

## Enhancing Places' Identities with Augmented Reality and Novels

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### Abstract

We provide an overview of a new way of augmenting experiencing urban tourist places. Our effort is based on two areas, novels and digital medium, augmented reality. Novels could unveil hidden relationships and varied perspectives based on historical, social, cultural, political, and architectural identities of urban places. The, location-based Augmented Reality could improve the engagement with real places by experiencing the visiting place in different ways through the perspective of novels' imaginary worlds. We address the integration of novels within an AR digital environment. We present a framework based on four approaches for AR, reinforcing, remembering, recontextualization and re-embodiment, by interwoven them with narrative analysis content extracted from novels. Such content express the city's substance (buildings, roads, squares); the ordered paths that reveal the oscillated motion of characters and events between city's sites; and the plot's situations that disclose the narrative city's geographies. Our tree-fold endeavor comprises the location of various real places associated with the novel; characters and events are expressed as paths between sites; the spatio-temporal implementation of the emotional-psychological situations of the novel's plot is overlaid. Two cases are presented; a single urban region, that of Heraklion, Crete, as unveiled from different authors' novels and second, three cities Jerusalem, Cairo and Alexandria under the gaze of a single writer. We emphasize the increasing potential of novels-based AR medium for a creative and fruitful engagement when visiting urban places, and encompassing a more multifaceted social and spiritual involvement of tourists – visitors with urban realities.

**Keywords:** novels, location-based-augmented reality, urban place, identity.

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### 1. Introduction

Every urban environment has a complex and multi-layered character of socio-cultural heritage where numerous values and content can be experienced. Cities' pluralistic landscapes are at a constant evolution and they are resynthesized as a formation of diverse identities. The social and cultural identities of cities are in continuous interaction with diverse life expressions of both inhabitants and visitors. Cities' multi-prismatic sites are resulted from a dynamic coexistence of mutations and they are encoded with a variety of social-cultural-aesthetic knowledge. However, given a multiplicity of limitations during a visit, the urban landscape's diasporic and complex character renders difficult a multifaceted understanding of the place's spirit. Narrative texts have a twofold impact in urbanscapes. First, novels context is unfolded within urban spaces. Second urban places can be approached as narrative stories, "Places are fragmentary and inward-turning stories, pasts that others are not allowed to read, accumulated times that can be unfolded but like stories held in reserve, remaining in an enigmatic state [...] There is no place that is not haunted by many different spirits hidden there in silence, spirits one can 'invoke' or not." (De Certeau, 1984). Narrative texts contribute to the lived experiences of places and comprise the power to transform spaces into richly experienced urban sites. Novels could unveil hidden relationships and varied perspectives based on historical, social, cultural, political, and architectural identities of urban places.

The visiting experience is highly mediated by information and communication technologies. Augmented reality (AR) is among the most promising digital media within the tourist – entertainment sector. Augmented reality encompasses and includes the real environments of everyday life, and it overlays digital content over the reality. AR could enable the emergence of new experiential and symbolic environments. Based on its unique aspect that users remain within the real environment, it could provide new ways of enlighten the urbanscapes' mutations. It could engage both visitors and inhabitants with pulsating connections between the past and present urban sites' identities. During the last years AR gains increasing recognition in dynamically alter the ways individuals perceive familiar and non-familiar places. Location-based AR medium could improve the engagement with real places by experiencing the visiting place in different ways through the perspective of novels' imaginary worlds. The main question the lies at the basis of our approach is that despite the variety and numerous amount of information as provided by typical current AR systems, it is not assumed that the users will be familiarized when visiting an urban environment. A multi-faceted medium like augmented reality can be utilized towards the exploration of diverse cultural, social, historic, urban transformations and mutations in various ways that are increasingly participatory and defined by users.

The mixture of novels and AR might provide a compelling narrative during visiting urbanscapes and therefore they could reveal urban places' identities.

