

READING THE WORLD TRADE CENTER
THROUGH DAVID HARVEY'S TRIPARTITE FRAMEWORK ON SPACE-TIME



GÖZDE DAMLA TURHAN

AUGUST 2016

READING THE WORLD TRADE CENTER
THROUGH DAVID HARVEY'S TRIPARTITE FRAMEWORK ON SPACE-TIME

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

OF
IZMIR UNIVERSITY OF ECONOMICS

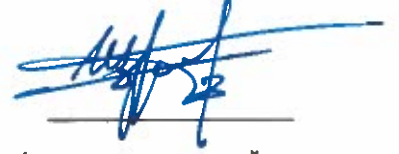
BY
GÖZDE DAMLA TURHAN

IN PARTIAL FULLFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF
ARCHITECTURE

IN
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

AUGUST, 2016

Approval of the Graduate School of Natural and Applied Sciences



Prof. Dr. İsmihan BAYRAMOĞLU

Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Architecture.



Asst. Prof. Dr. S. Bahar DURMAZ DRINKWATER

Head of the Department of Architecture

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Architecture.



Asst. Prof. Dr. A. Ceylan ÖNER

Co-Supervisor



Asst. Prof. Dr. Burcak PASIN

Supervisor

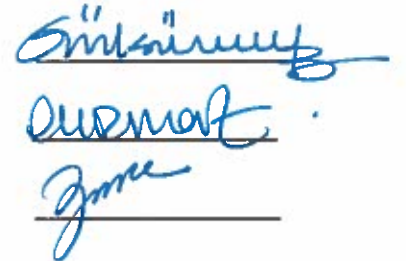
Examining Committee Members

(Title and Name in alphabetical order of last name)

Prof. Dr. Gülsüm BAYDAR

Asst. Prof. Dr. S. Bahar Durmaz DRINKWATER

Asst. Prof. Dr. Emre GÖNLÜGÜR



ABSTRACT

READING THE WORLD TRADE CENTER THROUGH DAVID HARVEY'S TRIPARTITE FRAMEWORK ON SPACE-TIME

Turhan, Gzde Damla

Master of Architecture

Graduate School of Natural and Applied Sciences

Supervisor: Asst. Prof. Dr. Burkay PASİN

Co-supervisor: Asst. Prof. Dr. Aslı Ceylan ÖNER

August 2016, 72 pages

This thesis investigates space and time not as separate static containers for various events or situations; but as complex and interlinked products of the interactions between various dynamics in global urban space. In this context, the correspondence of the tri-partite space-time conception of critical geographer David Harvey are discussed at the World Trade Center in New York, a global business district, by dividing its lifetime into three different time domains: Pre-9/11, 9/11 and post-9/11. While reading the World Trade Center as a case study through David Harvey's tripartite framework, 9/11 attacks and its creation of alterations in the context of space-time is investigated through an originated matrix which is based on Harvey's tripartite framework on space-time.

Keywords: Globalization, Space-time conception, David Harvey, World Trade Center, 9/11

ÖZ

DÜNYA TİCARET MERKEZİNİ DAVID HARVEY’NİN ÜÇ BÖLÜMLÜ ZAMAN-MEKAN ÇERÇEVESİ İLE OKUMAK

Turhan, Güzde Damla

Mimarlık Yüksek Lisans Programı

Fen Bilimleri Enstitüsü

Tez Yöneticisi: Yrd. Doç. Dr. Burkay PASİN

Ortak Tez Yöneticisi: Yrd. Doç. Dr. Aslı Ceylan ÖNER

August 2016, 72 sayfa

Bu tez, zaman ve mekan kavramlarını, çeşitli olayları ya da durumları içlerinde barındıran, birbirinden ayrı ve durağan konteynerler olarak ele almak yerine, çeşitli dinamiklerin küresel kent mekanındaki etkileşimlerinin kompleks ürünleri olarak ele almaktadır. Bu bağlamda, eleştirel coğrafyacı David Harvey’nin üç bölümden oluşan mekan-zaman anlayışının, New York’ta küresel bir iş merkezi olan Dünya Ticaret Merkezi’ndeki karşılığı, Dünya Ticaret Merkezi’nin yaşam süresi, 11 Eylül öncesi, 11 Eylül ve 11 Eylül sonrası olmak üzere üç farklı zaman aralığına bölünerek tartışılmaktadır. Dünya Ticaret Merkezi’ni Harvey’nin üç bölümden oluşan zaman-mekan anlayışı üzerinden okurken, 11 Eylül saldırılarının zaman-mekan bağlamında yarattığı değişimler, Harvey’nin üç bölümlü zaman-mekan çerçevesine dayanılarak oluşturulan yeni bir matriks üzerinden tartışılmaktadır.

Anahtar Kelimeler: Küreselleşme, Zaman-mekan kavramı, David Harvey, Dünya Ticaret Merkezi, 11 Eylül

ACKNOWLEDGEMENTS

First, I would like to thank my supervisor Asst. Prof. Dr. Burkay Pasin for his constant guidance, encouragement and patience over the last year. I thank him so much for helping me to look at my research in different perspectives and for opening my mind in our discussions. This work was greatly enhanced by his presence.

I would like to express my deepest appreciation to my co-supervisor, Asst. Prof. Dr. A. Ceylan Öner, who has always inspired me by her interdisciplinary background and her endless dedication to her job. I thank her for helping me in every aspect of my two-year study and my research; even she has been an ocean away.

I also would like to thank my committee members Asst. Prof. Dr. Emre Gönlügür and Asst. Prof. Dr. S. Bahar Durmaz Drinkwater. Special thanks to Prof. Dr. Gülsüm Baydar for accepting the invitation as a committee member in spite of her very busy schedule.

Lastly, I would like to thank my family, my mother Necla Turhan, my brother Yunus Can Turhan, and especially my father Bulut Turhan, who is an academician, for supporting me unconditionally in every aspect of my life and directing me into the academic career.

This thesis would have been difficult if I did not have Mehmet Sadık Aksu in my life. Many thanks to my companion for his emotional and technical support in this journey over the last year.



In memory of 9/11 victims and their families.

TABLE OF CONTENTS

ABSTRACT.....	iii
ÖZ.....	iv
ACKNOWLEDGEMENTS.....	v
DEDICATION.....	vi
TABLE OF CONTENTS.....	vii
LIST OF FIGURES.....	viii
1. INTRODUCTION.....	1-7
1.1. Problem Statement.....	2
1.2. Research Questions.....	4
1.3. Significance of the Research.....	4
1.4. Methodology.....	5
2. DAVID HARVEY'S TRI-PARTITE FRAMEWORK ON SPACE-TIME.....	8-29
2.1. Space-Time Conceptions in the Era of Globalization.....	8
2.2. David Harvey's Tri-partite Framework on Space-time.....	10
2.3. Reading the Global Business Districts through Harvey's Tri-partite Framework 	15
3. CASE STUDY: READING THE WORLD TRADE CENTER THROUGH HARVEY'S TRI- PARTITE FRAMEWORK	30-57
3.1. Space-time Matrix for the World Trade Center and 9/11.....	30
3.2. The World Trade Center, Pre-9/11 (1973-2001).....	37
3.3. The World Trade Center, 9/11 (2001).....	42
3.4. The World Trade Center, Post-9/11 (2001-2016).....	47
4. CONCLUSION.....	58
BIBLIOGRAPHY.....	62

LIST OF FIGURES

Figure 1 David Harvey's Tri-partite Framework on Space-Time.....	12
Figure 2 "A matrix of possible meanings for space as a keyword"	14
Figure 3 Burj Khalifa in Dubai.....	18
Figure 4 The Kingdom Tower in Jeddah (the Jeddah Tower).....	18
Figure 5 Dubai Creek in Dubai.....	19
Figure 6 One Canada Square building in Canary Wharf.....	20
Figure 7 The Shanghai Tower in Pudong.....	21
Figure 8 Canary Wharf, London.....	22
Figure 9 Docklands Transport, Canary Wharf's transportation scheme in 1980.....	23
Figure 10 Docklands Transport, Canary Wharf's transportation scheme in 2000.....	23
Figure 11 Canary Wharf Underground Station by Foster and Partners.....	25
Figure 12 Fulton Station by Grimshaw Architects.....	25
Figure 13 Sky Reflector at Fulton Station by ARUP.....	26
Figure 14 La Défense, Paris.....	27
Figure 15 Battery Park City, transformed waterfront area, rotting piers replaced by an esplanade.....	27
Figure 16 10 Park Drive in Canary Wharf.....	28
Figure 17 The World Trade Center, to northeast from over Hudson River in 1994...31	
Figure 18 The World Trade Center, to Lower Manhattan in 2000.....	31
Figure 19 Twin Towers.....	32

Figure 20 The World Trade Center by Daniel Libeskind.....	33
Figure 21 Ground Zero Master Plan, Studio Daniel Libeskind.....	33
Figure 22 Space-Time Matrix for the World Trade Center and 9/11.....	36
Figure 23 Site Plan of The World Trade Center.....	37
Figure 24 The World Trade Center, shops and services.....	38
Figure 25 Arrangement of office spaces, express and local elevators.....	40
Figure 26 Subway network, PATH routes, bus routes and ferry, 1974-2000.....	41
Figure 27 Zone of airplane impact on WTC 1 and the displacement and recession of columns on north facade of WTC 1.....	43
Figure 28 Southeast facade of WTC 2 showing the zone of airplane impact.....	44
Figure 29 Rescue workers at Ground Zero.....	45
Figure 30 Companies on 9/11.....	47
Figure 31 Affected areas, damage report from the city of New York.....	48
Figure 32 The World Trade Center Jet Impact Seismic Signals.....	48
Figure 33 Analyses for Aircraft impacts for WTC 1 and WTC 2.....	49
Figure 34 Second hijacked airplane flies into WTC 2.....	51
Figure 35 One World Trade Center.....	53
Figure 36 Michael Arad and Peter Walker’s Reflecting Absence memorial.....	54
Figure 37 Reflecting Absence Memorial, tribute in xenon light.....	55
Figure 38 Victims’ names on plates at Reflecting Absence memorial.....	55
Figure 39 Some of the exhibited pieces at National September 11 museum.....	56
Figure 40 Exhibited wall at National September 11 museum.....	57

CHAPTER I

INTRODUCTION

Based on economic, technological and social developments, relationships between space and time have been restructured in terms of their interrelations in the global era. This thesis utilizes the British critical Marxist geographer David Harvey's space-time conception in order to understand the complexities of globalization which reflect on urban space. Harvey argues that space cannot be conceptualized independent from time and according to him, the spatial construction of time (spatialization of time), as well as the temporal construction of space (temporalization of space) are both significant concepts to be questioned in reading the urban space. Harvey theorizes his conceptualization of space-time in relation to capital's growth and its hegemony through "globalization" and concerns about the (re)development mechanisms of the cities considering how globalization reshapes space and time (Harvey, 1990).

In chapter "Space as a Keyword" (2006) in *David Harvey a Critical Reader*, Harvey provides a useful tripartite framework to analyze the spatio-temporal relationships: *Absolute space-time* addresses the physicality of space at a certain time with measurable and quantifiable data. *Relative space-time* addresses how objects relate to each other in specific processes through time. *Relational space-time* reveals how complex concepts such as memories are formed and take place through internalization of processes that (re)define certain relations among users (Harvey, 2006). Harvey also asserts that these three spatio-temporalities co-exist within a hierarchy in relation to time: "...relational space can embrace the relative space and the absolute, relative space can embrace absolute, but absolute space is

just absolute.” and in order to understand the experience of space-time in different ways, dialectical tension of these three categories is needed (Harvey, 2006: 275-76).

Harvey also highlights that: *“space is neither absolute, relative or relational in itself, but it can become one or all simultaneously depending on the circumstances”* (Harvey, 2006: 275). In other words, certain spatio-temporalities may become prominent among the others in certain conditions and events. According to him, this hierarchy of spatio-temporalities works through the interplay among the flow of capital, commodities and people based on advanced communication and transportation networks. Global business districts, as concentrated sites of transnational business activity in urban space, are particular architectural settlements where these most intense complexities of globalization occur. Accordingly, they are where the absolute and relative space-time becomes prominent rather than relational understanding of space-time. World Trade Center in New York, one of the leading global business districts, is a particular example upon which all spatio-temporalities in this hierarchy can be read explicitly throughout its history. It becomes distinguished among the other global business districts where all spatio-temporalities can be seen simultaneously, especially in the reconstruction process through the creation of alterations of 9/11 events in the conception of time and space.

1.1. Problem Statement

“Space” as a keyword seems as a final frontier for many professions, especially for the architects. However, besides space itself, the definition of “time” in relation to space has become one of the central points that integrated into many debates. Architectural design in the global era is also affected by a transformation that the understanding of time as “obsolete” shifted to the understanding it as “relational” as Harvey suggests (Harvey, 2006). By means of this transformation, our experiences of time and space also shifted to another level of conception; time and

space is relational as Harvey states in his article *Space as a Keyword* (2006). Therefore, he prefers to say “space-time” rather than “space” and “time” (Harvey, 2006: 272). According to Harvey’s classification of space-time in three parts, there can be seen different integrations of these classifications bounding up with the circumstances (Harvey, 2006). In any case, space-time cannot be read without the simultaneity of all three approaches in order to understand the events, situations, and how space is being affected by various experiences and memories in global era.

As Harvey suggests, the way we comprehend the various events and situations around us and our experiences are being affected by various representations in space-time in global era. For instance, the spatial quality and organization of our surroundings, which are engaged into our 24/7 daily routines, may not even be noticed unless “*when something appears out of place*” (Harvey, 2006: 280). Therefore, it is argued that the 9/11 event at the World Trade Center in 2001 is a climax in time when the experiences and memories are affected by a transformation of a certain absolute space where the “*Ground Zero cannot be anything other than a site of collective memory and the problem for the designers is to translate that diffuse sensibility into the absolute spaces of bricks, mortar, steel and glass.*” (Harvey, 2006: 286). In this context, the new design for the World Trade Center by Daniel Libeskind tries to reflect commemoration and at the same time give back the cooperative business atmosphere (Libeskind.com, n.d.) which are, respectively, a relational and a relative term in space-time. These intentions were attempted to be realized through a master plan in the absolute space-time. Therefore, the reconstruction of the World Trade Center became a complex process by including all spatio-temporalities simultaneously.

1.2. Research Questions

In order to analyze Harvey's space-time conception in global urban space, the following research questions have been asked:

- 1) How has globalization shaped the conceptions of time and space in urban environment?
- 2) How is David Harvey's tripartite framework on space-time reflected on the characteristics of global business districts?
- 3) How does the interplay between three spatio-temporalities take place at the World Trade Center before 9/11, at 9/11 and after the 9/11 events?

1.3. Significance of the Research

This thesis aims to understand the events occurring around us by formulating ways of thinking and theorizing about processes incorporated into our daily lives in a spatio-temporal framework. It explores "space" and "time" not as separate static containers for various events or situations; instead, regards them as "space-time" due to the complex products of the interactions between various dynamics such as people, capital and commodities. This attitude on space-time is significant because there is an excessive amount of experiences and memories in the urban environment. According to Harvey (2006), these can only be resolved within a causal reasoning through the dialectical tension of his three spatio-temporalities: Absolute, relative and relational (Harvey, 2006: 276).

Within this framework of conceptualizing space-time relationships in three parts, the main focus of this thesis is a rather understudied subject in terms of exploring how the tripartite framework of Harvey on space-time reflects itself in certain events and the circumstances in urban space, especially in the global

business districts. Due to the capital's desire of accumulating, the built environment is being manipulated through developments in different patterns; the global business districts are one of these reflections in the urban space. Therefore, this thesis investigates the World Trade Center site as a global business district and 9/11 event as a climax with its creation of alterations in the conception of space-time in the urban environment. The case is read through Harvey's matrix regarding his tripartite framework and another matrix on space-time specific to the World Trade Center and the event of 9/11 is created accordingly. Through a matrix that is developed for different spatio-temporalities in the World Trade Center and 9/11 in particular, this thesis can contribute to the various disciplines in different types of researches with similar concerns. Thus, the word "space" becomes rich in possibilities, and theorizing space from different spatio-temporal perspectives creates potentials for architectural and urban design projects.

