



Journeys, Maps, Dungeons: Navigating Narrative and Cinematic Space in Open World Digital Games

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ABSTRACT

This paper describes ongoing research on the design of space and its experience in digital games from a cinematic and narrative perspective by exploring the relationship among spatial learning and cognition, narrative theories and the cinematic treatment of space. While the highlighted interconnections among the aforementioned fields apply to computer games in general, open world games are studied to identify commonalities between representations of space across different modalities (namely games and cinema). The paper outlines part of a theoretical framework regarding the above aspects of video games that is currently under formulation.

CCS CONCEPTS

• **Applied computing** → Computers in other domains; Personal computers and PC applications; Computer games.

KEYWORDS

Narrative, spatial cognition, video games, cinema, cinematic space

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1 INTRODUCTION

Navigation, orientation, perception and appropriation of space are common features of digital games, presenting both narrative and ludic challenges. Since the early years of digital games, spatial perception and knowledge acquisition was an important factor in the game experience. Navigation aids have undergone multiple transformations; additionally, the incorporation and further development of cinematic elements in digital games has resulted in more elaborate environments, especially in open world games (where exploration of the game world is a primary feature), together with the continued reliance on more traditional ludic spatial patterns such

as mazes, dungeons, or isolated enclosures. Most modern game environments are perceptually rich and realistically represented, thus facilitating the utilisation of spatial knowledge acquisition practices employed in the real world. At the same time, alongside the evolution of spatial elements and configurations and the increase in representational realism due to advances in graphics technology, the introduction of more complex cinematic techniques in the presentation and treatment of game worlds from a storytelling perspective has further enhanced both the perception of spatial structures and the overall game experience. In addition to their importance in the shaping of cognitive representations of the environment, spatial elements may be interpreted in experiential terms and used to frame narrative structures. The design of space itself can be seen as a container of narratives, as the navigation within the game environment can shape experiences, evoke narratives and invite users to engage in storytelling. In turn, experientiality and the process of active mental narrative construction may result in an increase in the relatability of the game with respect to the player and the memorability of various aspects of the game world. In light of the above, the following sections explore various ways in which different navigation modes and tools (maps, mini-maps, compasses, spatial clues, fast-travelling techniques, etc.) may be related to film techniques and traditions that have consistently influenced game design and interactive storytelling.

2 SPATIAL KNOWLEDGE ACQUISITION AND COGNITIVE MAPS

Video game spaces come in various forms and may nowadays resemble the real environment. Players interact with the game environment, which is encoded in their memory as a result. Although space in video games is an artificial construct, it is nonetheless experienced in a way that is reminiscent of the experience of navigating physical spaces. Thus, the game experience may result in spatial knowledge acquisition and associated cognitive structures that represent the game environment. One of the most often cited frameworks to describe the different types of spatial knowledge is that of Siegel & White [1]: landmark, route and survey knowledge.

2.1 Landmark Knowledge

Elements of the environment obtain landmark status as a result of their prominence (perceptual or symbolic) and/or contrast with respect to their surroundings [2–5], acting as ‘anchors’ for spatial knowledge to develop around. . Landmarks can be global or local depending on whether they are visible from all or some locations [5];



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they subdivide the environment into multiple lower-scale environmental units, each anchored to a particular landmark [6]. This aspect of landmarks becomes more relevant in vast game worlds such as the ones typically encountered in modern open-world games.

In game spaces, landmarks facilitate navigation and accelerate spatial knowledge acquisition, especially considering the fact that the game world will initially be unfamiliar to the player. Lack of landmarks can be a defining characteristic of traditional game types such as dungeon crawlers, in which the game environment consists of similar-looking rooms and corridors, inhibiting navigation and the memorization of space. To an extent, this was due to hardware limitations. More recently, games take advantage of realistic representations of space, and the process of spatial knowledge acquisition may resemble that of the real world. This effect is more pronounced in games that feature an egocentric frame of reference as the player experiences the world from the point of view of the game character. Modern games can be perceptually rich and even awe-inspiring, and players who derive pleasure from exploring game worlds usually strive to experience (and interact with) the environment, often at the expense of more ludic aspects (e.g. score).