### *Research aims*

The aim of this work is to argue that location-based AR integrated with novels provides compelling ways of understanding urban places' identities during a tourist voyage. Our objective is to provide a framework of new relationships between the real urban environment and digital content that is based on an imaginative art, that of literature. The proposed framework has a twofold scope, first to reveal particular identities and internal dynamics of urban spaces. Such reveal will be founded on an imaginative art such as narrative representations i.e. novels. Second, to integrate the urban manifold, (as it is unfolded within novels), within an AR digital medium framework. In particular we focus on understanding the components of representation and experience to accomplish tasks related to tourists-visitors such as experiencing, engagement, immersion in the historic, collective, cultural identities of a visiting touristic place. Based on the assumption (Scharffenberger, Van der Heide, 2014) that in general the relationship between the digital and the real has two basic forms, a spatial relationship and a content-based relationship, the second issue comprises fulfill such content with novels. In our study we tackle the abovementioned issues by proposing an integration of Augmented Reality and novels. AR has much powerful potential yet not fully explored. Contrary to the existing explicit AR applications, our effort is to define a new approach based on the qualities of novels in order to unveil the multifaceted urbanscapes. Two cases are presented in this paper. The first comprise a single urban region, that of Heraklion, Crete, from different authors' novels. The second involves three cities Jerusalem, Cairo and Alexandria under the gaze of a single writer.

## **2. Cities and the Novel**

Cities are charming fields that satisfies the tourists' – visitors' quest for original experiences. Places' experience is a resulted mixture of emotions and thought. Novels' multilayered content defines diverse and personalized feelings, interpretations, and conceptions with reference to urban sites. Tuan argues that literature have the power to call places into existence (Tuan, 1991). Novels have the inherent abilities to reveal diverse and varied perspectives based on historical, social, cultural and political identities of urban places. Novels' performative dimension could expose through evocative and intimate ways the exceptional character of an urban place. Authors not only can echo poetics toward real places, but also they can make possible the emergence of a subjective experience of places. People are inspired by novels that profoundly altered and stimulated them within their imaginative worlds, where during reading they live within such spatio-temporal psycho-geographical environments. Therefore novels can amend the ways visitors – tourists (and somehow inhabitants) understand their relation to a place, while they could shape visitors expectations of what a visiting place is or should be.

### *Textual spatialization geography*

Novels' authors contribute to the emergence of unique and alternate conceptions of places. The actual geographical, historical, social, and cultural constitution of each environment is highly integrated with

discursive meanings projected upon them by authors. Textual spatialization has become a very fruitful area where the spatial analysis of texts and especially novels gains insight and understanding of real places. The field of literary geography is highly expanded (Rossetto, 2014). In parallel with literary critics which they used maps as analytical tool for text interpretation, a great number of geographers and cartographers engage the multifaceted content of literature in order to enrich their mapping representations. Literary critics used maps as analytical tools for text interpretation, while a great number of geographers and cartographers enrich their mapping representations with literature's content. According to (Brosseau, 1995) novels have a particular way of defining its own geography. Bourdieu proposes a projection over the 1846 Paris's map of the social space of Flaubert's novel 'Sentimental Education' (Bourdieu, 1996). Moretti in his influential work opens up new horizons in literary analysis by the geography mapping the spaces of narrating (Moretti, 1998). He developed a series of maps that enable the discovery of many hidden dimensions of literary texts, where with these maps are visualized the characters' meeting places, and their interactions. He remarks that "space is not the 'outside' of narrative, but an internal force that shapes it from within", (Moretti, 1998 p.70). Piatti and her colleagues provide explicit methodologies with the aim of translate narrative places as appeared in European 19th century novels into geographic objects (Piatti et al., 2009). For Hones, at the core of literary geography is the narrative as texts and novels for which she argues those are not a mere representation, but she considers them as spatial practices, 'narrative as spacing, as a performance of space', (Hones, 2014).

Literary maps are proposed and developed as valuable tools for the narrative texts' spatial capturing and appreciation. However, the full potential of narrative texts could not be fully unveiled because of a number of inherent to the medium limitations. The cartographic mapping of narratives has certain limitations in the mixing of real and narrated places, the spatiotemporal translation of plot's events and its' intertextual associations, the different tasks of narrated spaces.

