of poverty and class divisions on society that generates corrupted attitudes, behaviours and values, preventing people from understanding the available opportunities for social mobility. According to (Wilson 1987), in Musterd Article, "sociologists believe that segregation in American cities produces and aggravates social problems".

3.4. SOLUTION POLICIES

The authors Smets e Salman (2008) examining several strategies which considered as political attempts to solve the adverse effects of urban Segregation:

- Mixing strategies"

"Mixing different population groups directly or indirectly by creating a mutual housing environment".

- Escapist strategies"

"Settling in their own isolated areas to escape unwanted poorer neighbours or repression of those causing unrest". The choice of self-isolation to create safety from other isolated groups - safe zones concept.

- Deinformalisation strategies"

"Emphasising on the role of economic participation to reverse segregation". However, taking into consideration that division between western and southern, no longer relevant. The notion of developing less-developed cities' division does not exist nowadays; this leads to the assumption of countering segregation by benefiting from the experiences of both western and southern cities regarding the segregation trend and applying the convenient tools following the unique characterisation of the case study of segregation issues.

3.5. CONCLUSION

Urban segregation and social exclusion were essential issues addressed in debates since the impact of new global economic formation reflected the social aspect.

The strategies used as solutions for this trend could be working in reverse, depending on the nature of the place containing the segregation issue. Therefore, it was essential to understand the massive nature of segregation and the vast elements that cause it, the type of social group in their spatial context, and their way of influencing. Furthermore, the type of studies that associate segregation with human emotions' impact -fear in particular- is rare in urbanism. However, fear itself is a problematic issue that can result from segregation in some cases, or it may even create segregation and force a case of social isolation at some point.

4

FEAR AND SEGREGATION; FIELDWORK WITHIN THE CITY OF PORTO

4.1. INTRODUCTION

In this chapter, the dissertation covers the practical work and the methodological approaches coordinated within a work-plan consisting of four axes, started with the first axis, which is a brief descriptive for references and documents within the literature, to identify the selected case study before embarking on the details of fieldwork. Thus, this brief literary reading aims to introduce the area of the study case (Porto City), both spatially and socially, and spot the latest population statistics related, so that be linked later with the results of fieldwork.

Thus, depending on this first axis of brief literature, the remaining axes were divided into three practical fieldwork contexts within the case study's general context (Porto city). This represents a clear example of an "ordinary urban context" far from the conflicted urban context example. Therefore, the presence of fear reflex is considered justified due to the nature of that urban context. (Abu-Orf, 2013; Tulumello, 2015).

The first fieldwork focuses on observing fear, segregation and spatial separation within the near vicinity of the city centre of Porto Avenida dos Aliados (Vale, 2015). The observed area is part of (Lordelo do Ouro). The aim is to detect fear that might occur despite the safety rate in the place and the urban formation and services connected to it. Given the hypothesis that proximity to the city centre is supposed to constitute a state of safety. Thus, examining the reasons for fear and lack of security in some of these well connected and close parts to the city centre. This first fieldwork depends on creating a kinetic route map in some parts of Lordelo do Ouro and Massarelos parish by passing through several streets and residential areas, with the use of Urban photography as a documentation and analysis tool, accessible databases map as a cartographic mapping tool, and Naturalistic observation type as a methodological approach.

The second fieldwork focuses on observing fear, segregation, and spatial isolation in suburbs and residential neighbourhoods far from the city centre. The urban context sample for this fieldwork is (Cerro do Porto neighbourhood). The aim is to detect fear that might occur in this kind of neighbourhood with social residence forms by creating a kinetic route map of Cerco do Porto through several streets within the neighbourhood, with the use of Urban photography as a documentation and analysis tool, and Naturalistic observation type as a methodological approach. Furthermore, an interview has been made with the manager of (Projecto Cercar-te) as part of a humanitarian, social organisation that works at Cerco do Porto Neighbourhood and other surrounding social neighbourhoods.

The third fieldwork focuses on observing fear in areas considered part of the city centre and with a high range of safety to detect a possibility of having perceptual segregation connected to the feeling of fear, essentially linked to the factor of time within those streets and spaces.

Thus, the urban samples chosen was in the historical city centre, in particular, Rua das Flores in (São Bento), during the daytime, morning and night.

As a result, a cartographic comparison methodology was adopted between the results of fieldwork that was applied in three small urban contexts as urban samples within the overall urban context of the ordinary city of Porto and the results acquired from analysing the imagery products of Santinal-mission2 Sattelite imagery with 10km resolution applying the **Normalized Difference Built-Up Index (NDBI)**, the **Normalized Difference Vegetation Index (NDVI)**, and the **Built-Up Resulted Index (BU)**.

Based on the comparison between the results of fieldwork and the results of analysing satellite images mapping according to (BU) index, the discussion section was concluded with the final results of the practical section and recommendations.

Table 2- Fieldwork Stages Structure

Work Methodology Table					
C-S: Porto, Portugal					
European Context – Ordinary City type					
Aim		Detect fear and its Urban physical form (Spatial Segregation).			
Tools		Spatial Samples			Sampling Method
		S1	S2	S3	
		Lerdelo do Ouro and Massarelos parish	Cerco do Porto	A Street in Historical Part near City Centre	
Stage 1	Urban Photography Documentation tool	Observation	Observation	Observation	- Depending on the proximity to the selected city centre.
		External Observer	External Observer	External Observer	
		On-foot	On-foot	On-foot	
		Observation type:	Observation type:	Observation type:	- Depending on the peak population and service density
		Naturalistic.	Naturalistic.	Naturalistic.	
Stage 2		Analysing	Analysing	Analysing	
		Observational Data	Observational Data	Observational Data	
Stage 3	Remote Sensing	Cartographic comparison	Cartographic comparison	Cartographic comparison	
	Terra Incognita map source				
RESULTS AND DISCUSSION					

4.2. EXPLAINING THE METHODS' TOOLS CONCEPTS:

4.2.1. OBSERVATION METHOD

According to (Urban Institute, 2021), observation is a qualitative method used by researchers in different fields of study, such as social sciences, psychology and urban studies. In contrast, they tend to examine certain social cases or urban places by using this work method to identify the urban type and its action related to that setting.

The observation method is defined by different types of forms and ways of application; however, the primary two forms are:

- The participant observation form, where the observer takes a role in the activities of the selected sample of the study.
- The non-participant observation form or so-called Naturalistic observation type, where the observer does not interfere with the study sample and plays the role of outlook observer without any involvement in the field. Typically this type of observation is used by Urban institutes due to its substantial advantages within the various urban environments (Ciesielska e Bostrom, 2018); hence, it was the type used in this dissertation.

4.2.2. URBAN PHOTOGRAPHY TOOL

As stated by José van Dijck (2008), cited in Winton (2016), photography is identified as a communicational tool used to express social interaction and relations experiences; hence, it was customary to use it as a research tool. As for urban photography in particular, according to Maher Ph (2021), the application of Urban photography is determined by the capacity to explore the spatial scope on foot, whereas the spatial experience with all its sensory components is an essential part of urban photography process. Furthermore, this tool was used in research fields as a data collection method, especially in ethnography, where it was considered a visual notebook to define the criminal body types. Not to mention its use as a tool for exploring cultural and social differences and diversity. Photography was later adopted in Western societies as a tool for observation and documentation (Close, 2007).

Although there is much controversy about the eligibility of photography results and data, especially in the fields of health research (Close, 2007); however, its use as a supportive tool besides other methods of work is considered to be necessary, especially in the fields of urban studies and observation. Therefore, in this dissertation, the Urban Photography tool was applied in the empirical field of work as a documentation and data collaborative tool.

4.2.3. SATELLITE IMAGERY TOOL – SENTINEL 2 IMAGINARY

According to Lillesand e Kiefer (2004), *remote sensing is the science of collecting data about an object, place, or phenomenon and applying analytical, quantitative indicators by using a device without any contact with the studied object, place, or phenomenon*. This newly cartographic and quantitative methodology has many processing applications within the field of Urban studies. Moreover, it seems to be a strong work strategy with an up-to-date database collection that can be used for many studies, such as rating the human influence on urban spaces (Kuc e Chormański, 2019).

al., 2019; INE. Instituto Nacional de Estatística, 2020), in an area of 41.30 km² and has the highest population density value (5.232,9 inhabitants per km²) (AMPorto, 2021).

According to CMP, The municipality of Porto is made up of seven parishes. (three unions and four parishes): União das Freguesias de Aldoar, Foz do Douro e Nevogilde, União das Freguesias de Cedofeita, Santo Ildefonso, Sé, Miragaia, São Nicolau e Vitória, União das Freguesias de Lordelo do Ouro e Massarelos, Bonfim, Campanhã, Paranhos, Ramalde. Three parishes within the city of Porto were chosen as the range of studying samples: Lordelo do Ouro e Massarelos, Campanhã, and City centre.

4.4. FIELDWORK, FEAR AND SEGREGATION - SPATIAL SEPARATION WITHIN THE CITY



Fig. 3- Kinetic path map -1- Lerdelo do Ouro and Massarelos parish. Map Base (Mapbox, 2021)

The first fieldwork sample depends on creating a kinetic path map of Lordelo do Ouro and Massarelos Parish by passing through several streets and residential areas, with the use of urban photography as a documentation and analysis tool, a free database map as a cartographic mapping tool, and Naturalistic-Outlook Observation as a methodological approach.

The area which has been chosen as a sample of the first kinetic path route in the case study Porto was parts of Lordelo do Ouro and Massarelos parish, that considered being relatively far from the City Centre -Avenida dos Aliados- outside the inner city ring defined by the VCI motorway, yet the parish considered to be with a medium population density (fig.3).

The kinetic path started from Rua de Dom Pedro, walking towards Park Cidade do Porto, with an estimated distance of 4.5km, passing through different areas and streets; However, according to the observation status, the most significant locations to detect were: Rua Carvalho Barbosa, Rua do Aleixo, and Rua Arnaldo Leite.

