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Urban archetypes applied to the study of cities in historic contemporary fictions. Symbolic urban structures in *Age of Empires III* and *Bioshock Infinite*

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ABSTRACT: In “The Idea of a Town: Anthropology of Urban Form” (1976), architecture historian Joseph Rykwert defined six archetypes used in Etruscan rites for the foundation of urban settlements, which continued to be used in Classical Greece and Ancient Rome. He proposed to use these same categories for the study of cities in different eras, as a methodology to develop a global urban history. This paper projects Rykwert’s concepts to cities created during the XXI century, specifically those designed for video games with historical themes, and provides the reader with an experimental methodology for assessing digital architectures and environments. Spatial and narrative archetypes will be identified in two different video games, as well as their connections to imaginaries born in the Classic period. In *Age of Empires* (Ensemble Studios, 1996-2005) urban foundation corresponds to the idea of the town as a place for dominating territory. Their variable structure is grounded on a systemic set of rules that benefits tactic configurations designed by players. In contrast, *Bioshock Infinite* (Irrational Games, 2013) proposes an immobile storyline built around the city as its leading narrative voice. Its urban spaces direct the action through archetypes such as the “center”, the “labyrinth”, and the “door”.

KEYWORDS: Urban History; Architectural History; Digital Landscape; Game Studies; Architecture.

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RESUMEN: *Arquetipos urbanos aplicados al estudio de ciudades en ficciones históricas contemporáneas. Estructuras urbanas simbólicas en Age of Empires.* - En “La idea de ciudad: Antropología de la forma urbana” (1976), el historiador de la arquitectura Joseph Rykwert definió seis arquetipos utilizados en el rito Etrusco para la fundación de ciudades, cuyo uso fue continuado durante la Grecia clásica y la antigua Roma. Este autor propuso su uso como categorías para el estudio de otras ciudades y periodos, para así construir una historia urbana global. El presente artículo proyecta los conceptos de Rykwert al estudio de ciudades diseñadas para videojuegos del siglo XXI con temáticas históricas, y presenta al lector una metodología experimental para el análisis de entornos y arquitecturas digitales. Se han identificado arquetipos espaciales y narrativos aplicados a dos videojuegos, así como sus conexiones con el imaginario clásico. En *Age of Empires* (Ensemble Studios, 1996-2005) la fundación responde a la idea de ciudad como espacio para la dominación del territorio. Sus urbes se basan en un set de reglas sistémicas que favorecen disposiciones tácticas diseñadas por los jugadores. En contraste, *Bioshock Infinite* (Irrational Games, 2013) propone una narrativa unidireccional construida alrededor de la ciudad como su principal voz. Sus espacios urbanos, responsables de dirigir la acción, están basados en arquetipos como el centro, el laberinto o la puerta.

PALABRAS CLAVE: Historia urbana; Historia de la Arquitectura; Paisaje digital; Game Studies; Arquitectura.

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INTRODUCTION: URBAN ARCHETYPES FOR THE STUDY OF PLAYABLE CITIES AND DIGITAL SPACES.

An archetype is the original model of something that is similar but superior to everyday incarnations. It is a concept that has multiple functions and can be adapted to different contexts. Archetypes have been used in urban history studies as categories that identify the main elements of a town. Foundational archetypes are even more elemental, as they refer to the essential pieces that must be present in every urban space considered as a city. If a foundational archetype is missing, a city is not a city.

Academic literature centered on this topic has been written mainly by authors from the fields of Anthropology and Urban Studies who seek patrons and common elements in rites for the founding of cities and towns. This line of research departs from Aristotelian concepts about politics and urbanism (s.V a.C.), and interpretations of them from thinkers such as Ibn Khaldun (1377) and Thomas Aquinas (1267). Later scholars worked on the origin of ancient cities (Coulanges, 1864) and their evolution through history as dynamic political constructs (Mumford, 1966). In the 1960s, architect Joseph Rykwert¹ built on the contributions of Fustel de Coulanges and identified six main urban elements present in every city's foundation that can be used to structure global urban history studies: a cosmogony, an urban center, an orientation, a limit, an entrance and a labyrinth (1976). Rykwert arrived at these archetypes by studying cosmogonic myths and urban narratives from diverse cultures in the Mediterranean, the Middle-East, Asia and sub-Saharan Africa (Rykwert, 1978). He stated that foundational practices have so many aspects in common that they can be compared through different cultures, geographies and times, which he proved through several case studies, including archaic and pre-archaic Greece, Etruria², Rome, India, Hausa, Dogon, and imperial China, among others. Rykwert proposed to use this methodology on the study of foundational practices in medieval burghs, medinas and early modern colonial foundations (Rykwert, 1976; Saga, 2018), and later extended its use to landscape studies of archeological sites in America and Asia (Atkin and Rykwert, 2005). However, Rykwert established a breaking point in the eighteenth century, when the urban realm became more complex and less defined by cosmogonic conceptions. Thus, he considered the present to be a time of uncertainty where the structure of our cities does not provide clear statements on the nature of our society and the people who integrate it:

It is difficult to imagine a situation when the formal order of the universe could be reduced to a diagram of two intersecting co-ordinates in one plane. Yet this is exactly what did happen in antiquity. [...] We have lost all the beautiful certainty about the way the world works — we are not even sure if it is expanding or contracting, whether it was produced by a catastrophe or is continuously renewing itself. This does not ab-

solve us from looking for some ground of certainty in our attempts to give form to human environment. It is no longer likely that we shall find this ground in the world which the cosmologists are continuously reshaping around us and so we must look for it inside ourselves: in the constitution and structure of the human person. (Rykwert, 1988 p. 202)

An alternative approach to this breaking point is to take fictional cities into consideration. This means studying cities designed for narrative purposes which lack the complexity of real settlements but can still have a substantial impact on society. Depending on the target audience, urban fantasies can be more or less detailed, with some specifying the materiality and dimensions of its landscape, and others malleable to the imagination of the public. Modern urban fictions have their more well-known examples in sixteenth century Utopias (More, 1516) and eighteenth century phalansteries (Fourier, 1841; Heffes, 2013), but later dystopian literature also depicted ideal urban designs, newly imagined to include totalitarian ideologies and subversive views on social corruption (Huxley, 1935; Orwell, 1949; Prieto Páez, 2017). The video game genre, with narratives supported by detailed cities and landscapes, can also be considered a part of this tradition (Saga and Parra, 2017). In this way, twenty-first century utopias and dystopias add gameplay dynamics and interactive protocols to a long tradition of fictional urbanism.

Video games as generators of historical urban narratives

In recent decades, digital gaming experiences have occupied a significant role in contemporary culture. The academy has taken notice. Video games are emerging as objects of analysis in interdisciplinary research, with a particular focus on narrative and ludology. Researchers like Chávez study how the technologically mediated “world” of the video game is based on digital scenarios, built through dramatized spaces and narrative historic metaphors (Chávez, 2010). Digital scenarios usually implement historical references that adapt urban and architectural images to the digital interactive space (Pérez Indaverea, 2012). Some of these images are in fact archetypes, elemental urban elements used as commonplaces that are easy to communicate to players (Saga, 2018). For example, in the video game genre, almost every city has a heroic founder, a recognizable center, a periphery, defined limits, and fortified entrances. Every town has main streets, secondary lanes and backstreets that constitute grouped districts and neighborhoods. These elements conform to basic urban structures leading to diverse shapes and supporting multiple narratives and gameplay dynamics, including those with a historical theme. As such, games can present plausible historic scenarios like Renaissance Rome or Nineteenth century London provided that their main foundational spaces and monuments are represented realistically enough

(Ubisoft, 2011-2015). The result is a simulation based on real urban landscapes whose interactive nature stimulate new shades of meaning.

