

Article

Visible and “Invisible” Aspects of Historic Mediterranean Metropolises Perpetually Emerging through Augmented Reality

Maria Moira ^{1,†} and Dimitrios Makris ^{2,*,†} 

¹ Department of Interior Architecture, Campus I, University of West Attica, Ag. Spyridonos Street, Egaleo, 12243 Athens, Greece; mmoira@uniwa.gr

² Department of Conservation of Antiquities and Works of Art, Campus I, University of West Attica, Ag. Spyridonos Street, Egaleo, 12243 Athens, Greece

* Correspondence: demak@uniwa.gr

† These authors contributed equally to this work.

Abstract: Alexandria and Istanbul, through diverse texts and writers, meet and intersect in their attempt to reconstruct and rebuild the metropolis’s character. Our method advocates spatiotemporal events in augmented literature that enable reflection of the palimpsest of historical frames. On a higher level, what we propose in this work is the dialogic field between the two metropolises, as it could be provided by novels’ chronotopes with the aid of augmented reality. We undertake a twofold task, to reveal the awareness of the connections between places and the connection and attachment of particular spaces, by unifying two approaches. First, Ecocriticism that comprises the ways in which novels express socio-cultural frameworks of the natural environment. The second approach is based on the strong interrelations of place engagement with collective and cultural memory. The linking of both urban, spatial geometry and topology with the waterscape for both metropolises, in our proposed conceptualization of a chronotope-based augmented continuum, endeavors to provide, firstly, the dialogic relations between the two metropolises, between each metropolis and the waterscape and, secondly, between urbanscape and waterscape and the novels’ fictional frameworks. Within the framework of the augmented reality, we synthesize the writers’ fictional cities with the factual surroundings of the metropolises in order to reconstruct the fragmented natural and architectural urban views in the continuity of the urban fabric, thus ending up proposing a dynamic repository of the metropolis landscape’s natural, collective and cultural memory.

Keywords: augmented reality; novels; collective memory; cultural memory; ecocriticism; chronotopes; place engagement



Citation: Moira, M.; Makris, D. Visible and “Invisible” Aspects of Historic Mediterranean Metropolises Perpetually Emerging through Augmented Reality. *Heritage* **2021**, *4*, 249–259. <https://doi.org/10.3390/heritage4010015>

Academic Editor: Stella Sofia Kyvelou

Received: 6 December 2020

Accepted: 20 January 2021

Published: 24 January 2021

Publisher’s Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

“in any case the metropolis has the added attraction that, through what it has become, one can look back with nostalgia at what it was.” (p. 23)

“Cities, like dreams, are made of desires and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else.” (p. 28)

I. Calvino

In his novel *Invisible Cities*, Italo Calvino [1] writes that we can talk about the metropolis in two ways: by accurately describing what the map depicts and what we can observe with our eyes as material instances (bridges, canals, districts, streets, and houses), or by talking about things “invisible” and absent from the supervision of sight but present in the adventurous journey of urban life. With the detailed description of the metropolis’s scenery or its structural components, the metropolis is not imprinted: the “city does not consist

of this, but of relationships between the measurements of its space and the events of its past" [1]. Novels' singular characters provide inherent abilities to reveal diverse and varied perspectives based on historical, social, cultural, political, and architectural identities of urban places [2]. Literature builds multiple "portraits" of the metropolis as it oscillates between individual and collective experience. The novel's spatial universe is made up of locations and settings, arenas and boundaries, perspectives and horizons, the natural and the built landscape, which echo reality and myth, present and past, memory and history, tracking discontinuities, ruptures and incisions in the character of the urban landscape [3]. The writers (permanent residents or occasional visitors, tourists and travelers) are emotionally involved with their environment and they reproduce and recreate cultural concepts through their physical-bodily adaptation, the perception they have established as experience and memory reserve for urban places. In this parallel "intercultural and intertextual" spatial formulation, the metropolis's physiognomy emerges neither with the absolutes of a town-planning event nor with the clarity of a map or a factual historical context, but as a constantly changing field of significance and meanings that can afford many interpretations and readings. On the one hand, there are the multiple levels of the literary text and, on the other, there is the palimpsest of the metropolis. Fiction creates various representations of the metropolis (social, cultural, historical, emotional, aesthetic and natural). Through this variety of portrayals, the urban environment as landscape and place is connected with desire, imagination with physical presence, and urban actors with their social, historical and cultural significance. Literature has the inherent power to call places into existence [4] by interweaving historical, social, cultural identities of places with fictive chronotopes. Literature as performance of place is a very influential concept at the threshold between research fields such as culture, nature, heritage, urbanism and tourism. In particular, literary tourism was studied as a catalyst for the experience and communication of cultural values and meanings [5]. In such research, a specific approach is applied regarding cultural production and consumption in a case study about the Lake District, homeland of B. Potter, an English writer of children's books, where the adoption of the cultural studies perspective enables a focus on the interconnections between personal, social, and cultural values and touristic activities [5]. In the tourism industry, the impact of literary and film tourism on specific destinations can have transformative and persuasive power over tourism patterns and trends [6]. In particular, the destinations of Ireland and Bali are studied as positively effective film and literary tourism phenomena. In parallel, the effects of literary tourism in destination branding and marketing strategies draw attention to particular places in the UK [7]. Through the lens of authors, books and festivals, the research questions the various forms of literary tourism and provides specific ways towards the future capitalization of a potential market for literary destinations [7].

