Representation of Culture Through Architectural Space in Video Games: The City of Saint Denis, Red Dead Redemption II

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Abstract: Video games, especially in the 21st century, serve as more than just entertainment. They are a reflection of the realities of either the past, the present or the predicted future. Video games can serve as a way of learning about past cultures. Red Dead Redemption II (RDR 2) is an outstanding example to show how video games can be used as a tool of understanding the culture, architecture, and social dynamics of a particular era in a particular geographic location. The environment, characters, sounds, and game mechanics make it a crucial case study in discussions about video games as a potential means of educating players. The aim of this paper is to present an understanding of the Western culture of the late 19th century through an analysis of the architectural environment of the town of Saint Denis in RDR 2. Video games can be considered as cultural and architectural texts apart from their narrative and entertainment value. Addressing this reading through systematic semiotic analysis as a gap, the paper tends to explore how historical and cultural meaning can be conveyed in the virtual world. The methodology used is a qualitative interpretive approach. The method involved interacting with the game, observing and capturing information in the form of pictures. Semiotic analysis was applied to identify the denotative (literal) and connotative (signified) meanings of the architecture in 19th century America, both at an urban scale (macro) and architectural scale (micro). The analysis of building styles and spatial arrangements is taken as elements to communicate cultural, social, and historical narratives. The findings show that spaces such as industries, hotels, restaurants, public parks etc., portray a rich cultural city that is a representation of various themes like industrialization, governance, urbanization, economic and technological progress.

Keywords: Representation, Culture, Red Dead Redemption II, Architecture, Video games.

1. Introduction

Over the years, video games have become 'one of the basic forms of mass communication' [1] and a good means for depicting the culture and architecture of the past, providing players with insights into the lives lived at different periods in different geographic locations. The games recreate old environments using modern digital technology and software such as Unreal Engine 5, 3D Studio Max, etc, to simulate the architectural layouts, infrastructure, characters, and all that an environment contains in a particular context [2]. These experiences are influenced by the level of details that are put in the recreation of the environments and all that it contains, i.e., buildings, clothing, cultural activities, etc [2].

Studies have been done discussing how these recreated virtual environments influence players' perception of history. Video games provide an interactive environment where players can explore, engage, and even alter the environment and culture of a certain historical environment. It is this interaction with the recreated environment that deepens the players' understanding and appreciation of the architecture and culture of the past over

and beyond traditional methods such as lectures, museums, or videos [3]. According to Lowe, video games are the latest and best means of accessing historical times [4]. The capability that has been equipped with the players to explore these complex, multi-layered virtual environments allows them to learn the beliefs, values, and practices that shape the environment. Design choices are important in video games. The use of symbolism and myth gives players an understanding of the importance of certain architectural elements. For example, in Assassin's Creed, close attention and importance was given to recreating certain historical architectural elements accurately, such as the Roman Colosseum and Renaissance-era Florence [5]. These buildings contain deep meanings. This approach provides a more intimate understanding of the past, both intellectually and emotionally. As Xeiler and Thomas noted in their paper 'The Relevance of Researching Video Games and Cultural Heritage', video games can serve as an innovative way for understanding and interacting with historical content as well as raising awareness about preservation of culture as they force players to engage in 'realistic simulations of real-life situations' [6]. As younger generations prefer playing and going for entertainment rather than studying, video games as part of the entertainment world are more accessible to a wider audience [2]. This is because video games are in our pockets, laptops, and living room consoles, and we use them to socialize in multiplayer modes [7]. In that way, they complement academic studies and foster understanding of global history [8]. As Dawn Spring profoundly noted in her article, 'Instead of a monograph and the presentation of the history as a linear narrative, the work of the historian could be produced as a video game' [9].

Video games do have a setback despite all their potential. One of them is the challenge of representing history accurately. For example, some game critics point out that certain games, such as RDR 2, sometimes oversimplify matters that are otherwise complex [10].

2. Literature Review

2.1 Theoretical Framework

2.1.1 Game Analysis Frameworks

Game analysis frameworks serve the purpose of breaking down the several aspects of video games, such as the mechanics, aesthetics, and narrative, step by step. Clara Fernández-Vara, in her seminal work 'Introduction to Game Analysis', highlights a need for a multidisciplinary approach to analyzing video games. Clara argues that video games should be treated as complex systems that work together to provide meaning [11]. This point of view enables the analysis of all aspects of video games as they work together.

The 'Gameotics' framework proposed by Araujo and Hildebrand refers to semiotics in order to discover meanings in audio-visual elements of video games. By studying the game mechanics, player engagement, and elements of a game, how meanings are constructed within that game can be understood [12]. These frameworks enable the examination of how architecture in video game environments contributes to the representation of a certain culture.