In any case, precaution is advised when considering historical simulations in video games. As in other historical narrative genres, video games present versions of the past based not on rigorous academic historiography but popular historical culture, with few notable exceptions. Since the video games public is a participant actor in its digital action (Rossi Maina, 2013), developers must combine historical accuracy with fluid gameplay dynamics, often making sacrifices to the former for the benefit of the latter. Thus, their historical precision depends on the design of digital environments but also on the interactive dynamics between them and players, applying specific ludo-fictional conventions for transmitting and communicating sensations³. According to Chapman:

In any historical videogame, the aesthetics of historical description also function at a ludic level, producing a form of “procedural rhetoric” that, depending on a particular game’s (or genre’s) structures, can influence virtually all of the other historical signifiers through which the game produces meaning. (Chapman, 2012)

Players can appropriate digital environments in their own way, allowing emerging narratives that are unique to the video game genre: “Video games are not just based on representation but on an alternative semiotical structure known as simulation” (Frasca, 2003)⁴

Games are based on interactions that produce an *experiential simulation* of the cultures and settings they portray, which makes their messages more viscerally impactful for their audience and necessitates a fundamental shift in critical methodology. (Penix-Tadsen, 2013 p. 177)⁵

These unique characteristics of the video game genre demand a different approach to their critical analysis. When looking at historical urban spaces in video games, the strictness of their digital representation is as significant as how players interact with it. Urban archetypes constitute a useful tool since they are concepts that combine morphological aspects (foundational structures and shapes) with the practices behind them (meanings, performances, traditions, law). This line of research into the analytical use of urban archetypes in the field of game studies can offer new ways of understanding how developers design digital spaces and their dynamics, while also considering their connections to historical narratives and other cultural inheritances.

CASE STUDY PRESENTATION

This paper offers a qualitative approach to this proposal, studying the presence of five foundational archetypes in two historical video games: *Age of Empires III* [AoE III] (Ensemble Studios, 2005) and *Bioshock Infinite* [BI] (Irrational Games, 2007), two titles recognized by critics as successful urban fictions.⁶ The primary in-

teractive dynamics of these games are based on cities and architectures, although they are vastly different in how they approach the representation and narration of the urban realm. This article first describes AoE and BI, their backgrounds and their impact on the game industry. It then provides three sections of analysis, each outlining the definition of an archetype and surveying its presence in each case study. It concludes with a discussion of the results of this case study, and a final note on how digital urban depictions entail interactions that introduce players to meanings underneath their foundational archetypes.

Age of Empires III

Age of Empires III (Fig. 1) (Ensemble Studios, 2005) is a title that belongs to the *Age of Empires* saga, a series of real-time strategy games started by Microsoft in 1997 as a response to the rising popularity of other historicist franchises like *Civilization* (Sid Meier, 1991). Since then, the AoE saga has sold more than 30 million copies, and is considered a notable commercial success⁷. Each AoE installment is focused on real historical events that advance chronologically as the series develops. *Age of Empires* (Ensemble Studios, 1997) covers a long period from the Neolithic to the Classic Era. *The Rise of Rome* (Ensemble Studios, 1998) presents the development and peak of the Roman Empire. *Age of Empires II: Age of Kings* (Ensemble Studios, 1999) follows with the European Middle Ages and Renaissance. *The Conquerors* (Ensemble Studios, 2000) and *Age of Empires III* (Ensemble Studios, 2005) include the Spanish conquest of Central America and other European colonial enterprises. AoE III has two expansions that break the chronological succession and narrate the rise of the Aztecs and Mexitas, the conquest of sub-Saharan African territories during the middle ages, the Indian unification, and other events from various periods (Ensemble Studios, 2006, 2007).

AoE is a strategy game where players perform as commanders during the development of a military confrontation. In the first AoE, players participate in real events such as the foundation of Egypt or the conquest of Crete. In AoE II, they play as real historical figures, including William Wallace, El Cid Campeador and Saladin. In AoE III, the narrative style is changed, and players embody fictional characters involved in historical events such as the Spanish conquest of Yucatan, the American Seven Years War and the Bolivian Revolution. Players must solve diverse situations by managing resources, infrastructures, and troops. Their view of the field is axonometric, an abstract perspective impossible for the human eye. From this divine position, gamers command a group of soldiers and civilians to found a settlement, ensure its supply of resources, and recruit an army powerful enough to accomplish the military objectives of each scenario. This kind of gameplay offers several solutions to every situation, some more historically accurate than others.



FIGURE 1. Promotional image of *Age of Empires III* showing a Spanish settlement in the main game view, where players have an omniscient aerial position. Source: (Ensemble Studios, 2005).

AoE III also provides a series of scenarios for multi-player games set on real territories in the Americas, such as the Amazon rainforest and the Andes mountains. Players must adapt their strategies to these different scenarios, which perform as variations of a single tabletops, obviating the contrasts between radically diverse landscapes like California and Yucatán. Also, gamers may choose to control various Eurasian potencies known in the game as “civilizations”, with options including Spain, Portugal, Holland, Germany, Russia or the Ottoman empire. Thus, although the setup of AoE III uses historical architectures and characters, and it is possible to reproduce real events, it also allows for anachronic scenarios and ahistorical action.

Scholars have considered how AoE can be used as a tool for the teaching and learning of history. The literature on the potential value of AoE for these purposes includes reviews that analyze its pedagogical uses (Ayén, 2010) (Gee, 2003) and dissertations that find how it can generate questions and reflections amongst young players (Pimenta, 2009). Other research has used the series as a study case for validating video game typologies (Espen et al., 2003), and experimented with its tutorial scenarios as

tools for project managing learning (Medlock, Michael C et al., 2002). Despite the general positive recognition of the narrative quality and architectural design in AoE, critics often point out the inconsistencies and absences in its historical contextualization ⁶ (Venegas, 2015).

Bioshock Infinite

The second case study discussed in this article is *Bioshock Infinite* (Irrational Games, 2007), a first-person action game with a strong narrative component. The *Bioshock* saga is acknowledged for its unique storytelling created by its director Kevin Levine, a film scriptwriter turned video game designer who founded the developing studio Irrational Games in 1997. Irrational Games published the first *Bioshock* in 2007, and in 2013 *Bioshock Infinite* came out as its last installment. *Bioshock* games use a shared narrative structure on different stories that mix retro-futurism and alternate history, where players perform in the role of a single character visiting strange cities. In the first *Bioshock* (Irrational Games, 2007) gamers play Jack, a 1960’s amnesic soldier who accidentally arrives at a lighthouse isolated in the middle of the Atlantic Ocean. In the lighthouse, Jack

finds a submarine that transports him to Rapture, an art deco style underwater city founded by tycoon Andrew Ryan. The name Andrew Ryan is an anagram of “W R Ayn Rand,” a reference to the objectivist philosopher and author of the novels *The Fountainhead* (1943) and *Atlas Shrugged* (1957), both very influential to the setting of *Bioshock*. Rapture is a high-tech version of Galt’s Gulch, the town founded by the protagonist of *Atlas Shrugged* for sheltering the ultra-liberal principles of Objectivism. The design of Rapture mixes architectural and cultural references from the art deco movement, which are visible in the designs of buildings, posters, typographies, domestic objects, and even short films. There is even a chapter in *Bioshock* dedicated to Sander Cohen, a fictional artist whose image and work is a twisted version of the famous Spanish painter Salvador Dalí.

In *Bioshock Infinite* (Irrational Games, 2013) players act as Booker Dewitt, an American veteran of the Battle of Wounded Knee (1890) and private investigator. The game situates Booker in 1912 at the doors of a lighthouse that gives access to Columbia City, with the assignment of rescuing an unknown girl in exchange for settling his gambling debts. Columbia is another high-tech city, this time above the ground, instead of beneath it (Fig. 2). The city consists of an archipelago of inhabited islands that floats thanks to a fictional levitating engine exhibited during the 1893 Chicago’s World’s Columbian Exposition (AHX, 2013). The parallel between the fictional city of Columbia and the real Columbian Exposition is clear: both share their name and their

patriotic character, as well as their neo-classic architectural style. In the game, the fictional Columbia intervenes in the Boxer revolts in China (1899-1901), showing the power of their previously concealed weaponry and laying waste to Peking in the process. This surreal event leads to the secession of Columbia from the United States, becoming a nomad independent city-state governed by a theocratic regime based on the exaltation of American Exceptionalism. Columbia’s founding father is Zachary Comstock, a dystopic religious leader named after the real north American politician Anthony Comstock, known for his promotion of censorship and moral protection policies, as well as legislating the first anti-vice laws in the United States at the end of the nineteenth century.

