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The impact of platform affordance on the representation of iconic architecture: a case study of Markthal across visual social media

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Abstract

Purpose – This paper explores how platforms shape the representation of iconic architecture across visual social media platforms, particularly how their unique features and affordances impact these representations.
Design/methodology/approach – This paper develops an integrated framework connecting iconic architecture representation, platform affordance and triadic spatial theory. Taking Rotterdam's Markthal as a case study and collecting multimodal data from TikTok, Instagram and Google Maps, the paper uses a mixed-methods approach that integrates content analysis with qualitative coding and quantitative image/video label detection and image clustering.
Findings – TikTok is more associated with enriching lived space by enabling users to share vibrant, personal experiences and activities. Instagram influences perceived space more by shaping how users view and experience the physical environment through curated visual content. Meanwhile, Google Maps effectively shapes conceived and perceived space by users' feedback of place ratings and reviews.
Research limitations/implications – Understanding how platform affordances influence the representation of iconic architecture helps designers and researchers generate design strategies and guides marketers in strategically selecting effective social media platforms for architecture promotion.
Originality/value – This research addresses the gap in understanding the impact of platform affordances on social media representations, especially through comparisons across multiple visual social media platforms. Its novel contribution is introducing the concept of affordance from media studies to architecture and urban studies while enhancing traditional text analysis with computational methods for analysing videos and images.

Keywords Platform affordance, Visual social media, Iconic architecture, Representation, Markthal
Paper type Research paper

Introduction

The relationship between architecture and media is particularly close in how architecture is represented. Traditionally, people mainly experienced architecture through media representations like paintings, as architecture needs to be mediated by the media (Colomina, 2000; Rattenbury, 2002). In the digital media era, however, urban and architectural experiences are now marked and represented by tweets and Instagram posts (Boy and Uitermark, 2017, 2020). The rise of visual social media has made the representation of architecture more vivid through visual technologies like images and videos (Degen and Rose, 2021). The integration of these emerging digital and visual technologies into traditional considerations of space raises important questions. These

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include how such technologies reshape our perception of architecture and urban environments (Ash *et al.*, 2018), how platform power – mediated by technological artefacts, algorithms, and content – shapes the production of place (Graham *et al.*, 2013), and how they influence the use and design of architecture and mobility patterns (Schwartz and Halegoua, 2015).

Social media has significantly influenced the representation of architecture. Specifically, iconic or star architecture attracts more attention and tourist gaze through social media (Lindsay and Sawyer, 2023). Drawing on the definition of "Simulacra and Simulations theory" in Jean Baudrillard's *"Simulacra and Simulations"* (Baudrillard, 1994), images and videos of iconic architecture shared on social media platforms like Instagram, TikTok and Google Maps are often "simulated". More precisely, these representations may present a more refined or exaggerated version of reality than the actual architecture through aesthetics, angles, filters, and editing tools. When the content created and shared by influencers and users emphasises personal interpretation, commercial interests, or artistic expression, it detaches from the reality of physical architectural space, transforming into a "simulacrum" in its representation.

Notably, these changes in representation influence people's understanding and experience of architecture. For architectural design and conception, to some extent, social media has turned "form follows function" (Sullivan, 1896) to "form follows Instagram" (Facebook comment, 2019, about the Vessel by Thomas Heatherwick). This shift implies that architecture is increasingly designed or adapted to enhance its social media appeal, becoming more "instagrammable" (Chang and Spierings, 2023). This trend is evident in the rise of media architecture and iconic architecture that prioritizes visual impact (Zhang, 2023). For the experience of physical space, the representation of architecture on social media allows people to experience it both within and beyond cyberspace (Pavlovskaya, 2016). Therefore, understanding many contemporary urban and architectural experiences requires acknowledging the convergence of user-generated content, social media platform algorithms and features, and the physical environment (Graham *et al.*, 2013). For activities and functions, the emergence of interactive maps and short videos on social media encourages people to share their personal stories (Wilken and Humphreys, 2021), individual movement patterns (Schwartz and Halegoua, 2015) and social networks (Sutko and De Souza E Silva, 2011). However, the existing literature lacks an in-depth discussion on the impact of different social media platforms on the representation of the architecture and the platform mechanisms.

Platform affordance is the action possibilities and features of a digital platform that shape how users interact with it and utilise its functionalities (Davis, 2020; Evans *et al.*, 2017; Gibson, 1979). The changes in the representation of architecture are also closely related to social media platform affordances. In media studies, relevant discussions have concerned architecture as a subject of visual representation (Colomina, 2000; Manovich, 2013). However, few articles study how various affordances provided by social media platforms influence the visual representation and perception of architectural spaces. Furthermore, different visual social media platforms, – like Instagram, Pinterest, TikTok, and Snapchat –, each offer unique tools and features for representing architecture, such as Instagram's image filters, Pinterest's pinboard layout, TikTok's short videos, and Snapchat's temporary content.

Therefore, this paper aims to understand the representation of iconic or star architecture across different visual social media platforms and reveal the impact of platform affordances. We use the case of Markthal, the iconic architecture in Rotterdam, to compare platform affordances on the representation of architecture across three visual social media platforms: TikTok, Instagram, and Google Maps place reviews. This comparative approach helps identify the strengths and limitations by studying the affordances of each platform in representing architectural content. The novel contribution of this paper is to bring the concept of affordance from media studies to architecture and urban studies and explore interdisciplinary boundaries. It enhances the theoretical understanding of the relationship between social media and iconic architecture while offering practical insights for professionals involved in promoting and analysing architectural works in the digital media era.

Literature review

This research is situated at the intersection of three fields: the representation of iconic architecture on visual social media, platform affordance, and *triadic spatial theory* in space production. Reviewing literature in these areas is crucial to develop an interdisciplinary conceptual framework.

The representation of iconic architecture on visual social media

To better understand the core concept of the representation of iconic architecture on social media, we break it down into three sub-concepts: representation, visual social media, and iconic architecture.