The use of landmarks also varies according to their referentiality to real geographies: most open world digital games belong to the fantasy or speculative fiction genre and construct imaginative universes. However, in some cases, open world games feature existing cityscapes, advertising the accuracy in the reconstruction of the locations as an important factor of the success of the game. A known case that plays with the element of referentiality – not only to real world geographies but also to cinematic space conventions – is the *Grand Theft Auto* series (Rockstar Games 2001-2021), set in the fictional city of Los Santos, based on a synthesis of Los Angeles, San Francisco, and Las Vegas. Another example of an accurate reconstruction of real locations is the game *LA Noire* (Rockstar Games 2011). The plot is set in 1947 Los Angeles and the game is based on the narrative, thematic and aesthetic features of the film noir genre. The main character (a police officer) can roam freely in this reconstructed L.A., by car or on foot, with the help of the city map and a mini-map that assists navigation while driving. During gameplay, players may discover iconic landmarks such as the LAPD Station, the Hall of Records, Chinatown, Angels Flight etc., all considered cinematic landmarks as well, such as the Bradbury building that features not only in classical film noirs as *D.O.A.* (Wyler 1950) and *Double Indemnity* (Wilder 1944) but also in neo-noirs such as *Blade Runner* (Scott 1982). The landmarks do not appear in the map, and visiting them is an optional side quest with an experience point reward. In games, landmarks are primarily used for orientation and way-finding; in game environments that are excessively well mapped, architectural, or natural, landmarks refer to “sightseeing” practices and highlight the richness of the game environment, thus functioning more as visually appealing elements than ludic features.

2.2 Route Knowledge

Typically, and assuming that spatial knowledge is acquired through an egocentric frame of reference, routes consist of interconnected landmarks that function as points of decision as to which path

is to be followed next. Landmark interconnectivity is usually directional: as one navigates the environment, paths are encoded / learned from an egocentric point of view; reversing the direction of a previously learned route may initially present some difficulty. If the environment (and the relative position of landmarks) changes, route knowledge needs to be re-obtained¹. In open world games, despite the egocentric point of view, players usually follow the same routes repeatedly in both directions, thus obtaining an accurate overview of the location(s) in question. This quality of route knowledge is not foreign to contemporary cinema, as one of the most prominent techniques in realist art-house films with a social perspective is to follow the character in over-the-the shoulder long takes, thus giving an immersive quality in the depiction of the real world (for example in Dardenne Brothers films). Such cinematography usually avoids establishing and wide shots, obliging the spectator to share the limited field of vision of the film’s character and often producing a sense of closure and anxiety when this track is followed at a fast pace. Though not compulsory for the viewer in this case, route knowledge pushes forward the narrative aspects of characterization and provides information about the social milieu and the settings. In contrast, video games usually give the player the chance to manipulate framing and pace while following a route, thus creating a rich and complex immersive experience. On the other hand, navigation aids such as those found in many open world games accurately indicate the route that the player/character has to follow in order to achieve his/her quest; route-finding in gameplay becomes too simple, as the player only has to follow the tagged path, without having to make any navigational decisions, and in this way reducing the degree of activity in the experience².

2.3 Survey Knowledge

This type of knowledge uses arbitrary frames of reference (e.g. Cartesian or geographic coordinates) and is the first type of spatial knowledge acquired when the environment is first experienced indirectly, e.g. through the study of maps. It tends to be hierarchical: some environmental elements are regarded as primary ‘anchor points’ (or networks) around which secondary or tertiary elements (forming their own sub-networks) are located [6, 9]. Survey knowledge in digital games is usually provided by introductory sequences or cut scenes, that are often presented through analytical continuity editing and following cinematic and animatic conventions – such as the ‘Ken Burns effect’ or comic strips graphics. A voice-over by an omniscient or extra diegetic narrator is one the most used devices that give survey knowledge by presenting the spatiotemporal environment of the game.

In real environments, a person’s route tends to preferentially utilise their primary networks, falling back to secondary and tertiary networks whenever a primary network is insufficient. In game worlds, such a sequential order is not necessary, as fast travel (i.e.

¹Directly experienced routes are more accurately encoded than those to which the individual has been indirectly exposed [7]. Furthermore, what is affected most is the shape of the route, and not so much the start and end point(s) [8].

²In some cases, the path indicated in the minimap may not be the optimal one (e.g. there may be a shortest path players can discover and follow, but to do so, they will need to disregard the minimap suggestion. This is an attempted compromise between the need for predictability of the environment and accuracy of navigation and pathfinding on the one hand, and unpredictability and surprise (that may encourage the player to further explore the environment), on the other hand.

teleportation) can be used through various means, whether justified (e.g. spells in a mediaeval fantasy setting, hyperspace jump in sci-fi, etc.) or not from a narrative point of view. Discontinuous spatial experience may inhibit spatial knowledge acquisition or render it segmented and ‘insular’, as players navigate several environmental units simultaneously, until the connections between these units are discovered. Games that promote survey knowledge typically include those that predominantly rely on a ‘bird’s eye’ view of the game world (e.g. strategy games)³.