Both *Bioshock* and *Bioshock Infinite* are considered complex fictional works by scholars from across disciplines in the arts and humanities, social sciences, psychology, and beyond. Historians, meanwhile, explain how *Bioshock* uses a real historical background to articulate its dystopic fictions, in a narrative style that satirically critiques current American society and politics (Buinicki, 2016). Other authors have analyzed the designs and architectures created by Irrational Games and how they emulate the futurist style of the end of the nineteenth century (Dobraszczyk, 2017). The merits of *Bioshock* have also been recognized in media and popular literature aimed towards the general public, as exemplified by *Bioshock and Philosophy: Irrational Game, Rational Book*



FIGURE 2: Screenshot of *Bioshock Infinite* that shows the main game view. Source: (Irrational Games, 2007).

(Cuddy and Irwin, 2015) or, in Spanish, *Bioshock y el alma de Estados Unidos* (Venegas Ramos, 2017). These writers detail the complexity of *Bioshock's* narrative and show its connections to historical, philosophical and political figures, including Rand and Comstock as mentioned earlier, but also Karl Marx, Beauvoir, Dewey, Plato, and Aristoteles.

MAIN ARGUMENTS

***Templum*: the cosmogonic archetype**

Introduction

The first archetype Rykwert outlines is the *templum*, a category that includes religious, political and legal practices that precede the city and justify it. The purest expression of the *templum* is a cosmogonic diagram, a drawing that gives order to the world and its inhabited territories. This category is connected to the naming of the territory and its landmarks, the rites for placing the city between them, and the figure of the heroic founder as a semi-divine character able of creating a fitting dwelling place for a chosen nation. Through the *templum*, the city keeps a birth relation with its natural and artificial context: the winds, celestial bodies, godly hierarchies, political dynasties, and laws. This category also includes surveying practices such as diagrams that set up order in the city and the territory. In video games, the *templum* is related to the general conception of the city and its interac-

tions with the players. Each game has a different approach to urban spaces depending on the game genre, its rules, and its narrative interests. In this sense, the first contact between the players and the city is a crucial moment that establishes the meaning of urban spaces through the whole gaming experience.

The structure of order in Age of Empires III

In AoE III, the urban premise is evident from the beginning. Players are conquerors and explorers whose duty is to create an American colonial city linked to a European power. This relation is staged through the “home city,” a capital that supplies the colonies and is named by the players. Good performance during overseas assignments will mean more resources for improving the home city, and therefore stronger supplies for future missions. Players can also change the aesthetic of the city by building new monuments or dressing the streets. In this way, the home city becomes a sort of trophy room and an anachronic mix of recognizable historical monuments that differ depending on what European power has been chosen by the players. For the Spanish nation, the capital is represented as a coastal city with a central square that gives access to a cathedral similar to Santa Maria del Fiore (Florence), a baptistery, a customs post, a factory, and a fortification that seems like the Golden Tower in Seville (Fig. 3). The urban landscape is full of two-story houses of Mediterranean style, with rectangular windows, wooden frames and pitched roofs with ceramic tiles.



FIGURE 3: Spanish Home City in Age of Empires III. Source: (Ensemble Studios, 2005).

In AoE III, player progression relies on technological advancement for the creation of weapons and troops. Either in the home city or the colonial settlement, progress is exclusively rated by the application of certain techniques -black powder, bastion building or steam machinery- ordered in a positivist hierarchy. For example, the game offers a limited number of practices for agriculture, all of them classified in a linear progression where the application of advanced tools like fertilizers will always be more beneficial than earlier techniques, disregarding factors such as location, soil or seasonal climates. Essentially, in AoE III, newer always mean better, so the investment of resources and time feels rewarding for the players.

The hierarchical nexus between colonial foundations and the home city articulates AoE's gameplay and its historical narrative. The home city reflexes the bigger picture, with a complex landscape that players cannot fully see, while colonies are manageable temporary spaces linked to specific objectives. They are two cities regulated by different times, schedules and urban dynamics. The home city remains throughout the whole campaign, and decisions in its development have long-term impacts, meaning players must plan carefully. By contrast, colonies are built around unexpected confrontations and react to short-term situations, so must be capable of change and adaptation in just a few minutes of gameplay. Whereas home cities are transcendent urban sceneries with fixed monuments and linear progression, colonies are disposable systemic structures with diverse pieces and variable functions that players can arrange in several different ways. This equilibrium between two different urban depictions is the *templum* of AoE III urbanism, a core dynamic or rule that provides purpose to players' interactions with ancient capitals and newly founded settlements.

The structure of order in Bioshock Infinite

In BI the city is presented as a more mysterious object. Players are not managers or commanders, but stowaways in a foreign metropolis built upon unknown laws. The city is introduced by cryptic messages, the meanings of which are not fully understood until players advance in the story. However, a premise is established from the beginning of the game: Columbia is an independent city, separated from the ordinary world and its common rules. It was designed for a selected group of people responsible for colonizing new territories through a moralizing discourse, a narrative that establishes explicit parallels with historical American frontierism between the eighteenth and twentieth centuries. As the real North America is separated from the old world by the Atlantic Ocean, the fictional Columbia is a flying "New Eden" that establishes a frontier between itself and the decadent ways of the "Sodom below" (Fig. 4). Its destiny is to condemn moral corruption and defeat nations tagged as "non-desirable." Objective measures like population, density and security have a secondary place in Columbia's design because its main sacred objective is considered its highest priority.

The city's urban plan is the product of an extreme surveying operation that separates the rightful citizen from the "others", in a similar way to real-world dynastic foundations such as Rome, Medina and Baghdad. Columbia is cut from the soil, resembling a Celestial Jerusalem that will bring salvation and apocalypse when it returns to the ground.

Discussion

Both AoE III and BI depict playable historical cities, although they present profound differences that can be identified from the first look. AoE III focuses on an urban system of standardized exchangeable pieces, comparable to systemic architectures and urban plans developed during the twentieth century (Montaner, 2008). The main pieces of the urban system are always visible, encouraging players to consider the consequences of



FIGURE 4. Screenshots of *Bioshock Infinite* showing messages written or sculpted onto Columbia's architecture. Source: (Irrational Games, 2007).

their movements. AoE III also establishes a double scenery of different times, with differing schedules and agendas in the home city and the colony. Both situate players in a position of superiority. The axonometric perspective of AoE III reinforces this effect, showing views that are more suitable to birds and gods than the mere men and women whose lives depend on the decisions of players. Colonial inhabitants and buildings are easily replaced. They have no name, no history, and no memory. Gamers must then focus on two specific objectives: dominate the territory and keep a technological advantage.

On the other hand, BI proposes a fixed but complex landscape. In this game, the city is a living scenery where players perform as a character among others in specific scripted situations, without any direct capability to change their environment. In other words, players are not gods who “play” with the city, but actors who “play” a specific character who confronts the city. The first-person view is appropriate for this approach and shows the monumentality of the city as a construct that surpasses the reach of the human eye. Although the role of the gamer in this script is as the protagonist, the game makes clear from its beginning that the city is the real star of the show. Every action and every drama involve Columbia and its dystopic nature, whose origins are subtly explained through buildings, public spaces, monuments, video messages and conversations between citizens.

The city center

Introduction

Rykwert depicted urban centers under the category of *mundus*, a Latin word that refers to the earth sacrifice made by Romulus and his companions during the foundation of Rome (Fustel de Coulanges, 1864: 167). The political center of the city is built over this sacrifice, shaping a public space that stages the relations between divine powers and mortal humans. This forum is an essential place in providing the urban settlement its form, sense of order, and laws that enforce it. The Greek *agora* and the Spanish *plaza mayor* are also related to the *mundus* concept since they function as public places that surround a main foundational element. In different cultures, this element can be a burning altar, a source of water, a majestic tree, a vestal temple, a wooden totem or a royal decree buried under the whipping post. In every case, this first place of the city establishes its center and divides its periphery, as the center of a cardinal system that places the citizen in one or another level of the hierarchy depending on its relative position to its origin.