2.1.2 Application of semiotics in architectural space

Semiotics is the study of signs and symbols. It provides a framework for analyzing deep meanings conveyed through the architectural environment. In architecture, semiotics is a framework for investigating how built structures communicate intent. Scholars like Eco (1976) and Jencks (1984) have explored how different architectural styles convey ideologies [16, 17]. Semiotics in architecture is relevant, especially in analyzing the meanings embedded in symbolic historic and cultural spaces. For example, the use of classical motifs in public buildings such as the Pantheon often signifies authority and stability [18]. Such symbols can be recreated in virtual environments in video games in

order to portray those historical cultural meanings. On the other hand, Roland Barthes (1972) broadened the argument that architecture and daily used objects are accepted as subtly reinforcing ideological texts [19].

2.1.3 History and Application of Semiotics in the Architectural Space of Video Games

Video games, being interactive in nature, provide both opportunities and challenges for semiotic analysis. In video games, Henry Jenkins (2004) introduced the notion of 'narrative architecture' where spatial design in video games is seen as a tool of storytelling [20]. Scholars Espen Aarseth (1997) and Henry Jenkins (2004) understood the games as cultural artifacts [20, 21]. Mian Consolva (2009) and Tom Bissell (2010) further proposed semiotic analysis to be applied to games, emphasizing how societies with historical, cultural, and ideological context can be reflected by virtually designed environments [22, 23].

Contrary to stationary buildings or texts in real life or pictures, video games demand active engagement by the players, which makes the creation of meaning a dynamic process. Christophe Bruchansky's 'The Semiotics of Video Games' discusses how video games act as a system of signs in which all visual elements and gameplay mechanics work together to communicate meaning [7]. Bruchansky emphasizes the importance of context because players can interpret signs differently based on their experience and cultural backgrounds. The architectural environments within games often serve as a focal point for semiotic exploration. Nitsche explores how the spatial design of the environment in video games shapes players' experiences in his work 'Video Game Spaces' (2009) [24]. He argues that the architectural elements in the game environment are active participants in the narrative. The elements are not just mere backgrounds that only guide player movements, but they evoke emotional responses.

2.1.4 Denotation and Connotation in Video Game Environments

In semiotics, denotation refers to the literal meaning or description of a sign, while connotation refers to the cultural and emotional meanings attached to that sign. These distinctions are important to understand architectural elements as signs in a video game. For instance, a church may denote a place of worship in a video game, characterized by its high headroom and stained-glass windows. However, that same church might connote themes of spirituality, community, colonialism, etc., depending on the overall context of the game [25]. In RDR 2, buildings such as homesteads, saloons, and churches are designed to accurately denote the late 19th century America while at the same time connoting themes of tension between tradition and change [18]. Another example of denotation and connotation in play is the use of building materials and spatial layouts of game architectural environments. A building made of brick and wood can denote a level of progress historically. However, the weathered texture and placement in an isolated environment, such as a forest, can connote themes of survival, hardship, and melancholy. These kinds of cases highlight how game developers create authentic cultural representations using the environments [18].

Architectural environments in video games can serve the function of cultural texts. They transmit encoded messages such as those about identity and culture. Majed S. Balela highlights how virtual environments in video games represent and interpret real cultural symbols. However, these representations can have a selective recreation of history in which certain narratives are exaggerated while others are marginalized [18]. In RDR 2, the architectural environment reflects a complex system of cultural symbols playing with one another.

The fundamental difference between video games and other media is interactivity. It is this factor that makes players more than just observers, but also gives them the ability to participate in the construction of meaning. The concept of procedural rhetoric by Ian

Bogost argues that video game mechanics also convey arguments and ideologies [26]. This means that the way players navigate the spatial environment and interact with the game environment affects their interpretation of cultural elements (signs). However, players may give a different interpretation to architectural environments based on their choices of action, despite the game developers' intentions. Frederic Seraphine, in her work 'The Intrinsic Semiotics of Video Games', argues that players can generate other meanings based on their choices. This makes semiotic analysis of video games even more complicated [27].

Based on this theoretical framework, it is important to use a semiotic analysis framework to examine the denotative and connotative aspects of the architectural environment in RDR 2 to uncover the meanings embedded within the environment. This will provide valuable insights into how video games recreate culture through the use of the environment.

2.2 Related Works

Understanding and depicting culture through representations in video games is an interesting aspect of research in architecture. It not only allows the users to witness the culture of a particular place and time but it also allows interaction with that culture and environment. How video game producers do it has been discussed in several thesis such as 'Architectural Experience in Video Games: Spatial, Temporal & Narrative', 2014 by Oğuz Orkun Doma [28] and 'Blockbuster Resonance in Games: How Assassin's Creed and Magic: The Gathering Simulate Classical Antiquity', 2023 by Andrei Zanescu [5]. It has also been discussed in journal articles such as 'Architectural Heritage and Its Representation in Video Games' by Rafał Szrajber [3], 'The Pastoral and the Sublime in Elder Scrolls IV: Oblivion' by Paul Martin [29] and 'Medieval Video Games as Reenactment of the Past: A Look at Kingdom Come: Deliverance and Its Historical Claim' by Martin Bostal [30]. Most of these researches have been done under cultural studies and similar frameworks.