2.4 Cognitive maps

Spatial knowledge is encoded in a cognitive structure that is usually ascribed map-like qualities (‘cognitive map’) [9–11, among others]. In addition to spatial information (e.g. configuration, topology, sizes, distances, etc.), cognitive maps also include perceptual cues (e.g. mental images anchored to locations), and even symbolic meaning pertinent to elements of the environment. In general, the more richly and completely spaces are perceived, the more accurate their cognitive representations will be; missing elements or inaccuracies in the spatial information as it is perceived will be accompanied by similar inaccuracies in the resulting representation.

Cognitive maps support navigation, i.e. the detection of environmental elements conducive to the attainment of the subject’s goals. In addition to landmarks, prominent elements that may act in such a way include architectural aspects (e.g. thresholds, boundaries, steps or stairs, or other demarcating elements), signage (e.g. numbering, signposts, etc.), and the rational / intuitive configuration of space itself and the organisation of its elements [12]. When spatial learning begins with egocentric navigation, the formation of cognitive maps starts with the identification of primary landmarks and/or points of interest and connections among them; subsequently, the resulting structures form clusters which are then joined, forming large-scale cognitive representations of space [1, 13]. In such cases, distance, relative size, and orientation change estimation tends to be more accurate when following a route; when survey knowledge is the first form of spatial knowledge to be acquired, absolute distances and positioning of elements are more accurate [14]. The types of spatial knowledge integrated into cognitive maps correspond to the categorisation of the basic elements of (urban) environments proposed by Lynch [4]⁴.

Cognitive maps may also contain an affective or symbolic substrate (e.g. individual or collective affective predisposition towards specific elements of the environment), as well as indications of various elements’ narrative importance.

³In such cases, the game world cannot be experienced from the point of view of a single game character, as it takes place at a higher level of analysis in which an individual perspective would not be useful or efficient.

⁴(i) paths: elements that connect - i.e. typically used to move between points in space; (ii) edges: (usually) linear elements that demarcate areas; they may be permeable (allowing easy access to and from the area in question) or rigid (inhibiting entry or exit); (iii) districts: regions that appear homogeneous in functionality and/or aesthetics; they are accompanied by the notion of “inside” and “outside” (in conjunction with edges); (iv) nodes: points where multiple paths converge (decision-making with respect to navigation occurs at nodes); (v) landmarks: elements that are significantly different from their surroundings in various ways, some of which have already been described in previous sections.

3 NARRATIVE SPACE: FROM CINEMA TO DIGITAL GAMES

In classical film storytelling, spatial perception is constructed mainly through editing and *mise-en-scene* practices. How the film facilitates, delays or impedes the spectator in terms of orientation is part of the narrative and stylistic choices of each director. As Bordwell [15] notes, Hollywood cinema chooses to “subordinate space” in favour of narrative causality that becomes the dominant system of a film’s form, utilising graphic space into a vehicle for narrative. Constructing spatial continuity is related to a set of strict montage rules that constituted the norms for classical filmmaking and continuity editing, eliminating in this way any practice that could disrupt the flow of “transparent” editing that pushes forward the narrative. In terms of *mise-en-scene*, spatial continuity is produced not only by theatrical devices such as set design, lighting and acting but also by the photographic qualities such as the depth of field, diversity of lenses, camera angles and movements. Framing usually follows specific typologies in order to help the spectator orientate and understand the space in which the action “takes place”, starting with establishing and wide shots in the beginning of each scene and continuing with balanced and dynamic compositions that are mainly centred on the bodies of actors. By abiding to a specific set of rules, a coherent spatial system is constructed, while at the same time, the viewer, “having learned distinct perceptual and cognitive activities, meets the film halfway and completes the illusion of seeing an integral fictional space” [15]. In post-classical cinema the shift from the photographic to the graphic qualities of the image in digital cinema brings cinematic space closer to the narrative space of digital games [16, 17].

