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PHYGITAL URBAN GALLERY: DEMOCRATIZING ADVERTISING SPACES VIA AR AND NFT ART

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ABSTRACT

This article examines how phygital urbanism, the integration of physical and digital spatialities can democratize commercial advertising surfaces by transforming them into participatory cultural interfaces. Through a case study in Quito, Ecuador, it analyzes the conversion of a temporary real-estate construction fence into a phygital urban gallery combining physical artworks, augmented reality (AR), and blockchain-registered digital pieces. The intervention disrupted speculative advertising logics, expanding public access to digital art and reconfiguring visual infrastructure as a civic interface. Findings indicate that this phygital commons enhanced social interaction and pedestrian engagement, even within a vehicular-dominated urban context typical of Global South cities.

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1. Introduction

Urban space is not a static surface of transit but a dynamic field of social interaction, technological knowledge, and symbolic relations. As Lefebvre (1991) argues, social space is produced through social relations and, in turn, actively shapes them. Architecture and urban infrastructures are therefore never neutral: they actively participate in the reproduction of wisdom, power, and everyday life. In the early twenty-first century, this production of space is increasingly mediated through digital systems that visualize, quantify, and algorithmically organize urban experience. Scott McQuire (2008) describes contemporary cities as media-saturated environments in which architecture and communication technologies actively shape urban perception and interaction. Screens, billboards, façades, smartphones, and AR overlays now operate as interconnected media surfaces through urban meaning is continuously produced and negotiated. This condition exemplifies the rise of platform urbanism, understood as the interweaving of digital platforms and physical city spaces in shaping public life (de Lange & de Waal, 2019).

Within this expanded media ecology, even the most ordinary urban elements as construction fences, scaffolding, temporary hoardings function as communication devices. Far from being neutral barriers, they circulate images, promises, and imaginaries tied to real-estate speculation and urban development. In cities like Quito, where rapid densification and private-led development shape the visual landscape, these temporary fences operate as what can be described as advertising membranes: surfaces that project idealized futures while concealing the social, environmental, and material processes of construction. Lefebvre (1991) frames such infrastructure as a manifestation of abstract space: a space produced for accumulation, homogenized in appearance yet fragmented in access. “Social space is a social product” (Lefebvre, 1991, p. 26).

This study aims to examine how phygital media-architectural interventions can transform construction fences from commercially dominated visual surfaces into platforms for civic engagement and collective expression. Specifically, the research addresses the following questions: (1) how does the integration of physical murals and augmented reality content influence pedestrian interaction with temporary urban infrastructures? (2) To what extent can phygital design strategies challenge dominant visual regimes and support alternative forms of public participation in the urban environment?

This project is situated within critiques of the coloniality of urban visual regimes, which privilege speculative imaginaries over lived experience in many Global South Cities (Quijano, 2000; Barriendos, 2011). Consequently, urban visual environments actively structure what can be seen, valued, and governed, sustaining extractivist grammars that marginalize everyday practices and local memory within contemporary Latin American cities (Carroza-Athens & Grosfoguel, 2023a).

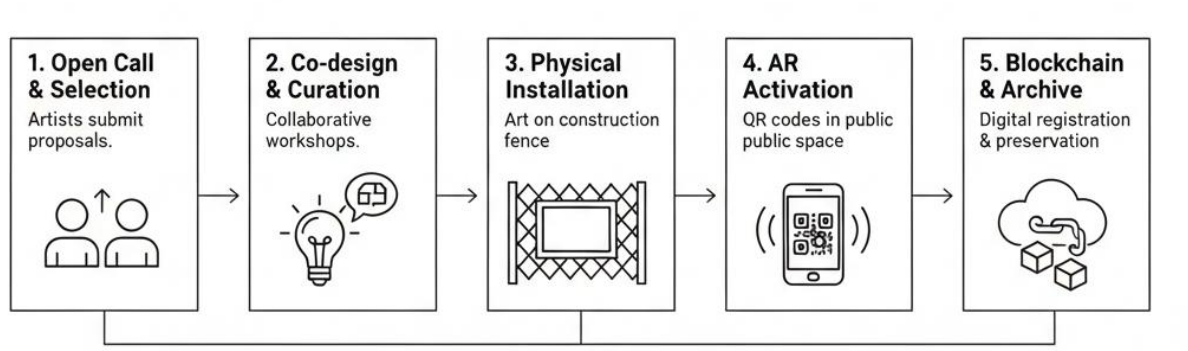
It is within this contested visual and media environment that the Phygital Urban Gallery intervenes. Rather than opposing commercial development directly, the project temporarily reprograms an existing advertising infrastructure, transforming a real-estate construction fence into a phygital urban interface. Through the integration of physical artworks, QR-coded AR experiences, and NFT-based digital certification, the fence shifts from a one-way promotional surface to a participatory cultural device. Importantly, appropriating of the technical knowledge to promote local emergent groups, this intervention is not a public art program nor a state-led initiative. It is a private, time-bound collaboration between a real-estate developer, independent curators, and digital artists, operating in the ambiguous space between public visibility and private ownership. This condition makes the project especially relevant for understanding how urban democratization can occur through temporary, negotiated interventions rather than permanent institutional transformations.

Nine digital artists were selected through an open call and were actively involved not only in producing artworks but in shaping the exhibition surface itself. Each work exists simultaneously as: (1) a large-scale physical image on the fence, (2) an AR layer accessible via QR code, and (3) an

NFT registered on a blockchain platform (functioning as a public record of authorship rather than a speculative asset). In a city where access to institutional exhibition spaces remains limited, particularly for emerging digital artists, the gallery operates as an ephemeral phygital commons, expanding visibility and authorship within everyday urban space. As Tuan (1977) argues, places acquire meaning through lived experience and emotional attachment (p. 6). By embedding digital art into routine pedestrian movement, the project reintroduces cultural meaning into an otherwise instrumentalized urban surface.

Theoretically, this intervention builds on the convergence of media-city theory (McQuire, 2008), the concept of augmented space as defined by Manovich (2006), and networked urbanism. The concept of the phygital city extends these frameworks by emphasizing not only the overlay of digital information onto physical space, but also shifts in agency and participation. As Mitchell (1996) argues, digital networks increasingly operate as urban infrastructures, producing new forms of networked publics. The Phygital Urban Gallery exemplifies this transition. The construction fence traditionally a symbol of exclusion and anticipation became a temporary interface mediating between private development and public experience, between speculative futures and present creativity. In doing so, it suggests that urban visual democracy can be enacted not only through permanent public infrastructure, but through ephemeral phygital prostheses that momentarily alter how space is perceive, seen, used, and shared.