4.4.1. THE KINETIC PATH OU-OB ANALYSES - LERDELO DO OURO AND MASSARELOS PARISH, SAMPLE 1

According to the Ou-Ob fieldwork, it was notable that the kinetic path centred around Rua do Aleixo, Rua Carvalho Barbosa, and Rua Arnaldo Leite gives a preliminary impression of fear based on the visual-spatial indicators represented by the initial urban formation on Rua do Aleixo (fig.7), whereas, the urban forms in the street shows features of spatial separation within the scope one small street, related to the residential type disparity, along with the presence of security protection factors represented by the high walls and secured gated surrounding the residence form on the left side of the street as shown in fig.6.

According to fig.4, fig.5 and fig.6, it was notable that within a small street width, there is a tremendous urban form differentiation; furthermore, the street observation experience detects a sense of unsafety as an intangible element connected to the physical factor of spatial separation.

As illustrated in fig.6 and fig.7, it represents a simple residency with a direct entrance without any gated forms, as the gated security wall in the left part has an equal height with the Right part.



Fig. 4- Rua do Aleixo - Differentiation of the Urban Forms.
(right side facade of the street). PH.R- 17/04/2021



Fig. 5- Rua do Aleixo - Differentiation of the Urban Forms
(left side facade of the street). PH.R -17/04/2021

It was notable that the kinetic path centred around Rua do Aleixo, Rua Carvalho Barbosa, and Rua Arnaldo Leite gives a preliminary impression of fear based on the visual-spatial indicators represented by the preliminary urban formation on Rua do Aleixo (fig.7), whereas the urban forms in the street show features of spatial separation within the scope one small street, related to the residential type disparity, along with the presence of security protection factors represented by the high walls and secured gated surrounding the residence form on the left side of the street as shown in fig.6

The three detected streets form the area near the Douro river with a view, which, at first glance, does not reflect any fear indicator, especially when there is a tendency to enter the area from the riverside; however, the experience within the three streets differ.

The peak point of the three observed streets is in Rua Carvalho Barbosa, where it is considered to be an empty street, with an apparent visual factor that identifies the use of it as a drug trafficking usage, altho the street holds a great potential of use such as arranged activities or a viewpoint (fig.8).

Based on observation, the kinetic path experimented with as a pedestrian Ou-Ob showed fear connected to the physical urban characteristic of the place (spatial separation) and the type of use.



Fig. 6- Rua do Aleixo - houses VS walls

PH.R -17/04/2021



Fig. 7- Rua do Aleixo. Urban facades.



Fig. 8- Rua Carvalho Barbosa. space of possibilities

Fig.7 shows the urban facade differentiation between old urban fabric with no element of security and a modern urban residency fabric with secured walls. As for fig.9 in Rua Arnaldo Leite, it was notable that the physical aspect of the urban façade differs in one area. In some cases, it can generate Fear if the surrounding areas or streets do not have any services, interaction, or connection to dangerous activity usage.



Fig. 9- Rua Arnaldo Leite. Urban differentiation
PH.R -17/04/2021

According to Vasconcelos (2016), in some cases, the homogeneity of spaces and urban forms within the scope of a city may not exist; therefore, it is possible to identify the socio-spatial differentiation by visual observation. Usually, the heterogeneous urban physical formation may refer to socio-economic class differentiation factors as its causes.

4.4.2.VISUAL MAPPING COMPARISON – RESULTS



Fig. 10- Cartographic comparison. S1

According to the conducted visual mapping comparison fig.10, it was visually notable that the three specified streets in Sample 1 are considered as a convenient space for illegal activities due to lack of services and the reality of neglect.

As BU image 2020 shows (fig.10), the ratio of built-up density in the cropped range is moderated compared to the built-up density visualized in the historical and city centre cropped range image (fig.18).

The UB image within the range of sample study 1 clearly shows a variation between the built-up areas and non-built-up areas, identified clearly in the open street map as the partially dysfunctional area confined between a southern actively functioned street (Rua do Ouro) and an isolated northern street (Rua Carvalho Barbosa) in which is highly possible to see illegal functionality such related to drug trafficking.

The illustrated OpenStreet map articulates the spatial Separation on the scope of Rua do Aleixo. However, the spatial separation within the scope of the street is not visually clear on the map, although the differentiation between the residence urban forms is visually notable on an extensive range scop of the Terra-Incognita map (fig.11).

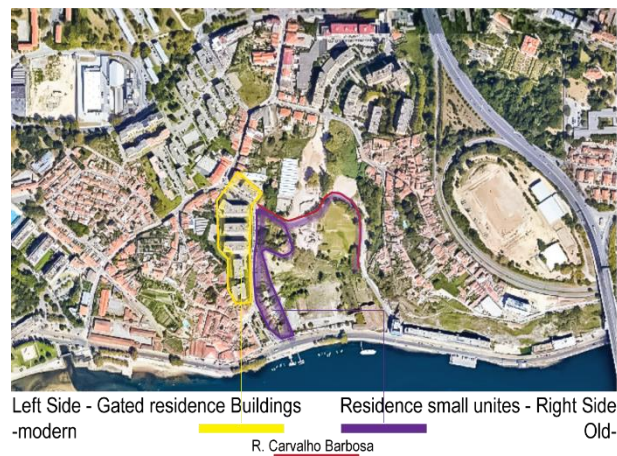


Fig. 11- illustrated zoning map - R. Aleixo. R. Carvalho Barbosa

As a conducted result of sample 1 - fieldwork and mapping visualization. The physical urban formation correlated with spatial separation can be a source of fear generating,

The spatial separation aspect can be tied to socio-economic differentiation, leading to social segregation-related problems.

A potential urban problem can be detected and identified by the sense of Fear that a particular place is generating, highlighting the importance of articulating the fear element as part of the urban policies agendas (Tulumello, 2017).

4.5. FIELDWORK, FEAR AND SEGREGATION – SOCIO-SPATIAL ISOLATION OUTSIDE THE CITY (SOCIAL RESIDENTIAL NEIGHBOURHOOD TYPE)



Fig. 12- Kinetic path map -2- Cerco Do Porto. Map Base (Mapbox, 2021)

The second fieldwork focuses on observing fear, segregation and spatial isolation in the context of suburbs and residential neighbourhoods far from the city centre, and the chosen urban context sample for this fieldwork is (Cerco do Porto neighbourhood), to detect the fear factor and the stigma of danger ties with this kind of social neighbourhood.

A kinetic path map was created of Cerco do Porto through several streets within the neighbourhood, bypassing through the area and observing its streets and social behaviours, in addition to applying an interview with the manager responsible for the (Cercar-te) project, which is an ongoing social project oriented to the community of Cerco do Porto. It has been interacting with the social environment there for eight years.

The area chosen as a sample of the second kinetic path was confined between two main streets in the neighbourhood (Rua do Cerco do Porto, and Rua Peso da Regua) with an estimated 1 km walk. The neighbourhood's location relative to the chosen city centre is far from the first highway net (VCI) surrounding Porto (fig.12). Furthermore, the population density in this area is low, according to (INE 2011). However, as the BU image conducted in 2020 shows, the density in the area is still considered low compared to the other chosen samples of study (fig.15).

Bairro do Cerco do Porto is located to the East of Porto municipality in Campanhã parish, close to the municipality of Gondomar and surrounded by a network of highroads such as Estrada da circunvalação and the Circular Regional Interna.

Several problems can be listed in this neighbourhood, such as illiteracy, low qualifications, unemployment, low family income resulting from unemployment, overcrowding of fires, ageing and isolation, drug consumption and trafficking to face low incomes, the marginality of young people, degradation of space public spaces and buildings and lack of cleaning and maintenance of public spaces. In addition, this area suffers from several urban, architectural, social and economic problems. According to Borges (2017), those problems are caused by neighbourhood characteristics and social stigmatization. In

contrast, it is known for the high levels of school drop and child abandonment. Consequently, "the levels of educational and professional qualifications are low, which led to high levels of illegal behaviours (e.g., drug trafficking).

Moreover, some studies debated that planning policies importance and the issues that should be included in the planners' fear per se (Tulumello, 2017); hence the policies role is essential for reducing severe problems and social inequality. However, in the case of Porto, the public policies are not oriented towards the goal of mitigating socioeconomic disparities. Therefore, there is increasing socio-spatial inequality (Alves, 2016); accordingly, the stated debates can be related to the case of Cerco Porto from an Ou-Ob point of view and based on the conducted interview.

An interview was conducted with the Cercar-Te project manager in Cerco do Porto neighbourhood. As a brief introduction of the project, it is considered part of Espaco T social organization activities within the area. It is a social project orientated towards the community, concerned with children and talent development, especially sports.

The interview was with Circar T project manager, who has been working in social organizations for 22 years, thus as the project manager on land, continuously interacting with Cerco do Porto community, issues and problems during eight years.

According to the Interviewee, there are 34 housing units for social housing in the Cerco area, in which about 2000 people live; 20% of the population are of Romanian origin. One of the main issues related to Cerco Porto is the drug trade. In addition, the distinction and social segregation are also considered an issue due to the diverse nature of population and the lack of well-oriented social policies related to those problems. One of the central notions that the interviewee mentioned is that as a neighbourhood located on the outskirts of Porto, the municipality made some efforts to improve the area's infrastructure. However, it is considered to be slow compared to the size of the area actual existing problems.

As an internal user of the place with constant interaction with the social and urban environment, the interviewee stated that he was worried about this area and had a stereotyped impression. Thus, fear of the (unknown or stigma of danger) was high; however, the sense of fear was reduced by time.

The fear level variation emphasizes (Delanty, 2008; Kirmani, 2017), whereas the fear ratio in many levels and contexts is usually correlated with the range of unknown reality or the amount of ignorance we have of the otherness qualities differentiation.

