

## BEYOND PHYSICAL BOUNDARIES: THE IMPACT OF DIGITAL RENDERING ON SPATIAL IDENTITY

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**Abstract.** This research investigates the concept of spatial identity by examining its definitions and Plato's Allegory of the Cave, as well as Michel Foucault's concept of heterotopia, to explore the relationship between the physical and digital worlds. To analyze the concept of spatial digital identity, we conducted a literature review of academic articles and case studies that focus on the intersection of digital technology and spatial identity. Using a thematic approach, we identified key themes regarding the influence of digital technology on physical spaces and its impact on spatial identity. Through a case study of Times Square, we examined the role of the digital world in shaping spatial identity, paying particular attention to the impact of urban screens, social media, online interactions, and digital applications. The study highlights the importance of considering the digital world in the planning, design, and use of public spaces, as it plays a critical role in shaping their spatial identity. Finally, the research highlights the importance of being aware of the impact of the digital world on spatial identity in order to develop a comprehensive and integrated approach to the design of public spaces in the contemporary world.

**Keywords:** DigiCal world, digital world, Heterotopia, spatial identity, identity of space, place attachment, Times Square.

### Introduction

Identity is a concept that has been considered in various studies, including “*Human identity*” the article of Holland (1978), and “*Identity*” by Leve in (2011). Identity of space is also a concept that plays a key role in the definition and recognition of space. This topic has been adequately addressed so far, but with the advancement of technology and the expansion of the digital world, digital identity has also become a part of the identity of spaces.

This research addresses the value of the digital world, which is nowadays an important part of spatial identity. Therefore, the existential nature of the digital world has been investigated by using the conceptual alignment with the true world in philosophical ideas such as Plato's allegory of the cave and Foucault's theories about heterotopia. Also tried to define the digital spaces in physical places and the world created by mixing the physical and digital concept. In this way, mentioned the role of digital world in spatial identity and subsequently defining the spatial digital identity.

In order to better depict spatial digital identity theories, Times Square will be analysed as a specific case study. Times

Square, situated in Manhattan, New York is a case that can be used to discuss how digital technologies and media can influence the formation of a place's spatial identity.

### 1. Identity

#### 1.1. Definition of identity

Identity is a term for which it is difficult to find a clear definition. Cambridge dictionary defines “identity” as “who a person is, or the qualities of a person or group which make them different” (Cambridge University Press, 2008, p. 713). Oxford has a more general definition which is “the fact of being who or what a person or thing is, the characteristics determining who or what a person or thing is” (Oxford University, 2010, p. 869). An important characteristic of identity is that entity is of essence to identity. Moreover, the concept of identity can be more complex, such that in Kroger's opinion, “At times, identity refers to a structure or a configuration; at other points it refers to a process. Still on other occasions, identity is viewed as both a conscious subjective experience as well as an unconscious entity” (Kroger, 2004, p. 34).

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In Erikson's point of view, identity is largely unconscious except in situations where internal factors and environmental aspects are combined (Erikson, 1978, p. 22). Also, identity has two simultaneous manifestations: self-sameness and sameness from the perspective of others, both of which are continuous across time and space (Erikson, 1978, p. 50). Identity is a definable concept but is not immutable and is an open and dynamic construct (Lichtwarck-Aschoff et al., 2008, p. 373). Since identity evolves over time, it is inextricably linked to time. On the other hand, as the concept of identity moves forward, it also carries with it its past as a structure. Therefore, instead of treating identity as a memoryless function of time, one should consider it along with information about its past. The past is known as memory and history. History is a narrative of memory that in many cases overcomes memory to display identities (Megill, 1998, p. 56). The narratives can be present as a text, image, or video that can significantly affect the identification of persons, creatures, spaces, and objects. Moreover, history does not always reflect the truth, and also there are always parts of the memory and the past that are never recorded by anyone but have an effect on the attitudes and feelings of other beings.