Figure 1. Project workflow of the Phygital Urban Gallery.



Source. Images by the author, 2025

Figure 2. Layered structure of artworks in the phygital gallery (physical print, AR overlay, NFT certificate).



Source. Images by the author, 2025

2. Methodology

2.1 Research Design and Epistemological Positioning

This research adopts a design-based research (DBR) approach (Brown, 1992; Wang & Hannafin, 2005), positioning the Phygital Urban Gallery simultaneously as an architectural intervention and as an analytical framework. DBR is particularly suited to architectural and urban research contexts, as it enables iterative experimentation in real-world environments while generating

transferable methodological and conceptual insights (Mitchell, 1996). In this study, the intervention functions both as a spatial prototype and as a research instrument for examining media architecture, urban perception, and public interaction (Lefebvre, 1991).

The case study focuses on a single site: a temporary construction fence located at a new real-state project adjacent to Plaza Argentina, close to Parque La Carolina in Quito's urban core. Although the area is characterized by heavy vehicular flow and minimal pedestrian amenities, the site offers high visual exposure and symbolic relevance within the city's contemporary development dynamics. By situating the project here, the research engages the politics of visibility embedded in urban development. Temporary construction fences in Quito typically display glossy architectural renderings that project sanitized, future-oriented visions of urban life, reinforcing speculative logics while suppressing present cultural expression. "The media city is not simply a place where media is located, but a complex environment in which media forms are embedded within the textures of everyday urban life" (McQuire, 2008, p. 1). Selecting this ubiquitous yet overlooked infrastructure as the exhibition surface allowed the project to directly confront the visual regime of speculative urbanism. In doing so, it operated within a *coloniality of seeing* that defines who can appear and what narratives dominate public space (Carroza-Athens & Grosfoguel, 2023).

Figure 3. Context and Project location.



Source. Images by the author, 2025

Survey participants were selected through on-site convenience sampling during different times of the day in order to capture diverse pedestrian profiles. While this approach enabled direct engagement with users of the installation, the sample is not statistically representative of the wider urban population. This limitation is acknowledged and addressed by triangulating survey data with observational evidence and large-scale digital analytics, strengthening the overall robustness of the findings.

2.2 Open Call and Artist Selection

The project was initiated through an open call for digital artists, launched collaboratively by the private real-estate stakeholder and an independent curatorial team. The call sought artists working across digital illustration, 3D animation, AR, and other hybrid media practices. From dozens of submissions, nine artists were selected based on their work's relevance to urban imaginaries, digital–physical hybridity, and potential for public engagement. Importantly, artists were treated not as content suppliers but as co-designers. This approach aligns with participatory

design traditions in Latin America (CIMAS, 2009), countering extractive cultural models by embedding artists directly in spatial and technical decision-making processes. Each artist's perspective influenced not only the content but also the layout and interaction design of the gallery, ensuring the installation was collaboratively authored.

Figure 4. Phygital Urban Gallery installation Photo Series (3 images)



Source. Images by the author, 2025

2.3 Co-Design and Physical Installation Process

Unlike conventional exhibitions where the venue is fixed and given, here the construction fence itself became a design variable. Throughout a series of workshops, the artists, curators, and the construction stakeholder engaged in conceptual discussions about the fence as a liminal public–private interface. The team collectively devised a modular grid system on the fence to allocate space for each artwork, balancing individual expression with a coherent overall layout. Artists participated in on-site activities such as design and painting the base wall, effectively transforming the blank barrier into a prepared canvas. Meanwhile, the construction company contributed technical and logistical support: printing the digital artworks at architectural scale on weatherproof panels, installing QR code signage linked to the AR content, and providing basic urban lighting to ensure nighttime visibility and safety. This collaborative process resulted in what can be described as a temporary phygital urban prosthesis: an additive, non-invasive layer that enhances the street's performative capacity without altering any permanent infrastructure.

2.4 Technological Framework: AR and NFT Integration

Each artwork in the gallery operated through a three-layer structure:

- Physical layer: a large-format printed image visible to any passerby without mediation.
- Augmented layer: an AR animation or interactive layer activated via a QR code, viewable on pedestrians' smartphones.
- Blockchain layer: an NFT entry serving as a public certificate of authorship (as opposed to a tradable asset).

Crucially, NFTs were conceived and communicated as *cultural certificates*, not commodities. This approach aligns with Catlow et al. emphasize that "blockchains are not neutral technologies" and note that artists are using them "to experiment with new forms of authorship and distribution" (Catlow et al., 2017, pp. 11–13). Likewise, the AR interactions were intentionally designed to be App-free (accessed through a standard mobile web browser after scanning the QR) and low-bandwidth, with each augmented experience lasting only about 6–10 seconds. This restrained design aligns with Manovich's definition of augmented space as "the physical space overlaid with dynamically changing information" (Manovich, 2006, p. 221). By minimizing

technological friction, the project ensured that digital augmentation added to – rather than detracted from – the physical experience.

Figure 5. Phygital gallery photo at sunset people using AR



Source. Images by the author, 2025

2.6 Data Collection Strategy

To evaluate the gallery's impact, data collection combined traditional in-person surveys with large-scale digital interaction analytics. This mixed approach denote as a platform architectures shape how participation becomes visible and measurable (Gibbs et al., 2015). The data sources and their purpose are summarized in Table 1. In brief, 100 short surveys were conducted face-to-face with pedestrians in situ, emphasizing qualitative perceptions (safety, enjoyment, understanding of the project). Meanwhile, the AR platform automatically logged every interaction (QR code scan and AR activation), yielding approximately 90,000 records over twelve months. These logs included timestamps and location markers for each artwork's activation, enabling temporal and spatial analysis. Additional analytics, such as per-artwork "heatmaps" of interaction intensity and average interaction durations, were generated from the raw logs. By combining human perceptions with digital usage data, the study gained a multi-dimensional view of public engagement.

Table 1. Data Sources and Analytical Purpose

Data Source	Sample Size	Purpose
Surveys	100	Perception, safety, understanding
AR logs	90,000	Engagement scale and duration
Heatmaps	9 artworks	Spatial intensity

Source: Daniel Cevallos Andrade, 2025.