1.3. Methodology

In this thesis, Descriptive Case Study Research Method is utilized which is "*a reference theory or model that directs data collection and case description*" (Scholz and Tietje 2002, 12). A descriptive case study can either reflect an embedded or holistic method. An holistic case study involves a qualitative method that consists of the narrative descriptions of a case; whereas in the embedded type of case study research, the research is not only conducted through qualitative evaluations but also it comprises of several cases or several units in one case where the case is described through multiple data collections (Scholz and Tietje 2002). Moreover, if the background of the research brings together multiple disciplines, the case studies can suggest new understandings for the language of architecture by enlarging the research resources of the discipline (Groat, L., Wang, D. 2002). In this thesis, in the structure of the case study, there are three units to be analyzed through multiple data collections obtained from architectural as well as interdisciplinary descriptions.

The overall research is also processed in three parts, each of which is interrelating to each other in a sequence. First, Harvey's matrix which is based on the "Possible meanings for space as a keyword" (Harvey, 2006: 282) is analyzed through his suggestive entries within the cells. Then, the equivalents of the keywords in the literature of the World Trade Center are categorized in a matrix in relation to different spatio-temporalities. Lastly, the matrix is utilized in the third chapter along with the outcome of literature reviews and collected materials regarding the 9/11 events. Harvey's matrix is employed in the thesis in order to analyze the correspondences of these three spatio-temporalities (absolute, relative, relational) at the World Trade Center in three different time domains: pre-9/11, 9/11 and post-9/11. In order to construct a knowledge about 9/11 attacks and afterwards, online newspaper articles, images, sounds, videos and witness statements are also utilized.

In Harvey's matrix, as seen from the definitions of each spatio-temporalities, Harvey (2006) assigns spatio-temporalities to the rows and columns such as the first, second and third row, respectively, as absolute, relative and relational space-time (Harvey, 2006: 282). In the absolute space, he categorizes whatever a certain space involves regardless of whether they are representational or material such as walls, bridges, buildings, cities, boundaries or cadastral maps in two dimensional representations and feelings that occur in space itself. In relative space-time, categorization is based on proximity and distances such as the circulation and flows of objects like capital, commodities, information and people and their representations in different contexts such as thematic maps showing distance, proximity or nodes as well as the feelings while spanning the distances such as anxiety occurring from mobility or tension of time-space compression. Lastly, in the relational space-time, it gets more complex due to the internalizations of the relations and the participation of uncountable concepts as memory, desire, dreams, social relations or psychic states.

Harvey (2006), about his space-time matrix, states that: "*the entries within the matrices are merely suggestive rather than definitive (readers might enjoy constructing their own entries just to get some sense of my meaning)*" (Harvey,

2006: 281). In this light, a space-time matrix for the World Trade Center and 9/11 is generated based on Harvey's own matrix. A different perspective is added in terms of how the matrix is read. It is adapted and changed to a degree in order to grasp a better level of juxtaposition of the concepts. The top row, which are pre-9/11, 9/11 and post-9/11, represent the "time" whereas the left column, which are absolute, relative and relational, represent the "space". Therefore, their junction cells become the outputs of "space-time". The cells are identified and classified in relation to Harvey's matrix and filled accordingly regarding the multiple collected data from both literature review and online newspaper articles, images, sounds, videos and witness statements in relation to the World Trade Center and 9/11 attacks.



CHAPTER II

DAVID HARVEY'S TRIPARTITE FRAMEWORK ON SPACE-TIME

2.1. Space-Time Conceptions in the Era of Globalization

After the mid-1970s, the world economy started to be more embedded into capital, production and consumption flows across state boundaries, which is defined as "globalization". In the 1990s' and early 2000s' arguments, the sociologists describe globalization as *"the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa"* (Giddens, 1990: 64). This comprises an alteration in the way we perceive geography and experience disregarding the territory. Economic geographers brings a wider context to discuss globalization by defining it as: *"...implies a degree of functional integration between internationally dispersed economic activities"* (Dicken, 1992: 1), accordingly, it also refers to advanced possibilities for actions between people in specific conditions such as commercial and financial flows, foreign direct investments, information flows, and personal or business travels around the world (Marcotullio and Lo, 2000).

Even though the geographical location and face-to-face communication is critical for many activities, deterritorialization, which is one of the consequences of globalization, shows itself in many social and economic circles (Ruggie, 1993: 139-174). For instance, professionals in different regions, can participate in digital market disregarding their actual place; television lets people being located in anywhere to notice the influence of wars although they are at their homes and away from the events; academics or researchers use video conferences to have meetings in which contributors are located at different geographical locations; the internet lets businessmen or academics to talk directly with each other although

enormous geographical distances are splitting them. In this context, globalization also addresses the stretching out of new practices of placeless social activity (Ruggie, 1993: 139-174). Therefore, integration to 24/7 networks disregarding locations affects our perception of the space and time in global era.

Conceptions of space and time are historically altered by the development of transportation technologies as a part of the Industrial Revolution. McClure (1902) worked on railroads on how distant spaces are getting closer which was possibly the earliest attempt to the concepts. Jefferson (1928) discussed the influences of the railroads, and Boggs (1941, 1945) furthered those discussions through use of maps by working on transportation technologies during World War II (Warf, 2008 citing McClure, 1902; Jefferson, 1928; Boggs, 1941, 1945). These studies put forward the discussions on how the spatial accessibility is influenced by the developments and how the duration of travels is reduced to a degree. After the mid-1970s, due to globalization, local events and situations started to be shaped by the events and situations which are happening in far distances.

In the late 20th century, 2000s' arguments advocates that the information, communication, technological developments and globalization generated an increasing world shrinkage which altered the set of expectations and obstacles confronted by people, firms and spaces. Before, size of markets were formed according to physical and time constraints, products and information could not flow timely because cost of transportation and communication restricted their physical size (Warf, 2008: 16). The advances in information, communication and transport technologies in global era defined new parameters and a new conception of *spatio-temporality*. Once the world was being imagined as bounded places, but now it shifted to a world of flows due to globalization (Massey, 2008: 81). Globalization involves the appreciation of spatiality and at the same time annihilation of spatiality; *"...it is a making of space through relations..."* according to Doreen Massey, a social scientist and a geographer (Massey, 2008: 83).

The technology enabled a new type of society that is bound to various networks such as transportation, communication and informational networks

(Castells, 2000: 693). In the network society, informational networks turn out to be central to the new organization of the society (Castells, 1996: 381). The information and the communication technologies help to separate the simultaneity of the shared moment from the contiguity of space. Thus, the dominant spatial logic of the new society is spaces of flows, in which the “*places do not disappear but they are defined by their position within flows*” of globalization (Taylor and Derudder, 2016:27).

The telecommunication and transportation services which are grounded on urban space also lead people to reach to greater distances in space and time. Therefore, distances lost their significance in the global urban environment. Space and time conception in global era is altered by these developments (Sassen, 2001) and their interdependency is reconstructed in a broader and complex perspective. By integrating space and time into a tripartite framework, Harvey offers a more focused way of looking at space-time conception that can help us to decipher these concepts in the global era.

2.2. Space-Time Conception of David Harvey

Space, by its nature, seems as a primary concern that challenges the geographers, and Harvey is a key scholar in theorizing how the relationship between space and time is altered in the global era to explain the hypermobility of capital overcoming the physical boundaries in globalization. He is grounding his theory of space-time onto both Marxist philosophy and classical Western philosophy.

In *Social Justice and the City* (1973), Harvey argues that investigating the nature of space will lead to a better understanding of urban processes operating under capitalism. In his later and seminal work of *Condition of Postmodernity* (1990), Harvey argues that in the global era, there has been a change and emergence of new ways of experiencing space in relation to time in the context of

social, cultural, political and economic practices. There is a decrease in the significance of distance and proximity. In relation to this, even space itself starts to be an outcome of globalization (Harvey, 1990: 249).

Harvey discusses the impacts of the global flows of capital on the urban space by linking the economic dynamics to the capitalist form of the society. He asserts that: *“for people, who hold the social power in his hand, to finesse perception of space and time, they gain more power in terms of the Marxist sense”* (Harvey, 1990: 238). This addresses the significance of economy in understanding space-time relations in a capitalist society. Accordingly, money is interlocked together with the space-time as the resources of social power.

In his article *Space as a Keyword* (2006), Harvey engages in an effort to find a general conception of space-time relations not only for global era, but in general. Here, he highlights how complicated the meaning of the word space is and how space cannot be thought independently of time. He juxtaposes time to space and offers a framework in which space and time is regarded as “space-time”. He asserts that the space could be rich in possibilities if we use the term by referring to the time (Harvey, 2006: 275-276). Unlike numerous modern philosophers, sociologists or geographers, he advocates the interdependency of these concepts.

According to Harvey (2006), there are three spatio-temporalities by which we understand complex relations of spatial experiences: Absolute space-time, Relative space-time and Relational space-time (**Figure 1**) (Harvey, 2006: 271). Here, absolute space-time approaches space and time through material facts and measurable Euclidian geometries where we record or plan events in the fixed physical space. Relative space-time addresses the abstract sense of space which is defined by what is being relativized by whom. Non-Euclidian geometries and their distances can be depicted differently. Relational space-time is where the space is constituted only by specific processes. These processes shape the spatial frame in which external influences get internalized by time (Harvey, 2006: 273). It involves any concept of which the measurement of it is problematic such as memories, desires, hopes or dreams (Harvey, 2006: 282).

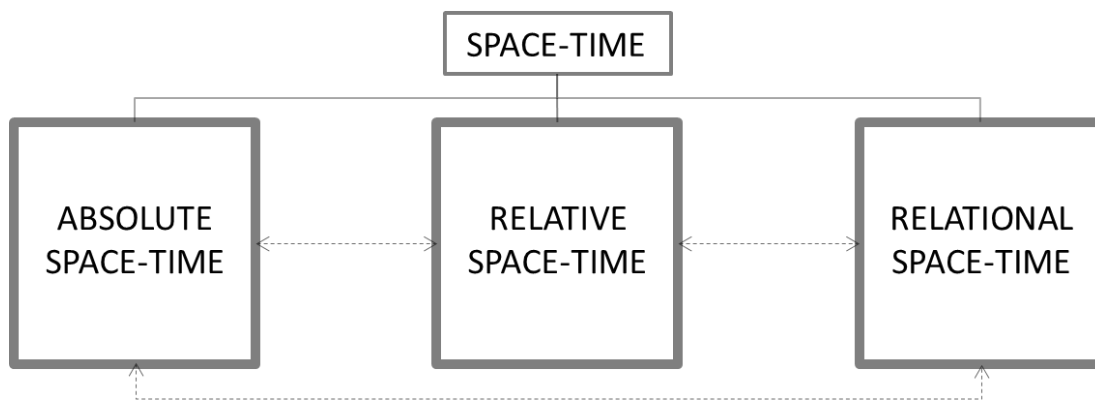


Figure 1 David Harvey's Tripartite Framework on Space-Time (Author, 2016).

Harvey advocates that these three spatio-temporalities should be held in dialectical tension together and that the space contains all of these three spatio-temporalities simultaneously. A space is absolute, relative and relational at the same time because there is no single meaning attached to the space and none of the meanings of space could be understood apart from each other (Harvey, 2006: 275-276). In addition, as a critical geographer, Harvey finds useful to approach space – time from a relational angle. He advocates that the memories cannot be measured through traditional measurement technics; an event in space cannot be understood by only looking at what the space contains at the time in which the event occurs (Harvey, 2006: 275). He states that: *“The actions taken in the absolute space only make sense in relational terms.”* (Harvey, 2006: 284). Therefore, he finds relational space-time more inclusionary: *“...relational space can embrace the relative space and the absolute, relative space can embrace absolute, but absolute space is just absolute.”* (Harvey, 2006: 275-76).

While constructing his first matrix of “Possible meanings for space as a keyword” (**Figure 2**), Harvey is concerned with the spatio-temporalities of capitalism and its social formations in advanced capitalist societies (Harvey, 1990). Since the matrix of space and time offers a general theory, it is possible to see how Harvey's early work on contemporary globalization processes can be reflected to the reading of the matrix in relation to global era. Harvey (1989; 1990; 1996) has

advocated that while the strategic location (relative location) is important within the global economy, characteristics of a space (absolute space) also become prominent in order to sustain capital accumulation through improving the business atmosphere to attract investment. The background of his work on three spatio-temporalities comes from his interest in land-use patterns, spatial justice, urbanism and spatial forms in which he realized that the relationality has not been stressed enough in the (re)development mechanisms of the cities (Merrifield 2003). He (2006) expands his theorization by employing Henri Lefebvre's and Karl Marx's theories mainly upon capitalist dynamics and their reflections on spatial experiences. In his matrix, there is a tripartite framework of absolute, relative and relational space-time which cross the tripartite division of experienced, conceptualized and lived space that are identified by Lefebvre. The outcome is a three-by-three matrix in which the intersection cells show different ways of understanding the meanings of space, and space-time in particular.

The matrix "Possible meanings for space as a keyword" can be read from all directions to all other directions and Harvey finds it useful to read in this way to imagine complex scenarios (Harvey, 2006: 281-84). He even discusses the matrix as an absolute form of representation in itself, and at the same time it is a conceptualization in his mind which is relative and lastly, it is also relational where the various inputs involves internal relations to each other occurring from the dialectical tension of each input with the rest (Harvey, 2006: 281).

In the era of globalization, capital circulates through the world to find an ideal grounding location for businesses and in relation to time, capital overcomes spatial barriers, produces certain spaces, destroys and re-creates in order to accumulate (Harvey, 2001: 247). This leads us to study the nature of space in relation to time in the *global business districts* which are seen as ideal locations by many transnational corporate firms and agents of globalization. Global business districts are also the places where capital tries to bond itself to the built environment and re-identifies the territorial dependence through an organization, which feeds the flow of the capital, commodities, information and people, and connecting spaces in an hierarchical order through various development patterns in

global urban space, as Harvey puts it, these patterns are the reflection of the *spatialization of the capital* (Harvey, 2000).

	Material space (experienced space)	Representations of space (conceptualized space)	Spaces of representation (lived space)
Absolute space	Walls, bridges, doors, stairways, floors, ceilings, streets, buildings, cities, mountains, continents, bodies of water, territorial markers, physical boundaries and barriers, gated communities . . .	Cadastral and administrative maps; Euclidan geometry; landscape description; metaphors of confinement, open space, location, placement and positionality; (command and control relatively easy) – <i>Newton and Descartes</i>	Feelings of contentment around the hearth; sense of security or incarceration from enclosure; sense of power from ownership, command and domination over space; fear of others ‘beyond the pale’
Relative space (time)	Circulation and flows of energy, water, air, commodities, peoples, information, money, capital; accelerations and diminutions in the friction of distance	Thematic and topological maps (e.g. London tube system); non-Euclidean geometries and topology; perspectival drawings; metaphors of situated knowledges, of motion, mobility, displacement, acceleration, time-space compression and distanciation; (command and control difficult requiring sophisticated techniques) – <i>Einstein and Riemann</i>	Anxiety at not getting to class on time; thrill of moving into the unknown; frustration in a traffic jam; tensions or exhilarations of time-space compression, of speed, of motion
Absolute space (time)	Electromagnetic energy flows and fields; social relations; rental and economic potential surfaces; pollution concentrations; energy potentials; sounds, odours and sensations wafted on the breeze	Surrealism; existentialism; psycho-geographies; cyberspace; metaphors of internalization of forces and powers (command and control extremely difficult – chaos theory, dialectics, internal relations, quantum mathematics) – <i>Leibniz, Whitehead, Deleuze, Benjamin</i>	Visions, fantasies, desires, frustrations, memories, dreams, phantasms, psychic states (e.g. agoraphobia, vertigo, claustrophobia)

Figure 2 “A matrix of possible meanings for space as a keyword” (Harvey, 2006:282).

2.3. Reading the Global Business Districts through Harvey's Tripartite Framework

When the physical and social landscape of urbanization is shaped according to distinctively capitalist criteria, constraints are put on the future paths of capitalist development. This implies that though urban processes under capitalism are shaped by the logic of capital circulation and accumulation, they in turn shape the conditions and circumstances of capital accumulation at later points in time and space. (Harvey, 2001: 345)

Capital's growth, which addresses a loop of accumulation in relative space-time by linking distant geographies, is deeply concerned with the built environment in absolute space-time, and vice versa (Harvey, 2000: 369). In the capitalist system, money is the leading force in shaping the social relations as well as the built environment. A large number of investments in particular areas of cities are the demonstration of this circumstance, which comes with the global competition of "global cities" (first coined by Saskia Sassen in 2001) and a competition includes power and prestige in global era.