## 1.2. Spatial identity

All spaces, such as public spaces, have an identity just like any other entity. In the literature, spatial identity is also referred to as "identity of spaces" and "identity of the place", but they all more or less refer to the same concept. When identity is understood as something objective, "it is what the place is actually like. Identity though is not the same as "image" which defines how an organisation or a place is perceived externally. Naturally, image may be strongly influenced by the "objective" identity and image makers will seek to structure the perceptions of others but cannot finally control them" (Barke & Harrop, 1994, p. 95). Objective identity is an impression of identity that takes into account the superficial and surface aspects of identity. This level is significant, but usually represents only a part of the total identity of an entity. For a comprehensive understanding of identity, its inner layers should also be evaluated.

On the other hand, many people consider the spatial identity as synonymous with tradition and define it considering the historical and cultural background of the space. Although tradition plays an important role in defining spatial identity, it is also not the only thing that needs to be considered for characterizing spatial identity (Kalandides, 2011, p. 29). Spatial identity can manifest itself even before the physical creation of space through the process of design and planning. This is evident in the early stages of planning and design for a new urban space that aims to reflect a specific culture or lifestyle, characterized by its unique architecture, landscaping, and public spaces.

"The concept of place refers to the subjective experience of embodied human existence in the material world. It is a paradoxical concept with a meaning that is readily grasped, but difficult to define" (Morgan, 2010, p. 11). The

identity of the place, similar to the place itself, is a clear concept with a complicated definition. To truly define this concept, one must consider factors that depend on it, such as the user and audience. As a result, personal experiences and place attachment are linked to spatial identity. Place attachment is frequently the result of interactions between users and the space. Interacting with space can create a memorable experience, and memory is one of the most important factors in establishing commonalities between people and places. In general, place attachment is criteria like the level of satisfaction and happiness in a place can be one of the indicators of place attachment (Hidalgo & Hernández, 2001, p. 275). This sense, which can be a personal or collective experience, is dependent on the time and location of the spectators, where everyone has their own isovist on the time-place axis. Here an isovist "is the set of all points visible from a given vantage point in space and with respect to an environment" (Benedikt, 1979, p. 47). As a result, deciding on a specific verdict for the place's identity is rather difficult. In this regard the place identity leans towards self-identity. Self-identity includes "memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behaviour and experience which relate to the variety and complexity of physical settings" (Proshansky et al., 1983, p. 59). In general, the behaviour and interaction of space with people or other users from a human perspective defines the spatial identity.

Memory also plays a significant role in shaping the identity of a place, impacting both individual and collective experiences. Personal memories of a place are unique and influenced by individual experiences and emotions, creating a one-of-a-kind fingerprint of that place. In public spaces, such as sites of national or international significance, these experiences and emotions often overlap, resulting in shared memories among a group of people. The memory of an event becomes more collective as more people remember it in the same place. In other words, when multiple individuals share a common location as the setting of a particular event they remember, the memory becomes more collective in nature (Othman et al., 2013, p. 556). This collective memory contributes to the formation of a shared spatial identity for these public places.

Isovists, or the visual fields within a given place, can be similar across different people and points in time. This similarity contributes to the shared memories and experiences that define the identity of public space. These memories and experiences can create a sense of place and help people connect with the space, making it more meaningful and significant to individuals and communities.

## 2. Digital world

### 2.1. Digital world ontology

In today's world, many concepts evolve on a daily basis. One concept that is still very young in the history of mankind is the digital world and the factors associated with it. In recent decades, technological advancements

have had an increasing impact on human life. In addition to common digital media, new 3D technologies such as virtual reality, augmented reality, mixed reality, and hologram technology are changing the way people interact with their environment. As digital technology continues to evolve, the digital world may become a parallel to the physical world, but with fewer physical constraints. On the other hand, the digital world can function as a concept independent of the physical world, but is nonetheless connected to physical life when being utilized. The digital world has several *dispositifs* – a French word that refers to any type of dependent concept factor, according to Michel Foucault’s viewpoint (Callewaert, 2017, p. 29) – such as creatures, laws, rules, exposed or hidden/secret spaces, communities of real or false identities, or artificial intelligence in different networks and environments. In designing and planning spaces, it is important to consider the impact of digital technologies and media on the spatial identity and user experience alongside physical elements.