Rafał Szrajber and Krzysztof Guzek, in their paper 'Architectural Heritage and Its Representation in Video Games', discuss how video games recreate past culture and historical settings through the use of the environment and architecture. They argue that the virtual 3D environment can serve as a tool for players to understand and engage with the architectural environment [3].

The authors aimed to examine how cultural value translates into the 'creation of a game environment based on a real-world location or inspired by a given cultural region, its myths, legends or local heroes'. They use two video games as case studies, namely the Assassin's Creed franchise by Ubisoft and The Division by Tom Clancy. The authors use the cultural studies and semiotics framework. They interpret architectural elements as symbols within the games [3].

In the first game, Assassin's Creed, the authors discuss how Gothic, Renaissance, and other styles are represented in the franchise. Environments such as 'the 12th century Jerusalem, the Renaissance city of Florence with the Cathedral of Saint Mary of the Flowers, Saint Mark's Basilica in Venice, Roman Colosseum, colonial New York, Paris during the French Revolution, and Victorian London' signify multiple cultural ideas to the players [3].

In the second game, The Division by Tom Clancy, the authors discuss how a 'devastated and chaos-stricken' contemporary New York is depicted using the virtual environment and architecture. The authors narratively present the result using paragraphs and pictures from in-game, explaining their points [3].

In a paper 'The Pastoral and the Sublime in Elder Scrolls IV: Oblivion', the author, Paul Martin explores how a video game, Oblivion by Bethesda Game Studios, 2006 uses environmental aesthetics to produce themes of the pastoral and the sublime, drawing on cultural and philosophical traditions such as that of Edmund Burke and Immanuel Kant

that associate nature with both tranquility and awe. Martin examines how the environmental landscapes of Oblivion are designed to evoke these aesthetic emotions. The game is a representation of 'classic pastoral and sublime ideals' [29]. The author also explains how the environment in the game influences player perception and interpretation of a certain culture.

The author uses screenshots from the game interface to explain his points. He uses qualitative content analysis to analyze visual and spatial elements in the game. He also draws upon 'literary and aesthetic theory' to interpret the natural environments in the game. He presents his results in a narrative fashion, explaining every step of the way, how the scenes of the environment evoke a sense of adventure and the player's responses [29]. The author proves that just like real environments and architecture, the environment and architecture in game worlds are crafted to evoke and portray a cultural understanding [29]. Just as Oblivion uses the landscapes to convey the desired themes, Red Dead Redemption II uses architecture and the environment to represent historical and cultural narratives of 19th century America. Therefore, the use of 'literary and aesthetic theory' provides a supportive framework for understanding how architectural design can communicate layered meanings and present culture within Red Dead Redemption II.

Martin Bostal, in his paper 'Medieval Video Games as Reenactment of the Past: A Look at Kingdom Come: Deliverance and Its Historical Claim', discusses how Kingdom Come: Deliverance attempts to present a very realistic medieval experience and setting of 15th century Bohemia. Bostal explains that the game's creators prioritized authenticity, down to minor cultural details, in order to provide a holistic experience that is meant to engage and educate players in relatively accurate medieval history [30].

In the study, the author employs a historical and cultural analysis framework, analyzing how the game constructs its version of 15th Century Bohemia as a means of entertainment and informal education. Bostal analyzes with the understanding that video games have the potential to function as interactive 'reenactments', showing that players can empathetically interact with the past through video games to shape and deepen their understanding of past culture by immersing them in realistic representations of time periods [30].

The approach he uses combines qualitative content analysis, comparative historical research, and interpretive player experience analysis to assess how well the game captures the nuances of 15th century Bohemia. He examines various elements within the game, such as architecture, social hierarchies, clothing, and combat mechanics. The author then analyzes their historical accuracy compared to sources like documented architecture and medieval practices of that time and region. This approach enabled him to identify the accuracy of the depictions and the differences. Also, through interpretive analysis of reviews, game forums, and player feedback, the author further evaluates how the design of the environment and game mechanics impact the players' perception and educational value [30].

Bostal presents the results in a narrative and thematic fashion by providing and explaining screenshots from the game interface. He uses comparative pictures side by side to compare historical records with the game's representations, highlighting both accurate depictions and slight modifications. This is a good way to present findings that have to do with architectural depictions and denotations.

In all these methods, clues are found as useful foundations for understanding how the 3D virtual environment and architecture in video games can serve as a means of understanding and engaging with historical periods and their cultures by contemporary players. The semiotic approach is taken as the method that aligns well with the aim of the study and applies cultural and semiotic analysis to explore how RDR 2's architectural elements represent 19th century American culture.

2.3. Red Dead Redemption II

Red Dead Redemption II (RDR2), released in October 2018 by Rockstar Games, is an open-world video game that tells the story of Arthur Morgan and the Van Der Linde gang at the end of the 19ᵗʰ century Wild West era. A failed robbery by the gang in the town of Blackwater forces the gang to flee to the snowy mountains. With bounty hunters and the law on their tracks, the gang has to steal, rob, and fight their way across the country to survive, moving from one place to another. Over time, internal conflicts begin to deepen as loyalty and brotherhood are tested in difficult times. Arthur Morgan realizes his ideals and has to choose between what is right (redemption) and loyalty to his gang [31].