#### *Location-based, context aware AR.*

AR was initially defined it as a system of three basic characteristics: a combination of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects (Azuma, 1997). Progressively its concept is comprised to diverse media that blend real knowledge and virtual content by new meaningful means. Following Klopfer insight AR is "a situation in which a real-world context is dynamically overlaid with coherent location- or context-sensitive virtual information" (Klopfer, 2008). In this way, AR provides technology-mediated immersive experiences in which real and virtual environments are merged (Klopfer, 2008) and users' interaction and engagement with a real environment are augmented. The utilization of locative-based and context aware approaches is based on real time current position and enhances the voyaging in natural and built environment. Spatial and content related guidance can be provided based on users' current near context. Such assistance is highly depends on users' personal interests. In almost all of the cases such applications provide explicit information necessary for tackling diverse orientation and direction cases.

However, during the last years the advent of hardware improvements widespread AR in areas like cultural heritage, entertainment, tourism, retail, advertising, etc. In the tourism sector numerous existing AR approaches are mainly based on / focus on explicit knowledge in order to aid potential visitors either before or during the visit. A special case of AR is location-based AR storytelling. Azuma presents some characteristic examples of such applications where stories can have strong influence on persons' relationship with their physical environments (Azuma, 2015). Nevertheless, in a touristic – oriented approach such applications have limitations to capture how cultural, social identities shape visitors spatiotemporal perceptions. Our approach addresses the fact that despite the variety amount of information as provided by AR systems, it is not assumed that the users will be familiarized when visiting urban environments. A symbiosis of novels and AR can aid the exploration of diverse cultural, social and historic urban alterations in various ways that are increasingly participatory and defined by individuals.

### **3. Framework Levels**

We address the integration of novels within an AR environment according two methods of novels' analysis, based on narrative – literature analysis, and spatial analysis. Novels, in general, are characterized by three components, setting – spaces, characters and events. We provide a framework based on three approaches for AR by interwoven them with narrative and spatial analysis, which is resulted towards a forth approach that

of re-embodiment. Based on these strategies a tree-fold endeavor is confronted. First, the various real places associated with the novel are located; second, characters and events are expressed as ordered paths between sites; third, the spatio-temporal implementation of the emotional situations of the novel's plot is overlaid. Such content express the city's spatial substance (buildings, roads, squares), the ordered paths that reveal the oscillated motion of subjects and events between the various city's sites; and the plot's situations that disclose the narrative emotional geographies of the city.

### *Levels of analysis*

At the core of a novels-based AR media exists the fundamental issues about the visualization of associations and the relationships between urban places that are appeared in a novel. Diver places (as containers) are used (contains) plot's events which in turn they express diver emotional stages of the novel's unfolding. We want to capture and express the various kinds of events related with each place and their intervals along the narrative time. The proposed synthesis of novels within an AR medium is a threefold approach. First, we provide an analysis of the proposed novels following theoretical and methodological approaches focusing on narrative space. Second, from a spatial approach we define specific classes in relation with narration (De Jong 2012, Bal 2009). In parallel, from an architectural perspective we introduce the concepts of urban analysis following Lynch insights (Lynch 1960) in order to extract urban elements as they contribute in the novels' content. Third, we will define four strategies as the underlying structure of the proposed AR medium in order to express the multivalent character of the surrounding environments of the selected urbanscapes. These are: reinforcing and remembering (Azuma, 2015), recontextualization, and re-embodiment, as expressing our contribution.

### *Novels' analysis framework*

Novels are arranged in urban sites but also configure such space by structuring multilayered spatiotemporal and semantic scenarios. The dynamics of narrative is unfolded in both spatial and temporal layers. Friedman's narrative analysis comprises a spatial reading of literature texts (Friedman, 1996). She defines a two axis analysis where the horizontal axis express the evolution of the plot, and the second, vertical axis contains a diversity of literary layers. The horizontal storyline comprises the plot's chains of events and its constituents like the characters, setting the progression of events. The horizontal axis reconstitutes actions, enables readers to imaginatively inhabit the spatiotemporal context of the novel. The content of the vertical layer inhabit within the horizontal axis "dependent on the horizontal narrative as the function that adds multiple resonances to the characters' movement through space and time" (Friedman, 1996). It could comprise possible layered intertextual 'dialogues' with other novels, historical aspects from other texts produced in different areas from different authors, (in close relation with the narrated temporal horizon). Such superimposed surfaces could remain hidden but in close relation with the readers performative choices.