These global cities tend to join into the hierarchical system of global network of economy (Sassen, 2001). A considerable part of these investments are intended to create or re-create financial centers in cities. As a reflection on absolute space-time, these financial centers become *central business districts* (CBDs) within their boundaries and they are located in relatively strategic locations of cities. Although this typology is based on the CBDs concept, defined first by E. W. Burgess, an American urban geographer with his concentric structure city model in 1923 (Yaguang, 2011: 258); *global business districts* (GBDs) are primarily distinguished from the CBDs in the sense that they are found in global cities, plus, they contain a significant percentage of the *transnational advanced producer service firms* as key agents of globalization as identified by Sassen (2001) and Taylor and Derudder (2016). In the networks of the GBDs, firms link themselves to different countries according to economic potentials and advantages of the territories rather than bounding themselves to a single district. Therefore, they become multinational

firms and their products and services become involved in larger networks within the 24/7 worldwide interactions (Gray, 2002: 57).

The GBDs have the potentialities that help markets to globally-operate and to have globally-linked organizations of production. This is a complex and intense process that needs to be realized in relative space-time which is the networks of cities. Therefore, new geographies and hierarchies of centrality, which is built on *decentralization* of economic activity around the globe, are being established in absolute space-time (Sassen, 2009). In the global economy, control and command units, producing units, assembling units and selling units of the firms are disjointed in spatial manner. Therefore, the space where the raw supplies come from and where they go is different from the space that they are transferred, the space in which the parts are brought together, as well as the space in which the product or service meets with the user (Sklair, 1995). Therefore, there becomes a production – consumption line based on a spatio-temporal network in different territories in cities.

In these production and consumption line, control and command units are particularly the prominent factors that shape the global urban space due to the transnational firm's criteria for selecting strategic locations to locate their headquarters. Sassen (2005) argues that the decentralization of the global economic activity needs a centralized command and control functions: *“Geographic dispersal of economic activities that marks globalization, along with the simultaneous integration of such geographically dispersed activities, is a key factor feeding the growth and importance of central corporate functions.”* (Sassen, 2005: 28). She claims that the managing, coordinating, servicing and financing activities have become central functions for the corporations and these complex functions led to the questioning of the key location for corporations. These functions are performed from the headquarters of the firms which are the advanced producer service (APS) firms, that is, the agglomeration of knowledge-based and information-based activities (Hall and Pain, 2006). The cluster of firms in the GBDs are not only associated with a single industry; instead, there are different types of businesses (Taylor and Derudder, 2016). Some of them are: Management, administration,

marketing, legal services, banking, finance, accounting, insurance, human resources, IT support, transport and logistics (Oner, 2008).

While in the traditional sense of business activities, the location of headquarters was being chosen by firms through contracting in high-rises for prestigious image because the corporate power and prestige has been symbolized through building heights since the late 19th century starting from the United States and spreading out to the world and today, building the highest is counted as a demonstration of power and prestige (Farouk, 2011). For instance, Burj Khalifa in Dubai (**Figure 3**) is at 828 meters height, Shanghai Tower in Shanghai is at 632 meters height and the Taipei 101 building in Taipei is at 508 meters height (Skyscrapercenter, 2016); the Kingdom Tower (the Jeddah Tower) in Jeddah (**Figure 4**) is expected to reach to 1 km height when it will be completed in 2018 (Thenational, 2016), and even the height of the Dubai Creek building in Dubai (**Figure 5**) has not been revealed yet (Channel4fm, 2016). However, in addition to the selection of high-rises as location, the physical patterns of agglomeration of economies in the built environment makes more sense in the relative terms such as networking and cooperation, and this leads to the agglomeration of locations as informational centers (Castells, 1989, 2005; Sassen, 2005). In this way, command and control functions are being centralized in cities as a form of high-rise clusters.



Figure 3 Burj Khalifa in Dubai (Burjkhalifa, n.d.).



Figure 4 The Kingdom Tower in Jeddah (the Jeddah Tower) (Spbssk, 2016).

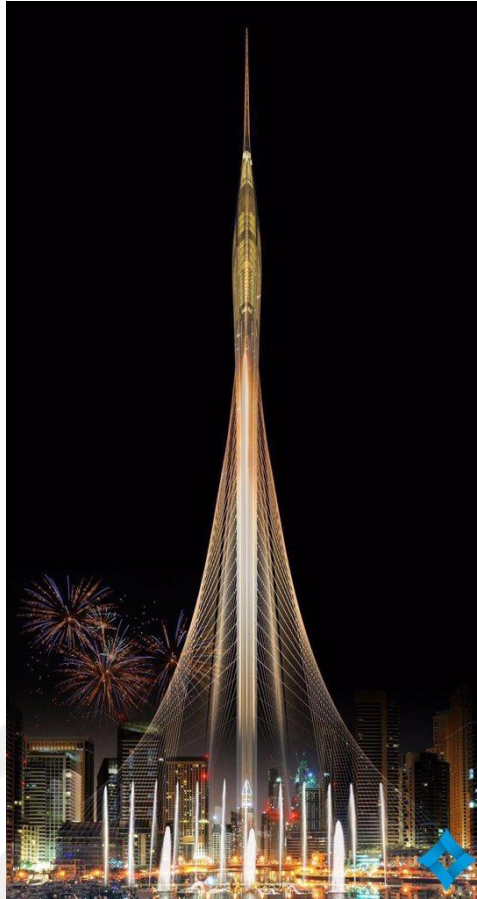


Figure 5 Dubai Creek in Dubai (DxbMediaOffice, 2016).

Besides the power and prestige that the high-rises provide, they also facilitate the tacit information exchange activities in their clusters because of the proximity to the adjacent firms (Oner, 2008). These clusters of prominent headquarters in the high-rises can be seen in the prominent business centers of global and globalizing cities, namely the GBDs such as Canary Wharf in London, La Défense in Paris, Battery Park City in New York or Pudong in Shanghai (Yeandle, M., Mainelli, M. 2016). In other words, the GBDs are also defined by the high-rise architecture where the transnational service firms are the tenants. For instance, One Canada Square building (**Figure 6**) in Canary Wharf is known for its rank of the second tallest building in the United Kingdom at 240 meters height after the Shard building at 309.6 meters height, and it was the tallest one until 2010 (Kristen, 2013). HSBC, JP Morgan, Moody's and Citi Bank are some of the transnational tenants in

the One Canada Square building. The Shanghai Tower (**Figure 7**) in Pudong at 632 meters height, the second tallest in the world (Gensler, 2015), is also another example.

Advantages of a cooperative business environment where the distance and proximity are significant in the relative space-time provide a strong influence on the firms that are located within the same frame of absolute space-time (Taylor et al., 2003). Proximity to the other firms enables firms to meet the great majority of needs of their clients. Conversely, for instance, a client who needs a legal service can also negotiate with a financing company within the same frame. Moreover, these companies can recommend each other which is an established non-market connection through a shared reliance (Taylor et al., 2003). Therefore, considering all three spatio-temporalities, the GBDs become great districts that provide complementary services, face-to-face interactions, informal information networks, high-profile employees and high-tech infrastructure (Oner, 2008).

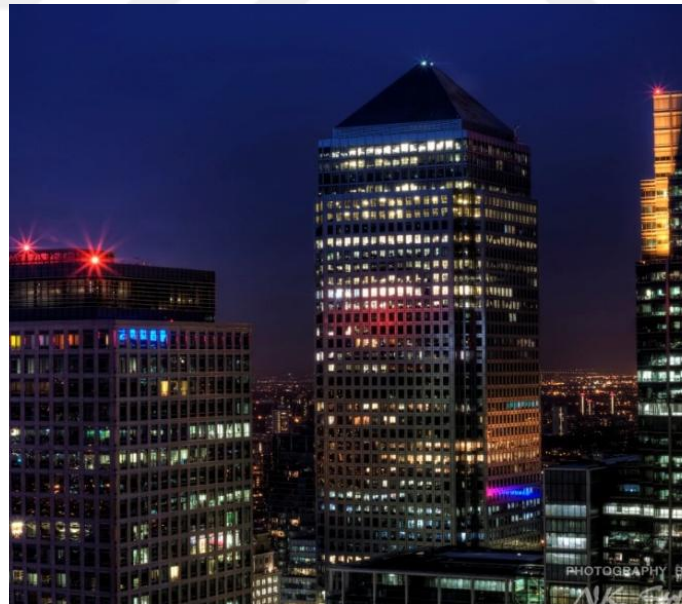


Figure 6 One Canada Square building in Canary Wharf (Kristian, 2013).



Figure 7 The Shanghai Tower in Pudong (Gensler, 2015).

Although the increasing interest for the cooperative atmosphere, competition, power and prestige are closely tied to each other in global era and they exist as consequences of global economy. Therefore, in the GBDs, demonstration of the corporate power is crucial (Oner, 2008). Globalization progresses under the framework of globally interlinked economic activities in relative and absolute space-time, and interferes into cultural interrelations (Lai, 2004). Competition for power and prestige continues in the built environment in the form of *iconic architecture* undertaken by *star architects* and innovative urban planning and design schemes. The glamour of the absolute built environment is very much connected with the conception of a city as a brand in relational sense of space-time. That is to say, in order to attract global flows of capital and people in absolute space-time, the cities are in competition to demonstrate that they have the most advanced infrastructures (Oner 2008). *“Road transport is becoming an important issue in many centres”* and the *“Lack of direct flights into certain centres holds them back”* according to the infrastructural issues as one of the areas of competitiveness identified by Global Financial Centres Index (GFCI) in 2016, March (Yeandle, M., Mainelli, M. 2016).

The GBDs are mainly located at the particular areas of cities or regions that are instrumental in globalization. Relative proximity to different transportation nodes and to other firms is among the reasons behind the firms' preference of dense networks to locate their headquarters in absolute space-time. For instance, in Canary Wharf (**Figure 8**), in respect to its timeline for infrastructural developments, bridges, roads, buses, pedestrian and cycling routes, parking lots and airport access were refined, in addition, Docklands Light Railway (DLR), Jubilee Underground Line and National Rail had been extended, even river buses were working as a short term support in the late 1990s (**Figure 9, 10**) (NLA Insight Study, 2014). After improving the accessibility through infrastructure, Canary Wharf gradually attracted more tenants and clients, and it gained political, economic and social powers which were shaped by a great amount of investment for the development of infrastructure and urban spaces after the financial liberalization (Herling and Liljedahl, 2005) as well as the iconic buildings and the stations (Drozd and Appert, 2012).



Figure 8 Canary Wharf, London (TheFabWeb.com, 2012).

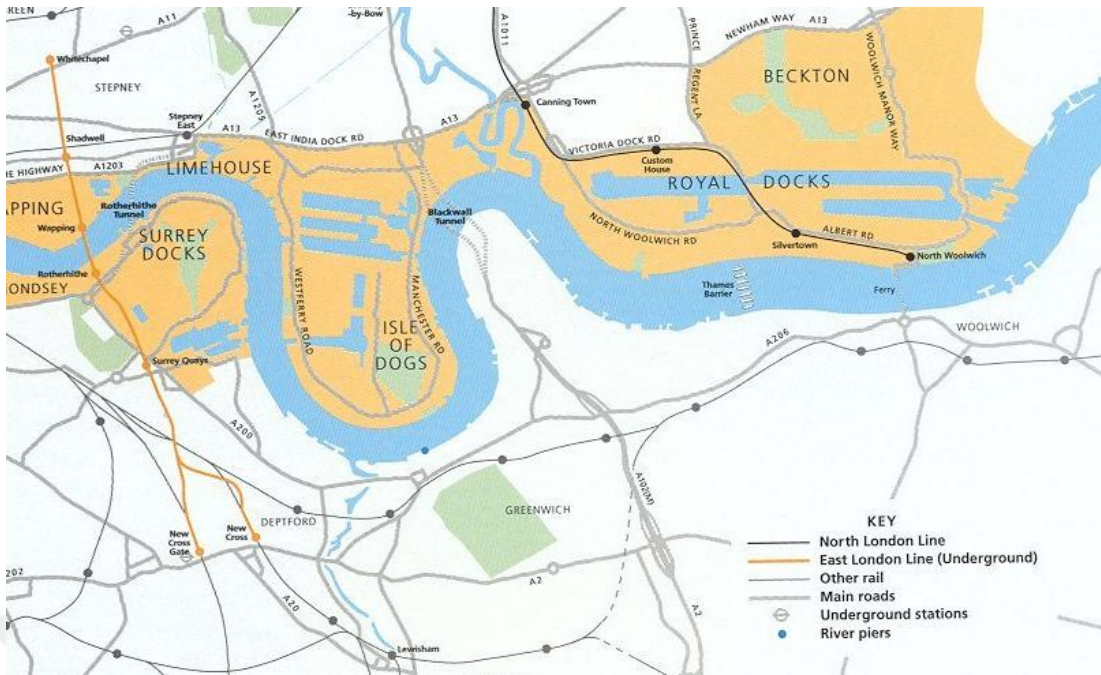


Figure 9 Docklands Transport, Canary Wharf's transportation scheme in 1980 (LDDC, 2009).

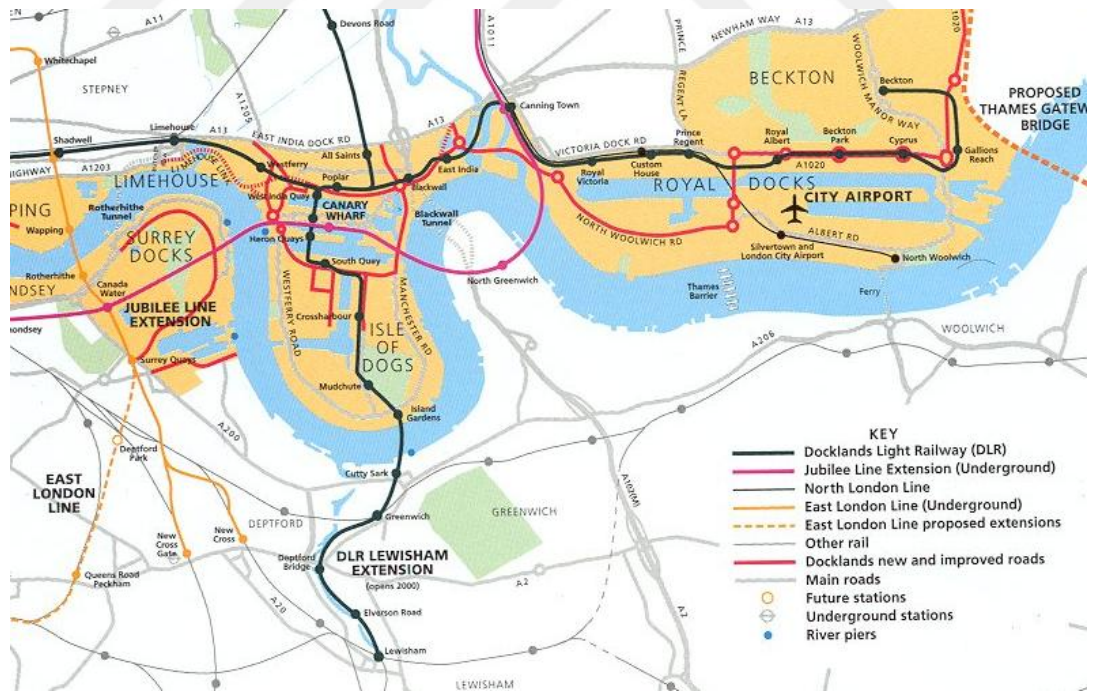


Figure 10 Docklands Transport, Canary Wharf's transportation scheme in 2000 (LDDC, 2009).

Before globalization, in terms of urban planning, the decisions were mainly being made by only concerning the absolute divisions of the cities according to certain functions, now; the urban planning decisions are transformed into the promotion of the image of the city through marketing (Kavaratzis, 2004). This competition takes place in cities and disregarding the type, large scale urban development projects typically come with infrastructural developments that would contribute to the new projects in terms of a functional backing. The GBDs are one of these megaprojects where the infrastructure is complementary to other investments. Reflecting a powerful and prestigious architecture including infrastructure in absolute spaces of the GBDs becomes a great chance for branding out the city.

A city's image is significant because it tries to brand out itself and compete against other world cities in order to grasp a better rank in the relative space-time, i.e. in 24/7 global network (Oner, 2008). Since architecture, as a tool, is visible in absolute space-time, has a key role to construct an image in relative space-time in order to maintain the cities' relative status in the rank. Therefore, iconic structures, high-rises and infrastructure in the GBDs are seen as providers of spatial framework for the landscape of the urban environment (Sklair, 2010). An iconic architecture is seen as that it never fails from the perspective of global capitalist economy (Brott, 2012). There is an understanding that the city is not in the competition without an iconic element (Dovey, 1999).