The game has received significant academic attention because of its detailed recreation of America in the 19ᵗʰ century, an era marked by social, economic, and cultural disruption. The game showcases the moral complexities of the time and industrialization in such a way that resonates with historical narratives [32]. It is a cultural artifact that provides an entertaining way for players to interact with that time period. The narrative of the game depicts the clash between norm and change in the last days of the Wild West [33].

The environment in RDR 2 combines different kinds of landscapes, from natural, serene landscapes to bustling industrial environments. The contrast between these natural landscapes and industrial expansion mirrors the conflict between man and the environment. The environmental design of RDR2 is central to its immersive quality, blending natural and built landscapes to evoke themes of the sublime and the pastoral. Some studies highlight how the environment arouses a sense of awe and nostalgia [34].

The characters in RDR 2 also provide a point of academic interest, especially the protagonist, Arthur Morgan. His journey from being a loyal gang member committing robbery and vengeance to a man questioning the morality of himself and his gang resonates with the moral change in society of that era [33]. Some scholars argue that the internal moral conflict of the protagonist is a romanticization of the Wild West. The story of Arthur also highlights loyalty, peer pressure, and redemption, which calls players to reflect on their moral choices [34]. The play mechanics utilized in the game are also another significant point of academic interest. The intentional slow pacing of the game, which requires players to participate in time-consuming activities such as sleeping, fishing, crafting, bathing, etc., is unlike most other modern games, which are usually fast paced [34]. This slower pacing strongly encourages a deep engagement with the environmental and cultural details of the historical context [33].

Another area of interest in Red Dead Redemption II is the depiction of marginalized people, such as the Native Americans (Red Indians), and also the racism against black people. The game portrays the oppression and displacement suffered by this group during the expansion. Some academics compliment RDR 2 for highlighting these themes and criticizing colonialism in that manner, while others note the oversimplification of the matter [34]. Another area of academic significance is the architectural details in the game. RDR 2's settlements, such as Blackwater, Saint Denis, and Strawberry, represent the social, economic, and cultural conditions of the time. For example, Saint Denis is modeled after 19ᵗʰ century New Orleans, Louisiana, which is a bustling industrial city compared to the other towns. Buildings play a huge part in historic video games; they serve as interactable components and a depiction of history [35]. These environments provide an understanding of the time period [32]. The sounds, music, and voices make the experience of the historical context more realistic. They reflect the musical instruments of the time and the linguistic accents of the people. The dialogues in the narrative are also worthy of attention as they weave into the entire narrative over time [33]. Clothing and tailoring are also given emphasis, highlighting the difference in economic classes and occupation [34].

In summary, RDR 2 is an excellent example of how video games can be used to teach about the culture, architecture, and social dynamics of a particular era in a particular geographic location. The environment, characters, sounds, and game mechanics make it a crucial case study in discussions about video games as a potential means of educating students. This

article, therefore, intends to explore in detail how the architectural environment of Saint Denis succeeds in representing the culture and social dynamics of that era. The semiotic framework is therefore important because it facilitates the breaking down of elements into their description and intended meaning. This study can be of significance to both academicians and future game developers because it explores and presents the potential of video games as a learning tool.

3. Methodology

3.1 Literature Review on Methodology

Other works, as mentioned in the previous chapter, have used different frameworks and methodologies to discuss the portrayal of culture in video games. The table below shows what each researcher's goal, framework, and methodology used;

Table 1: Researchers and their approach.

Researcher(s)	Rafał Szrajber and Krzysztof Guz [3]	Paul Martin [29]	Martin Bostal [30]
Title	Architectural Heritage and Its Representation in Video Games	The Pastoral and the Sublime in Elder Scrolls IV: Oblivion	Medieval Video Games as Reenactment of the Past: A Look at Kingdom Come: Deliverance and Its Historical Claim
Aim	To examine how cultural value translates into the "creation of a game environment based on a real-world location or inspired by a given cultural region, its myths, legends, or local heroes"	To explore how video games use environmental aesthetics to produce pastoral and sublime themes.	To explore how video games attempt to present a very realistic medieval experience and setting.
Case Study Video Game	Assassin's Creed franchise by Ubisoft and The Division by Tom Clancy	Oblivion by Bethesda Game Studios	Kingdom Come: Deliverance
Framework	Cultural studies and the Semiotics framework	Edmund Burke's Cultural Philosophy Immanuel Kant Cultural Philosophy Literary and aesthetic theory	Cultural studies framework
Methodology	Qualitative	Qualitative	Qualitative
Data Collection Method	Observation	Observation	Observation, Focus group
Data Analysis Method	**Semiotic analysis.** The authors interpret architectural elements as symbols within the games. In the first game, Assassin's Creed, the authors discuss how Gothic, Renaissance, and other styles are represented in the franchise and how they signify multiple cultural ideas to players. In the second game, The Division by Tom Clancy, the authors discuss how a "devastated and chaos-stricken" contemporary New York is depicted using the virtual environment and architecture. The authors present the result in a narrative manner using paragraphs and pictures	**Qualitative content analysis.** The author uses screenshots from the game interface to explain his points. He uses qualitative content analysis to analyze visual and spatial elements in the game. He also draws upon 'literary and aesthetic theory' to interpret the natural environments in the game. He presents his results in a narrative fashion, explaining every step of the way, how the scenes of the environment evoke a sense of adventure and the player's responses. The author proves that just like real environments and architecture, the environment and architecture in game worlds	**Qualitative content analysis**, **Comparative historical research**, **and Interpretive player experience analysis.** Bostal presents the results in a narrative and thematic fashion by providing and explaining screenshots from the game interface. He uses comparative pictures side by side to compare historical records with the game's representations, highlighting both accurate depictions and slight modifications.