We aim to restore the sense of place based on remembered and imagined experiences, which play an important role in the constitution of the metropolis's dwellers, while serving important collective and cultural functions. The emphasis is on a model of immersive experience and embodiment that focuses on meanings, feelings, "atmospheres", values and connotations that novels reveal from associative urban landscapes. Such an approach could support and further enhance the sense of place and place-attachment of inhabitants, newcomers and visitors.

In the case of Alexandria and Constantinople (Istanbul), different texts and different writers, native and eloquent, meet and intersect in their attempt to reconstruct and rebuild the metropolis's past and contemporary, apparent or hidden character. The gaze of "intimacy" and lived experience is differentiated from the look of "uncanny" admiration for the unknown-exotic. This bipolar spatial approach of the "urban experience" alternates between the fidelity of the representation of continuity and proximity and the force of the representation of distance and discontinuity. The habit and the surprise, the emergence of the embedded, is assimilated in the identity of the metropolis and its investigation. Alexandria and Istanbul are two seaside cities of the East. "Old" and "wet" cities, with multiple cultural footprints; wherever you go and whichever your starting point, you

always end up by the sea. Constantinople is a metropolis “saddened” in the writing of O. Pamuk [8]; Alexandria is “melancholic” in the work of N. Mahfouz [9]; but their essential difference lies in their development in relation to the seafront and the way in which this decisive limit is managed. Alexandria grows parallel to the seafront, having an extensive linear organization that exhibits alternations and variations. The sea represents the open horizon, the beyond, of its urban space. Corniche, the emblematic coastal avenue and its multifarious coastline, is a crucial element of its bourgeois identity and represents her individual psyche. In Istanbul, by contrast, the waterscape is yet another route, a waterway, which crosses the metropolis of two continents; a seaside avenue of water located within its urban area or body. The moving resident and visitor on this sea road, under the hanging bridges, has a privileged oversight on both sides of the metropolis, its European and Asian coasts.

2. Augmented Worlds with Novels

Based on the advent of current three-dimensional acquisition and digitization technologies and the rising popularity of Augmented Reality (AR) applications, any digital three-dimensional content can coexist within urban spaces and landscapes [10]. Especially in the field of cultural heritage, many urban components from past epochs can appear overlaid, indicating the apparent loss over the urban body. A major question that is still un-tackled in AR is in which ways an AR framework can reveal the possible relationships between the surrounding reality and the integrated digital content, both of which are integrated, or coexist, in front of urban participants. Augmented Reality combines real and virtual ingredients in an existent environment, works interactively, and in real time, and finally aligns real and virtual environments with each other [11]. Thanks to these properties, inhabitants and visitors can come into contact with what has happened and are incorporated into the urban event; “as this wave from memories flows in, the city soaks up like a sponge and expands” [1]. The relationship between individuals and surrounding urban constituents (buildings, squares, streets, arcades) is strongly altered because, through AR, new constituents and values not only emerge in the urban environment, but also stand in a dialogic and generative connectedness with old and/or hidden places, objects and values [12]. AR technologies comprise an innovative framework through which visitors can bodily and cognitively place and orientate themselves, and thus renegotiate their physical and semantic relationships with the surrounding urban places and landscapes [13]. The core element in engaging with the surrounding natural and urban environments is the human body itself. The position, location and direction of inhabitants and visitors in urban space is fundamental both for understanding the AR medium and its potential ability to offer something new to the relationship between the body and the environment, the body and the memory. AR provides very important features towards understanding, engagement and participation. Context-based and locative mobile AR media affect, with a growing factor, the existence and behavior of the physical body within space, within a context characterized by diverse evolving social, cultural activities and aims. AR enhances many aspects of everyday experience by revealing new types of relationships, not only between the actual and the digital objects, but also between contemporary everyday environments and a whole set of stratigraphies of past epochs and memories. The enormous potential of mobile AR is evident in numerous tourists-oriented applications based on context-specific services [13].

Research Topics

Our proposal is to restore the sense of place that is not based on geographical realities but on remembered and imagined experiences, which play an important role in the perceptions of visitors and newcomers, but also probably in those of the inhabitants as well, while also serving important socio-political, collective and cultural functions. The emphasis of our approach is on a model of immersive experience and embodiment, which focuses on the meanings, feelings, “atmospheres”, values and connotations that novels reveal from

associative urban landscapes. Such an approach could support and further enhance the sense of place and place attachment of inhabitants, newcomers and visitors. Beyond the typical augmentation of spatial relationships, the proposed scheme encapsulates a content-based form of augmentation in combination and direct relationship with a context-based form of augmentation.