Throughout human history, there have always been those who believe that the essence of the universe is more transcendent than its physical appearance and this idea has been proposed by various religious and philosophical perspectives (Huxley, 1947, p. 29). In addition, Plato considered the world in which we live in as a shadow of a perfect world. To describe the position of this world and the transcendent world, he describes “human beings living in an underground den, which has a mouth open towards the light and reaching all along the den; here they have been from their childhood, and have their legs and necks chained so that they cannot move, and can only see before them, being prevented by the chains from turning round their heads. Above and behind them a fire is blazing at a distance, and between the fire and the prisoners there is a raised way; and you will see, if you look, a low wall built along the way, like the screen which marionette players have in front of them, over which they show the puppets” (Plato, 2009, p. 469). They can only see the shadows of truth. In Plato’s setting, the common human is like these people who were chained in the cave and the perfect world is in the outside of the cave. In the outside world everything is in a flawless form and is called the world of forms or ideas.

Plato believes that perception of the world outside the cave is too difficult because the people inside the cave only observe shadows of the outside world. Also, imagine a screen on the cave’s wall that, in addition to the shadows, displays the other images. These images may depict things that came from the outside world or things that never existed. Digital technology is like this screen that can help people to observe new images of the perfect world.

The digital world and new technology can present aspects of the world that were previously unavailable. The world that can simultaneously harness the potentials of both the digital and physical worlds to the path of perfection can reveal a new picture of the world beyond the cave. The people in the cave can see a new world on the screen, which is a composite of shadows and images.

Every day, the line between the physical and digital worlds becomes increasingly blurred. It will no longer be worthwhile to put forth the effort to imagine it (Kien, 2009, p. 16). The digital world and the physical world can be considered as a single intertwined concept, where the two interact with each other and this interaction evolves to the point where they can actually influence one another. The world that is the result of a unified reckoning of the digital and physical worlds, can be referred to as the DigiCal world (Roig & Mestre, 2021).

However, it is possible that the DigiCal world does not always move towards perfection. The digital technology may startle the chained people with completely false images and instead of directing them to light and the true world, could take them to more ignorance (Heidegger, 1977). If digital technology is not used properly, it can further distance the users from the truth. Another way to study the digital world is to apply the concept of heterotopia. Michel Foucault identifies heterotopia as a space formed to achieve a kind of utopia, but this space emerges outside the ordinary world and sometimes challenges it. To illustrate this point, Foucault uses examples such as prisons, brothels, libraries but a classic example is a space that is a product of children’s imaginations while playing in a tent or under a bed. These spaces are embodied in their surrounding environment but are nevertheless a separated world from the outside world for children and have their own identity. This is a place that floats across time and space. These spaces can also evolve with human progress (Johnson, 2006, p. 78). Elsewhere, Foucault imagines heterotopia as a ship, a space that has no particular location but does have a spatial definition (Rymarczuk & Derksen, 2014, para. 7). The digital world can also be considered a heterotopia which embodies other heterotopias within itself. This world and its components such as websites and related factors have their own spaces, laws, and internal relations (Henthorne, 2010, p. 207).

Foucault In his radio interview, which was later translated into Spanish and published in the journal “Fractal,” presented Heterotopia through six features, which can also be used as a criterion to measure the similarity of the DigiCal world with heterotopic worlds (Foucault, 2008).

The first is that Heterotopia appears to apply to all societies. It follows that heterotopia has always existed in all societies throughout history. The second is that any society can reabsorb and destroy a previously constituted heterotopia, or organize a new heterotopia that does not yet exist, over the course of its history. Heterotopias which were holly spaces and royal courts in the first civilizations, were later on gradually created in new spaces like libraries, museums, hospitals. The third point is that heterotopia can combine several different spaces or heterotopias, such as the cinema salon and the movie environment. The fourth point is that heterotopias are frequently only temporary rather than being eternal. These spaces often like the imaginary spaces that children create during games,

have a beginning and an end, though cemeteries are an exception. The fifth, heterotopia is a system that can be open or closed. It may be necessary to perform certain rituals in order to enter these spaces, or these spaces may serve as an intermediary space for another. There are other heterotopias where everyone can enter only to realize that it has been an illusion and that no entrance was actually made. Last but not least, heterotopia is providing an imaginary world or a perfect world.