	from in-game explaining their points	are crafted to evoke and portray a cultural understanding.	
Results Format	Descriptive paragraphs, photo screenshots	Descriptive paragraphs, photo screenshots	Descriptive paragraphs, photo screenshots

3.2 Research Design

Adopting from the methodologies of works discussed in the previous section, this research adopts a qualitative, interpretive approach, which allows for an in-depth exploration of the cultural dimensions embedded in the game's architecture. Semiotic analysis will serve as the primary framework, facilitating an examination of how architectural elements signify cultural values and social contexts.
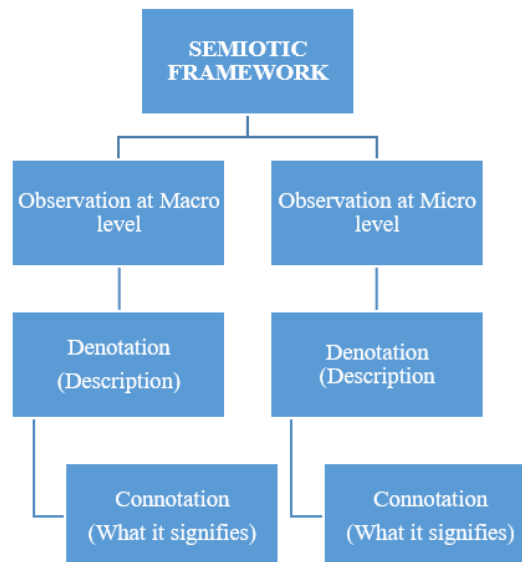

Figure 1. The semiotic framework

3.3 Data Collection

Architectural elements, urban organization, and character interactions of spaces in Saint Danis at urban and architectural scales are decoded by the study of signs and symbols, namely semiotics. Identifying and classifying the signs systematically is taken as an opportunity to interpret their cultural implications within the historical context of the narrative. By the application of this method, it is aimed to highlight the discourse on gameplays and cultural issues not only through dialogues and space solely but also through the semiotics of that space.

The primary data will be collected through:

Gameplay: Engaging with Red Dead Redemption II to observe and record architectural elements such as types of buildings, building materials, building layouts, and interior design, as well as the interaction of game characters with the architectural environment.

Documentation: Capturing screenshots of relevant architectural designs and environments for further analysis.

3.4 Data Analysis

The collected data will undergo a systematic semiotic analysis, focusing on identifying and interpreting signs within the architectural designs and analyzing the cultural narratives and meanings embedded in these signs. Semiotics is the study of signs and symbols. A semiotic framework is an analytical approach focused on understanding how signs and symbols

create meaning. In this study, the analysis will begin by identifying and categorizing key signs within the game itself, namely architectural and cultural signs. The research will analyze both the denotative and connotative meanings of the identified signs, i.e., the explicit meaning of signs, such as the physical structures represented in the game and the cultural implications and associations that these signs evoke, particularly concerning historical narratives, identity, and societal norms. The methodology will explore the relationships between the identified signs, focusing on how architecture can reflect cultural identity and narratives. The findings will be categorized by using thematic coding to categorize in order to extract significant patterns related to architecture and culture. This will be done using tables with the aid of pictures/screenshots to explain the points. For the macro study, a picture of the map is used to show the layout, streets, and buildings of Saint Denis. For the micro study, one picture will be used to describe the exterior of a building, and one picture to describe the interior to capture the relevant information of that space.

4. Case Analysis

4.1 Macro Level Analysis

Saint Danis is chosen for systematic semiotic analysis due to its rich environment on industrialization, different building types, and social complexities, as the aim of the study is to analyze signs. Its diverse architectural styles, from mansions to working-class quarters, gives a rich array of semiotic signs. Blackwater, on the other hand, a smaller and orderly town, does not include the socio-cultural contrasts found in Saint Danis. Hence, as the case of the study, Saint Denis is chosen to provide a more richer urban and architectural environment that can be analyzed to highlight the deeper understanding of how architectural elements can offer elaborate cultural and social meaning.