As a typical social urban component, the neighbourhood has many social and economic problems, such as weak economic income, school drop, and educational-related issues.

There are no plans to attract tourists or human movement to the area, even though the eastern Park of the City (Parque Oriental da Cidade do Porto) is near. However, activating the attraction movement towards that part of the city can hold a great range of capabilities and development potentials that can increase social interactions, reduce socio-urban segregation, and solve many socio-economic problems.

According to (interviewee), the inhabitant of Cerco do Porto desire to improve the social environment and develop the area, but they do not have the instruments of knowledge required.

4.5.1. THE KINETIC PATH OU-OB ANALYSES - CERCO PORTO NEIGHBOURHOOD, SAMPLE 2.

According to the Ou-Ob fieldwork, it was notable that the kinetic path created in the Cerco Porto neighbourhood (fig.12) generates a state of fear, based on the acquired external image related to the neighbourhood, as a social housing neighbourhood correlated with many social and economic problems, and embraces illegal activities at particular parts and streets of it,

The Urban physical formation is identified as a social housing cluster type (fig.13), where there is no preliminary impression of fear based on the visual-spatial observation. However, the fear is connected to the social stigmatization problems and maybe resulted from the spatial segregation aspect that is an urban physical form of the neighbourhood which is possible to detect on maps.



Fig. 13- Cerco do Porto neighbourhood. Entrance-Facade. PH.R -06/05/2021

In particular inner streets on the neighbourhood, such as Rua Alijó, there is a physical, social formation that was made to identify a gathering point or landmark referred to as drug trafficking spatial point within the neighbourhood,

although this self social-spatial organization is used to indicate the location of illegal activities, as a point of interest; however, it might be an indicator for social clustering and community isolation symptoms. Which can be identified as a problem generated by spatial segregation and a lack of oriented socio-urban policies applications (fig.14).



Fig. 14- Trafficking mark location-R.Alijó. PH.R -06/05/2021

4.5.2.VISUAL MAPPING COMPARISON - RESULTS



Fig. 15- Cartographic comparison. S2

According to the conducted visual mapping comparison fig.15, it was visually notable that Cerco do Porto neighbourhood location as a social housing area surrounded by a dense net of highways indicates a visual possibility of spatial segregation. As for BU image 2020 shows that the ratio of built-up density in the cropped range is low compared to the built-up density visualized in the first sample fig.10 and historical and city centre cropped range image fig.18. The highway network is visually apparent in both the BU image and the open street map.

The illustrated OpenStreet map articulates the highway network surrounded and the so-called dangerous street inside the neighbourhood, such as Rua Alijó, in which the illegal activities are applied, primarily drug trafficking actions.

As a conducted result of sample 2 - fieldwork and mapping visualization, the spatial segregation status of an area or a neighbourhood, can create various numbers of problems and produce isolated societies; moreover, it is capable of deepening the gap between the inhabitant of the area and the remaining social

groups within the scope of a city. Thus, many problems related to the social environment can be increased within a physical urban formation correlated with spatial segregation; due to these continuous linear correlated problems, fear can be generated.

Activating a route of attraction towards those areas and enhancing the social capacity plays an essential role in the development and problem solvation process. However, it is essential to activate social participation during this process. As community participation is an integrated process, it is considered an actual treatment for society to develop and deepen the sense of belonging to the area and the city as a whole integrated urban content.

The development of the urban area in terms of service is an essential factor that increases its spatial and social interaction, reflecting positive results towards problems reduction.

4.6. FIELDWORK, FEAR AS AN EMPIRICAL EXPERIENCE WITHIN THE CITY CENTRE (PERCEPTUAL SEGREGATION OF A PLACE LINKED TO THE FACTOR OF TIME).



Fig. 16- Kinetic path map -3- City Centre. Map Base (Mapbox, 2021)

The third fieldwork sample depends on creating a kinetic path map near Porto city centre and inside the historical part, specifying the observational experiment in the scope of a well-known street as a high touristic attraction point (Rua das Flores) in São Bento,

Rua das Flores is one of the traditional pedestrian streets in Porto, it has its historical roots, goes back to 1521, and it had an essential role in easing the transportation of trades, and played a significant role in the economic trade axis near the river Douro (Samuel, 1994). Within the historical part of Porto city, this street is considered to be a renovated pedestrian street, with a high range of attractions as a touristic line.

In correlation to a murder crime in the 19th century, the street might be interesting to spotlight the effect of reputation and unusual accidents on the emotional reflection of a place within the urban context. However, in this fieldwork, we mainly focused on experiencing the street outside its functional timeline during the nighttime. Therefore, we tried to observe this experience as street users and track fear factors and urban physical aspects.

4.6.1. THE KINETIC PATH OU-OB ANALYSES - DOWNTOWN PORTO, SAO BENTO: RUA DAS FLORES, SAMPLE 3.

According to the Ou-Ob fieldwork, it was notable that the pedestrian kinetic path during daytime does not reflect any sense of insecurity or fear. Due to its interaction, social functionality, and the full-service coverage related to tourism, along with the transportation constant movement around it.

Mainly the area of the street is highly functioned and active during the day. Nevertheless, the observer experience does not differ radically during the night, despite the cessation of services and the decreasing state of human interactions created by the various services in the street itself and the area (fig.17).



Fig. 17- Rua das Flores - nighttime - 04/07/2021

The observational experience tends to examine the street during nighttime; the discontinuation of the service creates a calm, silent environment; however, the pedestrian movement around the street still exists due to the proximity of transportation points both (metro station and bus station).

The location of the street as part of the active historical centre of Porto plays a significant role in providing at least a minimum level state of safety within the urban context.

4.6.2.VISUAL MAPPING COMPARISON – RESULTS

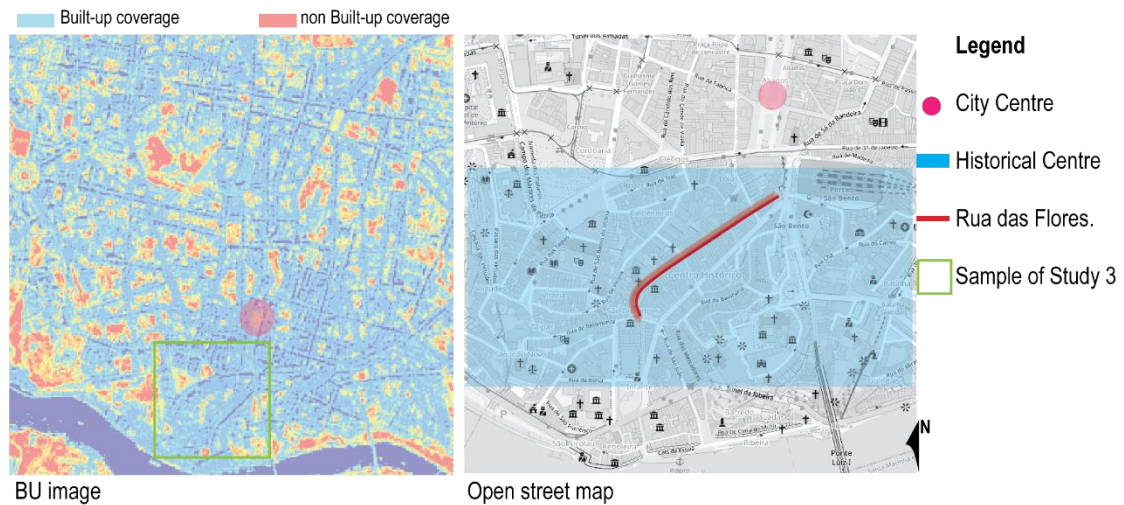


Fig. 18- Cartographic comparison. S3

According to the conducted visual mapping comparison of both BU image 2020 and the illustrated open street map fig.18, the ratio of built-up density in the cropped range is the highest ratio between the three chosen samples of study, and the location of the conducted kinetic path considered with high proximity to the city centre of Porto. Thus the spatial coordinates of the urban environment for modern city centres, and the service situation, play an essential role in integrating the urban context with its spatial surroundings. Thus the feeling of fear in such cases may not be apparent.

4.7. CONCLUSION

The outlook observation fieldwork, the urban photography documentation, and the visual mapping computations results within the three samples can be summarized as followed:

Sample1: the fieldwork observation detects fear factors within three specific streets- Rua do Aleixo, Rua Carvalho Barbosa, and Rua Arnaldo de Leite. Spatial separation and urban façade differentiation are noted in the field, especially on Rua do Aleixo, yet maps and satellite images do not clearly visualise urban segregation. As a visual mapping comparison (fig.10), it was notable that the land coverage surrounded by the three streets is an unused area, along with the unfinished structured works near the area, which might be creating a perfect environment for illegal actions such as drug trafficking usage in Rua Carvalho Barbosa. Due to lack of services and investments.

Sample2: the fieldwork observation detects fear within the social neighbourhood Cerco do Porto. The physical urban forms of the neighbourhood are identified as a social housing type. Thus, the social characteristics that tie with this type of urban formation are significant; based on that, the fear factor within this type of urban form is more likely to be connected with the social aspects. As a visual mapping comparison (fig.15), it was notable that the land-use coverage is visualized as a typical urban formation (social housing) within the area. However, the neighbourhood's surroundings might indicate a visual potential of spatial segregation because of the highway network, which can increase socio-spatial isolation even more.

Sample3: the fieldwork observation detects fear within the city centre surrounding, in particular - São Bento, Rua das Flores, which is considered a historical tourist area. The main focus here was to identify fear within timeline differences during a day; based on this notion, it was notable that fear occurrence

is slightly possible even within a high-density urban area with touristic features during the unfunctional time of the day. Furthermore, despite the fact of being in a high interaction urban area with well-covered services, yet the services and activities related to this type of area stop during nighttime, which might generate a sense of insecurity during the unfunctional times; thus, the functioned services in a place, elevate the sense of security (Heath, 1997).