In the past thirty years, global cities and globalizing cities host to multiple high level of quality of buildings and infrastructures (Ren, 2008). In the past, architecture was also a tool for expressing the national identity through state buildings, national buildings or national museums (Lane, 1985). However, in global era, investors, developers, bureaucrats, politicians or local authorities utilize iconic architecture to adjust a global language to brand out and market their cities. In this way, city marketing appeals to different people in different ways through representing globally-accepted impositions by iconic architecture: Power and prestige; rather than representing local values (Sklair and Gherardi, 2012). In parallel with this, in the high level of quality projects, transnational architectural

firms and *star architects* are being hired. Formerly, it was also valid to have prestigious architects, but this situation shifted to another level; such a way that the aim is not only about marketing only the building anymore, but also marketing the city itself through gaining a global recognition (Rowe and Kuan, 2002). People from different professions such as investors, owners, architectural firms, engineering firms or marketing firms also benefit from the iconic buildings such a way that they are also globalized with those buildings (Sklair and Gherardi, 2012). For instance, Canary Wharf's underground station (**Figure 11**) was designed by Foster and Partners and the Fulton Station in the Battery Park City was designed by Grimshaw Architects and ARUP (**Figure 12, 13**).



Figure 11 Canary Wharf Underground Station by Foster and Partners (Fosterandpartners.com, n.d.).



Figure 12 Fulton Station by Grimshaw Architects (Yoneda, 2014).



Figure 13 Sky Reflector at Fulton Station by ARUP (Yoneda, 2014).

As indicated, the level of quality of the infrastructure is an impact in the formation of the GBDs. In this process, for developers, investors and tenants, infrastructure such as centralized transportation hubs and advanced level of communication with rest of the world are significant because rapid transportation systems and advanced telecommunication systems enable firms to link themselves to the global market economy (Oner, 2008). These investments in forming the GBDs are seen in advanced capitalist societies and the triggering factors to form the GBDs can vary from district to district such as deregulations on economy for foreign investors, a need for decreasing the density in the historical city centers as happened in La Défense (**Figure 14**) (Lee, 2009) because of the shifted demographics due to the wars (Rubenstein, 1978: 28-35). The district was created to provide available workplaces stretching from the center to the periphery (Aveline, 2000) even by surpassing the legal boundary of Paris (Lang, 2006) and substantially contributed to the economic growth (Pumain, 1989). The regeneration of waterfronts is another example as happened to Canary Wharf with the revitalized docklands (Miller, 2009); or the recovery of old manufacturing zones, warehouse zones, industrial zones or port lands as seen in the Battery Park City (**Figure 15**) which is a waterfront district where the earlier sea trade activities date back to 17th century (Doud, 2011). Even demand for large office units and tax policies can create a potential in a district (Swyngedouw, 1989).



Figure 14 La Défense, Paris (Phototheque, 2014).

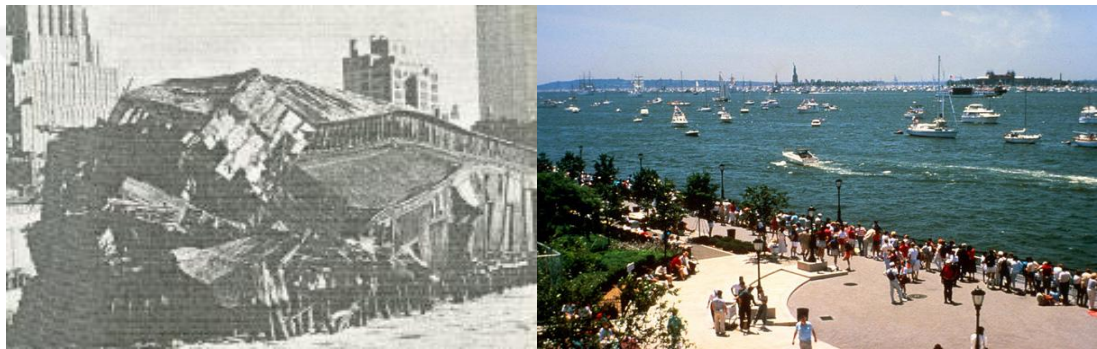


Figure 15 Battery Park City, transformed waterfront area, rotting piers replaced by an esplanade (Doud, 2011).

A single district becomes more concentrated and compound through incubating networks within a spatial boundary in absolute sense of space-time (Harvey, 2004: 121-123). In their boundaries, the GBDs are pre-dominantly comprised of office usage – based units (Del Cerro Santamaria, 2013: 721), however, they also include complex spatial formations in respect of their programs such as mixed uses of buildings, cultural centers, museums, galleries, cinemas, restaurants, coffee shops, shopping malls or any other common facilities and centralized transportation hubs. In most cases, the GBDs do not prefer to have residential units because of the affordability since the land value is relatively higher in the GBDs; instead, developers seek to build temporary accommodation spaces such as hotels (Limehouse and McCormick, 2011), however, there are also

contemporary exceptions such as Canary Wharf's recent and the first residential development "10 Park Drive" (will be completed in 2019) (**Figure 16**) (CanaryWharf n.d.). In short, the more the GBDs exist in the absolute space-time, the more they can attract investors, clients or visitors in relative space-time.



Figure 16 10 Park Drive in Canary Wharf (Wharf.co.uk, 2015).

In this manner, in the GBDs, space becomes something more than just a bounded territory in global urban space. They have certain boundaries in absolute space but at the same time, they are linked to the global network of economy across their boundaries by relating to others in the chain. This duality addresses the dynamism of relative geographies where space is in flux referring to the temporality, unlike the fixed and stable geographies. Rather than two dimensional surfaces and topographies, these networks constitute the space-time in a way that they are constantly become "*folded, stretched or distorted*" through various internalizations (Warf, 2008: 35). Therefore, the GBDs are not only consisted of existing structures; but also the connections between objects which relate to each other in space-time as consequences of complexities of globalization. In other words, as 1980s arguments advocates and Harvey would also approve, "...space is a

social construct rather than a Cartesian grid." (Sheppard, 2006 quoting Soja, 1980; Peet, 1981; Smith, 1981; Gregory and Urry, 1985).

In the GBDs, the hierarchy of different spatio-temporalities works through the interplay among the flow of capital, commodities and people based on advanced communication and transportation networks grounded onto the built environment. Considering that the certain spatio-temporalities may become prominent among the others in certain conditions and events (Harvey, 2006), in some instances, one of these spatio-temporalities might become more prominent in the discussions of space-time. While the GBDs can be read rather from the absolute and the relative space-time approach, the relational space-time approach might gain more emphasis when discussions take place around collective experiences and memories which are affected by the transformation of a certain built environment by an event occurring at a certain point of time. Therefore, the World Trade Center in New York becomes a particularly important case in this regard where the relationality of the district becomes prominent after the 9/11 events in the reconstruction process in a way that the new design of Daniel Libeskind for the World Trade Center tries to reflect commemoration; a relational term, and corporation; a relative term, through a realized master plan in absolute space-time. Therefore, the interplay between all the three spatio-temporalities can be read throughout its history.

CHAPTER III

READING THE WORLD TRADE CENTER THROUGH HARVEY'S TRIPARTITE FRAMEWORK

3.1. Space-Time Matrix for the World Trade Center

Briefly stated, the World Trade Center (**Figure 17, 18**) in New York, a global business district, was established in the early 1960s and the idea of constructing a financial center was pressed hard by the Port Authority of New York and New Jersey with the supports of David Rockefeller, founder of the Downtown & Lower Manhattan Development Association, and Nelson Rockefeller, his brother and the governor of New York in 1962. Minoru Yamasaki was selected as the leading architect for the project. Although the design received many criticisms mainly about ruining the urban character, skyline and urban functioning of New York with Twin Towers (**Figure 19**), construction started in 1966 and 16-acre site opened up in 1973 by demolishing 164 buildings (Borg et al., 2003). World Trade Center was accommodating a large number of headquarters for transnational advanced producer service firms originating from various countries in a form of agglomeration, and they were carrying out various types of businesses operating at global scale.



Figure 17 The World Trade Center, to northeast from over Hudson River in 1994 (Wark, n.d.).



Figure 18 The World Trade Center, to Lower Manhattan in 2000 (AC-Versailles.fr, n.d.).



Figure 19 Twin Towers (Tes.com, n.d.).

9/11 attacks was a climax not only in the recent history of the United States and the World Trade Center's site in particular, but also worldwide. Its recovery was also the central subject in many debates. According to Harvey, in the reconstruction process after the attacks, there were various perspectives regarding the site: Some investors and developers searched for a strategic location while some tended to keep the site as it was in the name of their losses in the attacks (Harvey, 2006: 285). The contradictions about the simultaneity of commemoration and revitalization regarding Daniel Libeskind's designs and master plan (**Figure 20, 21**) started at this point and the different points of views started to be involved into design process. In other words, while the idea of constructing a financial center within a given boundary would be the last confrontation, the intention of revitalization of the cooperative business atmosphere by referring to the pre-9/11, and at the same time the intention of commemoration were also among the aims to be realized.



Figure 20 The World Trade Center by Daniel Libeskind (Libeskind.com, 2003).

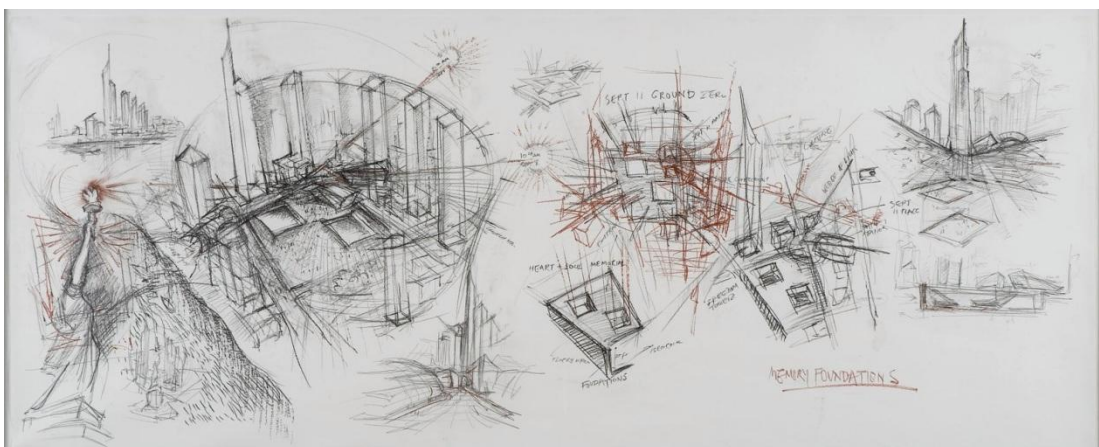


Figure 21 Ground Zero Master Plan, Studio Daniel Libeskind (Libeskind.com, 2003).

Therefore, in order to understand these complex relations in space-time, in this chapter, the 9/11 case is considered as a tool to reveal and analyze the tripartite space-time conception of Harvey (absolute, relative, relational) which are intertwined within the flow of daily time, so difficult to be conceived as distinct phenomena. The World Trade Center, which is a particular example where the interplay between different spatio-temporalities can be seen explicitly due to being a global business district and having the distinctive 9/11 event, is analyzed through a created matrix based on Harvey's tripartite matrix on space-time. In the originated matrix, the reading is slightly different than Harvey's original matrix in a way that the created one is adopted to a degree to obtain another level of juxtaposition of the concepts whereas Harvey has Lefebvre's three concepts crossing with his own spatio-temporalities.

In the created matrix (**Figure 22**), while the top row is addressing "time", the left column represents the "space", and their junction cells become "space-time" in which the cells are filled according to the Harvey's categorization of the concepts by classifying several keywords and phrases in relation to the World Trade Center and 9/11 event according to their spatio-temporal qualities. At this point, whether the words, phrases or concepts can be measured regardless of their context of representations is considered for the categorization of absolute space-time. For instance, the district's boundary can be seen in absolute space-time and at the same time it can be drawn onto a paper as a two dimensional representation or a sense of security occurring from enclosure can be categorized into absolute space-time. For the relative space-time, whether a word, phrase or a concept implies a distance, proximity or a feeling while spanning the distances is taken into consideration such as the spatial accessibility to the site, the circulation of images of the moment of attacks or the tension of motion while commuting to the site/leaving the site. For the categorization of relational space-time, if the words, phrases or concepts are complex and hard to be measured by conventional methods and if they are the results of an internalization process, then they are categorized into relational space-time approach such as collective and individual

memories, desires, or psychic states such as claustrophobia occurring from the memory of an event.

The matrix can be read by taking a linear path, or top to bottom, or left-to-right, or even across. Reading the matrix across can be beneficial if the cause and effect relations between various dynamics are desired to be excavated. When the inputs are read from left to right, how each of the absolute, relative and relational space reflect themselves in three different time domains can be seen. It provides a better understanding of how each point of view regarding space was altered or remained stable individually can become visible in relation to each time domain. However, if the matrix is read from top to bottom, how absolute, relative and relational spaces reflect themselves simultaneously in relation to a specific time domain becomes more visible. Therefore, in order to grasp the interplay between these spatio-temporalities better, the matrix should be read from the top to the bottom, and for these reasons, in this chapter, top-to-bottom reading is preferred while discussing the case study of the World Trade Center and 9/11. The preference is made because the standpoint of the observer plays a critical role.

SPACE-TIME	PRE-9/11 (1973-2001)	9/11 (2001)	POST-9/11 (2001-2016)
ABSOLUTE SPACE	<ul style="list-style-type: none"> • Private property boundaries of WTC • Architectural qualities of Twin Towers • Open plan offices • Height of the Twin Towers and the other buildings • Coordinates of the district on a cadastral map • Name of the firms, their floors, number of employees • Windows on the World • Underground Shopping Mall • PATH, WTC Station 	<ul style="list-style-type: none"> • Crush of airplanes • 94-98/78-84 Damaged Floors • Recessed columns at damaged facades • Fire explosions at damaged floors • Blocked stairways • Escaping routes • Jumpers, body parts, blood • Collapses, dust, airplane parts, debris on streets • Firemen, rescue teams and dogs, policemen ambulances 	<ul style="list-style-type: none"> • Private property boundaries of Ground Zero • Architectural qualities of One World Trade Center • Absence Memorial • Waterfall • Victim's names on plates • Underground exhibition space • Exposed wall remaining from the former building • Transit Hub <i>the Oculus</i> • Security cams, metal detectors in the buildings
RELATIVE SPACE	<ul style="list-style-type: none"> • Name of the site as WTC • Economic activity across state boundaries • Connectivity to 24/7 global network of economy • Circulation of capital, commodities, people and information • Intensity of actions at the site • Location, proximity to Wall Street • Commuting to WTC • The tension of motion while using PATH • PATH's map showing routes • Anxiety at job interview at AT&T 	<ul style="list-style-type: none"> • Name of the day as 9/11 or 911 • Thrill of moving into the unknown • Rush of firemen, rescue teams, dogs • Circulation of air (smoke, dust, heat) • Circulation of water (flood) • Loss of electricity • Communication of flight attendants and ATCT, reporting hijacking and instructions • Live broadcasting of the mediums in relation to attacks (circulation of images, sounds, texts) 	<ul style="list-style-type: none"> • Name of the site as Ground Zero • Sense of insecurity, fear • Listening to the voice records between flight attendants and ATCT, videos/images showing the crashing of airplanes, texts on the 9/11 event • Location, proximity to Wall Street (reconstruction) • Cooperative business atmosphere as before • Commuting to Ground Zero
RELATIONAL SPACE	<ul style="list-style-type: none"> • Conception of WTC as indestructible • Memory of a marriage proposal or celebrations at Windows on the World • Dream of working at a firm in WTC 	<ul style="list-style-type: none"> • Hope to survive • Desire to escape • Hope of being rescued • Hope to meet with loved ones • Claustrophobia • Dreaming while looking forward news from loved ones 	<ul style="list-style-type: none"> • Desire to re-erect United States' symbol of power • Symbols of strength of United States • Memory of loved ones • Empathy with others • Collective past and memory of United States • Devotion of half of the site to memorial

Figure 22 Space-Time Matrix for the World Trade Center and 9/11 (Author, 2016).

3.2. The World Trade Center, Pre-9/11 (1973-2001)

If the absolute space of the World Trade Center is analyzed in relation to pre-9/11, the district was a particular built environment which was constituted by the tangible elements such as “...physical boundaries and barriers, territorial markers, streets, buildings, walls, stairways...” Harvey (2006: 275). Planning of the district (**Figure 23**), its architecture and architectural program were defined by certain functions within certain boundaries: It consisted of seven buildings including two of them as the Twin Towers (WTC 1 and WTC 2). There was also a plaza including a hotel, shops and services (**Figure 24**), and a terminal station through an underground access from the site by using PATH (Port Authority Trans-Hudson) (Kausel, ed., 2002).

