

From Memory to 3D Prototype: Constructing the Collective Memory of the Cultural Center “La Carmela”, Puebla, Mexico

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Abstract

This study explores the construction of the collective memory of the "La Carmela" Cultural Center in Puebla, Mexico, a space historically stigmatized by violence and abandonment. Through an action-research methodology, the project "Let's desembrujar El Castillo" was developed, which developed literary stories with augmented reality (AR) created by young people from the area, based on the testimonies of five residents over 20 years old in the area. The objective was to activate processes of symbolic resignification of the place and strengthen the sense of community belonging. The findings reveal that AR, when appropriated from a critical pedagogical perspective, can become an emancipatory tool that allows excluded communities to narrate their history and dignify their spaces. The tensions between memory, oblivion and urban exclusion are reflected in the ambivalent perception of the site: a place loaded with affection, but also with stigma. Experience suggests that emerging technologies, integrated into participatory educational processes, can contribute to subjective and collective transformation. The original value of the study lies in articulating technologies, political action and community narratives as a strategy for heritage recovery and the creation of meaningful links in marginalized urban contexts.

Keywords

Collective Memory, Discontinuity, Augmented Reality

1 Introduction

The Cultural Center the Carmela is in the state of Puebla, Mexico. It is an old hydroelectric power plant that supplied energy to a Textile Complex during the Mexican Revolution (1910) (Ministry of Culture, 2023). However, the conflicts of the time caused the suspension of its activity, remaining abandoned for 100 years.

Currently, this place is part of the industrial heritage of Puebla and has become a Cultural Center that seeks to represent the history of the city. As of 2021, the Government of the State of Puebla and the Secretariat of Agrarian, Territorial and Urban Development (SEDATU) began the remodeling and construction of the complex, which includes a museum, a Cultural Center and an art market (Ministry of Culture, 2023).

Despite the rehabilitation of the space, the participation of the inhabitants has been indifferent. This is due to the violent and criminal reputation of the place, being known as The Castle, one of the most dangerous areas of the municipality of Puebla according to Camacho (2023), Linares (2025) and Razo (2025) who evidence this situation. The set of factors mentioned can cause – again – the abandonment of the space. This situation is aggravated by the lack of budget necessary to maintain its functions.

To address this situation, the project "Community digital media, Let's desembrujar "El Castillo" was carried out, which focused on developing five literary stories with Augmented Reality (AR), created by 10 young people from the community; supported by the voices of five inhabitants who have been living in

the surroundings for more than 20 years. The objective was to make a first effort to build the collective memory of the first inhabitants and generate a sense of belonging and appreciation of the space. Our assumption is that AR can enrich the collective memory of the community of the La Carmela Cultural Center. To this end, we appeal to a critical digital literacy inspired by the postulates of Freire (2021), which encourages learners to be co-creators of their world in both physical and digital space. In this way, the use of AR is not limited to a passive consumption of content or conceived as entertainment but also makes it possible to build narratives to strengthen collective memory. This activity of AR has been shown by Ceuterick (2021).

This is an exploratory study on how emerging technologies, particularly AR, can contribute to collective memory in a marginalized environment, where access to technological infrastructure, connectivity, and digital skills is limited. The aim is for the inhabitants not only to passively consume hegemonic models of technology, but also to create their own stories and memories, resignifying their condition as users to subjects both physically and digitally. The results offer a look at the elements that make up collective memory, emphasizing community participation, preservation and appreciation of physical and digital space. Using the Template

2 Theoretical approach

The neighbourhoods surrounding the La Carmela Cultural Center are Slums. In other words, an urban area that is characterized by a lack of basic infrastructure and that is economically and socially excluded (Davis, 2006 and Vázquez and Ramírez, 2020). Its inhabitants have precarious housing and high levels of marginalization. Martín-López and Durán López (2021) point out that in Mexico this housing is predominantly self-built, lacks durable materials, and overcrowding is a recurring factor. It is common for the inhabitants of these colonies to suffer the ravages of globalization in the sense that their rights are violated and their access to a dignified life is very limited (Duval-Hernández, 2022). The precariousness of these neighbourhoods is not accidental: it responds to a neoliberal logic of urban production that attends to the market and not to the well-being of the population (Hernández, 2020).