As a visual mapping comparison (fig. 18), it was notable that there is no sign of spatial segregation or isolation; on the contrary, the spatial density is high. Therefore the generated sense of insecurity is highly related to the timeline of services functions within the area.

5

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1. INTRODUCTION

This chapter focuses on the main objective of this dissertation, fear (as a social reflection) and its urban physical form (spatial segregation). It ties it to observational samples studies results that were applied within the scope of Porto city as the general case study. Furthermore, it discusses the main questions and objectives of the dissertation:

Does the ordinary urban context that shows a sign of urban forms differentiation such as segregation has a fear impact on it? What are the physical signs that indicate an appropriate environment of fear generation?

In this chapter, we raise the following points for discussion; depending on the results of the practical part dissertation:

- Urban fear is considered a cause and effect of urban segregation (Sample1);
- Segregation as a problematic criterion of urban formation in cities; plays a significant role in producing fear in ordinary urban settings and vice versa. (Sample1);
- Fear caused as an urban physical form in cities can be transferred to an empowering feature of society within its urban environment. (Sample1.Sample2);
- The functionality of a place and its diverse interaction nature can reduce fear (Sample3).

5.2. FEAR GENERATING AND ITS TIES TO URBAN FORMATION

Regarding fear generation and its connection to the urban formation; it is necessary to distinguish two perspectives:

- The image that a neighbourhood or a street identified with as the outside.
- The inside experience of a place (Tulumello, 2015).

As for the outside reflected image of a place, it is notable in the state of Cerco do Porto neighbourhood as an Ou-Ob sample of the study, where the area is stigmatized as a fearful dangerous area because of two main reasons,

First, the neighbourhood's social type is occupied by a gated community with its own significant cultural and social characteristics. However, the social types identified as different or 'other' holds great potential for positive diversity and multicultural interactions if the right socio-urban policy actions aim to adjust these differences as a strength point strategy of development.

Second, some neighbourhood streets are used as drug trafficking points (fig. 14 - Rua Alijo). However, having a perfect environment for illegal activities should be considered; consequently, the gaps and flows in urban planning strategies within this kind of area identified as (social housing neighbourhoods) can create an incubating environment for illegal immigrants activities. Thus, the socio-economically vulnerable populations clustered in those urban forms should be looked at from a different perspective with a new application of socio-urban strategies.

The inner experience of the neighbourhood of Cerco do Porto is divided into two analytical sections. The first section depends on the experience of the permanent user of the place (interviewee), and the second section depends on the experience of the external observer (student researcher). As for the permanent user experience (the interviewee) does not show an exaggerated sense of fear due to the constant integration with the community and the spatial environment over eight years. However, according to the interviewee, there is a lack of services in the place, the economic situation of residents is considered weak, and the social character is isolated. Therefore, it is not easy to gain its trust quickly.

As for the outside observer experience, a stereotyped view of the neighbourhood appeared, whereas the outside image as a dangerous and unsafe place was reflected on the Ou-Ob experience; it occurred in the form of high rated fear.

Spatial segregation of an area is a problem that can produce fear as a predictable response accompanying socio-economic problems related to the complex urban formation itself. This vicious cause-effect relationship between fear and the physical urban form appeared as spatial segregation (sample 2) or as spatial separation within the scope of a street (sample 1). Thus, it is highly linked to social, economic problems and the lack of policies that consider fear to indicate potential socio-urban problems.

Fear within the urban contexts can be a primary reliable indicator of identifying socio-urban and economic problems in a place. Furthermore, fear can indicate social collective thinking and behaviour; thus, considering it as a wide range factor, it can contribute to collective and urban development. Moreover, addressing fear should not necessarily be related to the rate of crime within an urban context. Thus, it is essential to emphasize observing fear as a diagnostic reaction of an issue and thinking of this element outside its stereotyped correlation with the criminological studies.

Accordingly, as seen in the case of Porto, the rate of crime is decreasing in Portugal in general and in Porto, mainly based on the PORDATA database. However, the stigma of fear is still connected with some areas, which considered dangerous areas or neighbourhoods to be in, such as the case of Sample 2 in the practical work of this dissertation on Cerco do Porto (tab.2).

It is undeniable that there is an act of illegal activities (sample1 and sample2) in those stigmatized areas. However, these types of activities reflect other essential issues that the place has, such as economic difficulties and the isolated social structure, which holds different types of problematic issues that need to disassemble and study in-depth on different levels to articulate a practical indication formula and address solutions or develop the social structure. Urban studies, on the other hand, play an essential role in this regard, as they can provide spatial interventions capable of moulding the social environment and directing it towards the desired goal using urban tools.

Table 3- Total rate of crime within a timeline 1993-2020 (PORDATA, 2021)

Crime Rate in Total, without categorizing					
	1993	2001	2010	2016	2020
Portugal	307,333	372,170	424,252	330,872	Pro 298,797
Porto	22,243	21,238	16,761	14,461	Pro 12,188
Metropolitan Area of Lisboa	129,874	125,499	133,588	105,793	Pro 89,025

Based on the practical study carried out in this dissertation, a significant point was noted. The lack of services in the place is a fundamental cause of fear, especially within urban contexts that are already considered problematic. On the other hand, the potential of development and the possible capacity of positive collective interaction within a problematic area is considered to be very high. For example, sample 1 has great potential to address it as a spatial point of attraction by applying flexible socio-urban studied interventions. Thus, it is essential to articulate fear as a problem symptom and a positive evaluation possibility. In contrast, each negative reflex carries indications of positive possibilities and promising spatial-social features. If adequately invested as an oriented plan within the planning policies, it can create a broad scope for improvement at various levels.

5.3. CONCLUSION

To conclude, the dissertation started by asking this question: Does the ordinary urban context that shows a sign of urban forms differentiation such as segregation has a fear impact on it? What are the physical signs that indicate an appropriate environment of fear generation? According to the practical observational fieldwork, it was noticeable that segregated areas or streets have a fear impact. The cause of fear impact is whether because of the social nature and its unmet needs, due to lack of services and policies of social integration and development or because of the visual urban physical positioning based on a clear structural difference between high-security residential facilities and inadequate facilities on the same narrow spatial scale. Furthermore, fear differs depending on the daytime changes, whilst this differentiation is significantly connected with the functionality and the density of social interaction and services.

Moreover, the range of proximity to city centres, the population density of a place, and the extent of social care given in parallel with urban care are all factors that affect the formation of the urban environment. Hence, they may either create a suitable climate for illegal practices and generate various social indicators such as fear or contribute to the development of the place from an urban and social perspective at the same time. Although fear indicates various types of problems in the place, it is essential to note that fear can also indicate urban diversity or cultural differentiation that can be positively shifted to a potential developmental and empowering tool. Thus, by developing fear as a measurement indicator with positive possibilities and suggestions, it is possible to create an efficient way of urban applications towards solving the problematic issues within an urban context.

5.4. RECOMMENDATIONS

In the dissertation, the researcher spotted some physical features that increase fear or are signs of segregation. Thus, a group of practical recommendations are suggested:

- In the case of Lordelo do Ouro Parish, particularly in the observed streets, it was noticeable that the area surrounded by Rua Carvalho Barbosa and Rua do Aleixo can be an attraction point. Therefore, one of the proposed ideas for revitalizing the area and integrating it with the surrounding environment is to activate Rua da Mocidade da Arrábida, which directly links between the Carvalho Barbosa area and the river, through the establishment of linear interactive activities extending towards Rua Carvalho Barbosa.
- In the case of Cerco do Porto neighbourhood, it was noticeable that near the neighbourhood, there is the eastern Park of Porto city, which can be linked with the Western Park of the city by a set of activities and interactions, to activate the human movement towards Campanhã and the Cerco do Porto neighbourhood in particular. Thus, contrived human flow can be utilised to integrate the area socially and spatially in conjunction with parallel development activities.
- The case of Rua das Flores can be used as a clear example of the importance of an interactive environment and service availability in creating a safe urban scope. Moreover, how the absence of the interactive reality and the timeline functionality changes can generate fear. From this point, it is recommended to strengthen the connection of inefficient places with active places through a network of urban linear activities and events that operate as a systematic and sequential spatial function method. The main objective of this urban network is to de-centralize the service and activate all parts of the city in a balanced and equal manner at the spatial level. As a result, reducing service and development centralization contributes to the development of the rest of the city and the fair distribution of urban interest, thus reducing fear.

Accordingly, further research is recommended:

- The measurements of urban fear are considered essential to address more quantitative practical urban studies that focus on fear and try to present new methodological tools application for measurement and detection due to the lack of empirical urban studies tied with fear.
- Using remote sensing methodology, the visual experiment of fear is a promising field of study with extensive quantitative and cartographic databases. Furthermore, the usage of remote sensing as a primary quantitative methodological tool is considered adequate. Whiles presents a broad scope of a digital database, especially when dealing with an urban context with high data access sensitivity such as Syria, Iraq, and various parts of the middle east.
- The research potential can be developed toward the field of advanced urban prediction by studying and utilising observational factors, including fear as predictive monitoring tools.
- The research can be expanded towards disaster management studies to include urban areas of greater complexity for practical studies, like the case of Syria.
- The study of urban segregation can be expanded upon as a stand-alone research problem, with fear and other psychological factors used as urban monitoring indicators.

Finally, it is essential to mention that, while working on this dissertation, there were a number of limitations:

- The lack of connection related to the language factor is considered a limitation that affects the interaction element, especially when dealing with a highly sociable subject such as fear as human emotional reflect.

- The dissertation did not apply a quantitative segregation measurement due to the lack of recent statistical data. However, as a secondary part of the empirical study, a remote sensing tool was used to address visual, quantitative cartographic images and maps used in the analytical part compared to the fieldwork observation results.