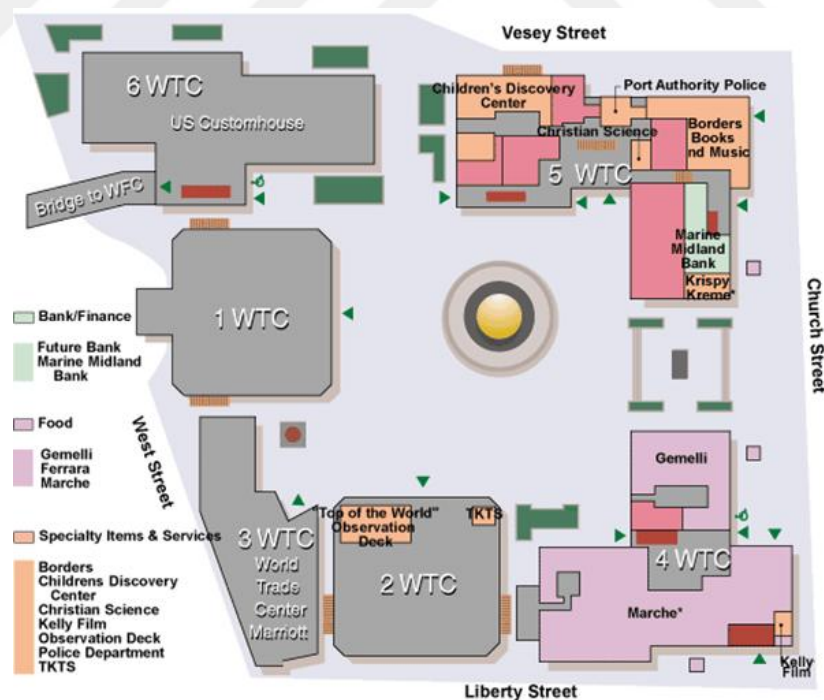


Figure 23 Site Plan of The World Trade Center Master Plan (Chin, 2005).

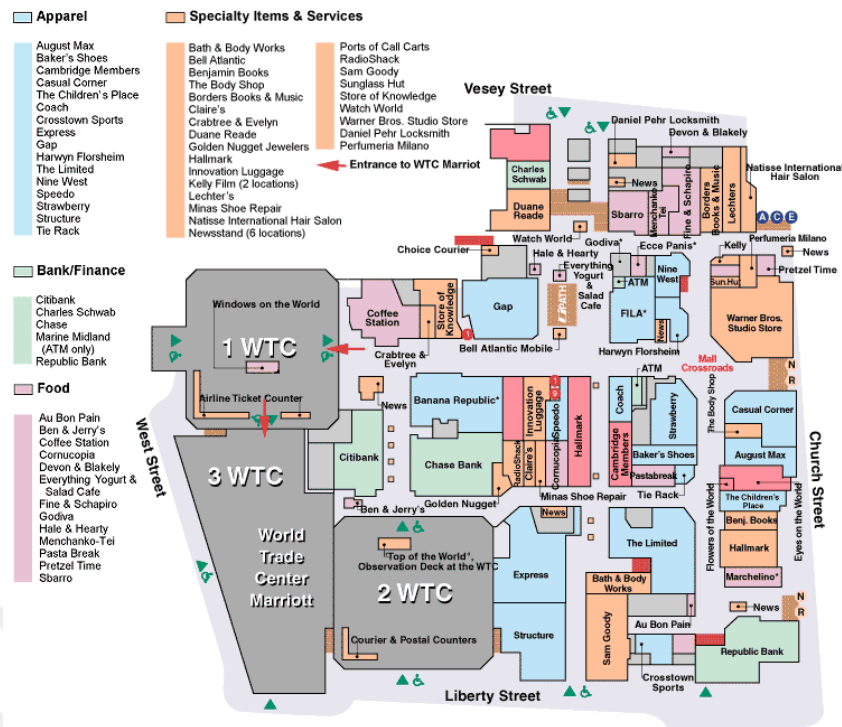


Figure 24 The World Trade Center, shops and services (Chin, 2005).

In the buildings, there were more than 430 firms from 28 countries engaged in various businesses such as banking, finance, insurance, import/export, law, computers/data processing, communication and governmental associations including foreign governments. Some of them were: AT&T, Cantor Fitzgerald, LG, Morgan Stanley, Commerzbank Capital Market, FedEx, Fuji Bank, Deutsch Bank, Port Authority of New York & New Jersey, Overseas Union bank, China Construction America, Government of Thailand and New York Metropolitan Council. They were mainly the transnational firms and they had their divisions, branches or headquarters in the buildings including the plaza level and the underground level (CNN.com, 2001). For instance, Morgan Stanley, which was located at South tower's 43th, 45th, 46th, 56th and 59th-74th floors (VanderMey, A., Adamo, M., 2011), was a globally-operating retail brokerage division including investment management and sustainable investing in 21 countries (now 28) including China, Hong Kong, United Kingdom, United States and Turkey (Morgan Stanley, n.d.), and they had 2.700 employees (VanderMey, A., Adamo, M., 2011).

Through the agglomeration of economies in a concentrated form and 24/7 business activities across the boundaries, the World Trade Center presented the characteristics of a global business district by its very nature in the relative space-time where the *“circulation and flows of ...commodities, peoples, information, money, capital...”* (Harvey, 2006: 282) were intertwined with the physicality of the district. Cooperative working environment among employees, directors, and managers or even between employees and the clients at great distances defines the spatial frame through exchange of information via communication technologies. The absolute spaces of offices were designed accordingly in order to support those activity flows in a way that the offices had open-plans through flexible partitions thanks to the suitable load-bearing system. In the Twin Towers, there were 8 floors out of 110 that were serving for mechanical maintenance and the rest of the levels were the office spaces (**Figure 25**) which were connected by 106 elevators in total. Besides the Twin Towers, the other five buildings were also assigned to the offices and 11.2 million-square area in total was dedicated to the workplaces in the district (Roberts, 2009).

The spatial organization of the transportation networks was also shaped according to the existing site in order to improve the accessibility in and around the district. Employees, citizens or visitors were commuting to the World Trade Center in relative space-time using certain infrastructural systems (**Figure 26**) that were constructed in absolute space-time such as PATH rail station which was serving for 85.000 users daily with connections to waterway, light railway, subway transit systems and buses. PATH, in terms of its relative location, was also connected to the district directly from the underground shopping mall and the name of the station was changed from Hudson Terminal (dated 1909) to WTC (dated 1971) (FEMA, 2002).

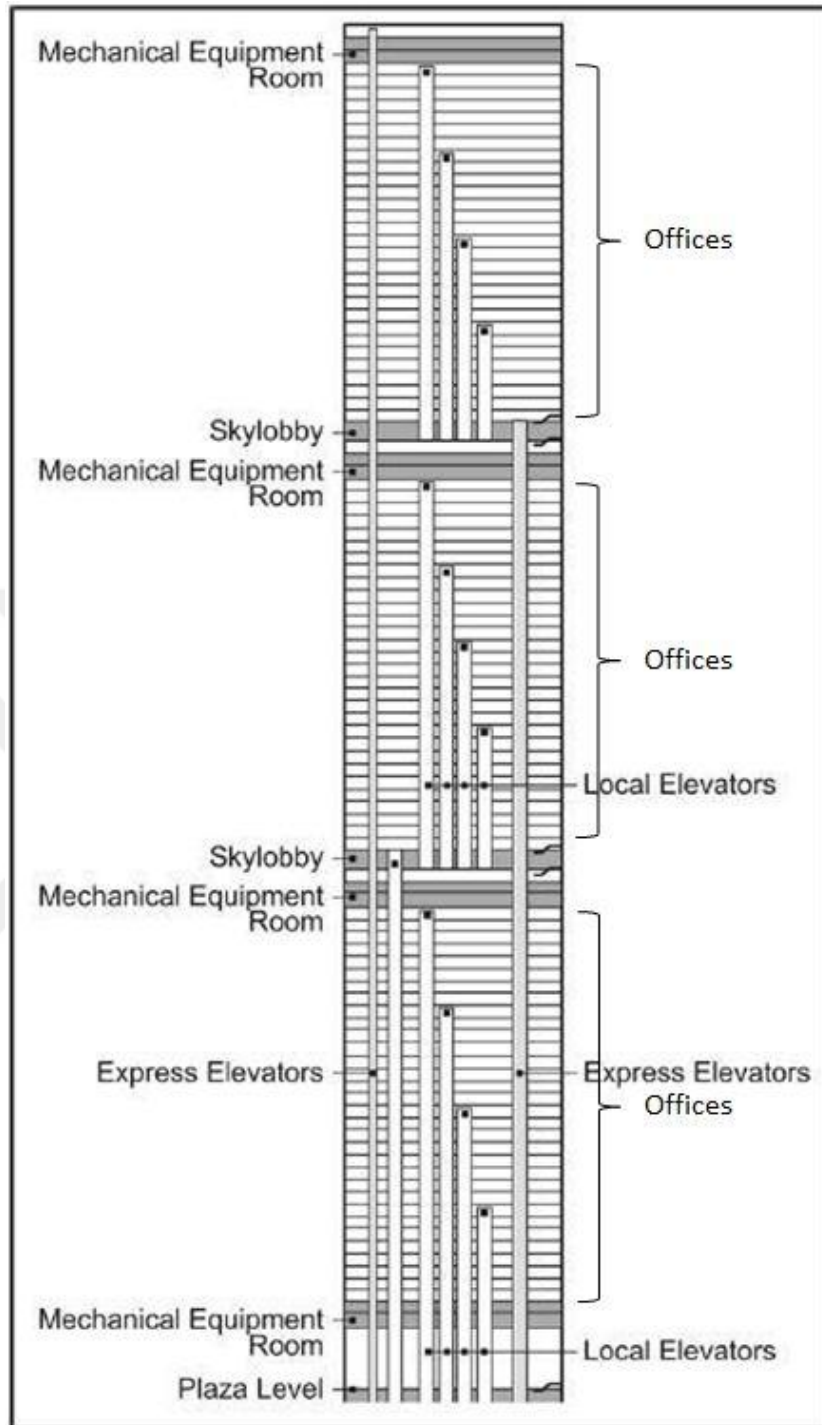


Figure 25 Arrangement of office spaces, express and local elevators (Roberts, 2009).

the World Trade Center as a representation and symbol addresses the relational space-time whereas the materialization of his ideas were reflected in the absolute space-time through the complex as a built form until 2001, September 11th.

It is seen that before 9/11, the relative space-time dominates the other two spatio-temporalities. Relativity directs the absolute and the relational interpretations in space-time in a way that being a global business district both affects the physical built environment such as the adjustment of the infrastructure according to the site, arrangement of the office spaces, or the agglomeration of economies; as well as the relationality of the site in people's minds, that is, the conceptualizations of World Trade Center, especially the Twin Towers. Therefore, it can be said that even if the three spatio-temporalities co-exist, the relative space-time dominates the absolute and the relational space-time in the World Trade Center before the 9/11 events.

3.3. The World Trade Center, 9/11 (2001)

In the World Trade Center, before the 9/11 events, there were different existentialities in space-time such as the physical built environment in absolute space-time and the 24/7 global business activities in the relative space-time. However, 9/11 events altered the constituents of the spatio-temporalities in a way that the existences were replaced with the destruction and non-existence through the collapses of the buildings. Therefore, the constituents of the spatio-temporalities were redefined in and after the day of September 11, 2001.

On the morning of September 11 in 2001 at 8:46am, American Airlines, Flight 11, a 767-223ER model of an airplane was hijacked and crashed onto the north facade of the WTC 1 (north tower) between 94th and 98th floors by giving a substantial damage (**Figure 27**) (Rehm et al., 2002). Airplane's pieces, especially engine parts, caused partial displacements of some steel columns and the recession of them from the facade to inside and floors which were linked to these columns also collapsed in places (FEMA, 2002). Although some of the floors came loose, it

was not predicted that the whole tower would collapse; however, the airplane had around 34,000 L fuel with 211 m/s velocity and it caused to several explosions due to the crash which also damaged to the other three facades of the WTC 1 (Rehm et al., 2002: 3).

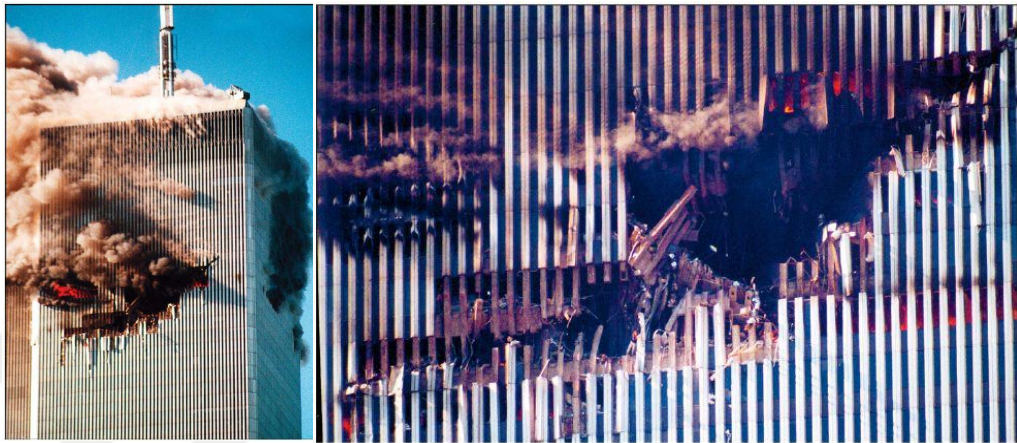


Figure 27 Zone of airplane impact on WTC 1 and the displacement and recession of columns on north facade of WTC 1 (FEMA, 2002).

WTC 2 was also attacked by another hijacked United Airlines Flight 175 which went into the south tower from southeast facade, initially damaged the floors between 78th and 84th. Similar to what happened to WTC 1, with the immediate impact of the crash, floor plates, walls, core columns and framing systems of WTC 2 were also damaged. Again, exterior columns and walls recessed into the interior spaces, and the impacted zone involved around 32 columns on the southeast facade ranging to five-storey (**Figure 28**) (Rehm et al., 2002).

In the World Trade Center, if we regard space as absolute during the 9/11 attacks, the exact moment of the crashes, types of airplanes which were used by hijackers to struck to the towers, damaged floors, crash zones on the floors, recessed/damaged columns, dusts on streets, jumpers' bodies or collapsed buildings can be considered as to shape the absolute space-time at 9/11 day whereas before the attacks, the absolute space was constituted only by considering

what the space contains such as number of floors, height of the buildings in the site, architectural program or office spaces themselves.

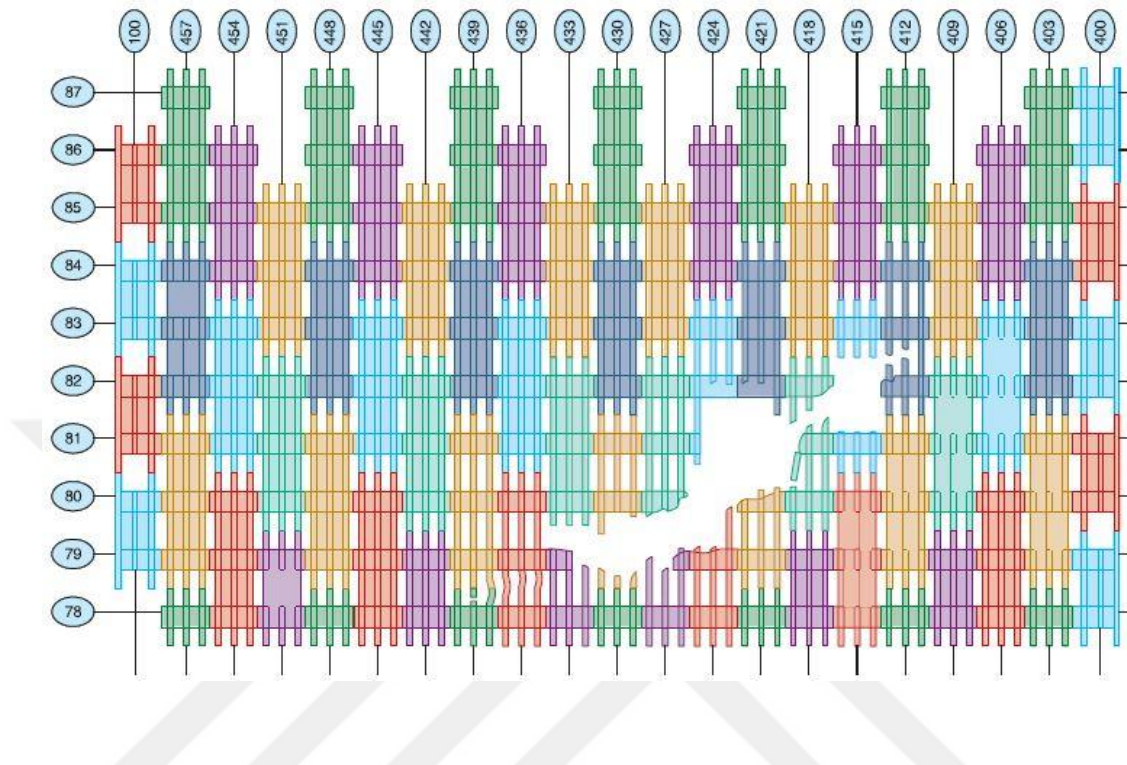


Figure 28 Southeast facade of WTC 2 showing the zone of airplane impact (FEMA, 2002).