In digital narratives, Punday [18] discerns two kinds of spaces: the primary one, the navigable space, where the player engages in an act of make-believe, and the orienting, non-playable space which includes interface elements and tools (i.e. maps). Open world games employ navigation within the game space and exploration of the gameworld as one of the primary mechanics resembling a digital analogue of Debord’s practice of *dérive*. Walking through an environment is more than the sum of bodily movements; through the embodied interaction with the surroundings, entities relate to the space, conceive meanings and construct narratives. The experience of navigating through a mediated digital environment and perception of space is close enough to that of physical space as described in the above section. Jenkins [19] and Ensslin [20] acknowledge the potential of environments to evoke narrative scripts with the former stressing on the narratological consequences of game space design and organisation. Early cognitive narratologists posit experientiality as central to the process of meaning-making while the second generation follow an enactivist approach regarding cognition, interpretation and story creation as a dynamic process between a living entity and its environment (physical and socio-cultural).

Maps, as orienting spaces, do not carry narrative meaning per se but may, under certain circumstances, function as storytelling devices. Open world games feature a variety of maps, most commonly mini maps (an aid for orientation) and world maps that indicate areas of interest and facilitate transportation to distant locations (fast-travelling or teleportation). As a guiding tool, in most cases they depict the players’ position in the game world with

high accuracy. While this practice increases ease of navigation, it also prevents players from being lost, which may detract from the degree of realism of the game world. Additionally, it promotes a break from the ‘conventional’ sequence of spatial knowledge acquisition by blending landmark knowledge with route knowledge. Mitchell [21] refers to the role of game mechanics in narrative construction and the process of meaning-making, describing two functions: as experiential metaphors that complement the narrative and as poetic gameplay by posing obstacles in order to encourage players to reflect on structural level. Maps designed as deceptive machines that deliberately obscure spatial information not only motivate users to explore the environment from an egocentric perspective; they also function on a semantic level. In the *Thief* series (Looking Glass Studios / Ion Storm, 1998 - 2004), the map shows an incomplete overview of the environment; still functions as a navigational aid, but is nowhere as detailed as in most modern games. This abstraction encourages exploration and direct experience of the environment. Furthermore, an incomplete map is plausible from an in-universe perspective. Another case is the structure of the Night City, in *Cyberpunk 2077* (CD Projekt Red, 2020) and the corresponding map, designed as quite dysfunctional, creating a sense of confusion and disorientation instead of offering guidance as expected. Thus, it intensifies the sense of complexity of the actual space and its chaotic, rather dystopian, atmosphere reflecting on the level of the story.

The use of world maps for transportation holds narrative significance as it allows the shaping of complex, rhizomatic structures offering personalised experiences. While this kind of (semi)instantaneous transition to disconnected areas may create unnatural spatiotemporal relations and affect spatial knowledge acquisition, it is usually tied into the game world in a plausible way that does not break the suspension of disbelief. In incremental open world games, the disruption of spatial knowledge is avoided by limiting fast-travelling between areas that have already been explored and thus players are already familiar with – i.e. in *The Witcher 3: Wild Hunt* (CD Projekt Red, 2015), players may utilise signposts to activate fast travel only if they have previously encountered them. In terms of narrative believability, spatial transitions are often justified by the gameworld rules and genre conventions already established by other narrative media (cinema, literature etc.). In *Red Dead Redemption 2* (Rockstar Games, 2018), a realistic option of fast-travelling is available in locations that would plausibly allow transportation, i.e. train stations, in addition to the ‘arbitrary’ activation of fast travel from any other location, i.e. when camping (in which case no plausible justification is given). In any case, what is omitted is the detailed delineation of the in-between journey, usually offered through a short cutscene for brevity. Narrative ellipsis and elision, as the omission of depiction of actions unnecessary to the plot, are techniques commonly used in cinematic storytelling created by editing and montage as already described.

4 CONCLUDING REMARKS AND FUTURE WORK

Games offer a complex and multidimensional perspective on space; they reframe and re-interpret it in the context of a surrogate, vicarious experience that is, on one hand, reminiscent of how space

is experienced and learned in the context of everyday life, and on the other hand a potentially novel experience that is disconnected from the ordinary and offers the possibility of (often welcome and well-intentioned) escapist tendencies and identification with alternate realities. Furthermore, the concept of narrative is deeply intertwined in the practice of gaming, whether featured in the game or imposed by the players in their attempt to ‘appropriate’ what transpires on the screen, thus promoting the similarities between games and cinema. Cinematic elements have historically been incorporated in games in various ways, resulting in a reciprocal relationship between these two narrative media forms (see also [22]). In this paper, an attempt has been made to highlight the common ground between games and cinema with respect to the acts of designing, representing, and experiencing space. As this is a research effort currently in progress, further investigation is planned into the similarities that may be found between games and cinema regarding the ways they construct narrative spaces.

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