In this research, representation refers to the depiction, portrayal, mediation, and communication of architectural works through visual and textual content on social media, influencing public perception and engagement (Baudrillard, 1994; Oh, 2022). This process is complex and dynamic, capable of simulating real architecture through platform affordances like aesthetics, filters, and editing, or detaching from reality through personal interpretation or artistic expression, transforming into simulacra (Baudrillard, 1994). Therefore, representation is not just about reflecting reality, but about representing a dynamic power process through which meaning is continually reconstructed, negotiated, and contested (Oh, 2022). It is shaped by authorities who use their power to change specific depictions of the city, aligning them with their ideologies and interests (Boy and Uitermark, 2017; Cassel and De Bernardi, 2021; Lefebvre, 1991; Pavlovskaya, 2016; Zook and Graham, 2007).

Social media – an emerging academic focus – holds a significant role within various media domains, demonstrating connections with related concepts, including broader topics such as *new media* and *digital media*, as well as more specialised variants such as *spatial social media*, *locative social media*, and *visual social media*. *New media* is defined as the digitisation of traditional media, which is highly interactive, modifiable, portable, and independent (Leszczynski, 2015). It is characterised by networking (Levinson, 2001; Manovich, 2013) and dynamic characteristics (Lievrouw, 2011). *Social media* is a unique category of new media that focuses on online platforms enabling communities and individuals to create, share, and interact with content in real-time. In the new media field, *spatial social media* introduces a unique dimension of geographic information and spatial location to this network (Crampton, 2009). Examples of *spatial social media* include location-enabled mobile devices, Google Maps and its place reviews, and social review sites like Yelp (Leszczynski, 2015). Furthermore, *locative social media* exists at the convergence of social media and location-based technologies, such as location-based social connection apps like Foursquare (Leszczynski, 2015). *Visual social media* involves image-driven social media platforms like Instagram, and TikTok (Rogers, 2021). Google Maps place reviews can also be defined as *spatial and visual social media* because the sites publish many user-generated images in the place reviews.

Iconic architecture refers to buildings or structures widely recognised and celebrated for their distinctive design, cultural significance, and symbolic value (Alaily-Mattar *et al.*, 2022; Lindsay and Sawyer, 2022). Such architecture not only generates an attention economy effect but also contributes to a city's identity and fosters dialogue between culture and architecture (Lindsay and Sawyer, 2022). Textual and visual online communication significantly enhances exposure and influences how buildings attain iconic status (Alaily-Mattar *et al.*, 2023). The spread of visual elements like photos and videos is central to the creation and evolution of iconic architecture (Sklair, 2017). This mediating role is amplified through photos shared on social media, through which iconic architecture acquires rhetorical and metaphorical significance, indicating its importance and meaning (Alaily-Mattar *et al.*, 2022). For example, some artists designed art walls and installations to attract tourists and brand such places as art districts (Polson, 2022) or favelas (Törnberg and Uitermark, 2022).

Therefore, visual social media platforms such as Instagram, Pinterest, and TikTok have important implications for the representation of iconic architecture. For example, those platforms enable personalized narratives around iconic architecture through user-generated

content, allowing users to share images and videos with personal stories. This content can reshape or enhance traditional narratives developed by architects and historians, adding a layer of personal experience and emotional connection (Schwartz and Halegoua, 2015). Additionally, the social media representation of iconic architecture boosts engagement and participation, like the creation of designed Photo Zones for capturing shareable moments (Chang and Spierings, 2023). Buildings that photograph well often gain more attention and visitors, prompting architects to consider "instagrammability" as a key design factor (Chang and Spierings, 2023).

Platform affordance of visual social media

To study how star or iconic architecture is represented on social media platforms, understanding the platform affordances of various social media platforms is critical.

The concept of *platform affordance* stems from the broader idea of *affordances* in design and ecological psychology, initially introduced by psychologist James J. Gibson in the 1970s (Gibson, 1979). Gibson introduced the term to refer to what the environment "provides" or "affords" for individuals (Gibson, 1979). He explored the operable possibilities between users and their environment, emphasising how these possibilities are easily perceived and how people and their surroundings mutually shape each other (Gibson, 1979). Don Norman later applied affordances to design studies, interpreting them as the potential actions that a subject (human, animal, or machine) can take with an object (Norman, 2013). In design, affordances refer to the perceived "action possibilities" of an artefact (Norman, 2013).

In the context of social media and digital platforms, platform affordances originate in media studies and refers to the functionalities, features, and structural elements of a platform that shape and enable specific user interactions. Numerous scholars have explored social media affordances, raising questions about how different technologies might offer similar affordances, how similar technologies might promote different affordances, and how changes in affordances result in different outcomes (Evans *et al.*, 2017). For example, similar visual technologies and images on Instagram and Google Map place reviews produce different affordances and lead to varying results in the representation of iconic architecture on visual social media, which provides core theoretical conceptual support for the research questions of this paper. Recent developments in affordance theory for digital and social media have highlighted the mechanisms and conditions under which affordances operate, providing an operational framework for understanding how, for whom, and under what circumstances technology enables specific uses (Davis, 2020). Methods such as qualitative, quantitative, and mixed approaches also offer valuable insights into platform affordances (Willaert, 2023; Zhao and Abidin, 2023).

Visual social media platform affordances significantly shape the representation of iconic architecture. One key affordance is the provision of content creation tools, like filters and editing options, to enhance the visual appeal of architectural images. For instance, Instagram filters can alter building aesthetics, making city images appear more attractive and stylised (Boy and Uitermark, 2017; Chang and Spierings, 2023; Degen and Rose, 2021). Another influential factor is platform algorithms, such as TikTok's "For You Page" which prioritises visually engaging content, influencing architectural images to gain popularity (Bhandari and Bimo, 2022). A third affordance involves branding, sharing, and ranking mechanisms. Google Maps rankings are influenced by various factors, culminating in efforts to affect search results (Zook and Graham, 2007). Additionally, user engagement features, such as likes and comments, can increase the visibility of certain architectural images, making them more likely to go viral (Nautiyal *et al.*, 2022). Finally, geotagging on platforms like Instagram utilise a spatial frame of reference as the operational basis for the app's interface. This geographic logic encourages users to contextualize themselves in terms of time and place (Hochman and Manovich, 2013).