REFERENCES

- Abu-Orf, H. (2013) - Fear of difference: «Space of risk» and anxiety in violent settings. *Planning Theory*. 12:2. 158–176.
- Alexander, C. L. (2008) - Safety, fear and belonging: The everyday realities of civic identity formation in Fenham, Newcastle upon Tyne. *ACME*. 7:2. 173–198.
- Alves, S. (2016) - Spaces of inequality : It is not differentiation. It is inequality ! A socio-spatial analysis of the City of Porto. *Portuguese Journal of Social Science*. 15:3. 409–431.
- AMPorto (2021) - Disponível em [www:<url:http://portal.amp.pt/es/4/municipios/porto/stats/habitacao/#foco_4>](http://portal.amp.pt/es/4/municipios/porto/stats/habitacao/#foco_4).
- Ax, A. F. (1953) - The physiological differentiation between fear and anger in humans. *Psychosomatic medicine*. 15:5. 433–442.
- Bannister, J., & Fyfe, N. (2001) - Introduction: Fear and the City. *Urban Studies*. 38:6. 807–813.
- Bonn, M. J. (1946) - The Economics of Fear. *The American Academy of Political and Social Science*. 246:1. 130–142.
- Borges, S. (2017) - *Habitação Social no Concelho do Porto*. (S.l.). Universidade do Porto.
- Briggs, S. (2005) - Social Capital and Segregation in the United States. *Desegregating the City: Ghettos, Enclaves, and Inequality*. Ch:5. (State University of New York)
- Brunton, S. I., & Jackson, J. (2012) - Urban fear and its roots in place. *The Urban Fabric of Crime and Fear*. 55–82.
- Chan, J. (2019) - *Urban ethics in the Anthropocene: The moral dimensions of six emerging conditions in contemporary urbanism*. (Singapore, Singapore University of Technology and Design).
- Ciesielska, M., & Bostrom, K. (2018) - Observation Methods. *Qualitative Methodologies in Organization Studies*. 2:12. 1–264.
- Close, H. (2007) - The use of photography as a qualitative research tool. *Nurse Researcher*. 15:1. 27–35.
- Delanty, G. (2008) - Fear of others: Social exclusion and the European crisis of solidarity. *Social Policy and Administration*. 42:6. 676–690.
- Earthexplorer, Database. (2021) - *usgs.gov*. Disponível em [www:<url:https://earthexplorer.usgs.gov/>](https://earthexplorer.usgs.gov/).
- ESA . (2021) - *Spatial Resolutions - Sentinel-2 MSI - User Guides - Sentinel Online - Sentinel Online*. Disponível em [www:<url:https://sentinels.copernicus.eu/web/sentinel/user-guides/sentinel-2-msi/resolutions/spatial>](https://sentinels.copernicus.eu/web/sentinel/user-guides/sentinel-2-msi/resolutions/spatial).
- ESA And Copernicus. (2021) - *Scihub.copernicus.eu*. Disponível em [www:<url:https://scihub.copernicus.eu/dhus/#/home>](https://scihub.copernicus.eu/dhus/#/home).
- Ettehad, P. *et al.* (2019) - Separating Built-Up Areas from Bare Land in Mediterranean Cities Using Sentinel-2A Imagery. *Remote Sensing, Mdpi*. 11:345. 1-24.
- Evrigenis, I. D. (2007) - *Fear of enemies and collective action*. (Cambridge University Press)
- Friedmann, J. (2002) - City of fear or open city?. *Journal of the American Planning Association*. 68:3. 237–243.
- Ganser, D. (2005) - Fear As A Weapon The Effects Of Psychological Warfare On Domestic And International Politics. *The Journal Of International Issues*. 9:4. 24 - 40.
- Ceccato, V. (2012) - *The Urban Fabric of Crime and Fear*. (Stockholm, Sweden, Springer).

- Gusman, I. *et al.* (2019) - Culture and tourism in Porto City Centre: Conflicts and (Im)Possible solutions. *Sustainability (Switzerland)*. 11:20. 1-21.
- Hale, C. (1996) - Fear of crime: A review of the literature. *International Review of Victimology*. (Great Britain, Academic Publishers). 4:2. 79-150
- He, C. *et al.* (2010) - Improving the normalized difference built-up index to map urban built-up areas using a semiautomatic segmentation approach. *Remote Sensing Letters*. 1:4. 213-221.
- Heath, T. (1997) - The Twenty-four Hour City concept - a review of initiatives in British cities. *Journal of Urban Design*. 2:2. 193-204.
- INE, I. P. (2019) - *Estatísticas da Construção e Habitação*
https://www.ine.pt/xportal/xmain?xpid=ine&xpgid=ine_publicacoes&publicacoespub_boui=443821545&publicacoestema=55534&publicacoesmodo=2.
- INE, Censos. (2011) - *Censos*.
[www:<url:https://censos.ine.pt/xportal/xmain?xpid=censos&xpgid=censos2011_apresentacao>](http://www.censos.ine.pt/xportal/xmain?xpid=censos&xpgid=censos2011_apresentacao).
- Jabareen, Y. *et al.* (2019) - Urban landscapes of fear and safety: The case of Palestinians and Jews in Jerusalem. *Landscape and Urban Planning*. 189: 46-57.
- Kern, L. (2010) - Selling the «scary city»: Gendering freedom, fear and condominium development in the neoliberal city. *Social and Cultural Geography*. 11:3. 209-230.
- Kirmani, N. (2015) - Fear and the City, Negotiating Everyday Life as a Young Baloch Man in Karachi. *Journal of the Economic and Social History of the Orient*. 58:5. 732-755.
- Kirmani, N. (2017) - Life in a 'no-go area': Experiences of marginalisation and fear in Lyari. *Cityscapes of Violence in Karachi: Publics and Counterpublics*. (ch. 1): Oxford University Press. p.103-120.
- Kuc, G., & Chormański, J. (2019) - Sentinel-2 Imagery For Mapping And Monitoring Imperviousness In Urban Areas. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*. 42. 16-17.
- Lillesand, T. M., & Kiefer, R. W. (2004) - *Remote sensing and image interpretation*. (USA: Wiley).
- Loic J. D. W. (1993) - *Urban Outcasts: Stigma and Division in the Black American Ghetto and the French Urban Periphery*. (Uk, Blackwell).
- Low, S. M. (2001) - The Edge and the Center: Gated Communities and the Discourse of Urban Fear. *American Anthropologist*. 103:1. 45-58.
- Luisa Maffini, A., & Maraschin, C. (2018) - Urban Segregation and Socio-Spatial Interactions: A Configurational Approach. *Urban Science*. 2:3. 55.
- Maher, J. (2021) - *A Detailed Introduction to City and Urban Photography, Tips and Examples*. Disponível em [www:<url:https://www.jamesmaherphotography.com/city-urban-photography/>](http://www.jamesmaherphotography.com/city-urban-photography/).
- Mapbox (2021) - *Studio Map* Disponível em
[www:<url:https://studio.mapbox.com/styles/olasalman/ckqsmhdl323pj19ltj0u365di/edit/#11.06/41.1615/-8.6116>](https://studio.mapbox.com/styles/olasalman/ckqsmhdl323pj19ltj0u365di/edit/#11.06/41.1615/-8.6116).
- Matei, S. *et al.* (2001) - Fear and misperception of Los Angeles urban space: A spatial statistical study of communication-shaped mental maps. *Communication Research*. 28:4. 429-463.
- Mubi Brighenti, A., & Pavoni, A. (2019) - City of unpleasant feelings. Stress, comfort and animosity in urban life. *Social and Cultural Geography*. 20:2. 137-156.
- Musterd, S. *et al.* (1998) - *Multi-Ethnic Metropolis: Patterns and Policies*. (Dordrecht, The Netherlands, Kluwer Academic Publishers).
- Musterd, S., & Ostendorf, W. (2005) - Social Exclusion, Segregation, and Neighborhood Effects - *Cities*

- of Europe: Changing Contexts, Local Arrangement and the Challenge to Urban Cohesion. 170-189. (USA, Wiley).
- Musterd, S., & Winter, M. (1998) - Conditions for spatial segregation: some European perspectives. *International Journal of Urban and Regional Research*. 22.
- Nicol, V. (2011) - *Social economies of fear and desire: Emotional regulation, emotion management, and embodied autonomy*. (USA, Springer)
- Perrotta, C. (2004) - *Consumption as an Investment*. (Routledge).
- Pfirsch, T., & Semi, G. (2016) - Segregation in the cities of the European Mediterranean. *Méditerranée*. 127. 15–23.
- Vale, C. (2015) - Entre o Corrente e A exceção. Os edifícios do 'novo' centro cívico da cidade do Porto. *Encontro sobre Patologia e Reabilitação de Edifícios-Patorreb*. 421–426.
- Pordata. (2021) - *Crime Rate*. Disponível em [www:<url:https://www.pordata.pt/en/db/municipalities/search+environment/table>](http://www.pordata.pt/en/db/municipalities/search+environment/table).
- REOT (2015) - *Relatório sobre o Estado do Ordenamento do Território REOT*. Camara Municipal do Porto, Portugal.
- Samuel, P. (1994) - *O Tripeiro*. 45-46.
- Saville, S. J. (2008) - Playing with fear: Parkour and the mobility of emotion. *Social and Cultural Geography*. 9:8. 891–914.
- Schuermans, N., & De Maesschalck, F. (2010) - Fear of crime as a political weapon: Explaining the rise of extreme-right politics in the flemish countryside. *Social and Cultural Geography*. 11:3. 247–262.
- Shirlow, P., & Pain, R. (2003) - The geographies and politics of fear. *Capital & Class*. 27:2. 15–26.
- Skoll, R. G. (2010) - *Social Theory of Fear. Terror, Torture, and Death in a Post-Capitalist World*. (Springer Nature).
- Smets, P., & Salman, T. (2008) - Countering Urban Segregation : Theoretical and Policy Innovations. *Urban Studies*. 45:7. 1307–1332.
- Stein, R. E. (2014) - Neighborhood Residents' Fear of Crime: A Tale of Three Cities. *Sociological Focus*. 47:2. 121–139.
- Tseloni, A., & Zarafonitou, C. (2008) - Fear of crime and victimization: A multivariate multilevel analysis of competing measurements. *European Journal of Criminology*. 5:4. 387–409.
- Tulumello, S. (2015) - Fear and Urban Planning in Ordinary Cities: From Theory to Practice. *Planning Practice and Research*. 30:5. 477–496.
- Tulumello, S. (2015) From «spaces of Fear» to «fearscapes»: Mapping for Reframing Theories about the Spatialization of Fear in Urban Space. *Space and Culture*. 18:3. 257–272.
- Tulumello, S. (2017) *Fear, Space and Urban Planning, A Critical Perspective from Southern Europe* (Switzerland, Springer).
- Urban Institute (2021) - *Observation*. Disponível em [www:<url:https://www.urban.org/research/data-methods/data-collection/observation>](http://www.urban.org/research/data-methods/data-collection/observation).
- Almeida Vasconcelos, P. (2013) - Processus et formes socio-spatiaux des villes: une contribution au débat. *Ségrégation et fragmentation dans les métropoles*. 37–62.
- Winton, A. (2016) - Using photography as a creative, collaborative research tool. *Qualitative Report*. 21:2. 428–449.
- Wu, Y. et al. (2017) - Fear of crime among Arab Americans in a culture of fear. *Ethnic and Racial S*