Our method advocates augmented literary spatiotemporal events that enable reflection of the palimpsest of historical frames. Our intended application of AR integrated with novels could provide a dialogic medium for inhabitants and visitors that could rework various experiences of the metropolis by focusing on movement rather than simply on the visual pleasure. Instead of merely perceiving a static image, inhabitants and visitors will discover actions, scenes and settings inspired and formed by social, collective, cultural and historic forces from various epochs. Augmented reality, in conjunction with the literary plot's chronotopes, generate alternative pathways through everyday space and time, [14,15]. These paths achieve the fullest reading and interpretation of the metropolis's narrative. Augmented literary trails could direct an in-situ emergence of particular and diverse collective, social and historical events. On a higher level, what we propose in this work is the dialogic [16] field between the two metropolises as it could be provided by novels' chronotopes with the aid of AR. The cities of the constantly transformed and mutated Mediterranean, Constantinople (Istanbul) and Alexandria, with a dense historical time and multiple cultural imprints, are the stimulus of literary representations over time and space and can be the subject of amplified digitized embodied readings and interpretations through a framework of Augmented Reality.

3. Proposed Method

In our approach, we combine two ideas that we believe are interconnected. We attempt to undertake a twofold task, to reveal the awareness of the connections between places and the connection and attachment of particular spaces, by unifying two approaches. First, Eco-criticism that comprises the ways in which novels express interconnections between nature and space, functioning as socio-cultural frameworks of the natural environment. Heise [17] provides an idea of eco-cosmopolitan consciousness that is based on identity formation through relations to multiple places as opposed to a singular place, a notion underlying the advanced focus on a sense of planet in contrast to that of the sense of place, which in turn results in attention being primarily directed towards global identification rather than only towards local belonging [18]. The second approach is based on the strong interrelation between place engagement and formation of collective and cultural memory [15]. First, we address the integration of novels within an AR environment according to two methods of novels' analysis, based on narrative and literature analysis, and spatial analysis. Second, we impose four basic strategies that could underlie a storytelling augmented reality typology. These strategies are reinforcing, recontextualization, remembering, and re-embodiment [15]. The metropolis, like any social space, does not present the readability of a surface of overlaid elements. On the contrary, it is characterized by a stratification, in which lies its difference from any other place, and according to which the overlapping layers of natural topography, architectural matter, collective memory and history create an always-becoming palimpsest. Literature is not limited to the phenomenological description of urban space. In literary texts, the metropolis does not emerge as a product of successful identification with the existing "reality". At an initial level, the literary representation of a particular metropolis is mediated by the narrative construction of a topology of "urban places/anchor points" capable of imprinting the significant features of its urban identity by direct or indirect reference to the map topography. At a second level, however, fiction, as it results from the elaboration of literary examples, provides the readers with a system of analysis of spatial-semantic relations that allows them to view the metropolis kaleidoscopically. Therefore, the waterscape is the shared keyword that inspires the residents and visitors to appreciate the spatial representation of the two metropolises; it is also the

threshold of entry into the structure and temperament of each metropolis; and it is the dominant metaphor that represents their opposite and different essences.

We propose a two-tiered approach for augmentation of both the urban built environments and the natural landscapes and waterscapes. On a first tier, the novel-augmented paths reveal the narrative patterns of the respective piece of fiction over the urbanscape as representative experiences in the metropolis (which, of course, are not equivalent to experiences of the metropolis). On a second tier, the augmented fictive paths of events and their relevant anchor points reveal the apparent and hidden influence of the natural topography over the narrative patterns. The dominant waterscapes and the surrounding urban landscape provide an initial layer of ordered practices where, due to its unchoreographed activities, the palimpsest of place may arise based on a series of reiteration practices (framework approaches) that both inhabitants and visitors may follow.

3.1. Alexandria

Native Egyptian writer N. Mahfouz [9] meets Greek S. Tsirkas [19] and English L. Durrell [20] in the imprint of Alexandria. They represent a metropolis by the sea, with a slightly melancholic cosmopolitanism, exposed to the winds and the moisture that saturates it. The windy buildings on the seaside avenue overlook the sea, even if they do not “see” it, are aware of it. Tsirkas even writes that the value of buildings is set depending on their proximity to the sea. The sea is the boundary of the metropolis, the central and primary element of denotation, and a constant determination of scope and identity.