Saint Denis has several buildings, some of which are notable and others that are not. In this section, the notable buildings and components in Saint Denis are presented in Table 2. The building types are listed, and the notable buildings under each building type are highlighted. A total of 62 notable buildings/ spaces are highlighted. Also, see figure 2 for a map of Saint Denis.

Figure 2. Saint Denis Map [36]

Table 2: The Saint Denis urban environment, its denotation and connotations.

Building / Space Type & Denotation	*Connotation*
Government buildings/ spaces: The governmental spaces in Saint Denis are as follows: • City hall • Lemoyne Supreme Court • Saint Denis Post Office • Saint Denis Police Station • Lemoyne National Bank Times Tribune newspaper office	The presence of these kinds of buildings connotes order and governance. Other towns in RDR 2 don't have similar spaces. This establishes the role of Saint Denis as the "big city" in Lemoyne.
Religious buildings/ spaces: There is only one religious building. However, the size and magnificence of the building say a lot about the city and the people. This building is: Saint Denis Cathedral	Despite the number of religious buildings being few, the size, magnificence, and positioning of the Saint Denis Cathedral signify its importance in the lives of the people of Saint Denis. It connotes spirituality as well as power.
Entertainment buildings/ spaces: There are various places of entertainment and lodging in Saint Denis. These are: • La Bastille Saloon • Doyle's Tavern • Theater Raleur • Fontana Theatre • Auberge Belle Helene Hotel • Hotel Grand • Hotel Chevalier • Marcel Beliveau Photographic Studio	The presence of entertainment spaces in Saint Denis is a natural effect of urbanization. People use them to escape the hustle and bustle of life. The hotels connote tourism and economic progress. Visitors to the city of high economic caliber have a luxurious and comfortable space to lodge.
Commercial buildings/ spaces: There are several commercial spaces, from traditional to modern. These are: • Saint Denis Market • Horner & Co. General Store • Kuo Chao & Co. Gunsmith • Charles De Coursey's Tailor Shop • Butcher's shop • Saint Denis Doctor's Office • Fence • Gus Macmillan's Trapper Store • Barbershop • Henri's Oyster Bar • Café Baizac Coffee • Le Havre • Jade Dragon Peking Restaurant • Jewelers • Lowenstein Bros. Pawnbrokers • Dubonnet musical instruments	The presence of a high number of enterprises signifies economic growth and societal demand. This stands in contrast to other towns in Saint Denis, which typically only have a general store and a weapons store.
Transportation buildings/ spaces: There are different types of transport systems and spaces in Saint Denis. These are: • Harbor Master • Saint Denis Harbor • Train Station • Theodore Eckhart Stable	The presence of horse stables, train stations, and trams signifies a clash between traditional transportation methods and encroaching new methods. The Saint Denis harbor also signifies international trade and economic growth.
Industrial buildings/ companies: There are several companies and warehouses in Saint Denis. These include: • Lemieux Power Plant • Cornwall Kerosene and Tar Oil refinery • The Lanik Electric Company • Fass Food Cannery • J. Cooper Lee & Co. Bottling Company • Wheeler Rawson and Co. • Draft Horse Brewing Company • Fournier Tobacco and Cigar Merchant • Snowberger Chocolate Company • Ward's Seed Company	The presence of these buildings signifies industrialization, the mass production of goods, and the race for productivity.

Luxurious residential buildings: There are also luxurious mansions in Saint Denis. The most prominent are: • The Mayor's mansion • Angelo Bronte Mansion	The presence of these buildings connotes high economic affluence. Wherever there are mansions as such, there are extremely rich individuals in the society.
Public spaces: There are different kinds of public spaces in Saint Denis. These are: • Harris Square • Lemieux Park • Saint Denis graveyard • Chitimacha Street • Courtenay Street • Frontier Street • Gaspar Street • Hestia Street • La Marque Street • Milyonne Avenue • Rabulione Street • Rue de la Diligent • Sac a Lait Street • St. Nicolas Street • Victory Street	The Harris square signifies urban planning. This entails bringing together important functions of a city into one place for easier access. The park also has a necessary effect on the urbanization of the environment. It signifies the yearning for peace and nature by people in a crowded and noisy environment. The organization and naming of streets also signify order and sophistication.