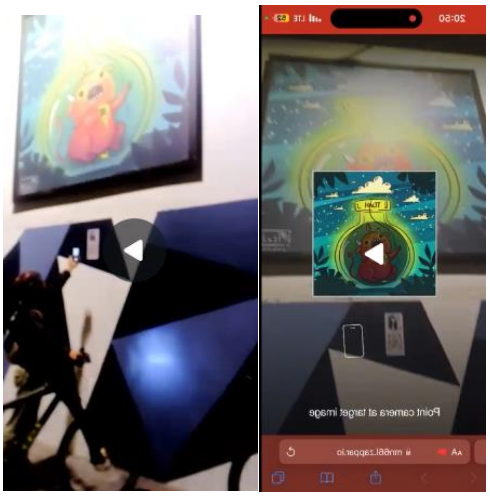
All surveys were conducted on-site at different times of day with randomly selected passersby and focused on subjective perceptions (safety, experience) and basic awareness of the AR component. Digital data were obtained from anonymized QR code scan logs provided by the AR platform, aggregated monthly and mapped spatially to identify engagement patterns across the fence. Together, these qualitative and quantitative datasets enabled a robust analysis of public interaction (Townsend, 2013).

2.7 Interaction Metrics and Heatmaps

Analysis of the digital interaction data revealed distinct patterns across both time and space. In total, the installation registered approximately 90,000 AR interactions (scans/activations) over the one-year period (September 2023 – August 2024). These were not evenly distributed: usage peaked in the first half of 2024 and then stabilized at lower levels (details in Results). Interaction durations were short but significant, averaging between 6 and 10 seconds per artwork engagement, these moments were sufficient to trigger the AR animations, convey each artwork's narrative, and often prompt onlooker curiosity or conversation. Notably, engagement intensity varied by location along the fence. Artworks situated near pedestrian crossroads and street corners saw higher scan counts, likely due to greater foot traffic and visibility. Interaction density also increased at night once supplementary lighting was installed, indicating that even modest lighting interventions can extend digital engagement into evening hours.

- Peak months: January–May (10,000–11,000 interactions/month)
- Stabilized phase: June–August (5,000–7,000 interactions/month)
- Average interaction time: 6–10 secon

Figure 6. AR perspective through a smartphone.



Source. Images by the author, 2025

2.7 Typological Classification: The Phygital Urban Prosthesis

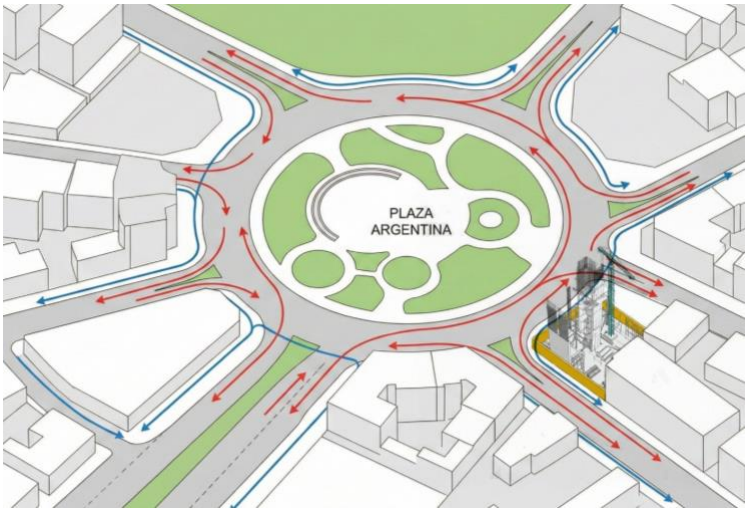
Based on its characteristics, the project can be classified as a temporary phygital urban prosthesis within the typology of urban interventions. Key attributes of this class include: (a) a time-bound installation intended duration of one year, with no permanent physical alterations, (b) operation in a liminal public–private space (the fence is privately owned yet publicly visible), (c) maintenance by private actors (the developer ensured upkeep and functionality), (d) a primarily cultural and relational function (as opposed to utilitarian infrastructure), and (e) demonstrable enhancement of walkability, safety perception, and social interaction during its presence. This term "prosthesis" underscores how the installation acted as a supplemental organ of the city, an add-on that temporarily extended the capabilities of a place (in this case, its communicative and social capacities) without becoming a permanent part of it.

This mixed-method approach enabled triangulation between large-scale interaction data and situated qualitative perceptions.

3. Results

3.1 Overview: From Advertising Surface to Phygital Interface

Figure 7. Fence construction site location.



Source. Images by the author, 2025

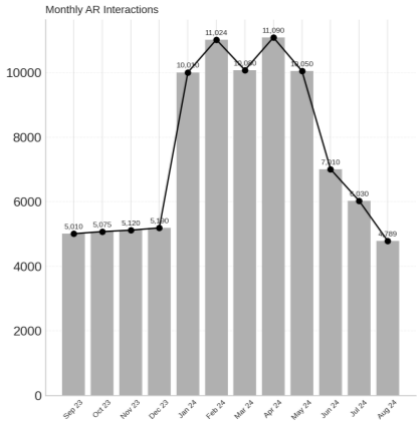
The Phygital Urban Gallery transformed a single construction fence at Plaza Argentina, originally dedicated solely to real-estate advertising, into a temporary phygital interface that sustained public engagement over a twelve-month period (Sep 2023–Aug 2024). Over the installation's lifespan, the fence was recast from a passive backdrop into an active cultural surface. Approximately 90,000 AR interactions were recorded, indicating a remarkable level of public interest for what was once an unnoticed structure. This shift aligns with Lefebvre's distinction between "representations of space," tied to systems of order and control, and "spaces of representation," which are lived and symbolically appropriated (Lefebvre, 1991, p. 33). Through repeated everyday interactions, the fence effectively transitioned from the former into the latter. In other words, an object built to commodify space was, if only temporarily, *appropriated* as a platform for collective expression and encounter.

3.2 Quantitative Engagement Metrics

3.2.1 Total Interactions and Temporal Distribution

Digital analytics captured an uneven temporal distribution of the ≈90,000 AR interactions, revealing distinct phases of engagement. The first five months of 2024 (January–May) saw peak usage, averaging 10,000–11,000 interactions per month. This suggests an initial surge of novelty and public curiosity, likely amplified by word-of-mouth and local media coverage about the "new AR fence." Thereafter, a stabilization phase occurred from June through August 2024, with monthly interactions leveling off to roughly 5,000–7,000. This pattern, an early peak followed by a sustained plateau, is consistent "Media architecture increasingly operates as an event-based medium." (McQuire, 2008, p. 138). In our case, the data indicates the gallery became accepted, if less sensational, part of the streetscape as the year progressed.