“Five races, five languages, a dozen creeds: five fleets turning through their greasy reflections behind the harbour bar ... In summer the sea-damp lightly varnished the air. Everything lay under a coat of gum ... Clang of the trams shuddering in their metal veins as they pierce the iodine-coloured meidan of Mazarita ... I see her sitting alone by the sea, reading a newspaper and eating an apple ... ” [20]. Contrary to Alexandria’s mundane physical reality, Durrell re-creates and imposes biased attitudes and beliefs about an exotic metropolis. Durrell’s controversial portrayal of Alexandria is juxtaposed with the deeply grounded motion of Mahfouz’s and Tsirkas’s heroes and heroines. Alexandria is constantly confronted with the omnipotence of the natural element represented by the sea. People and buildings are under its influential power, altering the appearance of things and people’s moods: “The massive old building confronts me once again ... Walls paintless from the damp, it commands and dominates the tongue of land, planted with palms and leafy acacias, that protrudes out into the Mediterranean ... ” [9]. “A good room, violet wallpaper. The sea view stretches as far as the eye can see, a clear blue. The curtains flutter in the autumn breeze. There is a scattered flock of clouds in the sky ... ” [9]. “Colored clouds driven by fresh gusts of wind raced over my head as I turned away. Along the Corniche, when the waves were rising high and cold spray was flying over the road, I walked defiantly ... ” [9]. The Alexandria of Mahfouz encompasses various languages, various religions and multiple cultural and collective identities.

Tsirkas in “The Bat” [19], in a large number of chapters, introduces the reader to the plot with a reference to the Corniche and extensive, brilliant descriptions of the Mediterranean, the celestial dome and the horizon. The coastal avenue next to the sea reflects the times and weather, the direction and intensity of the winds, the hours of the day from the sun’s movement to the celestial stature, the colors and the physiognomy of the urban landscape and the mental mood of the characters. On a bioregional level, the two dominant topographical components, the Sahara Desert and the Mediterranean waterscape, provide the rhythm for the lives of his heroes and heroines. The metropolis exists, and is perpetually shifting, by relying on both of them. Pedestrians and on-board drivers, cars, buses or trams, are moving in parallel, as if orbiting, to this extreme urban boundary. The tramway stations (Cleopatra, Fleming, Suts, Bakus, Sheffer), beach bars, clubs and hotels with the loud names are hangouts and peculiar identities. “We walked out on the Corniche, got hold of the iron railings, and began going up. We met few pedestrians and even fewer cars. There was a sweetness in the air, thick and odorless. In the distance, behind the fort on Pharos Island,

the orange sun was setting slowly, dyeing the cloudless sky red. To the east, above the houses on the east jetty, the color faded to yellow and pink. Over where Paraschos lived, the skyline of clustered apartment buildings, broken by a tall minaret and four low domes, stood out jet black against the evening light . . . I looked at the sea. It was smooth, like faded blue satin, and only far out in the distance, near the rose-tinted haze of the horizon, did it take on a deeper, emerald shade" [19].

3.2. *Istanbul (Constantinople)*

The native narrator O. Pamuk [8] represents his hometown of Constantinople in conjunction with the foreign narrator Y. Xanthoulis [21], concluding that Constantinople is a twin metropolis, a metropolis of two continents, and the bridges are the visible threads that tightly suture the two parts of the metropolis hovering above the Bosphorus. Xanthoulis states in the chapter "Silk Bridges": "Every time I return to Constantinople, I first try to make sure I am in the right place . . . I make sure that its seas are as I left them, and that its bridges have not been reduced or abolished . . . Why Galata Bridge remains a balcony, almost one kilometer long, from where you can observe from a safe distance the History of the City" [21]. Pamuk describes the moving metropolis's images (through anchor points like mosques, minarets, blocks of flats, towers, gardens, distant neighborhoods and hills), which cannot be seen clearly from the coastline. As you move to the waters of the Bosphorus, a kinesthetic panoramic view is unfolded in front of you. A fluid field is formed on both sides of viewing and observing: "Pushed along by its strong currents, invigorated by the sea air that bears no trace of the dirt, smoke, and noise of the crowded city that surrounds it, the traveler begins to feel that, in spite of everything, this is still a place in which he can enjoy solitude and freedom. This waterway that passes through the center of the city is not to be confused with the canals of Amsterdam or Venice or the rivers that divide Paris and Rome in two: Strong currents run through the Bosphorus, its surface is always ruled by wind and waves, and its waters are deep and dark. If you have the current behind you, if you are following the itinerary of a city ferry, you will see apartment buildings and yalis, old ladies watching you from balconies as they sip their tea, the pergolas of coffeehouses perched by landings" [8]. As you are moving along this sea road, you can look, and be looked at by, children who stroll along the coast, students, fishermen, bus passengers stuck in traffic, people aboard boats or walking on the shore, and even cats by the waterfront awaiting the fishing boats to return and feed them. "To travel along the Bosphorus, be it in a ferry, a motor launch, or a rowboat, is to see the city house by house, neighborhood by neighborhood, and also from afar as a silhouette, an ever-mutating mirage . . . " [8].