The city center in Age of Empires III

In AoE III the logic reproduction of a Spanish colonial city should include a generic main square in compliance with the Laws of the Indies, or at least with one

of the rules used in medieval and early modern Spanish foundations (Spain/Consejo de las Indias and Manzano Manzano, 1973). Eulalia Ribera captures the principle function of the Spanish main square: “wonder was [...] in the very essence of that central space that brought together the maximum architectural examples of religious, civil and economic power, and that reunited all sectors of society in a single hierarchized and complex society”⁸ (2014: 9). However, in AoE III the architectures that form the Spanish main square are disaggregated and spread. Its two main buildings –the council and the church– are misplaced and hold no relation between their position or orientation, in direct opposition to Spanish colonial urban principles. The council building is labeled as the “urban center” and elevated in the hierarchy as the first and main architecture of the city, while the church is considered an optional “advanced” building that appears in later stages of the game.

The separation between political and religious seats is a characteristic shared by all titles in the AoE saga, where players dispose of a system of several buildings with different traits. In AoE it does not matter if a town is Roman, Greek, German, Saracen, or French: every city will be composed of an urban center, a variable quantity of houses, barracks, castles, walls and other optional buildings which can be placed in different numbers and positions. A defensive settlement will need more castles and fortifications, while a coastal city can take advantage of a higher number of docks. This system allows players to familiarize with a limited set of pieces that are adapted to represent different “civilizations” just by changing their external aspect (Figs. 5 and 6). Another design principle of AoE is that every building of the same type has a similar architectural composition. For example, the height and built area of every castle are more or less the same, all stables are linear buildings, and all markets have exposed products. This rule also applies to the urban center, an L-shaped building with a tower on its intersection that represents the council of the city. Although the urban center resembles a kind of central public space, it is not an open area big enough to be considered the central square. Moreover, in the Spanish urban tradition, councils and main churches always appear related, showing the alliance between the seats of human and divine powers. AoE III disregard this rule and therefore present cities that do not comply with real sixteenth century Spanish settlements.

Depending on the civilization chosen by players, the council building will appear in one of three architectural languages: West Europe, East Europe, and South Europe. Colonies settled by the Ottoman Empire, Portugal, and Spain all use the South European style, which combines several traditional elements of Mediterranean architecture like ceramic roof tiles, small wooden windows, terraces, whitewashed walls, and arcades. This design means to create a version of historical buildings with a believable visual style that allows players to identify what civilization are they playing while being generic enough that



FIGURE 5. A selection of castles in Age of Empires II. Like in AoE III, these designs are shared between several civilizations depending on their geographic location. For example, all civilizations from the Middle East or “Arab” model on the right, and all Asiatic civilizations share the “Japanese” model. The “Central American” model is notably different as only one that is not a fortification but a temple, similar to the Three Windows Incan temple in Machu Picchu, Peru. Source: (Ensemble Studios, 1999).



FIGURE 6. Catalogue of Spanish architectures in Age of Empires III. The different versions of every building show the progression between different technology stages. Source: (Ensemble Studios, 2005).

every building fulfills the common visual traits shared by previous AoE games.

When considered together, the design of the council building does not resemble accurately a real historical referent. Spanish foundational practices in AoE III are so different from any real example in the sixteenth century that it is unlikely to find any coincidence in the urban trace, hierarchy or orientation (Fig. 7). The historical elements present in AoE's Spanish town centers are limited to the architectural style and the bell tower, but even then, the tower belongs to the main church, a building of uttermost importance that in AoE is exiled to the periphery. On the other hand, churches in AoE III have a simple design, with a basilica plan of one nave supported by buttresses that lacks any transept or lateral chapels. The roof is irregular, unplanned in appearance. The main façade is bare, without decorations or monumental elements. The nearest real referents are secondary churches built during the sixteenth century in New Spain, usually associated with monasteries or convents (Fig. 8). Indeed, the designers have stripped the primary element of these churches, the bell tower, so they appear as lesser temples. In summary, this analysis, which could be extended further, shows that the city centers in AoE are made of an anachronistic collage that mixes pieces of churches, palaces, and government buildings, composing an image of the past that can appear valid to an uninformed eye but falls apart under rigorous historical examination.

The city center in Bioshock Infinite

In BI the urban center was institutionalized many years before the arrival of players. They are not participant agents of the urban foundation, but strangers who arrives at a city with traditions and customs that are unknown to them. Columbia's central spaces are not a system of exchangeable pieces, but an arrangement of architectures that symbolize the genealogy of the city, structure the narrative and guide the players. This fact is especially evident during the first minutes of gameplay when several monuments and iconic building present themselves to the players as the landmarks of the city. Before arriving at Columbia, players are given a wooden box with a photograph of the girl they must rescue, and a postcard of a place called *Monument Island* shaped as a female angel. The postcard is a narrative element that establishes the winged statue as an important destination for players. The first occasion players encounter Columbia is from an aerial perspective in which the angelic statue seen on the postcard stands out between several flying islands. The view also frames a poster of a bearded man and the message "Father Comstock, our prophet." Some sequences later, players finally enter the city by "New Eden Square," a rounded plaza with a triumphant statue of Comstock in its center. These set of sequences present the Angel and Father Comstock as the founders of Columbia and its ideology, each with different values, architectures,

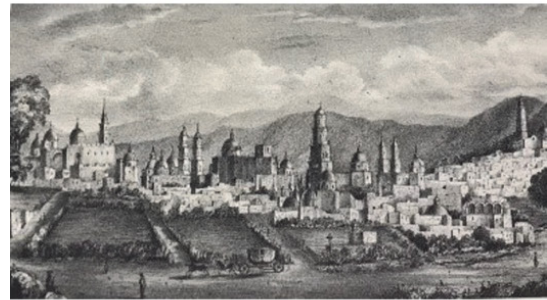


FIGURE 7. From top to bottom: 1. Promotional image of AoE III that shows an urban center, a group of houses, barracks, a civil reunion and a contingent of soldiers. Source: (Ensemble Studios, 2005). 2. Landscape view of Queretaro (Mexico), lithography, 1844. Source: (Chafón Olmos and Vargas Salguero, 1988 p. 89). 3. General view of Portobelo, Panama, founded in 1597. San Felipe church, built in 1597, dominates the view. Source: (Gutiérrez, 1990 p. 97). 4. The historical center of Potosi, Bolivia, founded in 1545. The two towers of the Minor Basilica, built between 1809 and 1838, stand out in the landscape. Source: (Gutiérrez, 1990 p. 200).

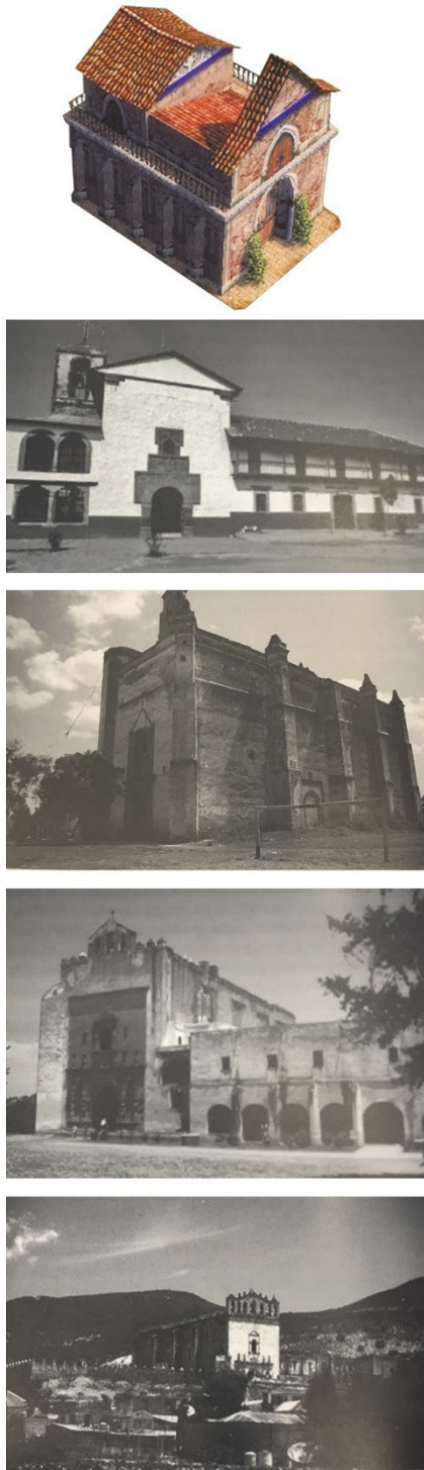


FIGURE 8. From top to bottom: 1. Spanish church in AoE III. Source: (Ensemble Studios, 2005). 2. Santiago church in Angahuan, Michoacan, Mexico, XVI century. Source: (López Guzmán, 2007 p. 197). 3. Convent church in Acatzingo, Puebla, Mexico, XVI century. Source: (López Guzmán, 2007 p. 288). 4. Saint August convent in Acolman, Mexico 1524-1560. Source: (López Guzmán, 2007 p. 222). 5. “Los Santos Reyes” convent, Meztitlan, Hidalgo, Mexico, 1536-1560. Source: (López Guzmán, 2007 p. 304).