ANNEX-1

INTERVIEW SHEET - ESPAÇO T ASSOCIAÇÃO - CERCAR- TE PROJECTS.

INTERVIEW WITH THE PROJECT MANAGER NUNO FERREIRA

- **LOCATION:** CERCO DO PORTO – CAMPANHA – PORTO – PORTUGAL
- **DATE:** THURSDAY 06/05/2021
- **TIME:** 4:00 PM

QUESTIONS SUGGESTED FOR THE INTERVIEW

Q1- Would you please tell us more about the type of Espaço T Associação and its work within Cerco do Porto neighbourhood.

Q2- What are the objectives of (Cercar-te) Projects?

Q3- What are the fieldwork difficulties you face?

Q4- According to your observation while working in Cerco do Porto with the people:

- Can you tell us more about the type of Social environment in Cerco do Porto?
- How do people from outside Cerco do Porto refer to it?
- What kind of services missing here?
- Do you think the actions of decision-makers applied in this area are efficient enough?

Q5- From your point of view as a social organization, what is the reason for stereotyped Fear about the Cerco de Porto neighbourhood?

Q6- Is this Fear justified?

Q7- from your point of view, what are the reasons that generate the sense of Fear here? (ex: crime, economic situations, Class disparity, service disparity, lack of social communication, societal isolation, spatial isolation etc.).

Q8- Do you think it might be a problem generated from the lack of services and governmental caring?

Q9- from a public space user point of view, what do you think about the type of Urban Planning applied in Ceco do Porto? Do you feel it is a social-friendly and containment scope, or it may sometimes create fear and isolation?

Q10- What kind of suggestions do you have to overcome the sense of fear that exists in Cerco do Porto and apply a social-spatial reconnection with the other parts of the City of Porto?

Q11- What are the social organizations working here aside, with you in Cerco do Porto?

NOTE: Those questions might differ depending on the context of the dialogue.

INFORMATION ABOUT THE NATURE OF THE INTERVIEW AND THE PERSON PREPARING THIS INTERVIEW

- The interview is intended for scientific research purposes only.
- Student responsible for this interview: OLA SALMAN

Master Program: Spatial Planning and Urbanism, FEUP, Porto University

ANNEX-2

THE THEORETICAL BACKGROUND OF SATELLITE IMAGERY METHOD TOOL – SENTINEL 2 IMAGINARY

According to Lillesand e Kiefer (2004), "remote sensing is the science of collecting data about an object, place, or phenomenon and applying analytical, quantitative indicators by using a device without any contact with the studied object, place, or phenomenon", This newly cartographic and quantitative meth-odology, has many processing applications within the field of Urban studies. Moreover, it seems to be a strong work strategy with an up-to-date database collection that can be used for many studies, such as rating the human influence on urban spaces (Kuc e Chormański, 2019).

Although the remote sensing application in this research is not the primary method, it was used as main comparative mapping and other maps provided by free database maps such as Open Street maps and Terra Incognita maps.

This research used a processed level-1C with zero cloud-ratio Satellite imagery product from Sentinal-2A images collection to calculate vegetation index (NDVI) and Built-up collection indices (NDBI, BI) processes. The acquisition date of the image was 22 February 2020, Porto Region (ESA and Copernicus, 2021). For more information, see Annexe 2.

The high-resolution, multi-spectral operation Sentinel-2 mission was developed by the European Space Agency (ESA) and Copernicus programme as part of the 2019 remote sensing database. This satellite mission contains two satellites (Sentinel-2A and Sentinel-2B) with the same orbit scope, phased at 180° (Ettehadi *et al.*, 2019). They observe the earth surface at three main spatial resolutions; the highest spa-tial resolution is at 10 m covered by the bands (2,3,4) and the near-infrared (NIR) band number 8.

The spatial resolution of 10m above earth surface is considered to be a high spatial resolution, which makes the products of Sentinel mission perfect to use as a free open source product in the fields of urban coverage and manufactured built-up detection, along with the vegetation coverage, and disaster control observation and management.

In this research, the (NDBI and BU) indices were chosen as the leading indicators to extract the base mapping of Porto city as the primary visual cartographic comparison map.

10 metre spatial resolution:

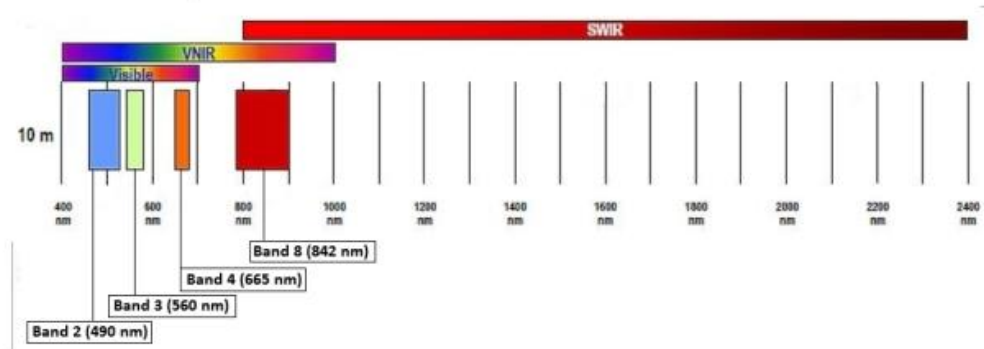


Fig. 19- Sentinal 2 Bands Diagram- Bands with spatial resolution 10m - B(2.3.4.8) (ESA, 2021)



Fig. 20- Sentinel 2 Bands Diagram- Bands with spatial resolution 20m - B(11.12) SWIR.(ESA, 2021)

Applied Indices

According to Kuc e Chormański (2019) empirical study results, Indices NDVI, NDBI are effective in detecting the imperviousness percentage within urban areas; thus, the resulted data of indices application shows that detecting urban areas using those indices is possible and can be reliable to use as a quantitative application. Based on those results as a ref, the NDVI, NDBI indices were applied as part of the empirical work of this dissertation to produce the essential map for visual cartographic comparison with the results of the observation phase. Accordingly, the Sentinel-2A satellite image product was processed as follows:

First, multi-spectral bands at 10m spatial resolution (2,3,4,8), and the two SWIR bands (11,12) at 20m spatial resolution was collected as layer stack using Erdas Emagin Program,

Second, the indices equations scripts were built using the Model-Maker script on the Erdas Imagine programme; the NDVI, NDBI images were created based on the following equation

$$NDVI = \frac{NIR(B8) - Red(B4)}{NIR(B8) + Red(B4)} \quad \text{Eq. 1 (NDVI Index) (Kuc e Chormański, 2019)}$$

$$NDBI = \frac{SWIR(B11) - NIR(B8)}{SWIR(B11) + NIR(B8)} \quad \text{Eq. 2 (NDBI Index) (Kuc e Chormański, 2019)}$$

To extract the Built-up areas from the previous resulted indices images as a final step in the processing stage, the following equation was applied

$$BU = NDBI - NDVI \quad \text{Eq. 3 (BU Index)(He et al., 2010)}$$

The final built-up image is considered the base map used in the visual cartographic comparison stage.