Today's society's heterotopias can be found in DigiCal spaces. These spaces frequently have a time limit and a boundary that can be accessed by using a variety of methods, including hardware and software. On the other hand, these spaces can sometimes combine different spaces to create a heterotopia made up of several other spaces. Spaces are created in the DigiCal world for a variety of purposes, including political, cultural, social, and commercial goals, and these goals are almost always pursued within it. Also, the DigiCal world can be just imaginative or be a way to perfection.

In a holistic view, the DigiCal world is a super-heterotopia located within the world itself. It can be like the mirror world, which is a "placeless place". "In the mirror, I see myself where I am not" (Foucault, 1998, p. 179). Physical and digital spaces can coexist in the DigiCal world. Digital technology can set heterotopia apart from the rest of the world and create features in space that change the way people interact with it.

## 2.2. Digital identity

Identity in the digital world is similar to that of the physical world, as it is created by the entity. However, in the digital world, presentations are not limited to visual elements and can also be coded. In this world, spaces can be created in 3D models, like a virtual reality experience that creates an immersive digital experience, allowing individuals to digitally experience space and feel a sense of place without physical presence. The digital world provides an opportunity to bring to life many things that may exist only in a person's mind. The identity of entities in the digital world can be the result of the thoughts of their creators.

On the other hand, digital identity can be a part of the DigiCal identity of an entity in the physical world and can reveal or highlight aspects of it that either does not exist or are not accounted for in the physical environment. Identity in the DigiCal world is shaped by the direct and indirect effects of digital dispositifs on the physical world. At first glance, digital identity in the World Wide Web appears to be limited to an avatar, name, and profile, but a comprehensive view of the world today, sees the digital world in conjunction with the physical world. Every day, digital technology further infiltrates human life and influences people's perceptions of their environment. The digital world has influenced many people's lifestyle and living environment. Therefore, it is critical to recognize it as the dominant identity in the new era.

## 2.3. Digital spatial identity of physical spaces

Spaces in the digital world, as in the physical world, that are shaped by the needs of users, can either be the manifestation of a physical existence or a standalone digital space (Deh & Glodović, 2018, p. 107).

As mentioned in section of 2.2, the identity of spaces consists of several components including objective identity, history, user experiences, and interactions with the space. In addition, the collective experiences of users through the digital world, are important aspects in spatial identity, as well as the users' interaction with the space using the digital world. This point of view is discernible in both the physical and digital worlds.

Nowadays, there are various digital devices in most places that interact with individuals and their surroundings for social, artistic, and economic objectives. Various digital media in the form of billboards and signage are establishing a digital world in a physical setting in cities. These media are frequently seen in urban facades and interact directly with the audience's visual and audio senses. As a result, it impacts people's experiences of spaces which can affect the spatial identity.

Most physical spaces, on the other hand, have one or more digital representations, such as social media, games, simulated environments, and other forms of media. Many individuals interact with environments in this way, and they consider everything that is shown about the area in the digital realm as a secondary or primary source of information. The quality of interaction with digital spaces varies based on the interface and method used. For instance, VR can create a fully immersive experience while a 2D image may not. However, for many people, these digital alternatives are unique or secondary ways to interact with spaces thus they hold as much significance as physical environments. Nonetheless, it's important to note that digital experiences in a place may not always align with the merely physical identity of that space. The digital and physical identities can mitigate or enrich one another, hence the way that these two worlds interact with each other is very important. To this end, spatial digital identity is an important aspect of spatial identity.