### *Architectural – spatial analysis framework*

The spatial references can provide a principal point of views for the visitor. In accordance with the novel's plot spatial references directs visitors / tourists point of vision based on either on protagonist (direct speech) or narrator (indirect speech) point of views. As novels are unfold within the real world certain urban spaces encompass their narrative events. A model of the spatial landmarks upon which the novel is interwoven, it would provide a topography of the fictional narration. While a detailed narrative analysis of novels is beyond the scope the current study we base our framework on some fundamental concepts of spatial forms. The narration's scenery is provided by a model of spatial sites upon which the novel is interwoven. We reform spaces categories after (De Jong 2012, Bal, 1997). The story-space depicts the novel's actual locations and it comprises first, the setting, where events unfold and can imply many locations across the novel's plot. The second is the frame, which is sites that occur in memories, dreams, and thoughts (DeJong, 2012). The spatial settings could be introduced by the viewpoint of narrator and/or a character. In general, the spatial locations are weaved into the plot, while at the same time they could show diverse situations of characters. The concept of scale plays an important role in novels and it comprises three levels. The first is panoramic standpoint where a distance exists between the site and the narrated person. The second is viewpoint is the scenic perspective, where a character is within the described scene. A further classification comprises whether the character has a shifting or fixed perspective (De Jong 2012). Finally, the third concept is a close-up standpoint where character describes a scene – site in many details. The next important categorization involves functions

that spaces entail. The first class comprises the symbolic function where sites are attached with ideological, cultural, social, etc. values. Then, is the characterizing function, which a space involves characters behaviors or values. The third is the psychological class where the narrated sites could express a universe of character's emotions.

In parallel, from an architectural point of departure based on Lynch's urban analysis concepts (Lynch, 1960) we define the following diverse urban elements; castle and its gates, ancient and contemporary buildings, squares and public space, avenues, roads and alleys, central and marginal regions, coastline, tramway lines and stations. In particular, Heraklion's novels' urban spatial elements are: the castle and its gates, central squares and public space, roads and alleys, and finally central and marginal regions. In Tsirkas trilogy the urban elements are the following. In Jerusalem the gates, the dense alleyways, old city's quarters. In Cairo the old downtown, contemporary and ancient landmark buildings, alleys' labyrinth and interior spaces. In Alexandria the Corniche coastline and plages, tramway lines and stations, avenues and streets.

### *AR Strategies framework*

The AR is a powerful media to express the inherent complexity of spatiotemporal dimensions of literature texts. Within an AR system it is possible the definition of interconnected layers that can contain the geography, temporal and geometrical dimensions of the novel and the different scales of the evolving plot. AR media can possibly envision and represent the dimension of memory (collective and cultural memory). Azuma (Azuma, 2015) has proposed three basic strategies that could underlie a storytelling AR typology. However our proposal of novels-based AR media is correlated in two ways. First the ontological and semantically richness of novels could enable all of his three strategies, second we enrich and extend the reskinning strategy with a broader concept that of recontextualization, and finally we add a fourth one, re-embodiment.

**Reinforcing.** Real places provide significant aspects that are important by their own already. The majority of touristic sites express such importance and significance and they have strong attractive power by themselves (Azuma, 2015). However, beyond the typical visiting paths, such urban sites are vivid stages of the everyday life expressing city's collective and cultural life. Novels provide a content that is a strong complement to urban sites that can reveal the inherent dynamics of urban places. A novel's plot that it is interwoven with urban settings like landmarks, edifices, roads, squares develop a story to better experience the reality. Visitors can follow a designated path over the urban tissue representing the characters and events. The digital enhancement consists of overlapped digital spatial objects (setting) appeared in visitors' reality during the referenced temporal context. Particular additions are applied especially where the urban milieu has been altered during the years. Three-dimensional augmentations consist of digital recreations of diminished edifices which make apparent the lost, diminished part of a city.