SENTINEL 2A SATELLITE IMAGE PRODUCT INFORMATION

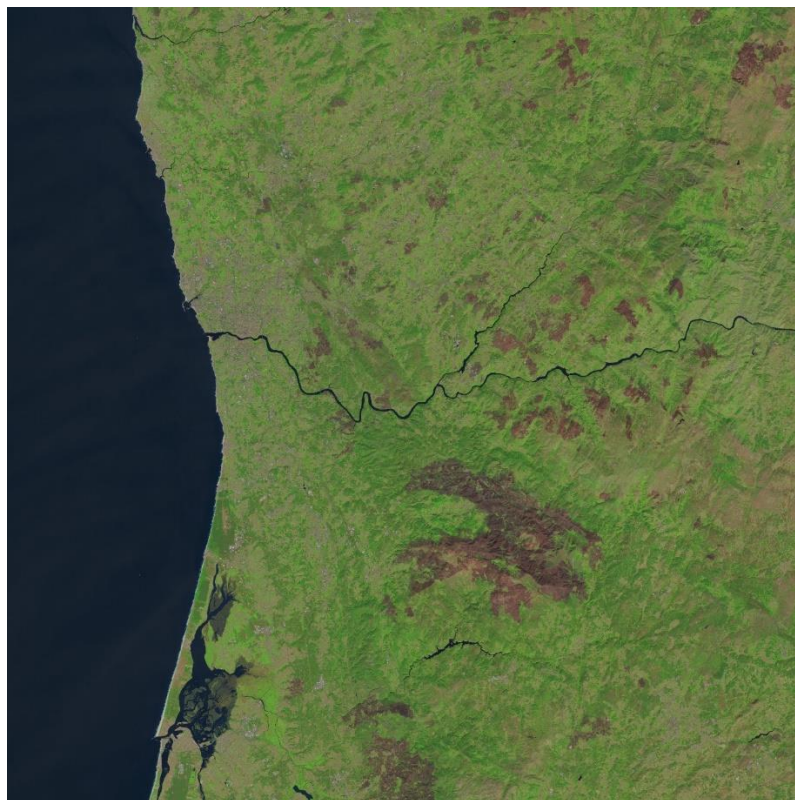
Full Display of:

S2A-OPER-MSI-L1C-TL-SGS-20200222T113727-20200222T164414-A006612-T29TNF-N02-04-01

DATA SET ATTRIBUTE	ATTRIBUTE VALUE
Entity ID	S2A_OPER_MSI_L1C_TL_SGS__20200222T113727_20200222T164414_A006612_T29TNF_N02_04_01
Acquisition Start Date	2020-02-22T11:25:25.613Z
Acquisition End Date	2020-02-22T11:37:27.167Z
Tile Num- ber	T29TNF
Cloud Co- ver	0
Agency	ESA
Platform	SENTINEL-2A
Vendor	SGS_
Vendor Tile ID	S2A_OPER_MSI_L1C_TL_SGS__20200222T164414_A006612_T29TNF_N02.04
Orbit Num- ber	37
Orbit Direc- tion	Descending Orbit
Vendor Software Version	2.04
Production Date	2020-02-22T18:54:31.000145Z
Vendor Product ID	S2A_OPER_PRD_MSIL1C_PDMC_20200222T185431_R037_V20200222T112112_20200222T112525
Archiving Center	SGS_
Datatake Type	INS-NOBS
Datatake Identifier	GS2A_20160927T112112_006612_N02.04
Data Type	UINT16
Product Type	S2MSI1C

Product Format	JPEG2000
Processing Level	LEVEL-1C
Datastrip ID	S2A_OPER_MSI_L1C_DS_SGS__20200222T164414_S20200222T112525_N02.04
Datum	WGS84
Map Projection	UTM
UTM Zone	29N
EPSG Code	32629
Resolution	10, 20, 60
Units	METER
Sun Zenith Angle Mean	44.70031833
Sun Azimuth Angle Mean	160.5271899
Quantification	10000
Image Referencing	U
Center Latitude	41°03'19.68"N
Center Longitude	8°20'48.88"W
NW Corner Lat	41°33'06.64"N
NW Corner Long	9°00'00.86"W
NE Corner Lat	41°32'39.52"N
NE Corner Long	7°41'01.68"W
SE Corner Lat	40°33'19.70"N
SE Corner Long	7°42'12.11"W
SW Corner Lat	40°33'45.90"N

SW Corner Long	9°00'00.85"W
Center Latitude dec	41.055468
Center Longitude dec	-8.3469096
NW Corner Lat dec	41.5518447
NW Corner Long dec	-9.0002398
NE Corner Lat dec	41.5443115
NE Corner Long dec	-7.6837996
SE Corner Lat dec	40.5554731
SE Corner Long dec	-7.7033627
SW Corner Lat dec	40.5627499
SW Corner Long dec	-9.0002363

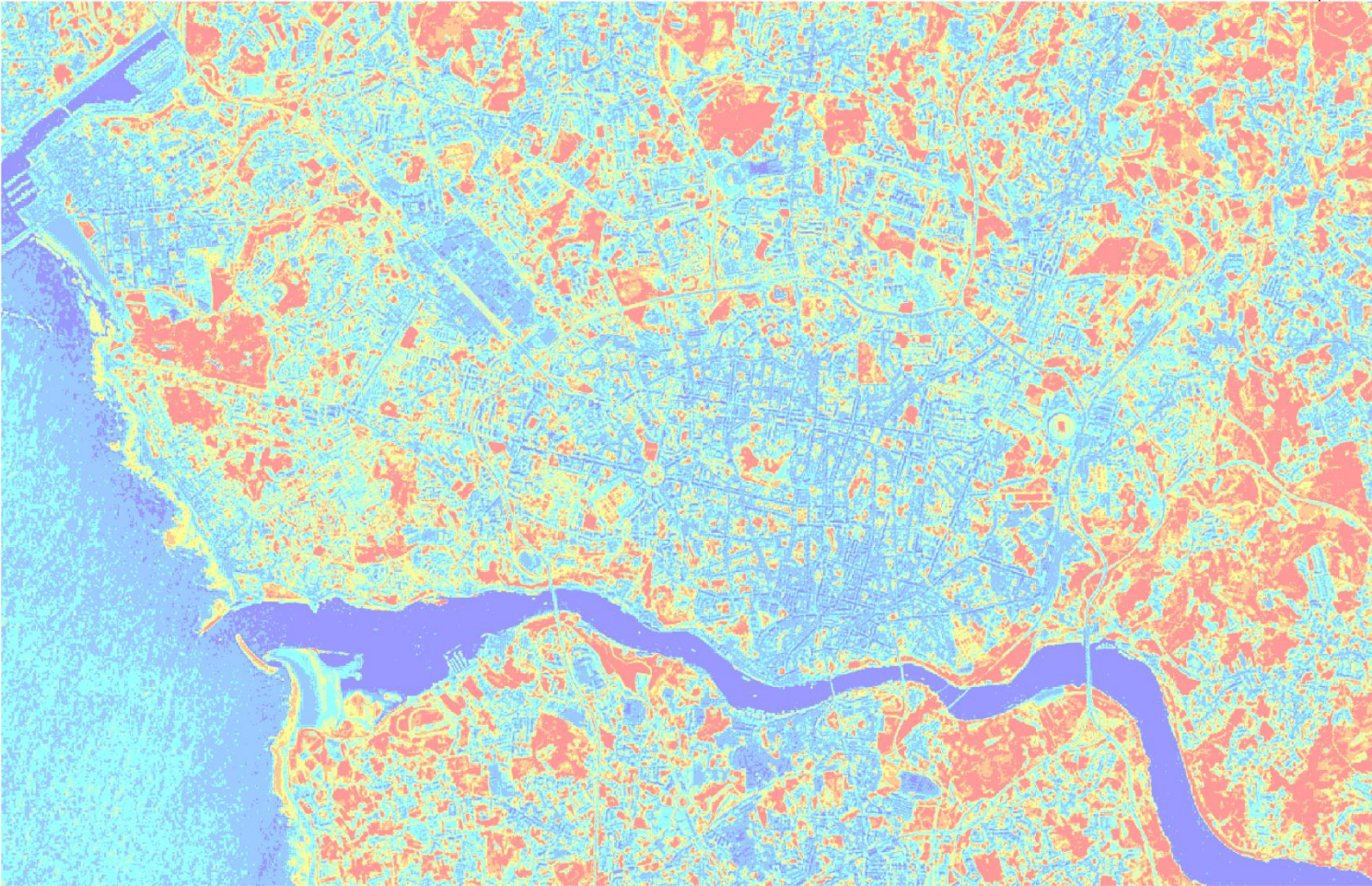


(EarthExplorer, 2021; ESA and Copernicus, 2021)



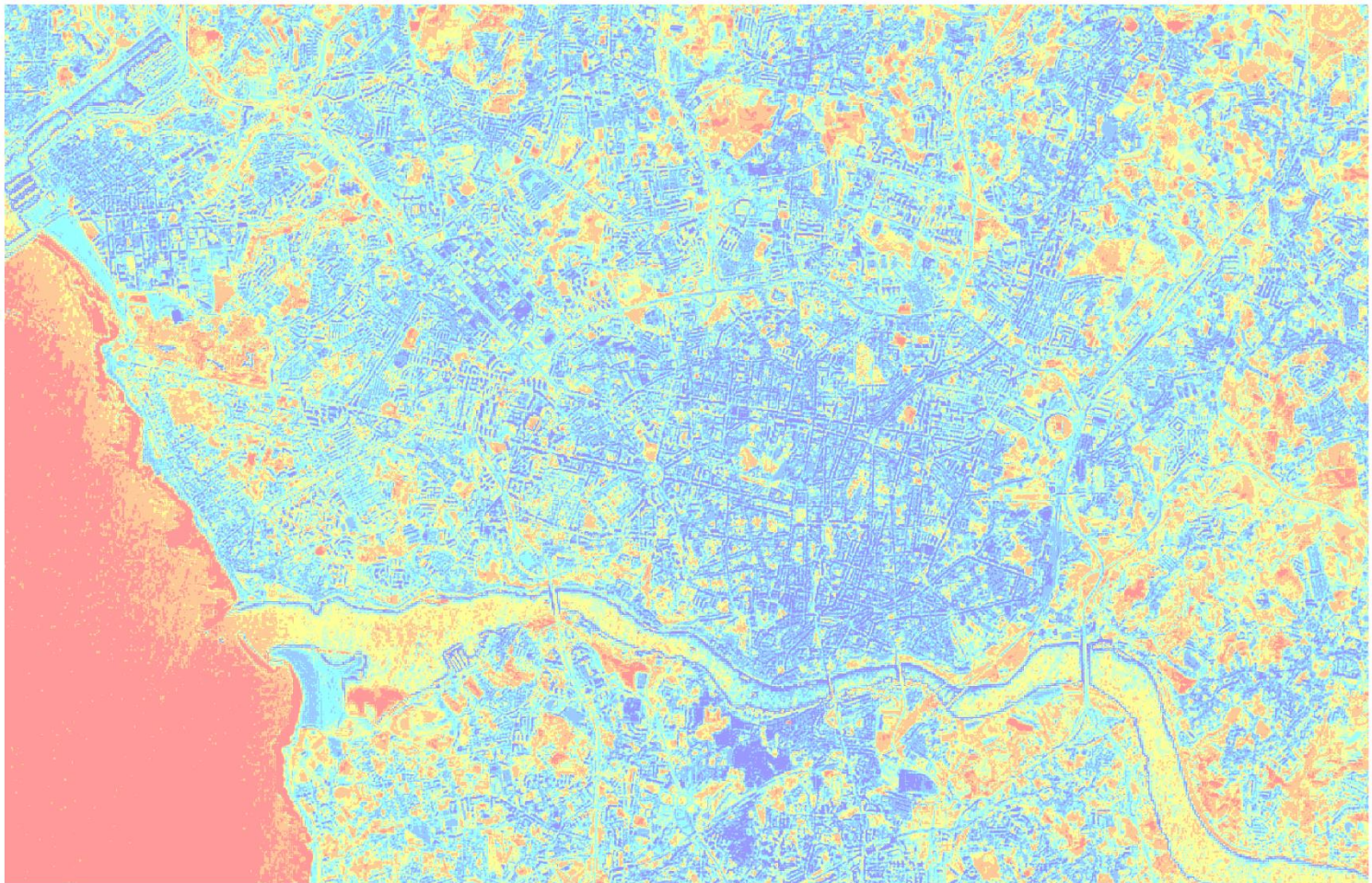
Built-Up index - classified Map
Porto - 2020