Figure 8. Monthly Distribution of AR Interactions (Sep 2023–Aug 2024).



Source. Images by the author, 2025

3.2.2 Interaction Duration (Dwell Time)

The average dwell time per interaction (i.e. how long a person engaged with an AR artwork) ranged between 6 and 10 seconds, as noted in the methodology. These short interactions align with Manovich's definition of augmented space as "the physical space overlaid with dynamically changing information" (Manovich, 2006, p. 221), where attention oscillates between movement and pause.. Although only a few seconds long, these interactions were sufficient to trigger the AR content and communicate each artwork's essence. In practice, that meant a passerby could scan a code, watch a short animation on their phone overlaying the mural, and perhaps exchange a remark with a friend, all in under 10 seconds. Crucially, these brief encounters often led to qualitative impacts disproportionate to their length: they caught the eye of other pedestrians, prompted people to stop and look, and seeded conversations among strangers. In essence, dwell times measured in seconds still created moments of public pause that accumulated into a larger social effect.

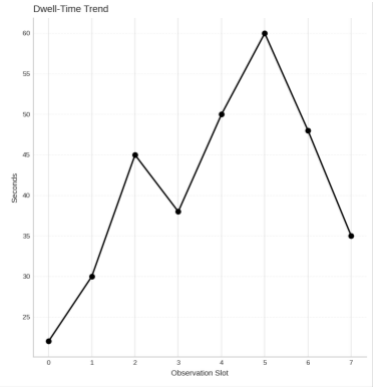


Figure 9. AR Interactions
Source. Images by the author, 2025

3.3 Spatial Engagement Patterns (Heatmap Analysis)

Analysis of interaction logs by artwork location revealed differentiated engagement across the nine AR artworks. A digital *heatmap* of scans showed higher densities at the fence's two ends (closest to pedestrian crossings) and at a central panel located near a bus stop. Key observations include:

- Artworks positioned at high-foot-traffic points (near the crosswalk and street corner) registered the heaviest use, confirming that visibility and convenience strongly influence engagement.

- Night-time interactions increased significantly for artworks under the newly installed lights, underscoring the role of lighting in extending public use of the installation.
- Some artworks with more visually complex or dynamic AR content drew repeat scanners, as evidenced by clusters of interactions even during the stabilized phase.

These patterns support Mitchell's observation that "digital networks do not abolish geography; they reorganize it" (Mitchell, 1996, p. 28), suggesting that digital layers are most effective when aligned with existing movement patterns.In other words, the phygital installation worked best when it "met people where they already were" in their paths through the city.

Figure 10. Heatmap of AR interaction intensity by artwork location on the fence.



Source. Images by the author, 2025

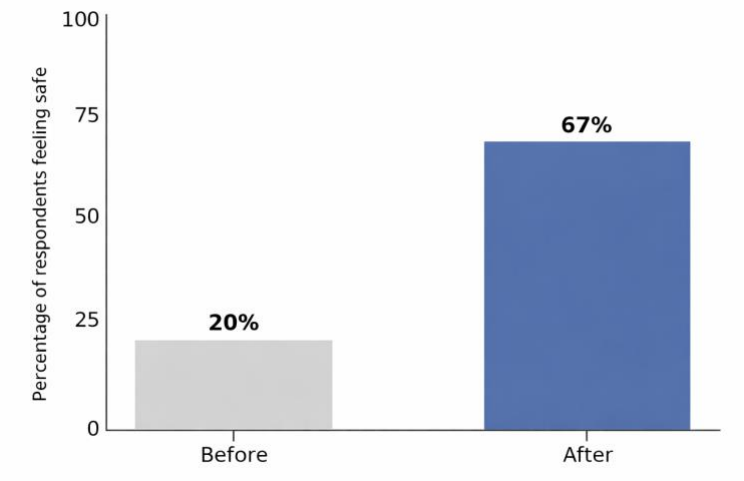
3.4 Survey Results: Perception and Social Impact

To complement the aggregated digital data, **100 in-person surveys** provided insight into how the installation was perceived and how it affected behaviors on the ground. The survey results are organized around key themes below.

3.4.1 Perception of Safety

One striking finding was that 67% of respondents reported an increased perception of safety at night in the area due to the installation. When asked to elaborate, most cited the improved lighting and the simple fact that people were present and paying attention to the space. This aligns with "a well-used city street is apt to be a safe street." (Jacobs, 1961, p. 35), where in the presence of alert and active usage enhances real and perceived safety. In this case, the gallery's draw created a positive feedback loop: added lighting and interactive art attracted people, and people's presence made the area feel safer, which in turn attracted more people. A smaller portion of respondents (around 20%) said they already felt safe before, indicating the site was not perceived as highly unsafe to begin with, but the intervention still measurably improved the atmosphere for the majority.

Figure 11. Percieved Safety Before vs, After Installation.



Source. Images by the author, 2025

3.4.2 Pedestrian Behavior and Stopping Patterns

According to observational data and survey feedback, the installation led to roughly an 80% increase in pedestrians stopping in front of the fence, compared to prior behavior at the site. Before, almost no one would deliberately pause along this busy sidewalk except perhaps to wait for the traffic light. After installation, however, 8 out of 10 people reported that they stopped at least once to look at the images or use the AR. The *nature* of stopping also changed: where previously a stop might mean waiting idly for a crossing signal, now stopping often entailed interaction, scanning a code, discussing an artwork, or just taking a closer look. This finding strongly resonates with "place is a pause in movement." (Tuan, 1977, p. 138). By causing people to linger, the phygital gallery effectively *created place* at a site formerly experienced as a non-place.

3.4.3 Social Interaction Among Strangers

A particularly emergent outcome was the surge in social interactions among strangers at the site. 79% of surveyed visitors said they either observed or personally engaged in spontaneous interactions with people they didn't know, sparked by the installation. Common scenarios included asking someone nearby "How does this AR thing work?" or commenting on a favorite artwork, or even lending one's phone to a stranger so they could also view an animation. These kinds of exchanges illustrate what McQuire (2008) describes as *media-generated publics,* temporary collectivities formed through shared engagement with media in urban space (p. 125). In a city where strangers on the street rarely interact beyond the transactional, the phygital gallery fostered a subtle form of civic togetherness. People bonded, however briefly, over a novel experience. Several respondents noted that it was "nice to have something to talk about with others" in public, highlighting a latent demand for more interactive public elements that break the usual social barriers of city life.