The authors' narrated world-making is largely defined by the landscape and topography of the metropolis. In all selected novels, the influence of landscape re-establishes various atmospheres in which the actions of their characters are the inevitable result of the form of such landscapes. The novels' plots depict the fundamental natural topography and surrounding landscape of the metropolis from the perspective of an underlying primal state where, in many cases, inhabitants and visitors find it difficult to perceive any importance in the role of spatiality in the narrative. The unfinalizability of a stable and definite character of the metropolis is reflected by the fragmented structures of the novels, where the perceptual alterations always escape a predetermined definition of Istanbul. Beyond any attempt of humans to identify historic and/or diachronic urban anchor points, Istanbul remains elusive and decentered, ever reflecting the dialogues of its natural topography between the land hills and the Bosphorus.

3.3. *Applying the Four Basic Strategies*

Reinforcing strategy: Real places from both metropolises provide significant aspects that are inherently important in and of themselves. The two metropolises have a compelling reality deeply interwoven with their exceptional waterscapes which, in turn, constantly provide meaningful cultural and collective memories and experiences. The added digital

content that complements reality could have relevant strength due to its interrelation with the fictive worlds of the novels. Novels' plots are interwoven with urban settings of dominant essence, such as natural landmarks like hills, mirrored banks (Istanbul), waterfronts and lakes (Alexandria), and built anchor points like edifices, roads and squares, thus developing a story to better experience the urban reality. The vividness of everyday life in the metropolis is amplified by the compelling content and plot of novels while the current and contemporary surroundings emerge through the designated paths with the overlaid digital recreations of destroyed edifices, which make apparent the lost parts of the metropolis. Individuals can follow a path through the urban tissue as this is designated by each novel, following the plot's characters and events. The digital enhancement consists of overlaid digitally recreated spatial objects (urban setting) that appear in inhabitants' and visitors' reality during the referenced temporal context of each novel. Particular created and integrated digital additions are applied, especially where the urban fabric has been altered and mutated over the years. Three-dimensional augmentations would consist of digital recreations of ruined built spatial and urban anchors [22], revealing the lost aspects of cultural heritage, the diminished parts of a metropolis. Significant edifices (e.g. Cecil Hotel, Alexandria), districts (Sidi Gabir, Alexandria), transportation paths (old B and V tram stations, Alexandria), and leisure facilities (swimming plazas, Alexandria) could be the digital content that will coexist with the contemporary real environment. The reinforcing effect of novels-based AR representations lies in revealing the history of the metropolis and the historic origins of its development and contemporary reality.

Recontextualization strategy: This strategy enables a twofold effort. First, the recontextualization of the metropolis's anchor points in accordance with hidden layers. Second, individuals, through their bodies, are recontextualized as they re-inhabit the embedded connotations of urbanscape and waterscape. In light of this strategy, experiences of the metropolis emerge through a re-characterization of the natural landscape, waterscape and urbanscape surrounding reality by evoking the fictional content of novels. In this case, the over-imposed digital content adds hidden compelling values and memories based on the intertextual levels that are implicit in novels. In particular, the recontextualization of surrounding urban reality is based on the intertextual narration that enables the appearance of hidden signifiers that are based on novels' chronotopes. Grounded in the plots' events, the characters' emotional states influence the referenced real and existing urban sites. Natural, historical, social and cultural transformation of existing places could be adapted to a novel's contextual frame to provide new significance and meanings. The lived reality of inhabitants and visitors is affected by the plurality of literary imagination and the particular social, political, financial and emotive context of the novel. Subsequently, the novel's timeline aligns the narrative sequences over the real and the digitally recreated metropolis's natural and built environments. The characters' emotional states influence the referenced real sites, while the intertextual narrative is digitally overlaid. Therefore, the novel's historical, social and cultural correlations could be experienced in parallel with the plot's timeline. The cities' image is enhanced in accordance with the novels' atmosphere and historical epoch. In this way, inhabitants and visitors can experience the entire character of the metropolis in its historical, social and cultural parameters. In terms of recontextualization, novels-based AR reproduces and represents the interconnections of sites, streets, squares, monuments and landmarks parallel to the movements/actions of the inhabitants, producing a kinesthetic urban panorama. The integrated virtual content is based on the novels' psychological and emotional aura; by digitally imposing it upon the natural and urban setting, it is restored to its dominant role for inhabitants and visitors, over the surrounding reality.