BU: Defined Built-up Index



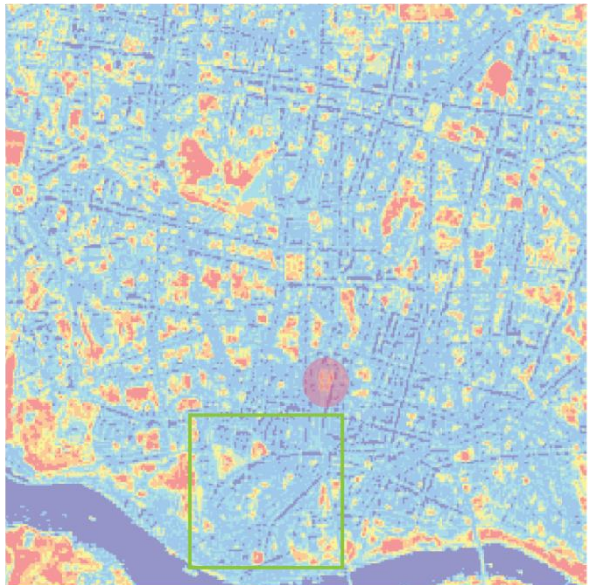
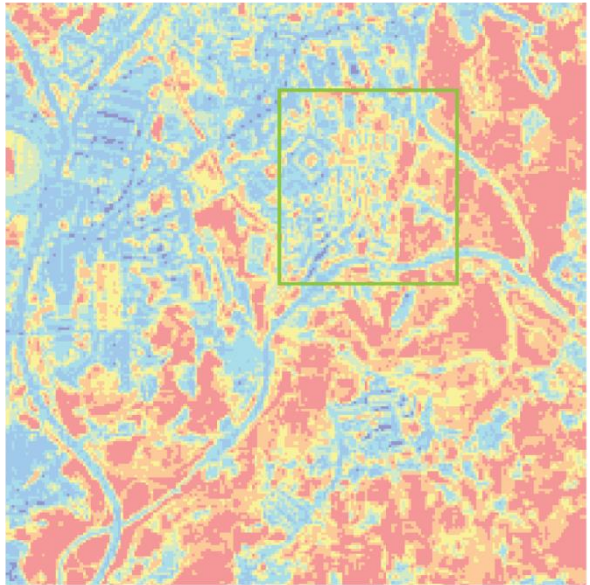
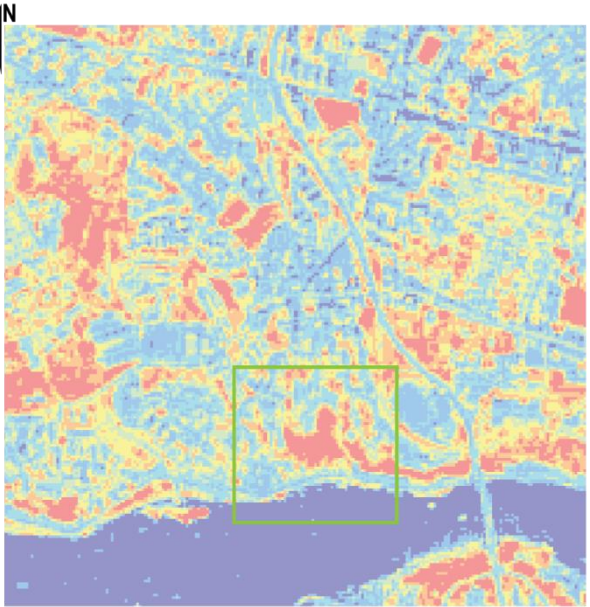
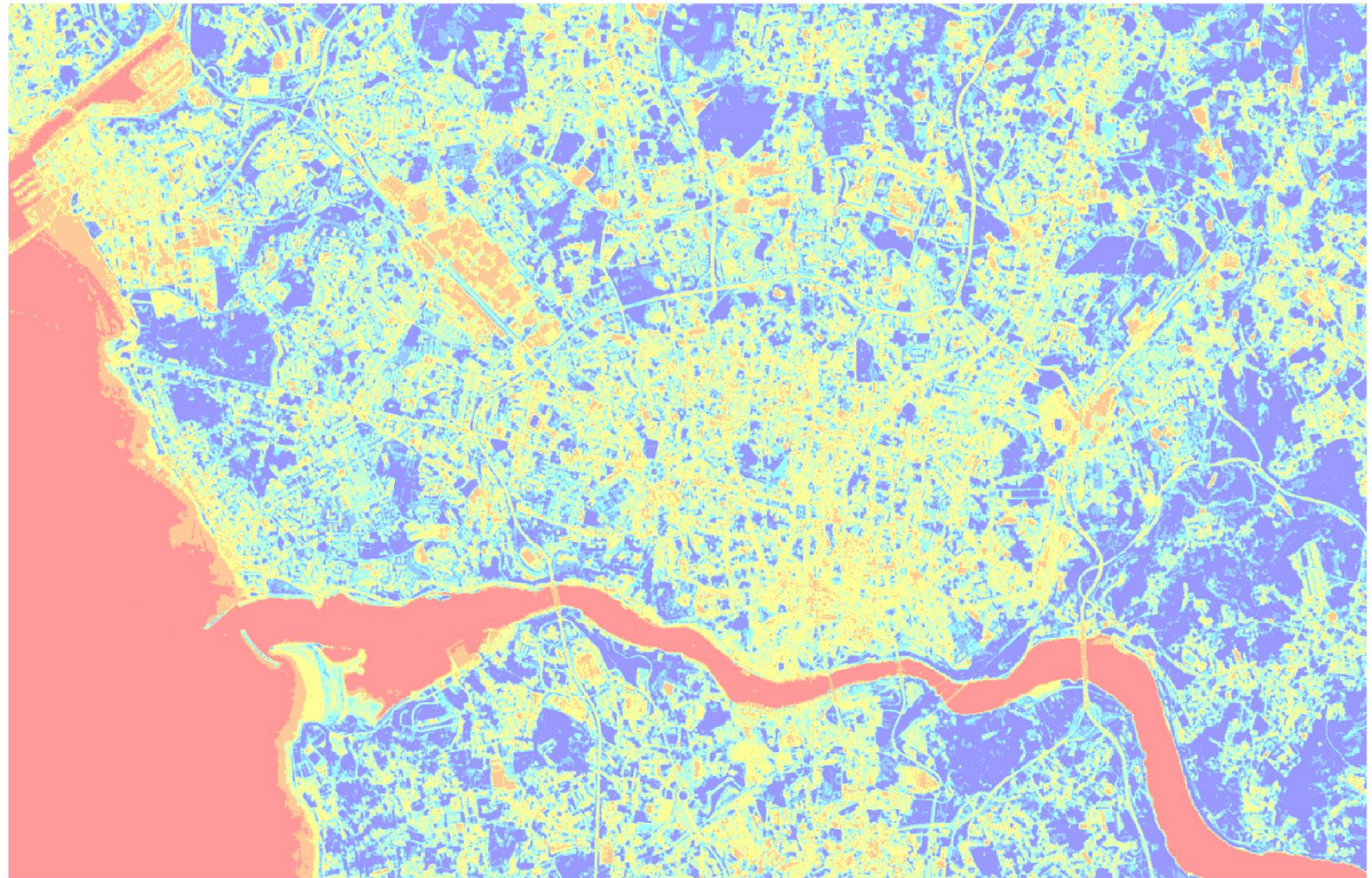
NDBI index - classified Map
Porto - 2020

NDBI: Normalized Difference Built-up Index



NDVI index - classified Map
Porto - 2020

NDVI: Normalized Difference Vegetation Index



Built-up coverage non Built-up coverage

BU image - 2020

DISSERTATION – MASTER PROGRAM
PLANNING AND URBAN DESIGN

The Impact Of Fear On Socio-Urban Formation
Within Cities. Observational Case Study
Porto-Portugal.

Ola Salman

M
2021



Autor. Ola Salman



M.FEUP 2021

The Impact Of Fear On Socio-Urban Formation Within Cities.
Observational Case Study Porto-Portugal
Ola Salman

FACULDADE DE ENGENHARIA