## 3. Times Square and digital media

### 3.1. Introduction the Times Square

Times Square, the famous public square in New York City in the United States of America, was originally known as the Long Acre or Longacre Square. This place served as the early location for William H. Vanderbilt's American Horse Exchange. By 1880, it was a large square surrounded by old buildings (Times Square, n.d., para. 2). The emergence of railroads and electricity was the beginning of a change for the square. Gradually, the increase in pedestrian traffic in the area led to the attraction of businesses. At the same time, the proximity to working-class housing and cheap tenements led to an increase in prostitution markets and illegal entertainment. Not only the theatre industry did

not alleviate such burdens, them putting on racy shows and selling liquor, encouraged the after-hours cabaret business. On the other hand, the reputation of this place as an entertainment district made it a great venue for urban advertising. Ultimately, the relocation of the New York Times office to the Times Tower after the mayor's efforts to redefine the identity of the square, led to the renaming of the intersection of Seventh Avenue and Broadway from Long Acre to Times Square in 1904 (Chesluk, 2008, p. 26). The New York Times shaped the identity of the square so much that even after its moving out of this place, the name remained on the square.

In the 1970s, Japanese companies and many other Asian brands began renting advertising space on Times Square for goods that they did not even sell in the United States. This proved as a turning point that Times Square became an international exhibition and display, which served as a crossroads of urban commercial imagination for both the United States and the rest of the world (Chesluk, 2008, p. 32). Furthermore, Times Square emerged as, and still is, one of the urban commercial centres in the United States, as well as the centre of national and global theatre syndicates. Vaudeville performances, plays, musicals, and movies had their world premieres in Times Square theatres before spreading across the country and around the world, providing a unique blend of commerce and culture.

At the same time, becoming a centre of public entertainment led to the growth of restaurants, bars, movie theatres, and hotels in the area for the middle-class public, while prostitution, homelessness, and drug dealing continued to be on the rise in the area. In the late 1990s, a multitude of remedies such as the attraction of investment for large corporations, the use of private city services and security firms, and new local adult entertainment policies and regulations, ensured that the situation in the area improved (Roost, 1998, p. 15). Further, the displacement of prostitution and adult entertainment from the exposed facets of this region to its more camouflaged layers, led to improved individual and social security in Times Square, making it one of the most important tourist destinations in the world today.

### 3.2. Times Square and digital identity

The identity of Times Square has constantly changed and shaped various Heterotopia throughout its life, but it has

begun to be more consistent ever since the New York Times newspaper chose this area as its headquarters.

Of the main elements that have often played an important role in characterizing the spatial identity of Times Square are the signage and the contents of the billboards around it. Since the 1970s that billboards have gradually covered a significant portion of the Times Square cityscape, the power of the media has reached a point where the display of goods in Times Square serves as a seal of approval from the consumer world. That is why, in order to attain that approval, the leading companies of alcoholic beverages and pharmaceutical products from Japan and other Asian countries first displayed their goods in Times Square, even if they were not distributed in the United States. These billboards have had a significant impact on Times Square's identity, and with the advancement of technology and the appearance of digital technology, they have assisted in the creation of a digital identity for the area. When standing in the heart of Times Square and looking around, it can be difficult to tell the difference between the digital and physical worlds because of the abundance of digital billboards and signs.

With the advancement of technology, the multiplicity of Times Square displays, almost all of which have been digitized today, has transformed Times Square into a heterotopia that separates users from their normal world. This space has almost all of the characteristics of Foucault's Heterotopia – mentioned in section 3.1 – and is made up of several smaller heterotopias, the majority of which are affected by the digital technology of the square screens in today's Times Square. Some of these heterotopias can be experienced by being in different isovists along the Square's time and place axis. So that users can observe several different identities by being in different parts of the square on different days of the year or hours of the day, as well as in different parts of Times Square at the same time. During normal hours, a continuous display of various product advertisements is rendered as users walk in one of the largest urban commercial centres in the world. While at any time that is necessary, by changing the content of the screens, the square space becomes a huge show hall (Figure 1). Moreover, in the "Midnight Moment" – which from 2011 start at 23:57 (The Times Square Alliance, 2017, para. 1) – for 170 seconds transforms Times Square into the largest digital art gallery in the world (Figure 2).