and monuments linked to them. In this respect, Columbia does use historical referents in its setting and its inherent urban narrative, following traditional urban principles for developing a city with iconic places that tell its story. The landscape of Columbia is filled with statutes of founders, doors with special meanings, and monuments with mottos such as “fire for the Sodom below,” or “another ark for another time” BI presents the center of the city as a mysterious playground that players must explore in order to uncover its myths and secrets.

These strategies for structuring context-driven narratives were also present in the main space of the real Chicago World’s Columbian Exposition in 1893, the disposition of which formalized a specific ideological agenda (Fig. 9). The central statue of this fair, named *The Republic*, played a similar role to the angel of *Monument Island* in BI. *The Republic* was a laureated female figure lifting a globe of the earth in her right hand, while holding a staff with the inscription “freedom” on its head in her left-hand (City of Chicago Department of Planning and Development, Landmarks Division., 2003). Figure 9 also shows the administration building placed in front of *The Republic*, which stood out as the main palace of the exposition. The primary architectural language of the exposition was American neo-classic, a style used in official buildings that was meant to exalt the national virtues of the United States of America. Exposition spaces were based around themes such as the culture of native North-American tribes, and the arms industry, amongst others (Rydell, 1984 pp. 38-71). These themes and the debate surrounding them at the time of the fair are all referenced in the story of BI and its caricature of US society. In this way, BI learns from historical events not to recreate them or imitate their urban language but also to develop a narrative that delves into historical political discourses and criticizes their legacies in current ideologies.

Discussion

Altogether, the narrative and spatial strategies of BI show a more direct application of foundational historical principles than AoE III. While in AoE the foundational center is an interchangeable location without any meaning, *Bioshock* uses the idea of centrality as the basis for designing spaces that narrate the foundational process and submerge the gamers in complex political conflicts. The urban center of AoE III is dressed in historical architecture that creates a compelling colonial landscape, but its configuration ignores every legal protocol, religious principle or ideological significance present in real Spanish cities of the sixteenth century. As such, its architecture has no historical sense and appears unrelated to common foundational spaces like the royal square, the city council or the main church. BI, besides its fictional approach, uses the foundational *mundus* archetype in a more evident way, guiding the players through an urban narration that feels connected with its historical context. The founder of Columbia,

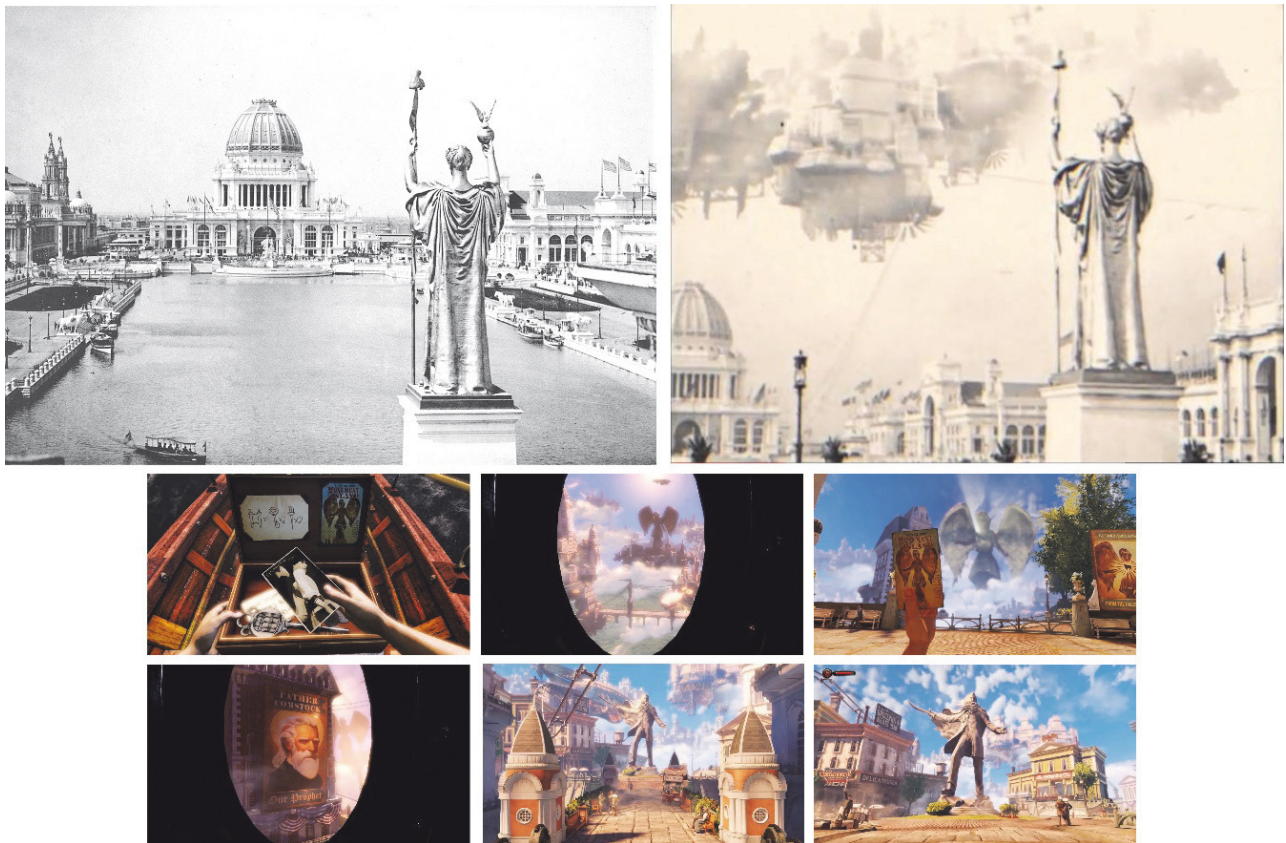


FIGURE 9: Top left: Liberty statue, administration building and grand basin of the 1893 World's Columbian Exposition, Chicago, Illinois. Source: (Arnold et al., 1893). Top right: Flying city of Columbia over the World's Columbian Exposition. Photocollage appeared in the fictional documentary "Columbia, a modern-day Icarus" (AHX, 2013). Middle: Sequence of screenshots showing the set of items players receive at the beginning of *Bioshock Infinite*, including a postcard of an angel statue, the first moment when players see that statue, and the instance when players can compare the postcard with the statue. Source: (Irrational Games, 2007). Bottom: Sequence of screenshots showing a poster of Father Comstock with the angel statue still visible behind it, the first glance of Eden Square and its victorious Comstock statue, and a closeup on this same statue. Source: (Irrational Games, 2007).

Father Comstock, is presented as a stereotypical foundational hero in the model of Romulus and Remus. The winged statue of Monument Island is an allegory of national identity, a savior angel or vestal virgin whose sacrifice is vital to the city's future. These elements make BI's stories surreal and fantastic, but also recognizable by its use of archetypal formulae that players have previously absorbed from classic urban myths and their modern descendants.