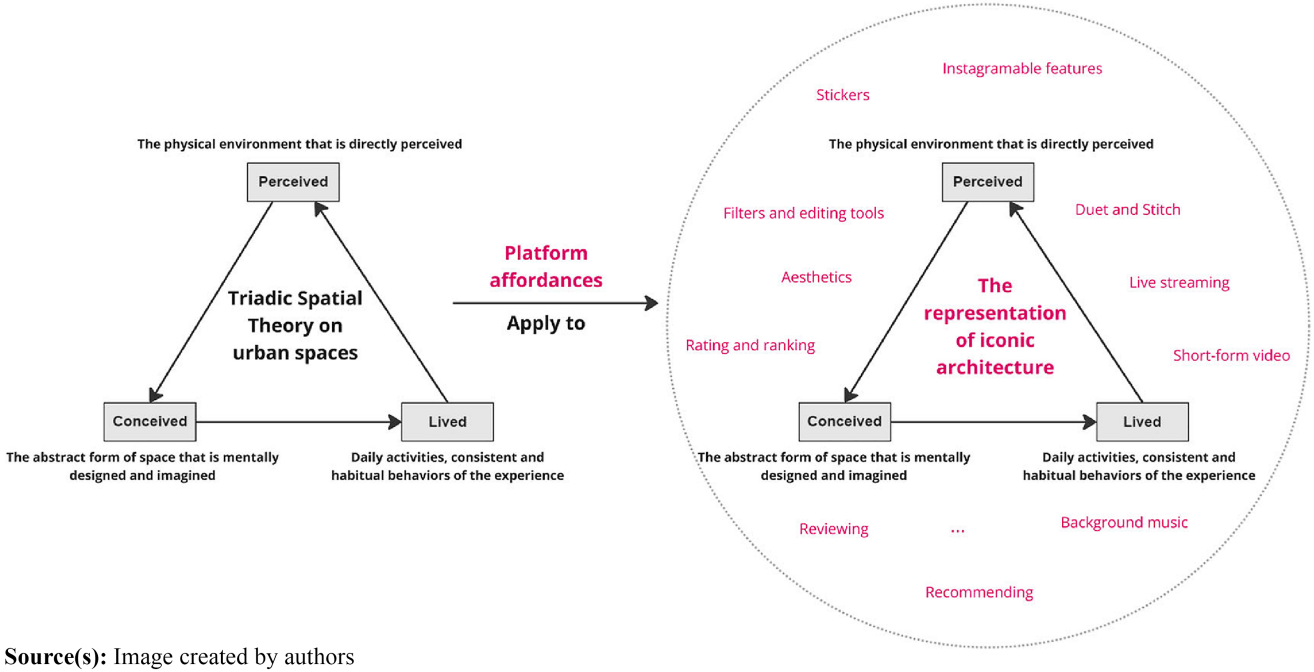
The triadic spatial theory of Henri Lefebvre and the representation of iconic architecture

The representation and experience of iconic architecture on social media can be analysed through the lens of Henri Lefebvre's triadic spatial theory – perceived space, conceived space,

and lived space – integrated with Degen and Rose's application of these concepts to digital experiences of urban change (Degen and Rose, 2021; Lefebvre, 1991). We argue that the representation of iconic architecture is a mediated space that not only mediates the materiality of architecture but also creates relational spaces and approaches between multiple entities, such as social media and users. (Degen and Rose, 2021; Jansson, 2013). This relational space can be seen as "an atmosphere, a stage, an envelope, a radiation, an environment" (Degen and Rose, 2021, p. 29) representing a complex, fluid, and interconnected realm that extends beyond physical architecture. This place can be understood through a relational approach that examines how people represent iconic architecture on social media and how these representations influence their interactions with the architecture (Boy and Uitermark, 2017). Following Lefebvre and Degen and Rose, we understand these spaces as triadic spaces, an ongoing practices recreated through participation in spatial construction, production, representation and experience (Lefebvre, 1991). Degen and Rose assert that the new urban aesthetics, namely digital experiences of urban change, can be described as conceived, perceived, and lived, to reflect different ways of experiencing space (Degen and Rose, 2021). Perceived space refers to the environment that is directly experienced: the concrete physical and social materiality of buildings, streets, technical equipment, or bodies. For the representation of iconic architecture, perceived space shows material parts such as physical structures, natural environments, users posting on social media, and the applications on mobile devices. Conceived space refers to the rational abstract form of space that is mentally conceived through verbal, visual or written expression. The representation of iconic architecture can also be seen as a conceived space because different types of urban participants choose specific parts of the building to post, emphasize the value of certain parts of the architecture, and give personal positive or negative evaluations and interpretations of the architecture for conceptual imagination in everyday life. Lived space refers to the daily activities, consistent and habitual behaviours of the lived experience of urban and architecture. The atmosphere of architecture and cities is how life is lived within these spaces (Böhme, 2014). Iconic architecture mediates the everyday experience of architecture by normalizing the use of social media and its representation as part of everyday life. Perceived, lived, and conceived are not distinct, they influence each other (Jansson, 2013).

The conceptual framework

However, based on the above literature review on the interpretation of the representation of iconic architecture, visual social media, platform affordance and triadic spatial theory, we find the lack of a comprehensive framework and empirical case studies that integrate these concepts. Few articles examine how platform affordance influences the representation of iconic architecture on social media and compare it across various visual social media platforms. Consequently, it remains unclear how these affordances affect representation and people's digital experience. Therefore, this paper applies the triadic spatial theory (Lefebvre, 1991) to combine the concepts of platform affordances, the perceived, lived, and conceived space of the representation of iconic architecture on social media, and the visual social media platforms (Figure 1). Given the numerous categories of platform affordances on various social media platforms, and the significant role of representation in architecture research, this study specifically focuses on the technology affordances related to architectural visual representation. For example, the representation of iconic architecture can have a more aesthetic effect than architecture itself through affordances like editing tools such as filters and stickers, which will influence conceived and perceived space (Boy and Uitermark, 2017; Chang and Spierings, 2023). The affordance of the short video format encourages the recording of daily personal life and experience, and its effectiveness in storytelling and inviting personal narratives influence perceived and lived space (Wilken and Humphreys, 2021). Whether these visual and technical affordances have a singular or combined impact on different types of triadic spaces has not been confirmed by theoretical and empirical research. Therefore, the main research questions are: 1. What is the difference between the



Source(s): Image created by authors

Figure 1. The conceptual framework applying Lefebvre's (1991) triadic spatial theory

representation of iconic architecture across different visual social media platforms? More specifically, are there differences in the platforms when representing the triadic spaces? 2. What is the impact of platform affordance on the representation of iconic architecture? More specifically, which types of affordance attributes influence or encourage specific spatial representations and experiences? The innovation of this article lies in its interdisciplinary research, which aims to explore the impact of different visual social media platforms on the representation of iconic architecture.