Figure 1. Met opera opening night: Verdi's Otello (Kerens, 2015)



Figure 2. “To what end?” Digital art exhibition (Tse, 2019)



Figure 3. The public AR exhibition of “Companion” – a character created by KAWS – Times Square, March 2020 (Palumbo, 2020)

Furthermore, the digital screens that surround Times Square are an important part of the visual memories of people visiting the area. It is rare to see a photo of today’s Times Square that does not include digital screens. Even the old Times building has been converted into a structure for digital screens. Because of this mindset, artists such as Brian Donnelly – aka KAWS – have chosen Times Square to display their Augmented Reality (AR) sculptures (Figure 3). These augmented sculptures and artwork, on the other hand, are potentially not restricted to a specific location, and their viewers can view them on their smartphones and tablets. However, because augmented reality incorporates digital data into the physical environment (Arnaldi et al., 2018, p. 26), the physical space’s identity is also important to artists as part of their work.

The observation and the memory of the many people who are visiting Times Square are affected by the digital screens of this place, and with the development of digital technologies like augmented reality, the screens of the users’ devices will be added to the square’s digital screens. All these screens similar to the screen in the Plato cave can be an opportunity for awareness or can be a threat that distracts the user from the perception of their environment.

On the other hand, Times Square has yet another facet, usually exhibited by users’ attraction to its social media presence, which is as noteworthy as the tourists’ foot traffic in the square itself. For example, in statistics that

are based on data derived from Instagram, TikTok, and the web page of <https://www.picodash.com>, by October 2021, over 8 million posts with the Times Square location-tag and over 6 million posts with the “TimesSquare” and “Timesquare” hashtags had been uploaded to the Instagram social media platform, and also over 6 million videos with the “Timesquare” and “Timesquare” hashtags with over 1.5 billion views had been uploaded to another social media platform, TikTok. Hashtags, likes, and views can be a reference for a kind of digital presence in Times Square through social media and the digital world. Social media and other digital spaces like video games have created an opportunity for interacting with a place without even physically experiencing it. Interaction with a space can create a sense of place attachment which can lead to a personal or collective observation of the identity of that place.

Many people who have not physically travelled to New York City may have still participated in the events of Times Square remotely and virtually. An important consideration is that individuals who only experience Times Square through videos, pictures, texts, or 3D technologies like VR, may not fully comprehend the space. Although these experiences can simulate physical experiences, they may not provide a complete perspective of the space’s identity. As a result, people may perceive just the digital identity of Times Square rather than a spatial identity that comprises both physical and digital elements.

## Conclusion and discussion

Identity is a complex concept that requires a layered approach. The spatial identity of every space accompanies it from the very first moment the ideas and sketches for its creation were born, until when the last memories of it fade away. The concept of spatial identity extends beyond the physical world. It is crucial to analyse not only the physical attributes of spaces but also their digital aspects. These digital aspects can play an equally important role in modern human life, complementing the corresponding physical world. Together, they form an advanced world comparable to Plato's allegory or Foucault's transcendent heterotopia, which we refer to in this paper in section 2.1 as the DigiCal world.

Times Square is an example of how digital media can shape a public space's identity. Digital screens can define a space as a theatre, digital art museum, or cinema. Social media can facilitate interaction with space even without physical presence, while 3D technologies such as VR and AR can create immersive digital and physical experiences either in physical or digital space. Consequently, the method and form of introducing spaces in the digital world and their digital spatial identity can significantly impact people's memory of a space and their interaction with it, ultimately affecting the overall identity of the space.

Spatial digital identity is an element of contemporary human life where two aspects should be considered for the perception of it in physical spaces. First, the ways by which users and physical elements interact with digital dispositifs of the space, and also the mutual impacts of the digital and physical features of the space on one another, should be considered. Second, it is crucial to pay attention to the ideas, illustrations, and characterizations of the physical spaces in the digital world such as those rendered in the form of social media and games.

Due to the importance of these two aspects, many technologies such as augmented reality have been developed with both aspects in mind that for future investigations can focus on each one and its effects on spatial identity. These technologies, which are advancing by the day, have different characteristics that make it necessary to further study their impact on spatial identity.

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