The limit, the door, and the labyrinth

Definition

This section explores three foundational archetypes collectively –the "limit", the "door", and the "labyrinth" – as they are intimately connected with one another. The city is not always a fortification or a wall, but often a rite that draws a line on the ground separating the urban realm from the non-urban, the

place meant to separate a society from the outside or "otherness". Its archetypal form is akin to the Etruscan *sulcus primigenius* or Roman *pomoerium*, a ritual furrow made with a bronze plow during the foundation of the city. This origin points to the connection between the trace of the urban limit and ancient surveying practices, which establishes the property and use of the land. For the surveyor, the furrow was not a simple line but a separation between two spaces that holds special significance. Therefore, the *sulcus primigenius* is the physical form of inheritance laws, land trade treaties and ancestral accords. It was a ritual line that came before any drawing of the city (Rykwert, 1976 p. 155).

The door, *portae* in Latin, derives from the action of rising - *portare* - the plow that draws the city's limit. In other words, the door comes from the absence of limit. If the limit formalizes the separation between the city and the "otherness" outside it, the door establishes a meeting point and a place of transformation. Going

from the outside to the inside involves a change in the person who crosses: the stranger becomes a guest; the enemy becomes a diplomat; the unknown becomes known. This shift comes under precise protocols and rites that ensure the survival of the city (Rykwert, 1976 p. 156).

Lastly, the labyrinth is the archetype that refers to the specificity of each city, those things that differentiate one city from the others. The labyrinth of a town is shaped by its urban fabric, its behavior codes, its moral laws, its language, and other cultural aspects. The ideal citizen is familiar with the labyrinth, knows its every detail and can walk through it without getting lost. The guest is admitted to the city but is still a stranger to its codes and will not become a citizen until they live within these structures. As in the story of Oedipus and the Sphinx, to get through the urban labyrinth one must be at least capable of drawing it from memory. Even then, it is possible that the guest will not ever lose the foreigner condition, so harsh are the rules of the city for those born outside its limits (Rykwert, 1976 p. 165). Understood together, the limit, door, and labyrinth help constitute the relationship between the city and its wider contexts.

Limits, doors, and labyrinths in Age of Empires III

In strategy video games like AoE III, the definition of a city and its limits is critical since the game's outcome is decided through the confrontation of two or more cities and their armies. Although AoE III bases its premise on the foundation of colonies, the truth is that their relationship with the American territory is more similar to a military fort than to a colonial settlement. For example, traditional Spanish colonial foundations in the Andes mountains did not focus their planning on fortifications or militaristic features, but on their role as government places for the control of the territory and its citizens. They were open settlements, connected with their environment and often without walls, following the model of cities like Santa Fe de Bogotá (Martínez, 1973) (Mejía Pavony, 2012). However, cities in AoE III are shaped like fortified settlements in the Caribbean sea during the first years of the sixteenth century, with bastion structures not used in North America until decades later (Fig. 10) (Salcedo Salcedo, 1996: 31). Indeed, in AoE III players do not so much manage cities as they do military compounds. The ultimate objective is to be protected or conquered, to make allies or enemies, with no middle ground, transitory permits or migration movements. The door is a membrane with only two positions, open - to be crossed - or closed - to be destroyed -.

In AoE III the inner labyrinth of the city is made of a system of individual pieces without streets or squares, the appearances of which depend on the civilization chosen by players. In the Spanish case, the buildings are hermetic, with small windows and arcades between the exterior and the entrance doors. Their volumetric composition



FIGURE 10. Bastion in AoE III (Ensemble Studios, 2005).

shows a characteristic main block that is surrounded by more neutral secondary volumes: a cube block, a rectangular body, a tower or chimney (Figs. 11-12). There are also exceptional pieces like domes and pediments, used for highlighting notable buildings. The result is a continuum of picturesque architectures that seek to imitate Mediterranean landscapes like those of Andalusia, the Iberic west coast, Sicily, northern Morocco, Naples, and the Greek coast.

Another critical architectural factor is the section design of buildings, particularly how higher bodies pile upon lower ones. Most architectures in AoE III follow an English model with high volumes hovering over the ground floor, with pitched roofs and attic windows. However, the use of irregular volume compositions in Spanish buildings and other south-European architectures suggest unplanned growth. This fact is evident from the early phases of the game when players complete the starting stage - the "Age of Discoveries" - and the settlement changes its aspect. Before that moment, all buildings have the aesthetic of a North American explorer's cottage with big visible wooden logs. In the second stage - the "Colonial Age" - though, the architecture of each civilization receives its unique visual traits. Southern European architectures are so different from the previous aesthetic that players are acutely aware of the absurd temporal and cultural shift (Fig. 13).

Regarding construction materials, Spanish architecture in AoE III is the only one that does not use wood in its structure or its exteriors. Its volume composition suggests a traditional technique of structural walls built with brick. When players advance to later stages, the buildings become decorated with adornments, such as metallic pinnacles and domes, that indicate technological evolution. Stone also appears later in the game, mainly in the lower wall sections of churches and fortresses. These changes establish a material hierarchy where metal and stone are considered more robust and advanced than brick or wood. Aesthetic changes help differentiate between advanced players and those who are "behind" in technology.



FIGURE 11. Analysis of arcades and access points of the Spanish urban center and the market. Source: Drawn by Laura Vanegas from screenshots of AoE III (Ensemble Studios, 2005).

In summary, the exterior aspect of the Spanish labyrinth in AoE III cities is vibrant, but its structural logic is questionable. Of course, this makes sense in a strategy game, where urban pieces are exchangeable and disposable. Game designers remove the complexity of any possi-

ble urban identity and instead add a few folkloric ingredients to its exterior design, maintaining the players' feeling of being the founder of a successful settlement. The use of opaque materials, arcades, transitional spaces, and massive structures constructs an architecture that reso-

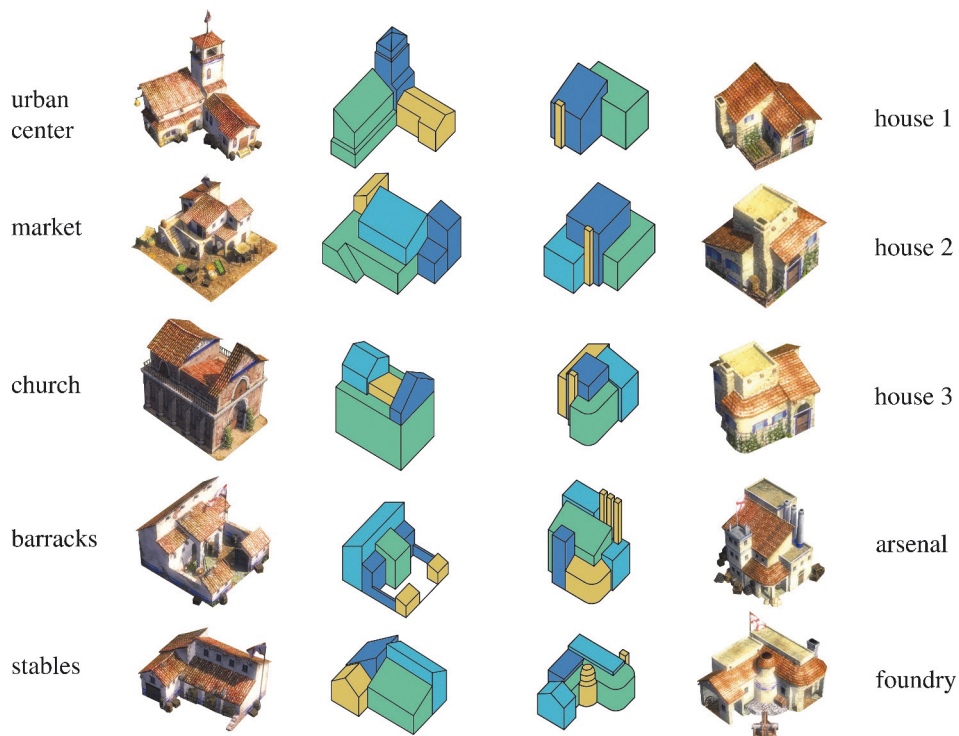


FIGURE 12. Volume composition analysis of Spanish buildings in AoE III of the “South-Europe” style, showing how compositions organize around a central main volume, except the church, the stable and the foundry. Source: Drawn by Laura Vanegas and Manuel Saga from screenshots of AoE III (Ensemble Studios, 2005).