4.2 Micro-level analysis

Out of the 62 buildings mentioned above, 5 buildings are discussed in this paper. These have been selected based on their accessibility to the player. In the video game, these spaces are among the most interactable and detailed. The five buildings are: La Bastille Saloon, Charles De Coursey's Tailor Shop, Lemoyne National Bank, Theater Raleur, and Saint Denis Harbor. These spaces are discussed in Table 3 below:

Space & Denotation	*Connotation*
La Bastille Saloon Figure 3: La Bastille exterior [31] Figure 4: La Bastille interior [31] La Bastille saloon is a luxurious bar in the heart of Saint Denis. It contains a bar/ restaurant on the ground floor and hotel rooms, a bath, and a large	**Opulence:** The chandeliers, intricate plastering, and luxurious wood indicate a period of economic growth and opulence. **Social hierarchy:** The grand staircase leading up to more private spaces indicates exclusivity to upper-class people while the common people stay in a bustling environment downstairs. **Technological advancements**: The chandeliers signify a level of technological advancements that is not found in other towns besides Saint Denis.

balcony on the first floor. The exterior façade is designed with symmetrical windows and iron balconies. The walls are made of Brick and Stucco with a prominent "La Bastille" signboard. The ground floor features a high ceiling with intricate plastering and chandeliers hanging there. It is also designed with wooden furnishings, from the wall finishes to the columns and the furniture. There is also a grand piano. The floors are made of hardwood. All these add up to produce an atmosphere of luxury. The first floor is also similar in décor. It contains more private seating spaces and rentable rooms.

Charles De Coursey's Tailor Shop Figure 5: Tailor shop exterior [31] Figure 6: Tailor shop interior [31] Charles De Coursey's Tailor Shop is also located at the heart of Saint Denis. The exterior features a storefront with large display windows through which one can see the fine clothing and accessories from outside. The interior is well organized with racks of dresses and suits. There are also shelves for caps and other accessories. The floor is made of polished wood. The walls are finished with decorative wallpaper. The ceiling is also finished with fine decorative plastering with well-diffused lighting. There is also a sitting area and a fitting room designed with mirrors to test the fitting of clothing.	**Social hierarchy:** The luxurious and decorative design of the place signifies its appeal to the elite of society. **French style:** The decorations and ornamentation connote the influence of French styles as a symbol of luxury.
Theater Raleur Figure 7: Theatre Raleur exterior [31]	**Cultural sophistication:** The Theatre Raleur is exemplary in its intricate design, signifying the sophistication of the French architecture in the 18th century. **Desire for entertainment:** The level of importance given to the design of the theatre reflects the human desire for entertainment. To escape from the hustle and bustle of real life into a world of humor and fantasy. **Modernity and Progress:** The design, lighting and systems in place reflect

Figure 8: Theatre Raleur interior [31]

progress and the embrace of technology.

Colonial European influence: The art and architecture style reflects the roots of Saint Denis in European colonialism.

Theater Raleur is also situated at the heart of Saint Denis, together with other high-class places. The theatre is surrounded by maintained streets and other businesses. The exterior façade is inspired by French architecture. It is adorned with columns, arches, and stone carvings. There is a huge sign stating the name on the façade, signifying its uniqueness and value. There are two large doors at the entrance with large windows on either side of the doors. The lobby features a dome with several glass windows with a chandelier hanging from there. The floor and wall decorations are made with polished wood. There is a ticket counter. The main theater has cushioned rows of seats on different steps. There are balconies for wealthier spectators, and there is a stage for performances. The walls are well decorated with carvings and beautiful curtains. The dome is also well ornamented with stone carvings, paintings, and a huge chandelier.

Lemoyne National Bank

Figure 9: Lemoyne Bank exterior [31]

Power and authority: The architecture and size of the bank signify its economic control of the region and its role in both the local and regional financial systems.

Security and permanence: The heavy stone construction, symmetrical design, and well-guarded vaults signify a strong sense of security given to customers to know that their wealth is well guarded from robbers and also from forces of nature.
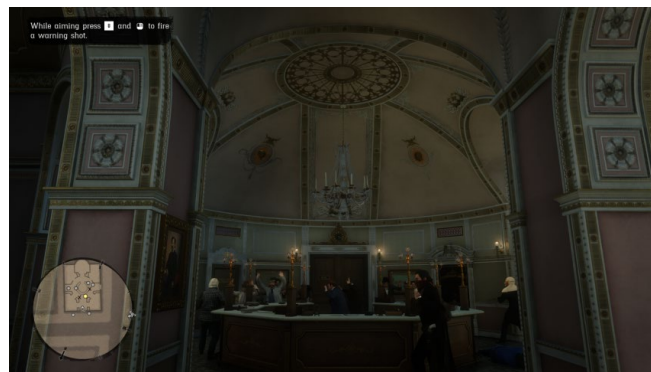

Figure 10: Lemoyne Bank interior [31]

The bank is located at the bustling heart of the city, along with other businesses. The building features a grand façade with stone columns at the entrance. The façade design is symmetrical. The interior is well organized with a central counter behind which are secure vaults. The interior is made of polished wood and beautiful chandeliers hanging from the dome.

Saint Denis Harbor

Figure 11: Saint Denis harbor [31]

Figure 12: Saint Denis harbor [31]

The harbor is a huge part of Saint Denis, covering a large area along the waterfront. This is a hub for activities featuring several workers with different activities. These include cleaning the wooden floor, loading and offloading of cargoes, etc. The dock is made up of a wooden construction elevated above the water. This platform is congested with stacks of crates, timber panels, barrels, and sacks of goods. There are also factories and a Harbor Master office. There are several boats resting on the shore. There are also several 'no smoking signs' around the dock as the area has a lot of flammable cargo, and hence makes any introduction of fire or smoke dangerous. The dock, combined with the central train station and a good number of factories, makes this area of Saint Denis the busiest part of Saint Denis.