Methodology

Case selection

We selected the Markthal in Rotterdam as a case study for its iconic architecture characteristic, social media popularity, and cultural significance. Designed by MVRDV, the Markthal's iconic arching structure and vibrant interior make it highly photogenic and a cultural hub where food, art, and community converge. Its multifaceted nature makes it a rich subject for social media, from gastronomy to urban lifestyle (Figure 2).

Social media platform selection

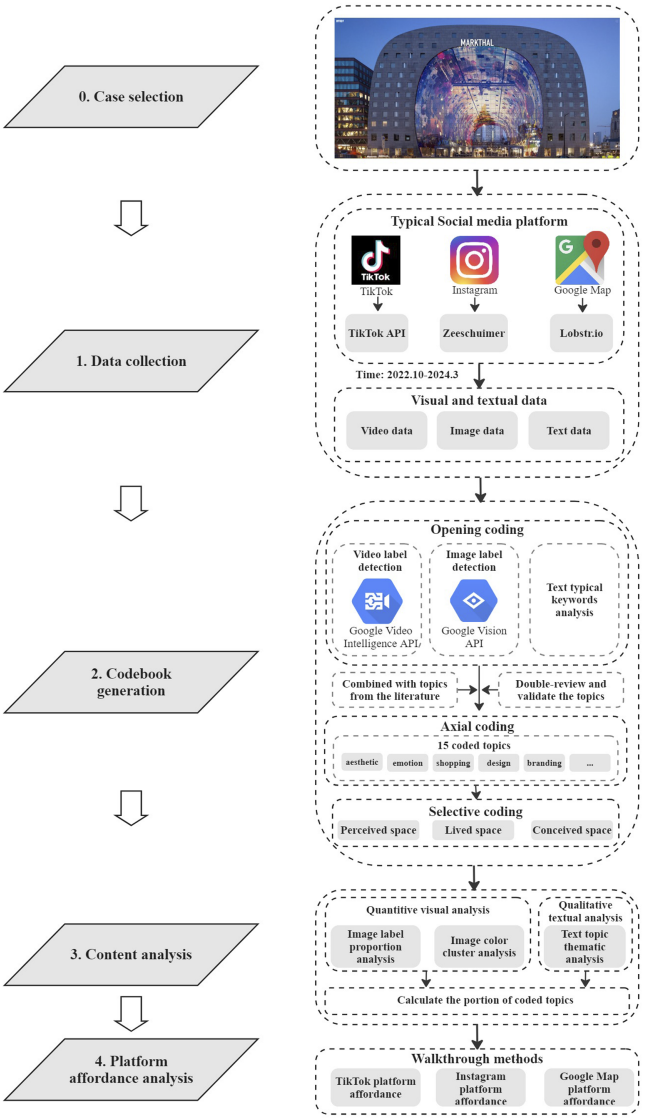
In order to select typical visual social media platforms, we categorised them into three types: place scoring and evaluation (e.g. Google Maps place reviews, Tripadvisor, Yelp, Foursquare), photography and aesthetics (e.g. Flickr, Instagram, Pinterest), and daily life and activities (e.g. TikTok, Snapchat, Facebook). Based on data availability, user numbers, and popularity, we chose TikTok, Instagram, and Google Maps place reviews as our platforms for analysis.

Research methods

This paper uses a mixed-methods approach, centred on content analysis of the representation of Markthal on TikTok, Instagram, and Google Maps, to examine the impact of platform affordances (Figure 2). As a widely used, empirically grounded method, content analysis combines qualitative and quantitative approaches to uncover underlying meanings and enhance the understanding of theories and phenomena (Riffe *et al.*, 2019). Architecture involves diverse visual, textual, material, and auditory information, necessitating a comprehensive content analysis (Troiani and Ewing, 2021). Thus, we analysed Markthal using visual data from images and videos, along with textual data from descriptions and reviews. Quantitative methods, including image/video label detection and image colour clustering were used to detect labels and quantify label proportions. For textual content, we used qualitative methods for the manual thematic classification of review texts. Based on these findings, we used walkthrough methods (Light *et al.*, 2018) to qualitatively analyse the affordances of different platforms using typical reviews as examples, to explore platform-specific features and user interactions in-depth. These steps and methods are detailed below (Figure 2).

(1) *Data collection:* We collected posts about Markthal from TikTok, Instagram, and Google Maps, that spanned nearly seventeen months, from October 2022 to March 2024, a period of high usage of Markthal. This timeframe balanced cost and effectiveness while capturing the most recent reviews. TikTok data was collected via the TikTok Research API, using hashtags #markthal, #rotterdammarkthal, and #markthalrotterdam, resulting in 876 videos and their descriptions. Google Map data was collected from Lobstr.io, comprising 3,475 comments, including 679 that contained images. Instagram data was collected using Zeeschuimer, which retrieved 1,798 posts (Figure 2).

(2) *Codebook generation:* To conduct the content analysis, this paper first generated a codebook for analysing platform affordances. The codebook was generated by coding the labels and topics from the collected visual and textual review data and



Source(s): Diagram created by authors; case image from MVRDV https://www.mvrdv.com/projects/115/markthal

Figure 2. Research flow

incorporating existing topics from the literature. We began with two researchers open-coding the image, video, and text data. The image data from Instagram and Google Maps were labelled using Google Vision API, while TikTok video data was analysed using Google Video Intelligence API. Text data, including comments and image descriptions, was manually coded. Additionally, we supplemented these coded topics with insights from existing literature (Główczyński, 2022; Li *et al.*, 2024). Then we performed the axial coding by summarising the result of open coding into 15 coded

topics. Finally, we selectively coded these coded topics into three spatial dimensions: perceived space, lived space, and conceived space (Table 1). Subsequently, one of the researchers drew on both sets of codes during the process of developing the categories. Both researchers examined and confirmed the final categories. Each topic is defined, referenced, and illustrated with textual comments and image labels from social media data. This codebook serves as a key reference for the subsequent qualitative and quantitative analysis.