**Recontextualization.** Its purpose is physical and semantically transform of places to be adapted to a novel to provide new significance and meanings. Our basic aim through that strategy is to reveal the diverse characters of the surrounding real places. The recontextualization of surrounding reality is based on the intertextual narration that enables the appearance of hidden signifiers. Based on the novel's plot events the surrounding environments are adapted and the missing context is digitally recreated. The visiting reality is affected by the literary imagination and the general context of the novel. Subsequent, the novel's timeline aligns the narrative sequences over the real and the digitally recreated urban environments. The characters' emotional states are influencing the referenced real sites. In accordance with Friedman's vertical axis the intertextual narrative is digitally overlaid. Therefore novel's historical, social and cultural correlations could be experienced in parallel with plot's timeline. The cities' image alters in accordance with the novel's atmosphere and historical epoch. The proposed experience based on the novels context has the potential to render hidden evocative urban context beyond the standard touristic routes and sites. In this way, visitors have the overall character of the city in its historical, social and cultural parameters.

**Remembering.** That strategy enables the emergence of different memories from the same urban place (Azuma, 2015). In the proposed case the various novels can provide specific memories from the urban site, because they have different plotlines. Visitors can personalize their augmented "walking" the same way as they do while reading a novel. AR is highly interactive and it enables users to unveil different content (social, cultural, architectural, aesthetical,) over the same designated path(s) via further integrating their personal experiences. The reading of a novel can communicate different feelings based on visitor's personality. Visitors can record personal feelings or underline individual emotional situations during their visit as a result of the enhanced reality by a novel. Novels translate characters' stories that enable visitors to approach the

surrounding locations through their emotional context. Another dimension of remembering is the case where visitors interweave their personal experiences – memories from the visiting place with the events of the novel(s). The visiting place is experienced through novels evocative memories.

Re-embodiment. The integration of these two media can provoke new experiences, emotions and memories, that are more powerful than alone the reading of a novel, or the use of AR. Visitors could be intertwined with the places they scope to understand and experience during their voyage to an unfamiliar environment. As they approach a foreign culture, they can reveal the inexhaustible layers of the visiting sites, and they gain renewed embodied participation. This participation can lead to an amplified attentiveness to difference and strangeness of the other place and/or individual. In parallel, as visitors are (increasingly) intertwined with the visiting place, they reform their idea of responsibility towards the newly gained world. In a broader sense, inhabitants could also gain deeper (spatial, emotional and cognitive) understanding and re-interconnectedness with their diverse urban regions. Visitors are re-attached with local communities and further re-familiarize with local collective and cultural memory. They can re-embody cases, things that are precedent, hidden and intangible.

#### **4. Augmented Cities**

The following cases re-embodied spatial engagement that brings into inspection the places and identities associated with the narrative fiction. A novels-based augmented reality as the proposed framework would enable the spatialization of experiences and emotions that are underlying in the selected sets of novels.

The first case comprises Heraklion Crete, (Moira, 2011), (Moira, Makris, 2015), a city of multifaceted heritage values of different historic periods, religions, ethnicities. A visitor can approach Heraklion's character from eight different experiences as established by the eight novels. (Alexiou, 1978 – Galanaki, 1997, 2002, 2004 – Kazantzaki, 2007 – Kazantzakis, 1969 – Mitsotaki, 1993 – Zografou, 1987). All authors birthplace is transformed as a 'literary city' of the late 19th century-early 20th. The literary depictions robustly associate the transformative events over the city of Heraklion with a number of principal cityscapes. All novels are tied to the current locations and therefore they complement the real Heraklion. Novels' analysis results the following city elements. The Venetian wall performs as a symbol and representation of memory. Principal cross roads are connecting the gates in the labyrinth of alleyways. Central and peripheral neighborhoods are expressing class, cultural and social differentiation. The popular squares are privileged sites of city's historical memory. These representations are spatially defined by the key urban sites of the historical – narrative plots in almost all selected novels. The novels reveal different chronotopes within the same cityscape and landmarks. Numerous correlated social and historical could be embedded to recontextualize the surrounding environment. All novels' chronological markers situate the events in different time epochs; in parallel the diverse urban spatial markers are precisely located over the body of the evolving city. The traces of the novels' time epochs are experienced over the city' body. Heraklion's urban surrounding reality would be altered to fit the needs of all novels' context. The current urban milieu is augmented with three-dimensional digital recreations of selected diminished elements. Specific audio augmentations based on novels descriptions are provided to visitors.