Keeping these quantifiable facts in mind, there is also a relative sense of space-time in which the further extents can be constructed onto the absolute space-time. In other words, while the absolute space-time allows us to see whatever the space constitutes at a certain time, the relative space-time embodies the *“movement of people, goods, services, and information... to overcome the friction of distance”* in which money, time or energy is consumed (Harvey, 2006: 275).

In this context, if the space-time is regarded as relative during the 9/11 attacks, circulation and flows of the air, smoke, heat and dust, the flood that was occurred due to the circulation of the water in the broken pipes, the loss of the electricity, as well as the restless movement of people in the towers can shape the relative space-time. During the attacks, the employees, the visitors and the staff

were trying to escape and survive without the cognizance of how long the attacks and their impacts took. For instance, in relation to the evacuation some survivors reported that: “...at about the same time that WTC 2 collapsed, lighting in the stairways of WTC 1 was lost.” and “...there were several accounts of water flowing down the stairways and of stairwells becoming slippery beginning at the 10th floor” (Discovery Channel, 2013). Here, the rush of people, the firemen, the rescue teams (**Figure 29**) and their intentions to evacuate the buildings, as well as, a “*thrill of moving into the unknown*” can be mentioned which is a relative concept in space-time (Harvey, 2006: 282).



Figure 29 Rescue workers at Ground Zero (Tama, 2001).

To take another example, several survivors conveyed that after the airplane crashed onto WTC 1, people in WTC 2 had heard a voice from the central broadcasting system, telling them to return back to their desks. However, they did not listen to it while there were also people, who listened and applied what they were told to, could not go out from the building after the second attack (BBC News,

2001). The announcements during the attacks from the authorized people to the employees within the towers and the live broadcasting of the mediums while the event was happening can also be read through the relative space-time, because, there were transmissions through circulation of image, sound and text.

The people, who did not listen to whatever they were told to, were in a rush of saving their lives and hoping to survive and desiring to reach to their loved ones even if their psychic states were not suitable for such conditions: *"...I heard some instructions but I couldn't understand what was particular about, I have a claustrophobia but, I just, I just run and hope to see my one-year-old daughter again."* (Discovery Channel, 2013). Some victims also hoped that they would be rescued from the roof top of the North tower (WTC 2), but unfortunately there was not such a rescue plan (BBC News, 2001; Discovery Channel, 2013). These statements can be qualified to shape the relational space-time during the attacks since they involve relational terms such as the hope, desire and claustrophobia as a psychic state.

In 9/11 stage, all spatio-temporalities existed at the same time and they were intertwined to each other. However, it is seen that a condition in absolute space-time mainly affected the others. As seen from different examples, while the physicality of the towers was being transformed from existence into non-existence, feelings that the space itself produces were also being canalized accordingly; or similarly, when the floors were damaged, the electricity was gone and the water pipes were damaged, the circulation of people and the escaping routes were being adjusted accordingly. In this context, it can be said that during the 9/11 attacks, although all spatio-temporalities were existing simultaneously, the absolute space-time dominates the physical as well as the relative and relational conditions by canalizing them in space-time.

3.4. The World Trade Center, Post-9/11 (2001-2016)

After the attacks, there have been researches conducted since 2001 up to now, which are both practice-oriented and academic studies, on the attacks and the collapse of the towers, such as strength of the construction materials, the damages on facades, explosions, companies on each level and their losses (**Figure 30**), sufficiency of the emergency escape routes, mass transportation at emergency, security, revealed chemical gases with the dust, air qualities, affected areas in the immediate context (**Figure 31**), changes in the soil qualities on the ground level, seismic data (**Figure 32**) and jet impacts (**Figure 33**) including the simulations of the collapses (Cardwell, 2002; Glanz, 2001; Holusha, 2002, Rehm et al., 2002; Herbst, 2009; Lewis and Holt, 2011). These researches have been conducted through different representations in absolute space-time such as calculations, maps, diagrams, texts, animations and simulations (Harvey, 2006: 282).

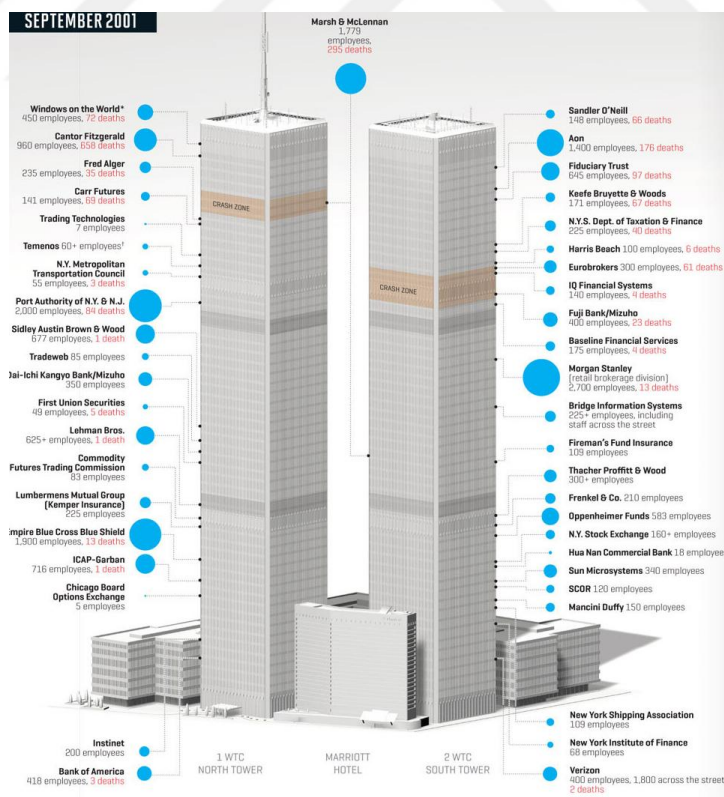
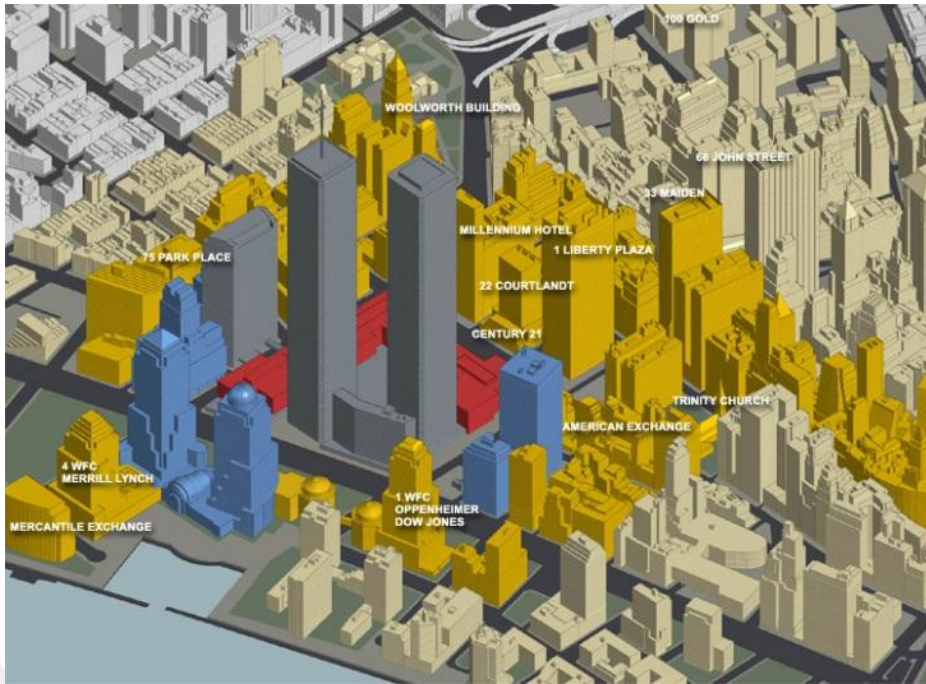


Figure 30 Companies on 9/11 (VanderMey, A., Adamo, M., 2011).



BUILDING STATUS

- Not affected
- Damaged but stable
- Major structural damage
- Destroyed
- In danger of collapse
- Needs Cleaning

Figure 31 Affected areas, damage report from the city of New York (CNN.com, 2006).

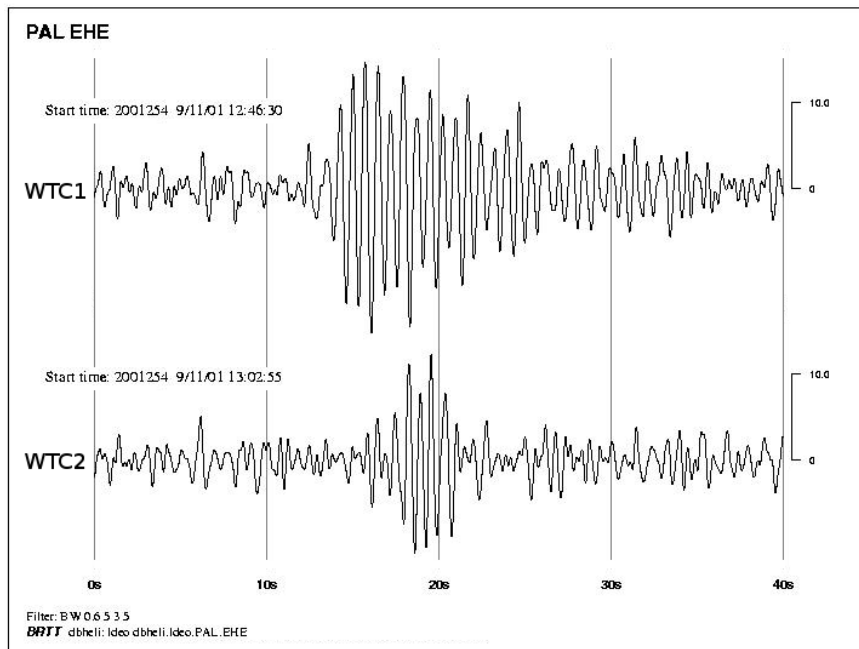


Figure 32 The World Trade Center Jet Impact Seismic Signals (911encyclopedia.com, 2013).

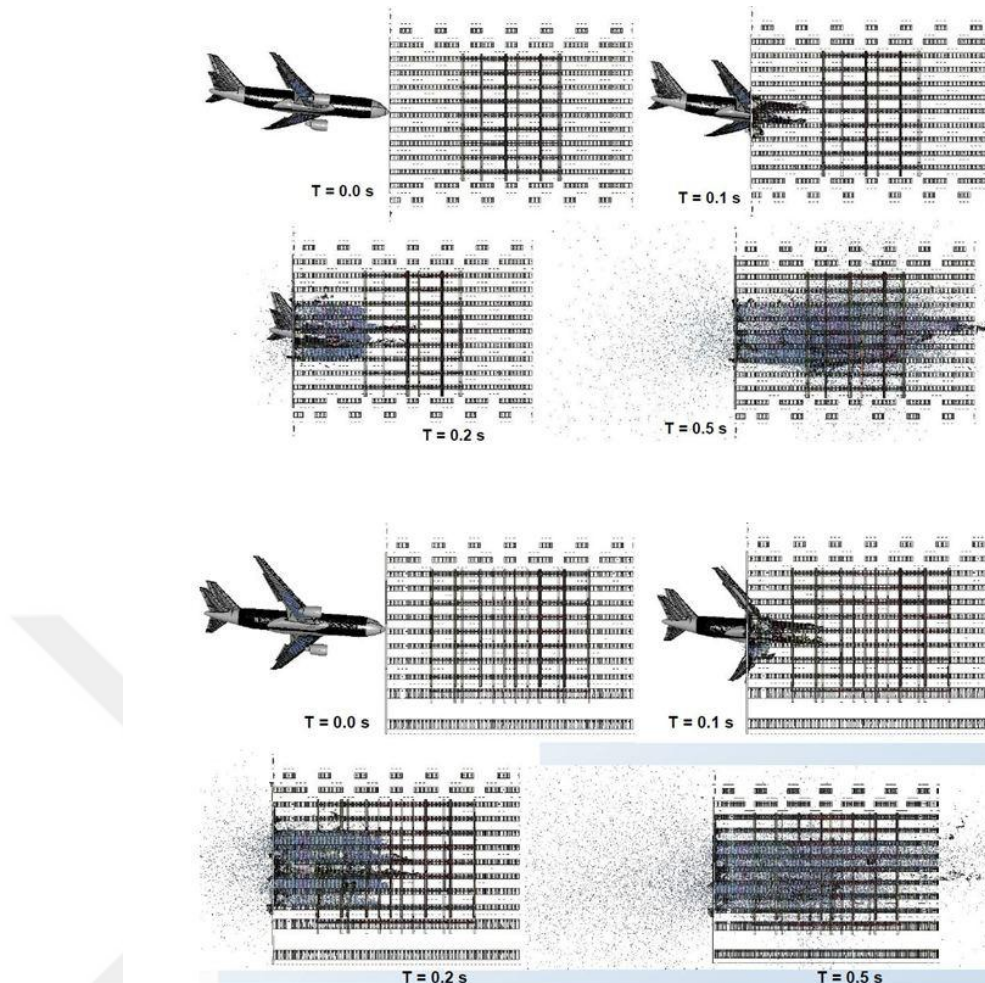


Figure 33 Analyses for Aircraft impacts for WTC 1 and WTC 2 (NIST, 2005).

From another point of view, these studies are being conducted in relation to the physicality of the World Trade Center revealed in 9/11. Since each researcher has developed a research idea and propounded a study about the district and the attacks, the district has become relativized by the researchers according to their own specializations. Harvey (2006) puts it: *“Space is relative ...that the spatial frame depends crucially upon what it is that is being relativized and by whom”* (Harvey, 2006: 272). Therefore, the creation of researchers’ their own spatial frames around their specializations in relation to the World Trade Center and 9/11 event, that is, the process of their researches has been taking place in the relative space-time. As revealed in the conducted researches, besides the altered dynamics in the absolute and the relative space-time after the event, there have also been various

discussions on the relationality of the district which involve a wide range of relational terms such as collective memory, trauma, representation, Islamophobia, anger, ambition. These are significant to grasp all spatio-temporalities simultaneously by adding them onto the absolute and the relative space-time in the World Trade Center after the 9/11.

Ground Zero cannot be anything other than a site of collective memory and the problem for the designers is to translate that diffuse sensibility into the absolute spaces of bricks, mortar, steel and glass.
(Harvey, 2006: 286).

In the case of reconstruction of the World Trade Center after the attacks, Harvey (2006) claims that: *“Ground Zero is an absolute space at the same time as it is relative and relational in space-time.”* (Harvey, 2006: 276). He furthers his claim by questioning which spatio-temporalities must have been approached in reconstruction of the Ground Zero. Harvey considers the site regarding each of these spatio-temporalities: He sees the site as an absolute space which can be reconstructed materially through engineering calculations after architectural design is done. On the other hand, the capitalist developers were searching for a strategic location to locate themselves which was perfect for them being close to the Wall Street; this makes the space relative. Another conception is about the thoughts of families of the victims, according to Harvey (Harvey, 2006: 275). They might object to think and build just in absolute and relative approaches; there must be something designed to talk about the history and the memory and this indicates that the relational space-time approach is needed. Since different actors establish different relations with the site such as investors, politicians, ordinary people, families of the victims, citizens of the New York and even people from other countries, construction of space was a heterogeneous and a complex process in the reconstruction.