(3) *Content analysis:* Based on the codebook, we conducted a mixed-methods content analysis of social media data from three platforms to comprehensively analyse different data types (Riffe *et al.*, 2019). First, we analysed image label proportions and their distribution across 15 coded topics to compare image content across platforms. We also used ImageSorter to cluster images and video thumbnails by colour to identify platform-specific clusters and their impact on visual content topics. For text data, we manually conducted a thematic analysis of comments to determine the text topic proportions corresponding to the 15 coded topics. Unclassifiable text (e.g. too short, garbled, irrelevant, etc.) was categorised as "others". Finally, we visualised the results to assess each platform's relevance to representations of perceived, lived, and conceived space.

(4) *Platform affordance analysis:* To analyse the impact of platform affordances, we used the walkthrough method on typical examples from our data. This method, common in digital media and platform studies, explores how users interact with digital platforms, apps, or websites (Light *et al.*, 2018). It involves systematically navigating a digital platform like a typical user while documenting the processes, choices, and features encountered.

Results

Based on the above analysis methods and data, we calculated the image label proportion and text topic proportion of TikTok, Instagram, and Google Maps based on the codebook.

We started with the analysis of the image label proportion of the representation of Markthal (Table 2). Perceived space is a major focus across all three platforms, with Instagram leading at 54.08% proportion of image labels. Within the category of perceived space, images of artificial space characters are particularly prominent, especially on Instagram (22.24%) and Google Maps (21.48%). Markthal, with its iconic architecture, attracts attention with labels like building, city, urban, design, city, etc. (Figure 3). Natural space images, like sky and trees, are often shared on Instagram (11.54%) and Google Maps (12.34%), with image labels such as sky, plant, and tree (Figure 3) appearing frequently, likely due to Markthal's colourful murals. TikTok, however, emphasizes lived space, with 38.67% of images related to gastronomy and food, showcasing the market's diverse cuisines, and unique dining experiences, leading people to record and share their eating experiences. Conceived space is less represented, though Google Maps sees more engagement with future designs (12.76%) and art (10.80%). Certain topics, like social interaction, are underrepresented due to their less visible nature.

Then, we analysed the clustering of images sorted by colour (Figure 4). Using ImageSorter to analyse TikTok, Instagram, and Google Maps images by colour reveals distinct clustering patterns. TikTok's central cluster predominantly features warm-toned images related to food, drinking, and leisure etc. Users focus more on their activities rather than the building's physical attributes. In contrast, Instagram's central cluster showcases many vibrant images of building exteriors and interior design, predominantly in blue tones, while images of food and activities are less common. Instagram images are richer and brighter in colour compared to TikTok and Google Maps. Google Maps shows a balanced mix of images depicting both activities and the physical attributes of buildings, with an even distribution of cool-toned and warm-toned images. It is less vivid but more accurate in reflecting real-world spaces.

Table 1. The codebook of the representation of Markthal in terms of perceived space, lived space, and conceived space on TikTok, Instagram, and Google Maps

Architecture dimension	Coded topic	Definition	Examples of text data*	Examples of labels of image data
Perceived space	Location and time	Basic information about the architecture, such as location and time	"Whilst at Markthal in Rotterdam, we also tried the Papdi Chaat."	Daytime, morning, night, winter, etc.
	Natural space character	Description of the natural elements around the architecture	"Bright colours add a great spring mood to the ceiling. And when it's flowers, it happens doubly."	Sky, tree, flower, plant, cloud, wood, leaf, etc.
	Artificial space character	Description of the physical space elements, materials, scale, form, colour, etc.	"One of our most iconic projects tackles urban regeneration." "The massive glass windows on either end of Rotterdam's Markthal are constructed from glass tiles hung in place with cables." "A new type of comprehensive market with large-scale paintings on the ceiling."	Building, architecture, urban, city, space, tower, ceiling, landmark, line, wall, window, glass, shade, textile, blue, tint, light, orange, yellow, etc.
	Facility	Facilities in Markthal for basic operations	"We rented a bicycle, and it takes about 10 min from the central station." "There's a shortage of toilets, and a lot of them charge."	Car, infrastructure, wheel, subway, etc.
	Aesthetic	Description of the aesthetics of this building that people feel	"The most beautiful fashionable food market in Europe." "Photographed this beautiful project" "The outside is quite ugly and inside a bit of a mess."	Colourfulness, symmetry, vibrancy, etc.
	Physical sensor	The body's physical senses in this building are sensitive to odours, sounds, and sights	"The colours and smells reign supreme!" "All the smells mixed together, very cramped."	Light, visual, etc.
	Emotion	Feelings and emotional fluctuations generated by people in the Markthal	"Cute places." "l feel so happy here!" "Now and then, it made me (you) happy." "Not sure if I'd want to see the crowd in front of my door every day though!"	Happy, smile, expression, etc.