3.4.4 Novelty and Understanding

An interesting duality emerged regarding novelty and understanding of the project's digital aspects. 100% of respondents noticed something "new" or unusual about the space, the colorful art on what used to be a drab fence ensured that. However, only 59% fully understood that the project involved AR and knew how to use it, whereas 41% noticed the artworks but did not engage with the digital layer (some did not realize it was interactive, others had technical issues or lacked time). This gap underscores both the accessibility of the physical layer (everyone could appreciate the murals) and the learning curve associated with AR. It supports De Lange's (2019) argument that participation exists on a spectrum rather than as a binary "engaged/not engaged" condition

(p. 15). In practice, even those who didn't scan QR codes often became part of the audience, watching others interact or simply enjoying the transformed ambience. In other words, the gallery offered multiple levels of participation, from passive enjoyment to active digital engagement, catering to different comfort levels with technology.

Table 2: Survey-Based Perception Metrics

Metric	Percentage
Perceived novelty	100%
Increased safety	67%
Increased stopping	80%
Interaction with strangers	79%
Understanding AR	59%

Source. Images by the author, 2025

(Table 2 summarizes key perception metrics from on-site surveys, reflecting strong positive responses in terms of novelty, safety, sociability, and a moderate learning curve for AR.)

3.5 Walkability and Urban Dynamics in a Car-Oriented Context

Despite Plaza Argentina's status as a vehicle-dominated junction, the installation produced a measurable increase in *pedestrian presence* and dwell time. People who would ordinarily hurry through or avoid the area on foot began to treat it as a mini-destination. This outcome is particularly significant in the context of Global South cities like Quito, where structural constraints (lack of pedestrian infrastructure, dispersive urban design, safety concerns) limit walkability. The results suggest that phygital cultural installations can act as micro-catalysts for pedestrian activity even in inhospitable settings. Crucially, this was *interest-driven* rather than necessity-driven foot traffic: curiosity brought people here, not errands or transit obligations. "Smart urban technologies must be embedded within local contexts rather than imposed as universal solutions." (Mora & Deakin, 2019, p. 73). In this case, the gallery was a situated, context-aware augmentation: it didn't require broad civic infrastructure changes, only repurposing what was already present (a fence) with locally resonant content and accessible tech.

The implication is that even highly car-oriented urban nodes have untapped potential for walkability if given the right stimulus. By inserting a pedestrian-centric attraction into the flow of the city, the project momentarily recalibrated the balance between moving *through* and staying *in* the space. This finding offers a hopeful note that small-scale, creative interventions can incrementally humanize places dominated by automobiles, which is a pressing challenge in many cities of the Global South.

Figure 12. Car dominance vs Walkability Space.

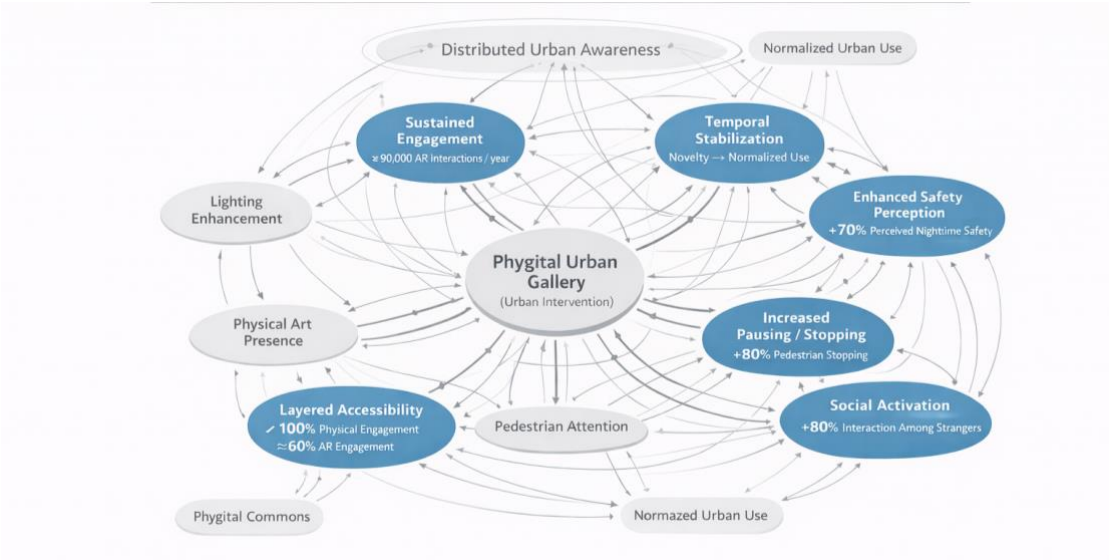


Source. Images by the author, 2025

3.6 Synthesis of Key Findings

Bringing together the diverse strands of data, the project's outcomes can be distilled into six core findings:

Figure 13. *Neuronal Network of social and behavioral effects triggered by a Phygital Urban Gallery*



Source. Images by the author, 2025

- Sustained engagement: Approximately 90,000 AR interactions over one year demonstrated strong public uptake and sustained interest.
- Temporal stabilization: Initial novelty effects gave way to normalized use, illustrating how a tech-driven installation can transition from "gimmick" to habitual urban feature.
- Enhanced safety perception: Perceived safety at night increased by about 70%, indicating the power of light and activity to change the social psychology of a space.
- Increased pausing/stopping: Pedestrian stopping in front of the installation rose by roughly 80%, evidencing a significant shift in how the space is used (from transitory to experiential).

- Social activation: Incidents of interaction among strangers went up by around 79%, revealing the gallery's role as a social catalyst that knit brief community ties.
- Layered accessibility: While 100% engaged visually with the physical art, about 59% engaged with the AR layer, meaning the intervention operated successfully on both analog and digital levels, though digital literacy remains a limiting factor for some.

Together, these outcomes support Lefebvre's assertion that "Every society produces a space, its own space." (Lefebvre, 1991, p. 31)). By altering the space of a city street, even temporarily, the project demonstrably altered social behaviors and relationships in that locale. The addition of digital and artistic layers reconfigured everyday urban experience, if only in microcosm, suggesting that physical space augmented with participatory media can indeed produce a different kind of social space, one with more visibility, agency, and conviviality for ordinary citizens.