Productivity: This area symbolizes the race for productivity and achieving as much as possible in terms of quantity.

Clash of building materials: The use of both wood and bricks signifies a clash between the two materials in which bricks are overtaking the conventional building material.

5. Results and Discussion

Saint Denis is a well-detailed city in Red Dead Redemption, symbolizing the height of progress in that age. The level of details enhances players' experiences and insights into the live lived in 18th century America [2]. Unlike the other towns in the game, Saint Denis features more functions and at a higher quality. It features a train station, harbor, industries, restaurants, a cinema, a luxury hotel, and much more.

At the beginning of Chapter 4, Arthur Morgan, the protagonist, and Dutch arrive at the outskirts of Saint Denis. Dutch then remarks, with a sense of disgust and sarcasm on his face, (Ok….there she is….a real city…the future). The scene then changes. The next scenes show landscapes of huge factories made of brick, with black smoke emanating from their dark brick chimneys, very few trees, and a dark, murky sky. The scene is also accompanied by eerie music, signifying some level of horror. This can be understood as a representation of the level of dislike from the protagonist's point of view towards what has been done to the environment, especially since they are coming from an environment that is the total opposite, i.e., timber buildings, trees, greenery, lakes, and serene landscapes in general. Then Arthur exclaims, "Big cities, ffhhh!....They are…", "Always repellant?" Dutch interrupts. He then looks towards Dutch and says, "Exactly!" Dutch nods in agreement and says, "I will find you in there, go see what you can figure out". Arthur says "yes" and they

ride off in different directions into the city. The use of the video and specific audio type (eerie music) in the scene provides an opportunity to understand the meanings embedded, especially from the point of view of the protagonist. This is similar to what Araujo and Hildebrand discussed, stating that semiotics is necessary to discover meanings in audio-visual elements of video games [12].

The city of Saint Denis depicts themes such as that of industrialization. The several industries and warehouses in the city indicate the encroachment of the industrial age, especially when compared with other towns in the game. Another theme depicted is that of economic progress. The luxurious salons, hotels, and tailor shops found in Saint Denis stand in stark contrast with those from other towns. Like Amalia put it, the narrative of the game depicts the clash between norm and change in the last days of the Wild West [33]. Social hierarchy is also emphasized. Urbanization is another important theme depicted. Paved streets, street naming, street lights, and trams are an integral part of Saint Denis. Urbanization and industrialization lead to the need for means to escape the hustle and bustle of city life. That is where the theatres and Public Park come into play. The city also speaks of governance at a high level. The mayor, the city hall, a court, and the Lemoyne National Bank are all functions exclusive to the city of Saint Denis. The architectural style showcased in the buildings also speaks of French colonial influence and sophistication.

By combining exploration, narrative immersion, and role-playing, RDR 2 allows players to engage with the architectural and urban environments of Saint Denis. Players experience the city by walking, horse riding, or by electric tram. With the use of architectural elements and spatial arrangements, they trace the realities of social status, racial segregation, and urban modernization. It is seen that the game is designed so that it offers interaction with non-playable characters and choices with the game's honor system, providing a socio-political context. The game takes the player within the story such that the play is transformed into an experiential narrative, a platform of participation. RDR 2 can be seen as a dynamic space, not only observed but interpreted and re-created.

6. Conclusion & Recommendation

Video games are the latest and best means of accessing historical times [4]. RDR 2 presents the environment of Saint Denis in a well-detailed style, incorporating several cultural aspects such as the architecture, clothing, transportation systems, etc. These aspects work together to provide meaning [11]. This presentation of a city that is inspired by the actual city of New Orleans is remarkable. Whether or not this representation is accurate is a different question, as video games typically have a problem of representing history accurately [10].

The aim of the paper was to present an understanding of the western culture of the late 19th century through an analysis of the architectural environment of the town of Saint Denis in Red Dead Redemption II. Video games are a good means of learning about past culture and architecture. RDR 2 does an outstanding job in detailing the city of Saint Denis, inspired by 19th century New Orleans.

By bridging culture, architecture, and game studies, the paper aimed to contribute to the interdisciplinary dialogue. The study tended to highlight how spatial design at different scales in the virtual world can communicate with historical, cultural narratives, and the players. Rockstar Games engages architectural details in RDR2, creating a medium as it is, hence offering players an experience of real-world spatial dynamics.

Playing a game with cultural and historical details can give a sense of travel by a time machine to the player. Taking this feature of video games as part of entertainment can be very educational as well. By using semiotic analysis to exemplify this for Saint Denis in RDR 2, an understanding of virtual space as a cultural representation is provided. The discourse can be extended on how video games can serve as historical, cultural, and social platforms embedded with identity in different games and different virtual cities.

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