The second case comprises a different approach. In particular, the case introduces three cities under the gaze of a single author. The three multiethnic cities are Jerusalem, Cairo and Alexandria as they appeared accordingly within the trilogy *Drifting Cities* (Tsirkas, 1995). Tsirkas narrates the geopolitical clash between the years 1942-44 through a dual contextual environment. First he provides relations between the current plot and its historical context. Second, he reveals, for each city, the cultural mixtures of different cities within a city. In general, in all cities the spatiotemporal recontextualization is based on relative historical, social and cultural correlations. The injected novel's life within a visiting tour demotivates visitors to explore and understand deeper the urban sites. Following a free movement through the trilogy's urban sites they can experience their diverse evolution through time. In Jerusalem the gates act as entrances to the multifocal past of city's fabric. The alleyways' density reflects a mosaic of a multilayered community values. The old city's quarters are introducing ethnic and religious blurring differentiation. In Cairo characters are transcending elliptically the heart of the old downtown. Contemporary and ancient landmark buildings are revealing the eternal rhythms of the urbanscape. The alleys' labyrinth is defining a collage of social and cultural contradictions. Specific interior spaces are juxtaposed their tranquility with the oscillating motion of the narrow downtown. In Alexandria the splendid coastline of Corniche with famous plages acts as a frontier and

an escape line. Tramway lines and stations reveal a mosaic of the diverse sociocultural canvas of local neighborhoods. The longitude avenues are competed with vertical streets towards the dense alleys. The surrounding reality of Alexandria would be altered in order to fit the needs of the novel's milieu. Three dimensional digital material is align with the real city's locations revealing the historical era. The diminished tramway line is digitally recreated and aligned with the current real city. Alexandria's historical buildings as referred in the novel are overlapped to the altered urban sites.

## **5. Conclusion**

The aim of the presented work is to overcome the traditional digital technology – tourist experience relation and we propose a new way of accessing visiting sites based on the novels chronotopes. Novels ensure complementarity in understanding the physiognomy of urban sites as a coherent whole. They could reveal urban paths, interpretation themes and engagement strategies that are related to social, cultural and aesthetic aspects. The novel's readers envision a landscape; they plot a trail, and finally become orientated to and within the depicted world. A novel renders a visiting urban environment as an exceptional visiting destination. Novels-based augmented reality can unveil important new and alternate ways of imagining the urban environment. It provides great capacities to stimulate visitors' imagination through original narrative representations of places and landscapes. Urban indicators as appeared in the relative texts result towards the definition of a set of singular points of view for the visitor. Such points of view are articulated as vectorial paths as a coincidence, in accordance with the development of plot events. Accessing visiting place visitors have the potential to be guided along particular paths in the city milieu, or they can blend their independent paths with suggested pathways from the literary texts.

The content of the proposed novels-based augmented reality is an amalgam from both the real world and the literature's imaginative worlds. It enables interaction and immersion with that mixed reality content as visitors would interact with the real world visiting site. Visitors' experience value derives from both the real and the digital context. The integration of novels' urban places within an AR system could provide subjective (fictional) and objective (factual) experience in a dynamically interwoven digital environment. The use of the proposed AR framework could result towards a spatial, emotional and cognitive engagement with an in principal foreign and unfamiliar urban landscape. Such interactive and dynamic medium could reset touristic topography as a powerful record of historical, cultural, social forces. It engages with the complex landscapes of the contemporary cities, and gives birth to tentative dialogues between the visitor and the urban tangible and intangible tissue. The visiting rhythm is unfolding gradually in the augmented course of the novel's plot. The proposed integration between novels and AR proposes the perception of a pluralistic visiting of the experienced urban sites with the possibility of, visualization, navigation, interaction, and emotional engagement, providing visitors with deep knowledge of the real and digital ground. As the experience of novels and digital representations are mixing, they will emphasize real sites of life and memory by eradicate the discontinuity between virtual and real world by establishing relations capable to lead to a re-familiarization with city's sites. Visitors re-acclimatize to a new world structured from both real places and novel's imaginative worlds. Visitors could tackle the weakened bonds of attachment to a visiting foreign spatiotemporal context. Making visiting cities identities more compelling, memorable and understandable by reveal the many layers of their social-cultural-spatial evolution.

"A place has to become an inner landscape for the imagination to start to inhabit that place, to turn it into its theatre" (Calvino 2004).

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