(*continued*)

Table 1. Continued

Architecture dimension	Coded topic	Definition	Examples of text data*	Examples of labels of image data
Lived space	Shopping	Shopping and buying goods behaviour in this building	"This is the largest supermarket in the Netherlands." "Enjoy the Friday shopping!"	Shopping, store, goods, product, etc.
	Leisure	The behaviour of relaxation and recreation that happens in the Markthal	"Ready for a moment of ultimate relaxation?" "The Holiday Passport is full of fun sporting and recreational things to do in and around Rotterdam."	Travel, fun, relax, etc.
	Gastronomy and food	Gastronomy-related eating, drinking, and cooking behaviours in Markthal	"Last time we visited Markthal to try different delicacies at different food stalls. From savoury to sweet, they've got it all!" "For dinner, we went back to the Markthal: I had the world's best vegan ramen and my favourite fresh fries." "The new food concept in the Markthal where everything revolves around the delicious flavours from sun-drenched European countries." "Ever tried a blood orange cannolo."	Food, cooking, dish, cuisine, recipe, cream, dessert, drink, meat, noodle, sandwich, soup, ingredient, etc.
	Culture and festivals	Events and festivals related to culture and customs that happen in Markthal	"Christmas vibes." "Celebrate Valentine's Day with our chef."	Christmas, etc.
	Social interaction	Social behaviour with friends, family, and the public that happens at Markthal	"Having lunch with friends." "A delicious family food adventure."	Friends, family, etc.
Conceived space	Design and future vision	Recommendations and designs for how the physical environment, business types, and activities can be improved in the future	"The market hall has improved slightly but is more of a tourist attraction than something where you go to do your shopping every day." "Want to have another 'Markthal' in Amsterdam." "There is still room for improvement for dealing with improving service attitudes and food prices, etc."	Design, vision, improvement, etc.

(*continued*)

Table 1. Continued

Architecture dimension	Coded topic	Definition	Examples of text data*	Examples of labels of image data
	Art representation	Place's representation, through artistic methods such as photography, video, painting, making music, etc.	"I want to use filters to show this market." "I drew a picture today depicting the bustling market atmosphere."	Music, painting, photograph, etc.
	Branding and reputation	People's evaluation and branding behaviour for this architecture	"Check out this cool market in Rotterdam!" "Highly recommended" "Good to stop by for refreshments or just photos!"	Sharing, score, etc.

Note(s): *The examples of text data collected from social media are fully anonymized, ensuring no risk of re-identification by removing direct identifiers and rephrasing participants' statements to further protect participant privacy

Source(s): Table created by authors

Table 2. The results of image label proportion of representation of Markthal on TikTok, Instagram, and Google Maps with perceived space, lived space, and conceived space

Architecture dimension	Topic	Proportion (%) of image label TikTok	Instagram	Google Maps
Perceived space	Location and time	3.90	4.52	4.25
	Natural space character	4.93	11.54	12.34
	Artificial space character	12.52	22.24	21.48
	Facility	5.23	5.29	6.22
	Aesthetic	3.49	4.62	4.15
	Physical sensor	2.67	1.83	2.08
	Emotion	6.66	4.04	1.56
	The sum of perceived space	39.4	54.08	52.08
Lived space	Shopping	2.15	1.35	6.43
	Leisure	1.64	7.21	6.84
	Gastronomy and food	38.67	8.46	6.32
	Culture and festival	3.69	4.90	4.25
	Social interaction	0.51	2.88	2.60
	The sum of lived space	46.66	24.8	26.44
Conceived space	Design and future vision	3.39	7.88	12.76
	Art representation	8.50	6.06	10.80
	Branding and reputation	4.62	3.27	1.66
	The sum of conceived space	16.51	17.21	25.22
Others		3.49	2.02	2.49

Source(s): Table created by authors

Finally, we analysed the text topic thematic proportion of the representation of Markthal (Table 3). Consistent with the image analysis results, the review texts on all three platforms mostly discuss perceived space (over 50%) and relatively fewer mention conceived space (less than 15%), although many differences are also present. For perceived space, the text on Instagram frequently mentions artificial (18.07%) and natural spaces (9.40%). Text can describe non-visual elements

Source(s): Image created by authors

Figure 3. Word clouds of the Image labels. From left to right: the result of TikTok, Instagram, and Google Maps

more intricately, leading to an increased focus on sensory and emotional aspects, for example, "I am so happy to visit the most beautiful arcade market in the world". Google Maps reviews emphasise facility issues (10.19%) at Markthal, like limited or paid toilets. Regarding lived space, all platforms discuss gastronomy and food (TikTok 20.97%, Instagram 11.18% and Google Maps 17.53%) and shopping (TikTok 11.48%, Instagram 10.10% and Google Maps 8.93%), with Instagram and Google Maps text reviews providing more details compared to visual data. Regarding conceived space, Google Maps (14.11%) has more discussions on the future design and representation of Markthal, notably focusing on branding and reputation (8.33%). Many reviews recommend improvements and suggest ways to address issues like overcrowding and high prices, aligning with Google Maps' functionality for user suggestions.

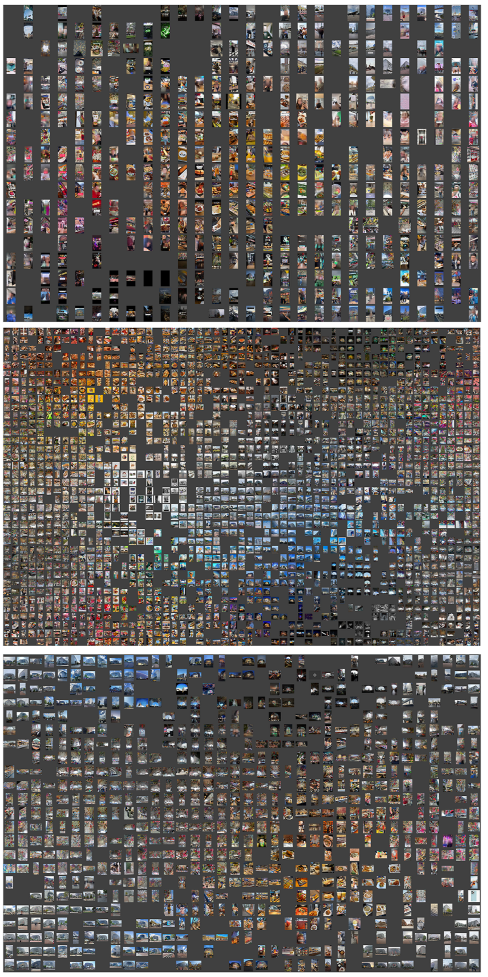
Comparing the result from the text and image labels (Figure 5), due to the characteristics of iconic architecture, their colourful decorations and unique forms have become their distinctive features, so perceived space accounts for the highest proportion across three platforms. Non-visual content such as physical sensors, emotion, branding, and future vision are more frequently conveyed through text than through images. Conversely, activity-related content is better suited to video formats, as evidenced by the particularly high proportion of TikTok videos label related to lived space than text. Images and videos are more suitable for showing visual information such as space and food details, which can be reflected by the fact that the percentage of images related to artificial space, natural space, etc. is higher than the percentage of text (Tables 2 and 3). The different results of visual and textual platforms also illustrate the impact of their unique affordances on architectural representation. Analysing text alone will bias the results of the visual platform.