However, as Harvey advocates, these tripartite spatio-temporalities should be embraced as a whole in the case of post-9/11 period (Harvey, 2006: 275). For instance, while developers seek a strategic location, at the same time the land value

becomes significant. In this manner, relative spatio-temporality embraces the absolute space-time because the land value is absolute. In the same approach, translation of thoughts, feelings, memories or traumas of families of the victims of 9/11 (the relational space-time) into the design process and the built environment (the absolute space-time) indicates that the relational spatio-temporality involves the absolute and the relative relationships of space-time.

The initial effect of the terrorist attacks to the Twin Towers in 2001 was that many people –lively or from the televisions, internet or any medium in the relative space-time along with the circulating images, sounds or texts, experienced the traumatic event through a familiar image of an airplane that was on the wing in a blue sky-scape and it ended up with an almost impossible cutoff point of colliding with one of the Twin Towers in the absolute space-time (**Figure 34**). The initial impressions were relational in space-time such as the meaninglessness of the image, and it was marked as a traumatic incomprehension by many people and authors: *“Nothing corresponding in language could stand in for it”* by James Berger; *“We do not know what it is and so do not know how to describe, identify, and even name it”* by Jacques Derrida; *“an encounter with something that makes no sense, an event that fits in nowhere”* by Dori Laub (Parr, 2008; Cvek, 2009).



Figure 34 Second hijacked airplane flies into WTC 2 (Sherwell, 2011).

A study that concerns with the significance of the event as well as the level of emotion was done by the 9/11 Memory Consortium between 2002 and 2004 through conducting a survey-based research by a group of psychologists from United States. According to their results, the attacks were not only a traumatic event, but also an event that shaped the individual and collective memory of people due to its scale. They also claim that the naming of the event itself as 9/11 or 911 or September 11 is a strong indicator which already gained a place in the memories as well as, being called as “Ground Zero” rather than the “World Trade Center” (911memory.nyu.edu, 2006) which means that *“the point on the earth's surface directly above, below, or at which an explosion (especially a nuclear explosion) occurs”*; or *“the central point in an area of fast change or intense activity”*; or *“the beginning state or starting point”* (Merriam-Webster, n.d).

In this regard, Daniel Libeskind’s master plan and his devotion of the half of the site to memorials are still being discussed in terms of the translation of the collective memory as a relational concept in space-time into absolute space-time since the site means something different to a parent of a victim than to a fireman, a city official, a developer, an architect or a tourist. Besides questioning the new design in terms of whether or not it corresponds to the collective memory, it is also being discussed that whether the idea of bringing back the vibrant business atmosphere, which is relative in space-time, is successful enough (Young, 2005: 146-153). The relationality of Ground Zero can be discussed at length through Libeskind’s expressive ideas and design; however, we inevitably see the materialization of this relationality into absolute space-time as built forms. Therefore, as Harvey (2006) suggests, these three spatio-temporalities should be discussed as a whole in a dialectical tension if the Ground Zero is the case (Harvey, 2006: 276).

Libeskind’s aim was to set a balance between creating a lively working environment as a global business district with its former flows of capital, commodities, information and people, and commemorating people who lost their lives in the tragedy. This means, he aimed to create simultaneity among the concepts of relative and relational space-time by transferring them into the

absolute space-time as built forms such as Reflecting Absence memorial, National September 11 museum and One World Trade Center and other buildings. To achieve that, he left half of the site, around 16 acres, as a public space and memorials in it. There are office towers equipped with sustainable technology and Libeskind imagined a revitalized neighborhood including a shopping mall on the ground unlikely the previous one which was under the ground, a transportation hub and arts center (Libeskind.com, 2003).

Although all the projects are qualified with high level of technology, One World Trade Center (**Figure 35**), also known as 1 WTC or “Freedom Tower”, is the design piece that attracts attention by being an icon that represents the brave position of United States after the attacks (Libeskind.com, 2003). This entails a relational concept of “desire” in space-time to re-erect the symbol of United States. This desire found a room for itself in absolute space-time in a form of a free-standing tower that is 417 meters, 104 stories and costs 3.2 billion dollars with its 61x61meters footprint approved in 2005, opened in early 2015 (Lewis and Holt, 2011).



Figure 35 One World Trade Center (Libeskind.com, 2003).

Another significant design piece is the design of Michael Arad and Peter Walker's Reflecting Absence memorial (**Figure 36, 37**) which symbolizes the absent towers and it was designed such a way that the victims' names were positioned on to the plates on the parapets that were borders of the footprints of the former towers (**Figure 38**) (Lewis and Holt, 2011). While footprints, plates, names of the victims and waterfall system are built in absolute space-time, they are also relational in a sense that they represent memories of loved ones. In addition, each visitor's feelings such as missing, anxiety, frustration or insecurity are relative in space-time since there become established connections between people and the memorial, and evoking of the memorial differs people to people.



Figure 36 Michael Arad and Peter Walker's Reflecting Absence memorial (Libeskind.com, 2003).



Figure 37 Reflecting Absence Memorial, tribute in xenon light (Louielighting.com, 2015).



Figure 38 Victims' names on plates at Reflecting Absence memorial (Wood-Young, 2012).

Memorial Museum also shares the same atmosphere with the outside memorials, designed by Mark Wagner from Davis Brody Bond Aedas, and it was opened to public in 2012. The underground exhibition space hosts some pieces collected from the site (**Figure 39**) (911memorial.org, 2016). It also has an exposed ruined wall from 9/11 (**Figure 40**). In relational terms, it is a symbol of strength of United States implying an undamaged foundation of the country (Van Der Heijden, 2009). However, at the same time, the wall can make the audience remember the 9/11 day; therefore, it can give the sense of “frustration” or “anxiety” which are the relative terms in space-time (Harvey, 2006: 282) in a way that they occur from the establishment of the connections between people and the memorial.



Figure 39 Some of the exhibited pieces at National September 11 museum (Skema, n.d.).

Instead of considering function of the wall as defining or enclosing a space, in the museum, wall is used more than an absolute element by keeping its materiality safe through implying a relational meaning regarding 9/11 attacks (Van Der Heijden, 2009). This case verifies Harvey’s advocacy of that the all spatio-temporalities can be experienced at the same time when we approach from relational space-time perspective. In the example of the exhibited wall in National September 11 museum, one can see the materiality of the wall by seeing its

material, texture, reflection of light on its surface or motion of its picks and pits and all these material properties give different sensations. For instance, the ruined wall does not have a soft and flat surface and there are some steel components sticking out from the wall, presenting hardness, coldness and motion to the visitors implying that the 9/11 was hard, cold and its memories are still in motion with the wall.



Figure 40 Exhibited wall at National September 11 museum (Libeskind.com, 2003).

Monuments do not purely serve for showing the truth of a traumatic event in an absolute form in space-time; instead, they reflect the cultural production of a collective memory (Parr, 2008). The new designs, including One World Trade Center building, the outside Reflecting Absence memorial and the National September 11 museum, have become design pieces that represent the collective past and the collective memory of the United States in the relational space-time. Therefore, they become the physical outcomes of a relational mode of thinking as a cultural production after the 9/11 tragedy. In this context, it is seen that in the reconstruction the relational terms join into discussions besides the absolute and the relative terms. Therefore, here, the relational space-time approach becomes more inclusionary and dominant in the case of World Trade Center at post-9/11.

CHAPTER IV

CONCLUSION

Space, *as a keyword*, is central to the identity of the discipline of architecture. It is where various social, political, economic, cultural and psychological dynamics are involved. In this manner, space, in terms of its nature, became a complex word to be questioned in the global era. The intensification of various activities in relation to the spatial as well as the temporal conditions arises from globalization. Therefore, in this thesis, the impacts of globalization on the conception of space and time in global era were questioned. It is seen that due to globalization, which is mostly described as the activities across spaces, the way we see and experience space in relation to time has been altered by various developments in transportation and communication technologies. Advanced possibilities enabled the flows of capital, commodity, information and people regardless of the territory and temporal zones. This led to the transformation of space and time. In this world of flows, society became bounded to the informational networks because of the advanced communication and transportation technologies (Castells, 1996: 381). Spaces started to be re-defined by their positionality within the flows (Taylor and Derudder, 2016: 27). This led to the imposition of space and time to each other; considering space and time as a whole and interdependent to each other.

In this context, David Harvey's tripartite framework on space-time was examined and it is seen that he suggests a more concentrated way of conceptualizing the nature of space functioning under capitalism. Harvey explores space and time as intertwined concepts, i.e. space-time, and conceptualizes them as the complex products of the interactions between various dynamics such as people,

capital and commodities. He (2006) asserts that the space, as a keyword, can become richer in possibilities when the time is involved into discussions (Harvey, 2006).

He (2006) suggests absolute, relative and relational space-time to investigate the nature of space in the global era and to indicate the hypermobility and spatialization of the capital in the capitalist form of societies. In any circumstance, Harvey advocates the simultaneity of these spatio-temporalities; however finds relational space-time more comprehensive and claims that there is a hierarchical order among them in a way that the relational embraces the relative and the relative embraces the absolute space-time; however, adds that there can be circumstances where this order can change and certain spatio-temporalities can become prominent among the others.

Harvey is concerned about the definition of the word space in relation to time under the globalization processes in capitalist societies; the strategic location for businesses and the characteristics of these spaces are the main shaping dynamics to be questioned in urban space. This led me to study the global business districts (GBDs) where the spatialization of capital is reflected through certain spatial patterns. In order to better understand and conceptualize the reflection of Harvey's tripartite framework on space-time, the GBDs were chosen to be questioned in terms of their characteristics that are taking place in the absolute, the relative and the relational space-time.

It was seen that the GBDs are where the transnational advanced producer service firms are concentrated and they are the crucial agents for globalization processes (Sassen, 2001; Taylor and Derudder, 2016). These firms benefit from the GBDs such a way that they can globally-operate in the relative space-time, and to have globally-linked organizations of production in the networks of cities. These firms' decisions of locating their headquarters or branches in the GBDs have also shown that the firms need dense networks and face-to-face communication. The relative proximity to strategic locations and the infrastructure become significant and they are reflected into the built environment under a competition occurring

from the level of demonstration of corporate power, image and prestige. As a result of this process, firms locate their headquarters in the GBDs mostly in high-rises as seen from the examples such as Canary Wharf, La Défense, Battery Park City and Pudong.

In the GBDs, due to the integration to 24/7 networks of global economy, there is a hierarchy of different spatio-temporalities and they function through the interplay among the flow of capital, commodities, information and people. These flows take place in relative space-time while the advanced communication and transportation networks which are grounded onto the absolute built environment enable these flows. As Harvey suggests the hierarchy of the spatio-temporalities in certain conditions and events (Harvey, 2006), in the GBDs, space-time can be approached rather from the dialectical tension of absolute and relative standpoints due to the interaction between spatial organization and 24/7 flows within the global network of economy. For instance, the built environment in absolute space-time is being shaped in relation to the dense networks in relative space-time such as the improvement of the infrastructure (absolute) in parallel with the number of businesses within the dense networks of the GBDs (relative); or, the dynamics within the relative space-time can alter the absolute space-time such as the arrangement of the office spaces in open plan office form (absolute) in order to support the circulation of capital, commodities, information and people (relative).

As a global business district, the World Trade Center in New York distinctively represents all three spatio-temporalities throughout its lifetime. While it was an absolute space that provides a ground for the global financial operations and flows to take place in the relative space-time, after the 9/11 events, relationality of the district becomes prominent in the reconstruction through the participation of the relational terms such as the collective memories. Moreover, Daniel Libeskind undertook as a duty to design spaces in the master plan for both commemoration; a relational term, and corporation; a relative term, through the materialization of the master plan in the absolute space-time. Therefore, it is seen that all the spatio-temporalities work through an interplay after the 9/11 events. It

is also seen that the 9/11 becomes a climax that enables us to see how certain spatio-temporalities become prominent and revealed, by means of such an event.

In the World Trade Center's case, unlike the other global business districts, it is seen that a certain built environment was transformed at large by an event occurring at a certain point of time. While the authorities wanted to maintain the cooperative business atmosphere, developers wanted to invest on the site due to financial concerns. However, something had to commemorate the victims and the collective past of United States. Therefore, Libeskind allocated half of the site to the memorials and transformed the underground area into the museum and gallery for 9/11 event. Therefore, the master plan itself became an outcome of a relational mode of thinking of Libeskind and the other participating architects as a cultural production after the 9/11 tragedy.

It can be said that if a space is evaluated by what it contains at a certain point of time, then this attitude can decrease the possibilities of imagination because there are also other dynamics in and around a space that relate to each other and internalized by people. Thus, a single space can be transformed into another space at different periods of time. Therefore, analyzing a space at a single time does not provide a comprehensive framework about that space; spaces can be produced, altered and even destroyed and reproduced as seen in the case of World Trade Center and 9/11 events. Hence, it can be concluded that, a space can be read from various perspectives and Harvey's framework enabled us to decipher different meanings of space in relation to time. The World Trade Center case study, as a response to the research questions, showed how all the spatio-temporalities exist at the same time through interplay although some of them might come to the forefront depending on the events. In a similar way, any space -regardless of its scale, that is altered by an event whether its effects are negative or positive, can be studied through the guidance of this thesis. This thesis can also be utilized as a guide for various disciplines in different types of researches with similar concerns about the nature of space in relation to time through the originated matrix in order to understand the spatio-temporal dynamics at certain spaces and events at certain periods of time at different scales.

BIBLIOGRAPHY

911encyclopedia.com (2013). World Trade Center Jet Impact Seismic Signals.

Available at:

http://911encyclopedia.com/wiki/index.php/World_Trade_Center_Jet_Impact_Seismic_Signals [Accessed 18.08.2016].

911memorial.org, (2016). *Explore 9/11: Architect Wagner discusses WTC cleanup, 9/11 Museum Artifacts*. Available at: <http://www.911memorial.org/blog/explore-911-architect-wagner-discusses-wtc-cleanup-911-museum-artifacts> [Accessed 14.08.2016].

AC-Versailles.fr (n.d.). Twin Towers. Available at: <http://blog.ac-versailles.fr/letsblogaboutit/> [Accessed 16.08.2016].

Aecom (n.d.) One World Trade Center. Available at: http://www.aecom.com/wp-content/uploads/2015/10/1WTC_Credit-Michael-Mahesh-PANYNJ-810x531.jpg [Accessed 05.08.2016].

Aveline, N. (2000). "Effects of Globalization on the Spatial Structure and Property Markets of the Paris Region". *Globalization and large cities*. Japan: Center for Urban Studies, pp.243-256.

BBC News, (2001). *We Ran for Our Lives*, Account of Mike Shillaker. September 13. Available at: http://news.bbc.co.uk/2/hi/uk_news/1543208.stm [Accessed 09.08.2016].

Borg, R. F., Gambatese, J., Haines, K., Hendrickson, C., Hinze, J., Horvath, A., Koehn, E., Moritz, S., Mass, M., Haughney, R. A. (2003). "Rebuilding the World Trade Center". *Practice Periodical on Structural Design and Construction*, vol.8, issue 3, pp.137-145.

Brott, S. (2012). "Modernity's Opiate, or, The Crisis of Iconic Architecture". *Log*, vol.26, pp.49-59.

Brownill, S. (1990). *Developing London's Docklands: Another Great Planning Disaster*. Thousand Oaks: Sage Publications.

Burjkhalifa (n.d.). Burj Khalifa. Available at: <http://www.burjkhalifa.ae/en/the-tower/factsandfigures.aspx> [Accessed 18.08.2016].

Canary Wharf (n.d). *Canary Wharf Group PLC*. Available at: <https://www.canarywharf.com> [Accessed 09.08.2016].

Cardwell, D. (2002). 'Hearing brings more debate over Ground Zero air quality'. *New York Times*, Feb.24, B-31. Available at: <http://www.nytimes.com/2002/02/24/nyregion/hearing-brings-more-debate-over-ground-zero-air-quality.html> [Accessed: 12.08.2016]

Castells, M. (1989). *The Informational City*. Oxford: Blackwell Publishers.

Castells, M. (1996). *The Rise of the Network Society*. Oxford: Blackwell Publishers.

Castells, M. (2000). "Toward a Sociology of the Network Society". *Contemporary Sociology*, vol.29, issue 5.

Castells, M. (2008). *Space of Flows, Space of Places: Materials for a Theory of Urbanism in the Information Age*. In: *New Urbanism and Beyond: Designing Cities for the Future*. Tigran Haas (ed.). New York: Rizzoli.

Castells, M. (1978). *City, Class and Power*. The Macmillan Ltd., pp.197-233.

Castells, M., Cardoso, G., (2005). *The Network Society: From Knowledge to Policy*. Washington, DC: Johns Hopkins Center for Transatlantic Relations.