4. Discussion

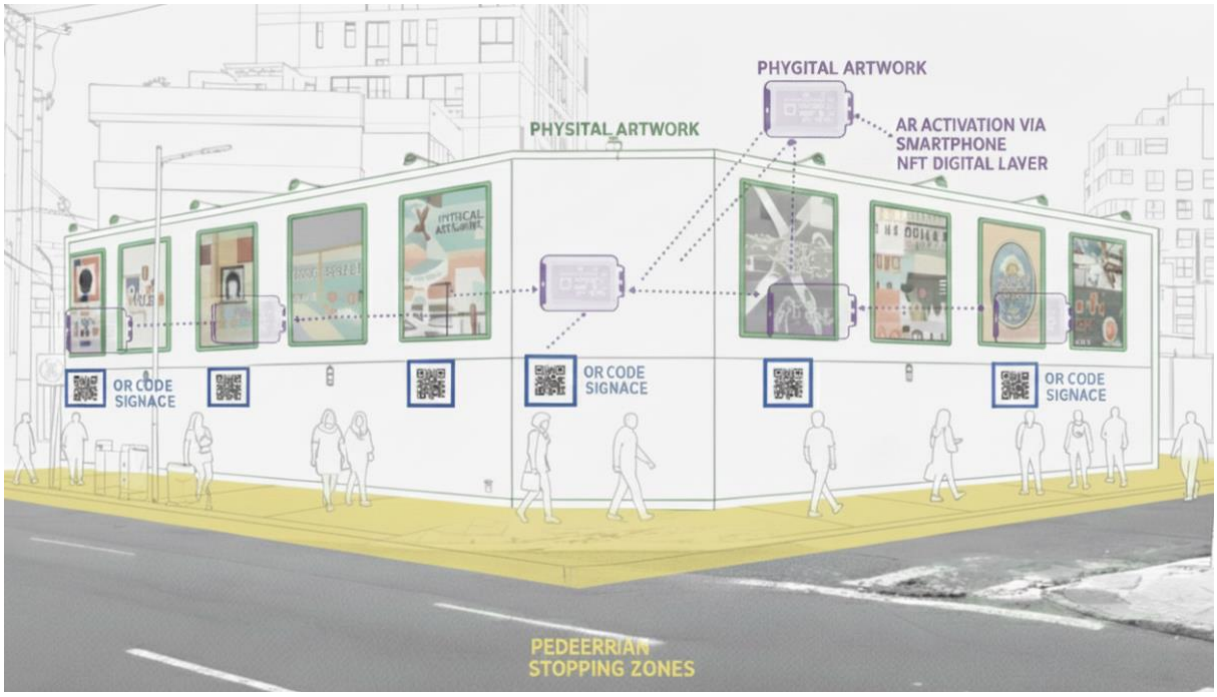
4.1 From Advertising Surface to Counter-Space

Beyond quantitative engagement metrics, these results indicate a qualitative shift in how pedestrians relate to temporary urban infrastructures. The combination of physical and digital layers appears to encourage longer dwell times, exploratory behaviors, and informal social interaction, suggesting that phygital interventions can alter not only visual perception but also spatial practices in transitional urban spaces.

The Phygital Urban Gallery demonstrates that urban democratization can occur through *reprogramming* existing visual infrastructures rather than relying on new architecture. A temporary construction fence, originally intended to enforce exclusion and project a polished vision of future development, was transformed into what Lefebvre describes abstract space as a spatial order tied to power and domination, while insisting that alternative spatial practices emerge by "accentualing differences" against its homogenizing logic (Lefebvre, 1991, pp. 38, 352). In its conventional role, the construction fence exemplified what McQuire (2008) describes as an *urban screen of persuasion*, operating via one-way communication and tightly controlled imagery (p. 106). By contrast, once embedded with AR-artworks and community-facing content, the same fence shifted from a spectacle to an interface. It enabled two-way interaction, recognized local authorship, and invited collective meaning-making. This transition directly challenged the visual logic of speculative urbanism without outright confrontation; instead of tearing the fence down, the project *hijacked* its communicative capacity for public benefit.

This strategy highlights a pragmatic form of urban activism: working *within* existing private structures to subvert their function. The gallery did not halt development or remove the advertisements entirely; it overlaid and interwove with them, offering an alternative narrative in parallel to the official one. In doing so, it carved out a transient commons on corporate property, a manifestation of what we might call urban acupuncture, where a small-scale intervention relieves some of the pressure of larger structural inequities (in this case, the inequity of who gets to broadcast messages in the city).

Figure 14. *Elements of a Phygital Urban Gallery*



Source. Images by the author, 2025

4.2 Media Architecture and Hybrid Urban Perception

The use of augmented reality situates this project firmly within the field of media architecture, albeit not in its most obvious form. Typically, media architecture brings to mind large digital façades or building-sized screens. Here, however, we see a more distributed, low-threshold incarnation: QR codes on a plywood fence. Yet, conceptually, the effect is similar, physical architecture is augmented to reshape how people perceive and behave in public space. McQuire (2008) emphasizes that media architecture works by reorganizing attention and encounter in the city (p. 102). Our results bear this out: even short AR interactions (on the order of seconds) were sufficient to alter pedestrian behavior, prompting people to stop, gather, and converse. In essence, the fence became architecture-as-interface. It is a reminder that media architecture need not be monumental or high-tech; it can be lightweight and ephemeral, activating ordinary street elements with new layers of engagement.

"Augmented space is the physical space overlaid with dynamically changing information" (Manovich, 2006, p. 221). In the case of the Phygital Urban Gallery, this overlay produced brief intensifications of attention and affect that reframed the spatial experience.Crucially, these moments did not require users to stare at their phones for long durations or enter a fully immersive world. Instead, meaning accumulated through repetition and layering: a passerby might scan one artwork today, another tomorrow; someone might observe an animation over a friend's shoulder without scanning themselves. Over time, these small moments reinforced the fence's identity as a site of encounter and surprise. Importantly, the project avoided the pitfalls of over-technologization. It maintained full legibility and appeal at the purely physical level eye-catching art, so that even those not inclined or able to use AR could still participate as spectators. As "new electronic spaces are not separate from the physical city but increasingly intertwined with it" (Mitchell, 1996).