Remembering strategy: At the core of this strategy lies the effort to reveal to contemporary participants different types of memories—collective, cultural and historical—associated with specific urban anchor points and the natural topography. Remembering concentrates on both registered apparent memory of places and the memory that is created by the heroes/heroines of the novels involved. There may also be a third level of memories

on an individual and personal level, in which inhabitants have their personal perspectives and memories amalgamated and re-enhanced based on the content of novels. Different collective and cultural memories emerge from the different novels' plotlines. In the proposed case, the various novels can provide individuals with specific memories from the urban fabric because they can personalize their augmented "walking" in the same way they do when reading a novel. AR is highly interactive and it enables inhabitants and visitors to unveil different content (social, cultural, architectural, aesthetic) over the same designated path(s) via further integrating their personal experiences. The reading of a novel can communicate different feelings based on the personalities of different individuals. Inhabitants and visitors can register their personal feelings when tracing a novel-based path. Inhabitants and visitors can emphasize their personal emotional situations and interweave their personal experiences and memories from the surrounding place with the events of the novel(s), as a result of the novel-enhanced reality. The pre-war self-contained hedonism of Durrell is interwoven with the interwar historical shifts and political ideas recorded by Tsirkas and the financial and moral mutations in Mahfouz's novel. Istanbul's landscape and urbanscape, and its collective and cultural deterioration, is founded on multifaceted internal and external forces as a result of both the natural and the cultural mutated fields. The participating real urban anchor points also affect the emotional atmospheres of the novels. As a result, the urbanscape is transformed with the patina of the fiction's epoch into a new context and acquires new values and meanings afforded by the novels. In terms of remembering, residents and visitors bring out of obscurity the emotional states, mnemonic recalls and perceptions that arise beyond the "material" and the "real" surrounding urban environments.

Re-embodiment strategy: While, as Bloom [23] states, reading is a personal activity, its integration within AR is decidedly a social and participatory action. In particular, the interconnected bodies of inhabitants and visitors unite the various fragments of both the built environment and the landscape/waterscape. The intensity of everyday experiences may be amplified through the augmented intertwining of personal viewpoints with the authors' viewpoints, by retracing the heroes/heroiness' traces within the same environment. Body and environment become enmeshed in explorations of the metropolis through the augmented body's activities. In terms of re-embodiment, they explore their geographical and territorial specific metropolises. Individuals are following the current of the narrative through a rhythmic path in which specific dense halts appear interwoven with specific urban anchor points, where the urban fabric emerges not as a continuous environment but as a constellation of interrelated conjugations of gravitational/deep forces of action, emotions of cultural and collective memories. Novels' paths, off designated high streets, central avenues and popular routes, can lead to an amplified attentiveness to the difference and strangeness of the other place(s) and/or individual(s). At the same time, as inhabitants, newcomers and visitors increasingly intertwine with diverse urban districts, the latter become more and more understandable and appreciated. Thus, attentiveness to place is amplified and people reform their idea of responsibility towards the newly gained metropolis. In a broader sense, inhabitants can also gain deeper spatial, emotional and cognitive understanding and re-interconnectedness with the various urban areas. Individuals can become re-attached with local communities and re-familiarized with particular precedent local, collective and cultural memories, which are in many cases hidden and intangible. As a result, AR enables the creation of peaks of accentuated anchor points with inherent properties, as conferred by the novels' chronotopes.

These four strategies of AR, combined with the mediation of literary representations, assist urban surveillance procedures and user engagement with the multidimensional, multivariable character of the metropolis, its historical depth and complex structure, so that it may become familiar and legible through its habitation condition.

4. Discussion

The proposed amalgamation of novels with Augmented Reality could reveal an exploration that is intellectual, material, and virtual: intellectual through the interconnection between the reader and the novel; material by enabling the reader-inhabitant to move within the novel's urban settings; and virtual by enabling the metropolis's hidden layers (landmarks, paths, etc.), with their natural, social and historical meaning, to reappear. AR could make perceivable the relations between the digitized virtual content and the waterscape and urbanscape.

Augmented Reality based on novels is assisted by a set of distinct overall images and identities of the two metropolises of our case study. The proposed framework highlights the peculiarities and singularities and ends up reconstituting the cities' past faces that are hidden or lost forever. Within the framework of the AR, we create a synthesis of the fictional cities of the writers with the actual surroundings of the metropolises in order to reconstruct the fragmented natural, architectural, urban views of continuity on the urban fabric, thus ending up proposing a dynamic repository of the metropolis's natural, collective and cultural memory. The aforementioned four strategies can reveal, through experiences in the urban built and natural environments, the perpetually transforming and mutating metropolises.

Both metropolises, Istanbul and Alexandria, owe their evolution to their surrounding landscape and waterscape forces, which are clearly underneath many narrative events of the selected authors. The pervasive influence of landscape is not only limited to the earth's topography; instead, it is rather an amalgam of environmental and cultural fields that are defined and shaped by the various diverse ethnicities that oscillate between the metropolises and their greater geographical regions. Crossroads are derived from the formation of the topographical landscape and waterscape, which, in turn, enable human and cultural movements. Authors' fictive creations are experiences *in* the metropolis and not just experiences *of* the metropolis. The literary excerpts selected for Alexandria and Istanbul present a significant introductory image of the two cities, introducing the critical importance of their waterscape, which determines their psychogeographical and historical character and shapes their urban structure and building structure. The novels' plots and characters—as they move between the individual and the collective, the singular and the plural, the social, the cultural and the spatial context—help the user of AR to understand the threads that connect, over time, nature, human habitation and the experience of the metropolis. The re-choreographed motion of individuals' bodies results in the modification and increase of aesthetic, social, and cultural awareness of the surrounding urban environment.