Channel4m4 (2016). Incredible new building is coming to Dubai. Available at: <http://www.channel4fm.com/trending/theuae/incredible-new-building-is-coming-to-dubai/> [Accessed 18.08.2016].

- Chin, R. K. (2005). *World Trade Center Map*. Available at:
<http://www.rkchin.com/wtcimages/wtcmaps.html> [Accessed 20.08.2016].
- CNN.com (2001). 'List of World Trade Center tenants'. CoStar Group, Inc. Available at: <http://edition.cnn.com/SPECIALS/2001/trade.center/tenants1.html> [Accessed 03.08.2016].
- CNN.com, (2006). "Damage Report from the City of New York". *Courtesy of the City of New York and Urban Data Solutions*. Available at:
<http://edition.cnn.com/SPECIALS/2001/trade.center/damage.map.html> [Accessed 09.08.2016].
- Cvek, S. (2009). *9/11: Event, Trauma, Nation, Globalization*, Ph.D., Zagreb, Croatia.
- Del Cerro Santamaria, G. (2013). "Urban Megaprojects: A Worldwide View". *Research in Urban Sociology*. United Kingdom: Emerald Group Publishing, p.13.
- Deviantart.com (n.d). Bright Lights at Pudong, Shanghai. Available at:
<http://astra888.deviantart.com/art/Bright-Lights-at-Pudong-Shanghai-366232511> [Accessed 03.08.2016].
- Dicken, P. (1992). *Global shift: The internationalization of economic activity*. Thousand Oaks: Sage Publications Inc.
- Discovery Channel, (2013). *Inside The Twin Towers*. Available at:
<https://www.youtube.com/watch?v=RXkfs8KjRSc> [Accessed 09.05.2016].
- Doud, A. L. (2011). *Battery Park City: Reimagining Lower Manhattan*. Yale University.
- Dovey, K. (1999). *Framing Places: Mediating Power in Built Form*. United Kingdom: Psychology Press.
- Drozd, M., Appert, M. (2012). "Re-understanding CBDs: A Landscape Perspective". *This Is Not a Gateway*, United Kingdom, p.4.

Dutchofficefund.nl (n.d.). World Trade Center Amsterdam in Zuidas. Available at: http://dutchofficefund.nl/uploads/foto/groot/foto_935923.jpg [Accessed 01.08.2016].

DxbMediaOffice (2016). New iconic tower by Emaar in Dubai Creek. Available at: https://twitter.com/DXBMediaOffice/status/695985517247070208/photo/1?ref_src=twsrc%5Etfw [Accessed 16.08.2016].

Farouk, A. (2011). *High Rise Buildings and How They Affect Countries Progression*. Egypt: E-iatarC Leader.

FEMA, (2002). *World Trade Center Performance Study - 403*. New York: G&OB Pendley. Available at: <http://www.fema.gov/media-library/assets/documents/3544> [Accessed 08.08.2016].

Fosterandpartners.com (n.d). *Canary Wharf Underground Station*. Available at: <http://www.fosterandpartners.com/projects/canary-wharf-underground-station/> [Accessed 13.08.2016].

Gensler (2015). The Shanghai Tower in Pudong. Available at: <http://www.gensler.com/projects/shanghai-tower> [Accessed 19.08.2016].

Giddens, A. (1990). *The Consequences of Modernity*. Cambridge: Polity Press.

Glanz, J. (2001). "Buildings: air pressure and fine filters—biowarfare". *New York Times*, Mar.28, A-15. Available at: <http://www.nytimes.com/2001/10/23/science/buildings-on-many-fronts-experts-plan-for-the-unthinkable-biowarfare.html> [Accessed 12.08.2016].

Gray, J. (2002). "The Decay of the Free Market", *New Statesman*, 25 March.

Groat, L., Wang, D. (2002). *Architectural research Methods*. New York: John Wiley & sons.

Hall, P., Pain, K. (2006). *Polycentric Metropolis: Learning from Mega-city Regions in Europe*. London, Sterling, VA: Earthscan.

Harvey, D. (1985). "Consciousness and the Urban Experience". *Studies in the History and Theory of Capitalist Urbanization I*, United Kingdom: Basil Blackwell.

Harvey, D. (1990). *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change*. Cambridge, MA: Blackwell: 201-308.

Harvey, D. (1994). "The Invisible Political Economy of Architectural Production". In O. Bouman and R. van Toorn (eds), *The Invisible in Architecture*, London: Academy Editions.

Harvey, D. (2000). *Spaces of Hope*. Scotland: Edinburg University Press.

Harvey, D. (2006). "Space as a keyword". *David Harvey: A Critical Reader*, Noel Castree and Derek Gregory (eds.), Wiley-Blackwell Publishers.

Harvey, D. (2007). *A Brief History of Neoliberalism*. New York: Oxford University Press.

Herbst, R. (2009). "Mysteries of the Twin Towers, A Survey of the Available Evidence on the World Trade Center Towers". *Seattle 911 Visibility Project*, Rev. 12.

Herling, C., Liljedahl, C. (2005). *Canary Wharf - An Establishment of a Major Business District*, M.Sc., Stockholm: Royal Institute of Technology, Department of Infrastructure, Building and Real Estate Economics.

Heyer, P. (1966). *Architects on Architecture: New Directions in America*, New York: Walker and Company, pp.184 – 195.

Holusha, J. (2002). "More attention to security in designing buildings". *New York Times*, Mar.10, A-6. Available at:
<http://www.nytimes.com/2002/03/10/realestate/commercial-property-more-attention-to-security-in-designing-buildings.html?pagewanted=all> [Accessed 07.08.2016].

Kausel, E. ed., (2002). *The Towers Lost and Beyond*. 1st ed. Massachusetts: MIT Press, pp.5-150.

Kavaratsiz, M. (2004). "From city marketing to city branding: Towards a theoretical framework for developing city brands". *Place Branding*, Vol.1, 1, 58-73, Netherlands: Henry Steward Publications.

Kristian, N. (2013). One Canada Square at Night / London, UK. Available at: <https://www.flickr.com/photos/nielskristianphotography/8418786144> [Accessed 18.08.2016].

Lai, S. (2004). *Urban Infrastructure and the Making of City Image in the Age of Globalisation: The JLE Project in London*. Shanghai towards Internationalization—Fostering City Image and City Spirit, The 4th International Symposium on 21st Century Shanghai Development, Shanghai Overseas Returned Scholars Association (SORSA), China.

Lang, J. (2006). *Urban Design: A Typology of Procedures and Products*. London: Architectural Press.

Lane, B. M. (1985). *Architecture and Politics in Germany 1918-45*. United States: Harvard University Press.

LDDC (2009). Starting from Scratch -the development of transport in London Docklands. Available at: <http://www.lddc-history.org.uk/transport/> [Accessed 19.08.2016].

Lee, K. H. H. (2009). *The Development of Secondary Urban Centre in the Globalization Era of Hong Kong: A Comparative Study of Kai Tak and Kam Tin to develop the sustainable urban sub-centre*. The University of Hong Kong, p.30.

Lewis, K., Holt, N. (2011). "Case Study: One World Trade Center". *CTBUH Journal*, 2011, p.3.

Libeskind.com, (2003). *Ground Zero Master Plan*. Available at: <http://libeskind.com/work/ground-zero-master-plan/> [Accessed 06.08.2016].

Limehouse, F., McCormick, R. (2011). *Impacts of Central Business District Location: A Hedonic Analysis of Legal Service Establishments*. Discussion Papers, U.S. Census Bureau, Center for Economic Studies, Washington, USA.

Lo, F., Marcotullio, P. J. (2000). "Globalisation and urban transformations in the Asia-Pacific region: A review". *Urban Studies*, vol.37, issue 1, pp.77-111.

Louielighting.com (2015). World Trade Center Tribute In Light. Available at: <http://blog.louielighting.com/world-trade-center-tribute-light/> [Accessed 19.08.2016].

Massey, D. (2008). *For Space*. Thousand Oaks: Sage Publications.

Miller, H. (2009). *London Docklands Development Corporation Research Paper: An Introductory Briefing*, Eastside Community Heritage.

Morgan Stanley. (n.d.). Global Offices. Available at: <http://www.morganstanley.com/about-us/global-offices> [Accessed 14.07.2016].

NIST (2005). "Part IIA – Collapse Analysis", *Response to the World Trade Center Disaster, Federal Building and Fire Safety Investigation of the World Trade Center Disaster*. Available at: www.nist.gov/el/disasterstudies/wtc/upload/WTC_Part-IIA_WTC_Collapse_Analysis_Final.pdf [Accessed 17.07.2016].

NLA Insight Study (2014). "London's Growing Up". *London's Centre for the Built Environment*. United Kingdom: New London Architecture.

Oner, A. C. (2008). *Locational Distribution of Global Advanced Producer Service Firms in the Polycentric US Metropolis*, Ph.D., Virginia Polytechnic Institute and State University, Blacksburg, VA, USA.

Parr, A. (2008). *Deleuze and Memorial Culture: Desire, Singular Memory and the Politics of Trauma*. Scotland: Edinburgh University Press.

Photoshelter.com (2013). *La Defense buildings*. Available at: <http://manuelcohen.photoshelter.com/image/I0000Vrt26f9eCeM> [Accessed 20.08.2016].

Phototheque.com (2014). *La Défense Panoramic View*. Available at: <http://www.phototheque.arnaudfrichphoto.com/en/media/32b75d36-d5c4-11e1-9557-bd0015cdd414-la-defense-at-night-paris> [Accessed 20.08.2016].

- Pumain, D. (1989). "Spatial Analysis and Urban Models". In *Urban Dynamics and Spatial Choice Behaviour*, J. Hauer, H. Timmermans and N. Wrigley (eds.), pp.155-73. Dordrecht: Kluwer.
- Rehm, R. G., Pitts, W. M., Baum, H. R., Evans, D. D., Prasad, K., McGrattan, K. B., Forney, G. P. (2002). "Initial Model for Fires in the World Trade Center Towers". *Building and Fire Research Laboratory*, USA: National Institute of Standards and Technology.
- Ren, X. (2008). "Architecture and Nation Building in the Age of Globalization: Construction of the National Stadium of Beijing for the 2008 Olympics". *Journal of Urban Affairs*, vol.30, issue 2, pp.175–190.
- Roberts, M. (2009). Arrangement of express and local elevators. Available at: <https://sites.google.com/site/911stories/insidethenorthtower%3Awitnessaccounts91-60> [Accessed 14.08.2016].
- Rowe, P. G., Kuan, S. (2002). *Architectural Encounters with Essence and Form in Modern China*. Cambridge: The MIT Press.
- Rubenstein, H. M. (1978). *Central City Malls*. Hoboken: Wiley & Sons, pp.28-35.
- Ruggie, J. G. (1993). "Territoriality and Beyond: Problematizing Modernity in International Relations". *International Organization*, vol.47, issue 1, pp.139-174.
- Sassen, S. (2001). *The Global City: New York, London, Tokyo*. London: Routledge.
- Sassen, S. (2005). "The Global City: Introducing a Concept". *Brown Journal of World Affairs*, vol.11, issue 2, pp.27-43.
- Sassen, S. (2009). *Cities Today: A New Frontier for Major Development*. London: Routledge.
- Scholz, R. W., Tietje, O. (2002). *Embedded case study methods: Integrating quantitative and qualitative knowledge*. Thousand Oaks: Sage Publications.
- Sheppard, E. (2006). "David Harvey and the Dialectical Space-time". *David Harvey: A Critical Reader*, Noel Castree and Derek Gregory (eds.), Wiley-Blackwell Publishers.

- Sherry, M. (2009). *Memories of the Windows of the World*. Available at: <http://madelinesherrypaintings.com/?p=280> [Accessed 06.08.2016].
- Sherwell, P. (2011). *Second hijacked airplane flies into WTC 2*. Available at: <http://www.telegraph.co.uk/news/worldnews/september-11-attacks/8755452/September-11-America-marks-10th-anniversary-of-911.html> [Accessed 20.08.2016].
- Skema (n.d.). National September 11 museum. Available at: <http://library.skema.edu/fr/watches-rolex-showroom-new-york.html> [Accessed 18.08.2016].
- Sklair, L. (1995). *Sociology of the Global System*. United States: The Johns Hopkins University Press.
- Sklair, L. (2010). "Iconic Architecture and the Culture-ideology of Consumerism". *Theory, Culture and Society*. United States: Sage Publications.
- Sklair, L., Gherardi, L. (2012). "Iconic architecture as a hegemonic project of the transnational capitalist class". *City*, vol.16, 1-2.
- Skyscrapercenter (2016). 100 Tallest Completed Buildings in the World by Height to Architectural Top. Available at: <http://skyscrapercenter.com/buildings> [Accessed 19.08.2016].
- Spbssk (2016). The Kingdom Tower in Jeddah (the Jeddah Tower). Available at: <http://spbssk.ru/news/novosti-sovremennoy-arhitektury/8-udivitelnyh-arhitekturnyh-proektov-kotorye-realizuyutsya-uzhe> [Accessed 16.08.2016].
- Swyngedouw, E., (1989). *Regional Policy at the Crossroads – European Perspectives*. L. Albrechts, F. Moulaert, P. Roberts. (eds.). United Kingdom: Jessica Kingsley Publications.
- Tama, M. (2001). Rescue workers search through WTC rubble. Available at: <http://997now.cbslocal.com/photo-galleries/2011/09/09/photos-remembering-911-rescue-recovery-at-ground-zero/> [Accessed 17.08.2016].

Taylor, P., Beaverstock J., Cook, G., Pandit, N. (2003). *Financial Services Clustering and its significance for London*. London: Corporation of London.

Taylor, P.J. and Derudder, B. (2016). *World city network: a global urban analysis*. 2nd edition. London: Routledge.

Tes.com (n.d.). Twin Towers. Available at:
https://www.tes.com/lessons/bSzZq_NIELDsIA/twin-towers [Accessed 15.08.2016].

Thefabweb.com (2012). *Wide angle aerial view of Canary Wharf in central London*, Available at: <http://thefabweb.com/63211/30-best-city-pictures-of-the-week-nov-4th-to-nov-10th-2012/attachment/63237/> [Accessed 27.07.2016].

Thenational (2016). Emaar to build tower higher than Burj Khalifa and new 'mega-retail district' for Expo 2020. Available at:
<http://www.thenational.ae/business/property/emaar-to-build-tower-higher-than-burj-khalifa-and-new-mega-retail-district-for-expo-2020> [Accessed 19.08.2016].

Van Der Heijden, T. (2009). *The Post-Image: 9/11 and the Unrepresentable*. M.Sc. Dissertation, Universiteit van Amsterdam, Netherlands.

VanderMey, A., Adamo, M. (2011). 'Major businesses in the World Trade Center towers during the attacks on Sept 11, 2001', *Fortune Magazine*, September 5: 108. Available at:

<http://nicolasrapp.com/shop/wp-content/uploads/2014/10/TOWER2.jpg> [Accessed 16.08.2016].

Warf, B. (2008). *Time – space compression: Historical Geographies*. United Kingdom: Routledge.

Wark, J. (2016). World Trade Center, view is to northeast from over Hudson River. Available at: <http://www.airphotona.com/img?i=1815> [Accessed 15.07.2016].

Wharf.co.uk (2015). Canary Wharf's showpiece residential tower. Available at: <http://www.wharf.co.uk/news/property/canary-wharfs-showpiece-residential-tower-9743094> [Accessed 19.08.2016].

Wood-young, S. (2012). Reflecting Absence memorial. Available at:
<http://pocketfullofmemorycards.blogspot.com.tr/2012/09/reflecting-absence.html>
[Accessed 17.08.2016].

Yaguang, S. (2011). "Development and characteristics of central business district under the philosophy of health". *International Conference on Green Buildings and Sustainable Cities*, Netherlands: Elsevier Ltd. Press.

Yeandle, M., Mainelli, M. (2016). "GFCI 19", *Global Financial Centres Index*, March 2016, London: Z/Yen Group Limited. Available at:
<http://www.longfinance.net/global-financial-centre-index-19/992-gfci-19.html>
[Accessed 29.07.2016].

Yoneda, Y. (2014). Fulton Station. Available at: <http://inhabitat.com/nyc/fulton-center-leed-seeking-landmark-transit-hub-unveiled-in-lower-manhattan/> [Accessed 19.07.2016].

Young, J. E. (2005). "The Memorial Process: A Juror's Report from Ground Zero", *Contentious City: The Politics of Recovery in the New York City*, (ed.) John Mollenkopf, New York: Russell Sage Foundation, pp.146-153.