4.3 NFTs as Cultural Infrastructure (Not Speculative Assets)

One of the project's novel contributions lies in its non-speculative use of NFTs, reframing them as a form of cultural infrastructure. In recent years, NFTs in art have been notorious for speculation and exclusivity, often reinforcing commodification of digital culture. Our approach took the

opposite tack: every artwork's NFT was minted and publicly viewable as a certificate of authorship, with no option to trade or sell it through the project. "Blockchains are not neutral technologies" but "cultural infrastructures" through which artists experiment with new forms of authorship and participation (Catlow et al., 2017), rather than merely creating artificial scarcity. By using NFTs in this *documentarian* way, the project ensured that each ephemeral mural and AR piece left a persistent record in the digital commons, a kind of memory capsule.

Figure 15. *Photo Phygital Urban Gallery*



Source. Images by the author, 2025

In the context of ephemeral urban art, which is traditionally transient and often anonymous, the NFT layer provided as Tuan explains, "experience is necessary to the understanding of place" (Tuan, 1977). It allowed the experience to echo beyond its physical lifespan. Months or years later, someone can look up the blockchain record and find the artist's name, the artwork's title, perhaps even metadata linking to images or AR content. This is a subtle but meaningful expansion of the commons: not only did the project temporarily democratize a physical space, it also contributed to an evolving digital public archive of local culture. Moreover, by deliberately detaching the NFTs from monetary valuation, the project responds to broader critiques of digital art as enabling new forms of extraction and inequality. It suggests that distributed ledger technologies can, if carefully designed, support *cultural rights* (like attribution and preservation) without enforcing exclusion or speculative behavior.

4.4 Walkability, Curiosity, and the Global South City

The increases in pedestrian lingering and social interaction are especially noteworthy given the project's location in a Global South urban context. As Hollands (2008) argues, many smart city initiatives prioritize corporate-led technological solutions, often overlooking the everyday spatial practices and needs of ordinary urban residents in Quito, like many Latin American cities, faces challenges of uneven governance, limited public cultural infrastructure, and car-centric planning. Interventions that succeed in such environments can offer valuable lessons. As Townsend states, "the real intelligence of cities lies in how citizens use technology to solve problems themselves" (Townsend, 2013). Rather than massive smart-city programs or infrastructure upgrades, a relatively low-cost installation was able to spark meaningful changes in how people use a sidewalk. This is encouraging for cities where resources are scarce and planning processes slow, temporary phygital installations could serve as *pilot projects*, demonstrating the latent demand for more walkable, interactive public spaces.

At the same time, it's important to emphasize context. What works in Quito's hyper-center might not directly translate to a different neighborhood or city. The design was grounded in local conditions: the aesthetic of the artworks drew on Quito's visual culture, the decision to go app-less acknowledged low app adoption, and the project team leveraged an existing development partnership. As Mora and Deakin (2019) argue, urban technologies must be rooted in local realities rather than imported wholesale as abstract solutions. The Phygital Urban Gallery's success was contingent on this contextual fit. Thus, while it provides a model, any replication should carefully adapt to the specific urban rhythms, social expectations, and technological access of its setting.

4.5 Safety, Visibility, and Networked Publics

The reported improvement in perceived safety highlights a classic but sometimes overlooked aspect of urban design: visibility and activity breed safety more effectively than surveillance cameras or policing alone (Jacobs, 1961). By simply making the fence interesting and illuminated, the project attracted organic "eyes on the street." This grassroots approach to safety is especially relevant in places where official resources for lighting or security might be lacking. It shows that public art and media can contribute to public safety as co-benefits. Equally important is the boost in interaction among strangers. In an era where urban residents are often isolated in their own bubbles (physical or digital), creating situations that encourage benign social contact is valuable. As Mattern (2013) reminds us, "not everything that counts can be counted," underscoring the importance of experiential and social effects that escape purely quantitative evaluation. The phygital gallery functioned as a catalyst for what McQuire (2008) would term emergent publics or networked publics, groups of people who coalesce through a shared focus, here mediated by technology and art.

These spontaneous micro-communities (two strangers chatting, a group gathering to watch an AR clip) are fleeting but meaningful. They suggest that even transient encounters can counteract the fragmentation of public life. In many Latin American cities, fear and fragmentation often dominate public space use; anything that lowers those barriers, even temporarily, deserves attention. The fact that technology was an *enabler* of face-to-face interaction in this project (as opposed to drawing people into private screen-worlds) is particularly noteworthy. It reinforces the idea that urban media can be designed to augment sociability rather than detract from it.

4.6 Ephemerality as an Urban Strategy

The project's temporary nature was not a drawback but a deliberate strategic choice. As an ephemeral phygital urban prosthesis, the gallery avoided many challenges that plague permanent digital installations, such as long-term maintenance, vandalism, or technological obsolescence, while maximizing short-term impact. Lefebvre's (1991) idea of urban rhythms offers a lens: the installation introduced a new rhythm of appearance, interaction, and disappearance, distinct from the static, monolithic time-frame of a construction project. This temporal contrast, in which a lively intervention emerges and then departs against the slow backdrop of construction, actually *intensified* the experience. There's a poignancy and urgency to knowing the gallery is temporary; it encourages people to engage now rather than later.

McQuire (2008) similarly notes that media architectures are inherently event-based. By embracing ephemerality, the project aligned with a politics of adaptability rather than monumentality. This may be especially well-suited to cities with limited resources and uncertain governance: an ephemeral project can sidestep bureaucratic inertia, and if it fails, its impacts are not lasting; if it succeeds, it can be iterated or scaled elsewhere. Ephemerality can also be a form of critique. By disappearing, the phygital gallery left behind a "normal" fence again, implicitly asking the city: Why shouldn't our everyday spaces be more like what you briefly experienced? In that sense, the project's temporary nature sparks reflection on the permanent conditions of urban visual culture.

Collectively, the findings contribute to architectural and urban media theory in three key ways: first, by conceptualizing phygital installations as spatial interfaces rather than isolated digital

artifacts; second, by demonstrating how media architecture can contest dominant visual regimes in commercialized urban contexts; and third, by illustrating the role of temporary architectural interventions in fostering situated forms of public participation.