The dialogic field between the two metropolises, as it could be provided by augmenting novels' chronotopes, could emerge from two perspectives. In the framework of a local perspective, inhabitants and visitors can compare points of view from different writers' narratives of the same metropolis, as is the case with the three aforementioned texts on Alexandria and the two texts on Istanbul. In the framework of a wider ecocritical perspective, both locals and visiting participants can compare the singular character of the other metropolises as a result of natural landscape and waterscape forces. The integration of the compelling content of novels within AR could aid local inhabitants and visitors, as well as global participants, to approach the two metropolises with two comparative perspective frameworks. Both perspectives are mutually intersecting based on the metropolises' transformations and mutations over the course of time.

The proposed novel-based AR scheme could unfold a multilayered dialogic canvas between the natural topography and the human built interventions. First, it unfolds a dialogic canvas between the bioregional body inscriptions and the cultural and collective urban memories, and particularly between the two landscapes—hilled shores and their connecting element (Istanbul), and the contradictory relation between the seafront and the desert (Alexandria). Second, it unfolds a dialogic canvas between surrounding realities and imaginative literary universes, so the individuals experience the psychological,

historical and social dimensions of the literary chronotopes. Individuals are directed to rethink subjectivity, in the middle of an amalgamated reality, surrounded by the diverse multicultural chronotopes towards new ways of embodiment and engagement.

5. Conclusions

Novels-based AR could provide a medium for inhabitants and visitors to rework divergent experiences of metropolises by focusing on movement rather than simply on visual pleasure. Instead of merely perceiving a static image, they will re-narrate actions, scenes and settings inspired and formed by social, collective, cultural and historic forces. Inhabitants, visitors and strangers are encouraged to walk and follow the trails of the novel's chronotopes around the urban settings and environments, towards a vectorial vision rather than simply sight-seeing. In this way, the difficult concept of the palimpsest becomes corporeal through the living of places as an enmeshing and entanglement of authors' imaginative fiction and everyday experiences. Therefore, novels-based AR could reveal such landscape forces and their importance in the formation of both metropolises' urban social, cultural, historical and natural character. Additionally, such content- and context-specific AR of the two metropolises could reveal their strong interdependence with their respective natural surroundings.

AR could precisely augment the single most important characteristic of literature, that is, to create place by means of language. The narrative sequence through the rhythms and degree of associative action patterns reveals chronological aspects as intrinsic relations between different urban anchor points, between inhabitants and places, and between different metropolises' landscapes and waterscapes. Likewise, AR media combined with literary fiction could function as a new perceptual proposal for aesthetic perception and appreciation of the urban space. They may allow an in-depth monitoring of cultural insights, building an information and image network; a re-emergence from oblivion and reappearance (through digital restoration) of the cities' past elements and signifiers; and a thorough supervision of the cross-sectional multi-kind comparison of views, data and information. The proposed framework could aid inhabitants, visitors and newcomers to perceive and appreciate their metropolis based on the overlaid points of view from various different authors (in our case study, three for Alexandria and two for Istanbul.) The second general result is the emergence of the singular topographic character that shaped the heroes' and heroines' and authors' escapism from the surrounding natural and built environment. "The city, however, does not tell its past, but contains it like the lines of a hand, written in the corners of the streets, the gratings of the windows, the banisters of the steps, the antennae of the lightning rods, the poles of the flags, every segment marked in turn with scratches, indentations, scrolls" [1]. The linking of urban spatial geometry and topology with the waterscape for both metropolises, and our proposed conceptualization of a chronotope-based augmented continuum, endeavors to expose the dialogic relations between the two metropolises, between each metropolis and its waterscape, and between urbanscape/ waterscape and the novels' fictional frameworks. The urban landscape of the two metropolises is transformed from a distant entity to a multilayered emotional experience, capable of defining strong relationships and evoking respect, concern, responsibility, and care for urban environments.

The material of words through polyphonic representations reflecting various focuses in different time periods, the distinct angles, the deviant versions, make a world exist beyond its real dimensions. In our case, individuals could draw ecological, collective and cultural memories and knowledge from the content of the literary world. This playful (*homo ludens*) world resulting from the fusion of novels' chronotopes and AR is a very vibrant, creative and subversive new world that users create in every moment by adding, subtracting, reconstructing, "playing" with shapes, forms, words, images, sounds of the past and present, in ephemeral form, forming a new cultural heritage, a narrative of a new type for the metropolis. The enriched digital urban environment is unprecedented in the history of civilization, introducing, according to new media philosopher McKenzie

Wark [24], a new concept of the “real”, leading the user to experience a “more real” reality, not just a mirror of physics, but often more authentic than physics.