Discussion

The impact of platform affordances

The above research results indicate that the representation of the same iconic architecture varies across three different visual social media platforms. We argue that in the process of platform users selecting architectural elements to represent, re-creating them based on platform affordances, and disseminating this information, the platform serves as a media and intermediary, and its platform affordances play a vital role in the representation of content. By employing walkthrough methods to analyse content production, engagement patterns, and representation impact, we have identified key issues and cross-platform discussions. While each platform may be connected to one dimension of representation, it is important to acknowledge that other dimensions also overlap across platforms. This multidimensionality shows the dynamic and complex role of affordances across the platforms, summarised below.

TikTok – Lived space. TikTok is particularly effective in reflecting lived space, as its video-based format captures dynamic interactions and personal experiences in real-time. Content analysis shows 38.73% of text and 46.66% of images on TikTok are related to lived



Note(s): The images collected from social media are fully anonymized, ensuring no risk of re – identification by blurring and masking faces and identifiable features to further protect participant privacy

Source(s): Images created by authors by using ImageSorter, including images from TikTok https://www.tiktok.com/tag/markthal, Instagram https://www.instagram.com/explore/tags/markthal/ and Google Maps https://www.google.com/maps/place/Markthal/

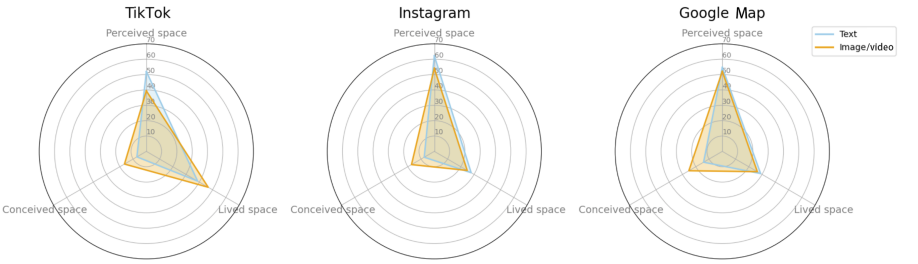
Figure 4. The clustering of images* sorted by colour from TikTok video thumbnails, Instagram, and Google Maps

space, the highest among platforms (Figure 5). Through dynamic video content, TikTok users show their direct interactions and emotional engagements with various spaces. These videos often include personal narratives, creative expressions, and community interactions that embed personal and shared meanings (Du *et al.*, 2022). With its short, engaging videos often accompanied by music, TikTok is ideal for showing how Markthal is actively used and lived in, encouraging the capture and sharing of spontaneous moments and emerging trends. For example, videos featuring local festivals, community projects, or unique personal

Table 3. The results of text topic proportion of representation of Markthal on TikTok, Instagram, and Google Maps with perceived space, lived space, and conceived space

Architecture dimension	Topic	Proportion (%) of text topic TikTok	Instagram	Google Maps
Perceived space	Location and time	8.57	7.97	3.10
	Natural space character	5.87	9.40	5.04
	Artificial space character	17.65	18.07	16.66
	Facility	3.52	3.20	10.19
	Aesthetic	2.70	5.81	6.88
	Physical sensor	5.46	8.64	7.15
	Emotion	8.21	9.16	5.70
	The sum of perceived space	51.98	62.25	54.72
Lived space	Shopping	11.48	10.10	8.93
	Leisure	3.78	3.73	1.75
	Gastronomy and food	20.97	11.18	17.53
	Culture and festival	1.43	1.60	0.55
	Social interaction	1.07	1.18	0.16
	The sum of lived space	38.73	27.79	28.92
Conceived space	Design and future vision	2.70	2.92	5.23
	Art representation	1.68	2.47	0.55
	Branding and reputation	2.76	2.23	8.33
	The sum of conceived space	7.14	7.62	14.11
Others		2.14	2.33	2.25

Source(s): Table created by authors

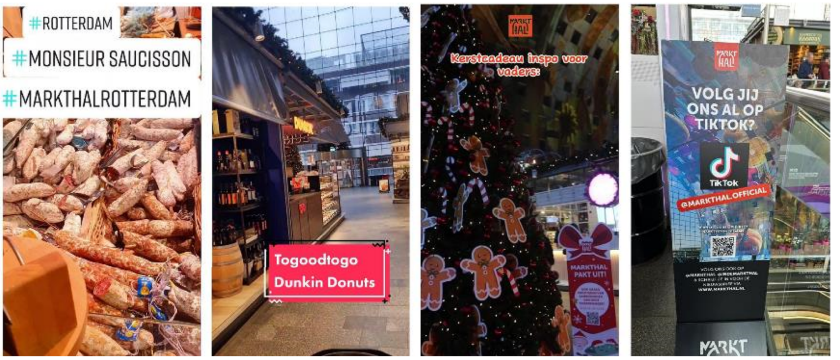


Source(s): Image created by authors

Figure 5. The result of the proportion of text (Blue) and image/video label (Orange) for perceived space, lived space, and conceived space. From left to right: the result of TikTok, Instagram, and Google Maps

experiences reshape how others perceive and engage with these spaces, making them more than just physical locations. TikTok's Duet, Stitch, and Live streaming functions enable direct interaction, fostering collaborative videos and real-time engagement, which are crucial in promoting architectural functions and services. Notably, the official Markthal TikTok account @MARKTHAL placed a board at the building's main entrance, inviting visitors to follow and share users' personal experiences (Figure 6-a). This shows that architectural operation officials increasingly leverage social media to promote iconic architecture with personal stories.