4.7 Limitations and Critical Reflections

Despite its successes, the project had clear limitations that temper its claims:

- Digital literacy gap: As noted, 41% of people did not engage with the AR layer, often because they didn't understand how or were unaware of it. This highlights a need for better on-site guidance (signage explaining "Scan me to see augmented art") or alternative means to include less tech-savvy passersby. It's a reminder that even "simple" mobile AR isn't universally accessible.
- Technological mediation and equity: Participation depended on owning a smartphone with internet access. This implicitly excluded those without such devices or with limited data plans. While smartphone penetration is high in Quito, it's not 100%, and even among users, comfort with QR codes varies. Future projects might incorporate analog interactivity (like lenticular images or on-site assistants) to broaden accessibility.
- Private dependency: The project relied on a private company for wall space, installation, and maintenance. This raises questions of scalability and resilience. Would such interventions only happen where a benevolent developer exists? What if the company had decided to remove the gallery early? The reliance on private initiative means the model is not entirely in public control. Long-term governance of phygital public spaces remains an open issue.

These concerns echoes Greenfield's critique of smart urbanism as "a way of imposing a particular, highly normative way of seeing and understanding the city," often privileging corporate and administrative logics over lived urban experience (Greenfield, 2013), these limitations echo Graham and Marvin's (2001) warning that networked urban innovations can inadvertently reproduce exclusion if not carefully designed. A critical approach to phygital urbanism must continuously ask: Who is left out? Who controls the platform? In acknowledging these shortcomings, we do not diminish the project's achievements but rather lay groundwork for improving future iterations. For instance, an alternative scenario could be a community-led phygital installation on a public wall, which might address the private dependency issue. Or partnerships with telecom providers to sponsor free connectivity at the site could mitigate the data access issue. Each limitation points to a possible solution or area of advocacy.

4.8 Toward the Phygital Commons

The Phygital Urban Gallery operated as a prototype of a phygital commons: a shared urban space where digital layers embedded in physical infrastructure enable collective authorship, interaction, and belonging. This understanding resonates with Cevallos Andrade's description of phygital urban prostheses, where "the Hyper-connector merges digital layers with physical spaces through human-computer interactions, acting as a facilitator between the physical and digital realms in public spaces" (Cevallos Andrade et al.,) .In our case, a privately owned fence became, for a time, a commons, open to use and enjoyment by anyone passing by. Rather than opposing private development, the project *negotiated* a temporary access to visibility. This suggests that even in highly privatized urban environments, there are opportunities to reclaim pockets of space for public use through creative tactics.

This interpretation also aligns with Mitchell's (2004) understanding of networked urban subjects, where digital infrastructures reshape not only spatial form but modes of collective agency. In the digital age, this right must extend to the layers of code and content that increasingly saturate urban space. The Phygital Urban Gallery offers a modest case where that extension was attempted: citizens not only physically appropriated the street edge to gather and linger, they also symbolically appropriated the messaging space of the city (through art) and the data space of the city (through open NFTs and public interaction data). It hints at how a phygital commons might

function, *not* as a totalizing cyberspace that replaces the city, but as a federated set of micro-commons that enhance physical places with additional dimensions of publicity.

5. Conclusions

5.1 Reprogramming Urban Visibility through Phygital Intervention

This study demonstrates that phygital urbanism can operate as an effective tool for democratizing urban visual culture, even when deployed through privately owned and temporary infrastructures. By transforming a real-estate construction fence into a phygital urban gallery, the project reprogrammed a surface typically reserved for speculative advertising into a participatory cultural interface. Crucially, this transformation did not require new public space or regulatory change, but rather the strategic reuse of existing urban infrastructure through design and accessible digital technologies. In line with Lefebvre's assertion that representations of space reflect dominant relations of production (Lefebvre, 1991), an infrastructure associated with exclusion and future speculation was temporarily converted into a site of encounter, interaction, and shared meaning.

This finding suggests that overlooked or transitional urban elements—such as construction fences or vacant façades—hold significant potential as sites for civic engagement. Control over urban visibility is not fixed but can be negotiated, redistributed, and temporarily reclaimed through targeted phygital interventions, opening pathways toward more inclusive forms of urban representation.

5.2 Methodological Contribution: Combining Survey and Interaction Data

A key contribution of this research lies in its mixed-method approach, combining on-site surveys with large-scale digital interaction analytics. The approximately 90,000 recorded AR interactions provided a robust behavioral dataset, revealing temporal and spatial engagement patterns that would be difficult to capture through conventional observation alone. These data were complemented by 100 in-situ surveys, which offered qualitative insight into user perceptions, including safety, understanding, and social interaction.

The contrast between large-scale digital traces and smaller qualitative samples highlights the methodological value of combining sensor-based data with human-centered inquiry in urban research. Rather than functioning as tools of surveillance, interaction logs in this case enabled a nuanced understanding of how citizens engaged with media-enhanced public space, supporting Townsend's view of urban intelligence emerging from everyday use rather than top-down control (Townsend, 2013).

5.3 Curiosity-Driven Urbanism in a Car-Oriented Context

The project's impact is particularly significant given its location in a car-dominated urban environment. Despite limited pedestrian infrastructure, the phygital installation generated a substantial increase in pedestrian stopping behavior, driven primarily by curiosity rather than necessity. This indicates that even in environments hostile to walkability, there is a latent demand for engaging, human-scale experiences.

For Global South cities facing fragmented development and limited public investment, such interventions offer a pragmatic and low-cost strategy for testing alternative uses of public space. While not a substitute for structural urban transformation, phygital installations can function as micro-catalysts, demonstrating the social value of pedestrian-oriented environments and supporting incremental change.

5.4 Phygital Media Architecture as Civic Infrastructure

This research also contributes to debates on platform urbanism by reframing technologies such as AR and NFTs as civic rather than commercial tools. In this project, AR was designed to be lightweight and app-free, prioritizing accessibility, while NFTs functioned solely as certificates of

authorship and public record rather than speculative assets. This approach illustrates how digital platforms can augment the urban commons without reinforcing extractive or exclusionary logics.

Finally, the project highlights the strategic value of ephemerality in urban media architecture. As a temporary intervention, the phygital gallery maximized engagement while minimizing long-term maintenance and institutional dependency. Its time-bound nature encouraged experimentation and public participation, while its digital traces ensured a lasting cultural record beyond its physical lifespan.

In conclusion, this study positions phygital media architecture as both a methodological framework and a design strategy capable of expanding architectural agency in contemporary cities. By bridging physical space and digital interaction, temporary phygital interventions can reconfigure urban visibility, foster social interaction, and support more inclusive and participatory forms of urban design.

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