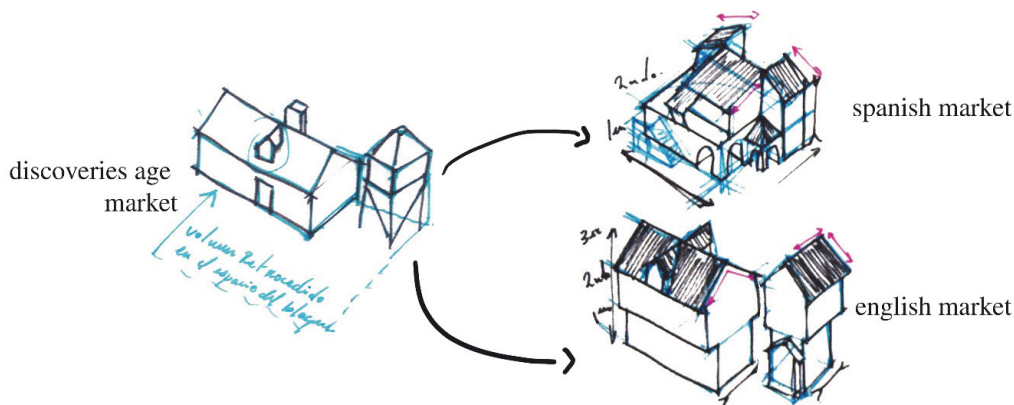


FIGURE 13. Drawing that shows the volume composition of an AoE III market during the “Age of Discoveries,” and its transformation when the players advance to the “Colonial Age.” The English market follows the previous model, while the Spanish market transforms its architecture to a different typology. Source: Drawn by Laura Vanegas.

nates a sense of strength and permanence. Spanish buildings are designed as introverted units with varied compositions that add new volumes and material when the players advance. Their architectural language is simple but diverse, establishing a clear differentiation from the more regulated styles of other European civilizations in AoE III.

Limits, doors, and labyrinths in Bioshock Infinite.

BI is different from AoE III in how it develops its limits and in what values they represent. As explained above, the *Bioshock* saga is built around fictional cities separated from the world, one beneath the sea and other above the clouds, both created by founding fathers, each with their own vision of an ideal society. Columbia was elevated from the earth, so it does not need walls or fortified limits. The ascendance of Columbia is its own *sulcus primigenius* and material evidence of its ideology. The separation is the wound between itself and the otherness that gives birth to the urban realm. In other words, Columbia is a city born from a group of people who consider that they hold the high ground, morally and literally.

A lighthouse serves as the point of connection between Columbia and the “Sodom below”. During the first minutes of gameplay, players approach the lighthouse and in its interior they find a series of messages, maps, and documents that give the first hints of Columbia as a holy nomadic city. At the top of the lighthouse, a chair appears inside the lantern. When players sit, automated handcuffs tie them firmly to the chair, metallic walls appear surrounding them and the chair fires into the air. Players then face a porthole through which they see only stormy clouds. A female voice counts the altitude: 5000 feet. A flash of lightning shows the protagonist’s reflex in the window. 10000 feet. Dramatic music. 15000 feet. The protagonist mumbles: “stay calm.” The voice exclaims “Hallelujah.” The transport goes

through the storm, and the porthole shows a shiny landscape of Columbia, while a melodic version of “Amazing Grace” sounds in the speakers (Fig. 14). This sequence of events is carefully designed to show a change of the players from external agents to fully immersed participants in the urban mystery that is Columbia. Players know that they have crossed the city limits. They are no longer outside, but neither inside, or at least not yet.

If the first step in players’ ascension to Columbia is to comprehend their movement in space through an invisible, clouded limit, the second is an introduction to the religion, ideology, and morals of the city. Once the flying chair lands in Columbia, players enter a temple illuminated only by candles. There are statues and stained-glass windows that show the foundation of Columbia, the role of Zachary Comstock as its founding father, and the destiny of the city as a weapon of cleansing fire upon the world. Subsequently, players enter a flooded great hall, covered by vaults and divided into several paths of water. People walk through those lines in a praying posture, one by one, until reaching a single place: the baptism fountain. There, a message is sculpted in the wall over the priest’s head: “this path of forgiveness is the only way to the city.” When players accept baptism, the scene goes flashback, and they finally notice a key aspect of BI: Booker, the protagonist they embody, has his own story. In BI players are not neutral avatars but perform as a character with a defined personality and an unknown past. Players may pull the trigger, but Booker’s actions are his own. After this revelation, Booker wakes up in a labyrinthic garden decorated with statues of George Washington, Thomas Jefferson, and Benjamin Franklin, worshipped as holy prophets in Columbia. The final door in the garden gives access to the city. Above it there is another inscription: “the seed of the prophet shall sit in the throne and drown in flames the mountains of man,” a further motto of separation and oppo-



FIGURE 14. Series of promotional images and screenshots of *Bioshock* showing the cities of Rapture and Columbia, with a lighthouse as a common link between them; the lighthouse of Columbia, a message in its interior, a maps of Columbia's flying route; the chair on the top of the lighthouse; and the first view of Columbia that players experience.
Source: (Irrational Games, 2007).

sition between the city and the world below. After opening the door, Booker enters New Eden Square and beholds a shiny view of Columbia. A statue of the previously mentioned Zachary Comstock dominates the composition, thereby spatializing the mythical origins of the city (Fig. 15).

Once inside Columbia, Booker walks through several floating squares and gets familiar with the inner structure of the city and the aesthetics of its buildings. The strategy of the game's developers in building Columbia's style consisted of designing an entire architectural language that suited the historical era in which the action is set. At the same time, these designs had to include solutions for constructing houses, monuments, and industries with retro-futuristic elements without losing coherence. The result is a complete architectural catalog that combines

North American neo-classical elements from the nineteenth century with utopian designs inspired by P.C. Cameron (1900) or G. Krutikov (1928), and architectural designs inherited from twentieth century New Yorkers like Hugh Ferriss (Seguer Muñoz, 2017). This style is applied to most spaces in the game, creating a diverse succession that feels feasible and coherent so that the players can familiarize with it in just a few hours of gameplay (Fig. 16).

Irrational Games uses these storytelling and design strategies to create a narrative ritual that confronts Booker with Columbia's political regime and, at the same time, show players the complexity of the city, alongside the character that is going to fight against it. The separation between ground and air levels and the passage ritual necessary to travel through them are al-