Instagram – Perceived space. Instagram is strongly linked to perceived space through its focus on visual aesthetics. With 62.25% of text and 54.08% of images related to perceived space (Figure 5), users often share photos that highlight the attributes of natural and built environments. The platform allows users to visually create, edit, and publish multimedia that

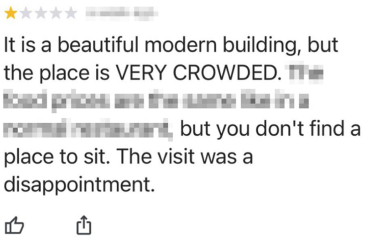


The video thumbnail images from TikTok and the board of the official TikTok account of @MARKTHAL in the building (**Source(s):** Left three images from TikTok https://www.tiktok.com/tag/markthal, right one image photographed by authors)

(a)

The images of Markthal with filters from Instagram (**Source(s):** Images from Instagram https://www.instagram.com/explore/tags/markthal/)

(b)



The Markthal's place review from Google Maps (**Source(s):** Images from Google Map https://www.google.com/maps/place/Markthal/)

(c)

Note(s): The images and text collected from social media are fully anonymized, ensuring no risk of re-identification by blurring and masking faces and identifiable features to further protect participant privacy

Source(s): Images from TikTok, Instagram, Google Maps, and photographed by authors

Figure 6. The selective case of the representation of Markthal on three platforms

can capture and enhance the aesthetic aspects of everyday life. While perceived space is a primary focus, the photos and captions convey how users interact with spaces, significantly reflecting lived space. Users often see the photos of spaces on Instagram before experiencing

them in person, shaping their perceptions and expectations. For instance, an Instagram filled with beautiful images of a tourist destination makes the place seem more attractive, affecting public perceptions and potentially increasing tourism (Rogers, 2021). Users apply filters and editing tools to enhance or alter images and videos, changing the perception of reality, and making ordinary settings appear more extraordinary (Figure 6-b). The overlap between perceived and lived spaces on Instagram is crucial, as visual representation influences how users intend to engage with the space, turning what is perceived into lived reality.

Google Maps (Place Reviews) – Conceived and perceived space. Google Maps, particularly with its place reviews feature, is primarily relevant to the conceived space. It offers a structured and organized way to conceive and visualise geographical data and infrastructure, advancing future promotion and suggestions for Markthal. For instance, 14.11% of text and 25.22% of images focus on conceived space, both exceeding the other platforms (Figure 5). Google Maps allows users to share their experiences and opinions about places they have visited, influencing others' perceptions and decisions (Główczyński, 2022). However, we recognise that content related to perceived space is prominent, such as artificial space and facilities, reflecting how the space is physically encountered and perceived. Integrating user reviews and ratings provides feedback that can be used to reflect public opinion, serving as a crucial tool for urban planners, architects, and businesses by offering insights that help inform planning and development decisions. For example, a consistently highlighted issue in reviews, such as overcrowding, overly expensive, smelly, lack of seating, and limited local food, can be incorporated into the redesign and renewal of those elements in architectural design and urban planning (Figure 6-c).

In sum, Google Maps, Instagram, and TikTok each provide a dynamic, multifaceted view of how spaces are perceived, lived, and conceived, reinforcing the importance of analysing these representations in a comprehensive and integrated way.

Implications of platform affordances on iconic architecture and future research

Understanding platform affordances allows researchers, designers, and marketers to comprehend how digital social media influences user behaviour, and how that user behaviour influences the representation and experience of iconic architecture. Platform affordances can affect how users interact with iconic architecture content, whether they share content and the types of content they choose to create. Affordances like easy sharing and algorithmic promotion can make content viral, influencing public opinion, trends, and even platform activism and social movements (Hautea *et al.*, 2021). Identifying the affordances that drive engagement can help marketers and advertisers of iconic architecture create more effective strategies. Over time, these interactions shape broader cultural trends and social norms, such as the "Instagram style" and the "Instagrammable" appeal of iconic architecture.

Research on platform affordances reveals that each platform has specific limitations and biases. Future studies should carefully select social media platforms to minimise these affordances' influence on research outcomes. A deeper understanding of platform affordances and their unique mediascapes can help researchers gain insights into these dynamics (Hurley, 2023). Recognising how affordances affect the production of iconic architectural content, designers and researchers can develop effective design strategies, and marketers can more intelligently choose platforms for promoting architecture.

Limitations and prospects

This study focuses on three visual social media platforms, with a limited sample size, and uses the Markthal in Rotterdam as the sole case study. There are limitations when applying this approach to other types of buildings, such as public buildings and urban public spaces of different scales or functions, and it is unclear whether our findings remain applicable in these contexts. Concerning visual data analysis, since the video format of TikTok is different from the image format of the other two platforms, the selected label detection algorithm also differs, which may also influence the results. When analysing textual data, the process of topic

categorisation and codebook generation is subjective. Ethically, while social media users share content willingly, they are rarely informed about its potential use in research. Currently, only TikTok offers an official research API, while data from the other two platforms is collected through third-party software. This raises challenges in ensuring methodological transparency while protecting user privacy.

Future research might leverage techniques like Word2vec for more nuanced word representations, and this algorithm can be applied for more accurate analysis and application to research in other fields (Koblet and Purves, 2020). At the same time, this work can be part of a larger research program, future work might consider more systematic analyses of platform affordances, auto-ethnographic accounts, and participant interviews to explore the strong relationship between platform affordance and its outcomes. Future research can expand the types of platforms studied and the context of the case. A potential direction is to see whether the social media performance of iconic architecture in different contexts, functions, and scales leads to similar results.

Conclusion

The concept of platform affordance is fundamental in media studies, but it remains underexplored in the field of architecture. This paper explores how iconic architecture is represented across visual social media platforms and uncovers the effects of platform affordances on the representations. This study collects visual and textual data from three platforms: TikTok, Instagram, and Google Maps. Using Rotterdam's Markthal as a case study, it develops a conceptual framework and employs mixed methods for analysis. Google Maps play an essential part in shaping conceived and perceived space, assisting in the planning and visualization of urban environments through user feedback. Instagram is more closely linked to perceived space by influencing how audiences perceive and expect physical locations via curated visual content. TikTok is more associated with lived space by allowing users to share dynamic, personal experiences linked to specific locations, strengthening social and emotional bonds. This research has important theoretical and methodological implications, highlighting the potential for future studies at the intersection of architecture and social media.

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