Author Contributions: Conceptualization, M.M. and D.M.; Methodology, M.M. and D.M.; Writing—original draft, M.M. and D.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: We are grateful to the anonymous reviewers for their careful reading of our paper and their many constructive comments and recommendations.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Calvino, I. *Invisible Cities*; Harcourt Brace Jovanovich: New York, NY, USA, 1974.
2. Alter, R. *Imagined Cities: Urban Experience and the Language of the Novel*; Yale University Press: New Haven, CT, USA; London, UK, 2005.
3. Makris, D.; Moira, M. Augmenting Urban Places’ Identities with Novels. In *Innovative Approaches to Tourism and Leisure*; Springer Proceedings in Business and Economics Book Series; Katsoni, V., Velandar, K., Eds.; Springer: Berlin/Heidelberg, Germany, 2018; pp. 245–248. [\[CrossRef\]](#)
4. Tuan, Y.-F. Language and the making of place: A narrative-descriptive approach. *Ann. Assoc. Am. Geogr.* **1991**, *81*, 684–696. [\[CrossRef\]](#)
5. Squire, S.J. The cultural values of literary tourism. *Ann. Tour. Res.* **1994**, *21*, 103–120. [\[CrossRef\]](#)
6. Noelle, O.C.; Sangkyun, K. Pictures and prose: Exploring the impact of literary and film tourism. *J. Tour. Cult. Chang.* **2014**, *12*, 1–17. [\[CrossRef\]](#)
7. Hoppen, A.; Brown, L.; Fyall, A. Literary tourism: Opportunities and challenges for the marketing and branding of destinations? *J. Dest. Mark. Manag.* **2014**, *3*, 37–47. [\[CrossRef\]](#)
8. Pamuk, O. *Istanbul: Memories and the City*; Freely, M., Ed.; Vintage International: New York, NY, USA, 2006.
9. Mahfouz, N. *Miramar*; Anchor Books: New York, NY, USA, 1993.
10. Georgopoulos, A. Contemporary Digital Technologies at the Service of Cultural Heritage. In *Heritage Preservation*; Chanda, B., Chaudhuri, S., Chaudhury, S., Eds.; Springer: Berlin/Heidelberg, Germany, 2018; pp. 1–20. [\[CrossRef\]](#)
11. Azuma, R.T. Location-Based Mixed and Augmented Reality Storytelling. In *Fundamentals of Wearable Computers and Augmented Reality*, 2nd ed.; Barfield, W., Ed.; CRC Press: Boca Raton, FL, USA, 2015; pp. 259–276.
12. Jung, T.; tom Dieck, M. (Eds.) *Augmented Reality and Virtual Reality Empowering Human, Place and Business*; Springer: Berlin/Heidelberg, Germany, 2018.
13. Kourouthanassis, P.; Boletsis, C.; Bardaki, C.; Chasanidou, D. Tourists responses to mobile augmented reality travel guides: The role of emotions on adoption behavior. *Pervasive Mob. Comput.* **2015**, *18*, 71–87. [\[CrossRef\]](#)
14. Makris, D.; Moira, M. Enhancing Places’ Identities with Augmented Reality and Novels. *Int. J. Cult. Digit. Tour.* **2018**, *5*, 16–23.
15. Makris, D.; Moira, M. Cultural memory in its spatio-narrative-augmented reality. *Int. J. Media Cult. Politics* **2018**, *14*, 151–169.
16. Bakhtin, M.M. *The Dialogic Imagination*; Holquist, M., Ed.; University of Texas Press: Austin, TX, USA, 1981.
17. Heise, U.K. *Sense of Place and Sense of Planet: The Environmental Imagination of the Global*; Oxford UP: Oxford, UK, 2008.
18. Goodbody, A. Sense of Place and Lieu de Memoire: A Cultural Memory Approach to Environmental Texts. In *Ecocritical Theory: New European Approaches*; Goodbody, A., Rigby, K., Eds.; University of Virginia Press: Charlottesville, VA, USA, 2011; pp. 55–67.
19. Tsirkas, S. *Drifting Cities a Trilogy*; Kedros: Athens, Greece, 2015.
20. Durrell, L. *The Alexandria Quartet*; Faber and Faber: London, UK, 1968.
21. Xanthoulis, Y. *Konstantinoupoli ton asevon mou fovon*; Dioptra: Athens, Greece, 2014. (In Greek)
22. Couclelis, H.; Golledge, R.G.; Gale, N.; Tobler, W. Exploring the Anchor-Point Hypothesis of Spatial Cognition. *J. Environ. Psychol.* **1987**, *7*, 99–122. [\[CrossRef\]](#)
23. Bloom, H. *How to Read and Why*; Touchstone: New York, NY, USA, 2001.
24. Wark, M. *A Hacker Manifesto*; Harvard University Press: Cambridge, MA, USA; London, UK, 2004.