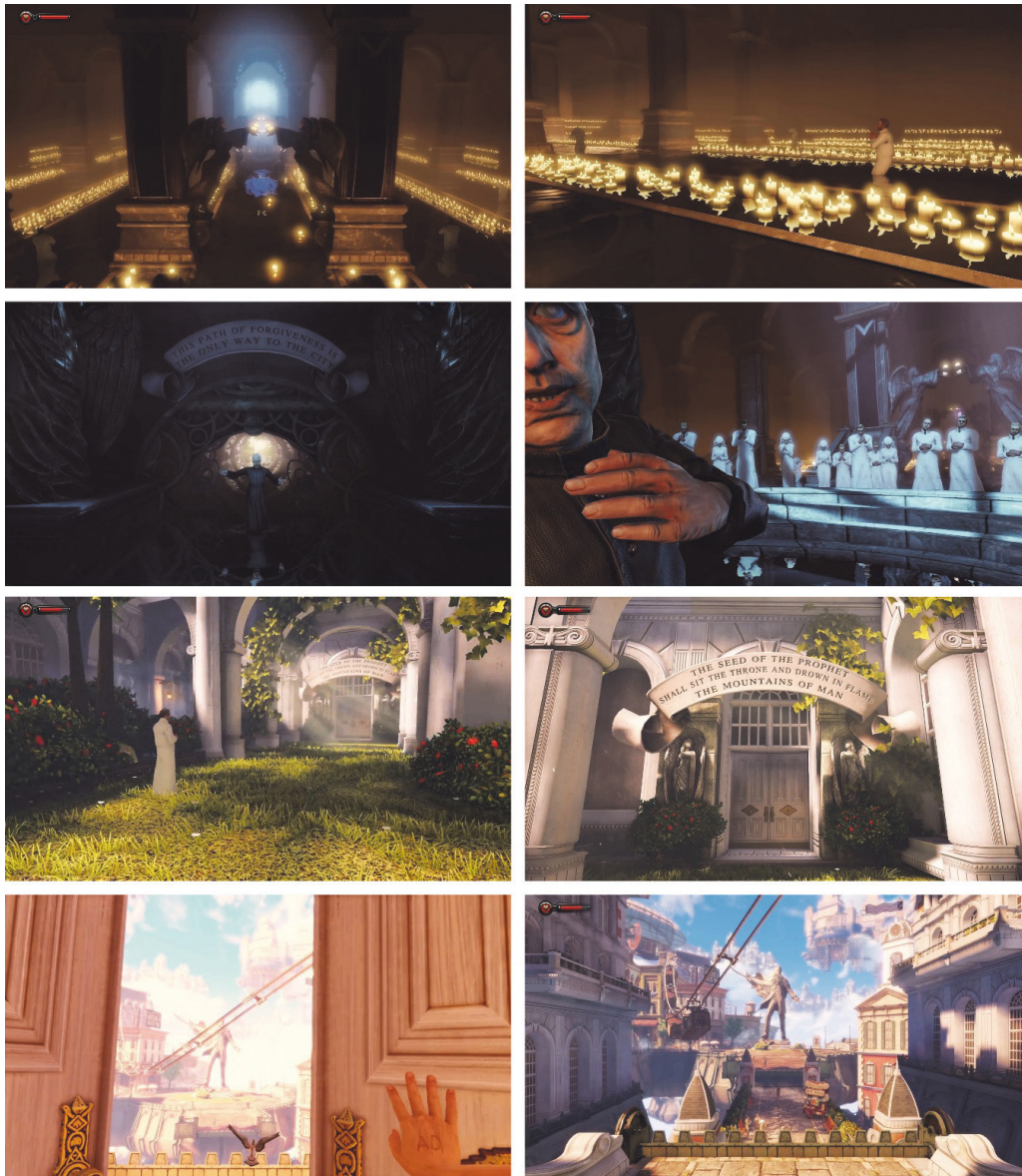


FIGURE 15. A sequence of screenshots of *Bioshock Infinite* showing the baptismal temple, the players' approach to the priest and his baptism, the labyrinth garden and the entrance door to the city. The baptismal altar is designed both as a road and as a door. Source: (Irrational Games, 2007).

legories of the ideological framework that supports Columbia. In this way, the script of *Bioshock* uses the city as the main narrator of its story. There is no omniscient voice or all-knowing entity, just a series of spaces that speak through their form, in their own silent language.

CONCLUSIONS

Foundational archetypes, inherent to cities since their very conception, are still being used in contemporary urban narratives. When the design of digital cities tries to reproduce real historical events, or at least uses them as the basis for fictional narratives, an analysis of

their foundational archetypes is useful in identifying what ideas and values are being expressed. The archetype, an urban element that can be found in vastly different cities, is also valid as a tool for surpassing the digital frontier, comparing contemporary creations with their historical equivalents, and understanding how players interact with them.

Both *AoE III* and *BI*, two productions with evident differences in their premises and gameplay, are suitable examples for a comparative analysis of foundational archetypes. This paper has presented some of the results of that comparison, showing which aspects are historically accurate and which are not, and in the process, asked why each game was designed in the way they



FIGURE 16: Left column: concept art pieces from *Bioshock Infinite* showing Comstock's church, Columbia's old center, the *Comstock center* building, and the industrial district. Right column: final design of those same spaces. Ordinary buildings use cataloged systemic solutions, while unique architectures and monuments are designed individually and with great variation during the modeling process. Source: (Seguer Muñoz, 2017) from screenshots and images in (Irrational Games, 2007) and (Levine, 2014).

was. Archetypes such as the foundational center, the limit, and the door are central elements in both games but represent different values and objectives in each. *AoE III* places players in an omnipotent position, from where they control the territory and restructure it through strategically placed architectures. The game reduces the complexity of European colonial urbanism to a systemic catalog of little more than ten typologies and four architectural languages.

On the other hand, *BI* uses the city as a vast scenery with an internal logic that is hidden during the first stages of the game. The players, insignificant in front of the urban scale of Columbia, must learn its strange values, ideas, policies, actors and technologies to eventually confront the forces that control it. While *AoE III* plays as military cartography and a simplification of reality for tactical purposes, *BI* offers the players a picturesque landscape, an exotic reality whose mysteries calls them like siren songs (Fig. 17).



FIGURE 17. From top to bottom, from left to right: 1. Promotional image of *Age of Empires III*. Source: (Ensemble Studios, 2005). 2. Map of the town of Tetela, Corona, Mexico. 1581. Source Archivo General de Indias, Sevilla, ES.41091.AGI/27.17//MP-MEXICO,31. 3. Promotional image of *Bioshock Infinite*. Source: (Irrational Games, 2007). 4. “Granata” illustration by Joris Hoefnagler, south view of Granada City. Dated between 1563 and 1565. Source: Granada University Library (Calatrava and Ruiz, 2005).

The foundational premises in *AoE III* and *BI* do not differ with regards gameplay or aesthetics, but also in their consideration of history as a space for reflection. While in *AoE III* events like the creation of modern weapon industries exist only as a gameplay mechanic, in *BI* they hold much deeper meanings. Furthermore, although *AoE III* covers the Spanish and English colonies history from sixteenth to eighteenth centuries, the game makes no mention of some of the essential dimensions of these colonial projects, such as the transatlantic slave trade. In *BI*, however, Columbia’s founders demonize president Abraham Lincoln for ending slavery, and exploit their racialized workforce, leading to the conflict in which players take part. The work of Irrational Studios is far from academic literature and certainly prone to caricature and anachronisms. However, the game is a remarkably profound reflection on some of the political debates taking place during the end of the nineteenth century, that expounds on some of the ideas defended at the time, and explores what it would have meant to found a city based upon them. Columbia is aware of its historical context, so its fictional narrative is received by audiences as logical and coherent.

The systemic language of *AoE III* uses the cosmogonic hierarchy and the urban center as its main archetypes.

A colony cannot exist without a council and a connection to the home city. To be successful, gamers must create the urban center, protect it and make it grow in the short term, all for the benefit of a European home city that promises prosperity in the long term. It is a systemic, colonial, Eurocentric approach that thrives in a simple set of rules for generating increasingly complex situations. On the other hand, *BI* stress Columbia’s limits and its doors, the rituals required to cross them, and the consequences of trespassing. Sequences of public spaces and urban landscapes are narratively charged, offering a multilayered experience to the players. The neoclassical language of *BI*’s architecture produces an immersive effect based on tradition and familiarity. This believable stage contrasts with the unexpected and fantastical circumstances of the city. The developers have created an urban realm that addresses profound philosophical debates such as the inevitability of destiny or the implications of divine power; through relatable foundational places like squares, streets, statues, and temples. In this way, Irrational Games have made intelligent use of narrative and urban archetypes to create a revolutionary digital, context-driven narrative, the design of which is firmly rooted in classic literature and philosophy.

NOTES

1. Varsovia, 1926.
2. With Marzabotto as its main example.
3. Presura, “Steel-clad conquistadores on horseback: A case study of selective authenticity and the Spanish Empire in computer games”, by Peñate Domínguez, F., 29 August 2019. <http://www.presura.es/2017/08/29/selective-authenticity-and-the-spanish-empire-in-computer-games/> [accessed 15/March/2018].
4. As cited by Penix-Tadsen, 2013.
5. Emphasis of the author.
6. GameSpy, “Art & Design: The Alternate History of Age of Empires III”, by Rausch, A. “Delsyn,”, 14 October 2005. <http://pc.gamespy.com/age-of-empires-iii/658725p1.html> [accessed 25/March/2018].
7. For example IGN, “Age of Empires III: A New World beckons”, by Butts, Steve, 14 October 2005. <https://www.ign.com/articles/2005/10/14/age-of-empires-iii?page=1> [accessed 29/May/2019] and The Guardian, “Bioshock Infinite - review”, by Cowen, Nick, 26 March 2013. <https://www.theguardian.com/technology/gamesblog/2013/mar/26/bioshock-infinite-video-game-review> [accessed 29/May/2019].
8. English translation by the author.

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