This accentuates the structural conditions of social and economic exclusion by limiting access to emerging technologies, such as AR. In Mexico, there is a penetration of 97% of mobile devices, according to data from the National Survey on the Availability and Use of Information Technologies in Homes (ENDUTIH) 2022. The high level of mobile penetration does not guarantee equitable and critical access to digital technologies. For example, Hernández and De la Torre (2021) found that peripheral areas in Mexico face structural obstacles that prevent them from taking advantage of the transformative potential of technologies.

This situation of economic and social exclusion is highlighted in surveillance capitalism (Zuboff, 2010); the democratic principle of access to information and communication that emerged with the internet is diluted, now, it has a contrary purpose: to collect, analyse and sell the data of people who, by accepting terms and conditions (without reading them) provide all their information (O'Neill, 2017; Couldry & Mejias, 2019; Villoro, 2024). In terms of Freire's (2022a, 2022b) critical pedagogy, a user is conceived as a data-object that feeds the large complexes of algorithms of digital platforms. By considering the person as an object-data – and not as a subject – they are assigned a passive consumer approach to content that alienates them (Broca, 2020; Meyer, 2023). However, in this paper it is argued that AR can acquire an approach with emancipatory potential from users to subjects. Distances are taken from its extractives and entertainment aspects of a society of the spectacle or of a technological (Zuboff, 2020) and cognitive (Meyer, 2023) capitalism.

To achieve the above, it is pointed out that AR can generate new modes of expression by placing the person between a physical and virtual space by creating transitional or liminal spaces, which make AR an appropriate medium for the aesthetic representation of memory, as supported by the work of Ceuterick (2021). A virtual space to be visited and navigated which takes on significance when it is built by members of the community. The collective memory built with elements of AR is based on a locative art

where less dominant narratives are sought, as shown by the works of Mikelli and Dawkins, (2019), Gonsalves et al. (2021) and Gonsalves (2023).

This locative approach is based on the postulates of Halbwachs (2004) who defines collective memory as the evocation of an event with relevance for our group and that we bring to memory, making it present from the perspective of that group. This seeks to present the historical and community relevance of the place from the local perspective. Memory, according to Hernández (2023), understood as anamnesis, is the very foundation of politics, which is understood as the search for the common good, since it embodies knowledge and activates the conditionings, structures, and actions that sustain human dignity. This knowledge and community activity aim to procure the common good and eunomia, that is, the good law that promotes the well-being of all, inseparable from personal well-being. Memory is, therefore, the pillar of human dignity and the fundamental basis of every society, always present in our consciousness.

This approach to collective memory allows for the communal use of AR not only as an aesthetic or technological act, but as a political action that reconstructs the human dignity of a group. AR is conceived in this space as a decentralized technology that presents narratives of excluded and marginalized groups.

The critical approach and decentralization of AR underpinned the choice of methodology; Action. Involving the inhabitants of the environment near the "La Carmela" Cultural Center in the process of recovery and resignification of the space was the key axis to address the problem posed: the negative perception of the place. This was aligned with the theoretical proposal of the study that considers collective memory not only as an object of research but as an active field of political and social intervention. In this framework, the action research allowed exploring how collective memory can be recovered and resignified by the community through participatory and co-creative practices mediated by emerging technologies.

3 Sample

The sample was made up of two groups of participants, selected through purposive sampling, based on criteria of sociocultural relevance and voluntary willingness to participate in the activities. Data collection and workshops were held between February and July 2023. The first group was made up of five residents of neighbourhoods near the "La Carmela" Cultural Center, who were selected through a criterion sampling, considering as the main requirement to have at least twenty years of residence in the area. The group was made up of four women and one man, all over 50 years old. The interviews were conducted individually, using an open-ended question guide. The interviews were recorded with informed consent, transcribed and later analyzed using the Atlas.ti software, applying open coding for the identification of topics. The second group was made up of ten young people between 15 and 18 years old (eight women and two men), students of the General Gregorio de Ghent High School, located a few streets from the cultural center. The call was made in person at his educational institution. This group participated in a creative process of reinterpreting the memory of the place through digital media, through its involvement in three workshops: (1) creative writing workshop, held once a week for three months; (2) 2D illustration workshop, lasting one month with weekly sessions; and (3) 3D modelling workshop with Blender and AR design with Meta-Spark, also one month with a weekly session. All the workshops were held on Fridays and Saturdays, with a duration of three hours per session. The final product of this process—the literary stories and visual elements developed by the youth—was shared publicly at a community meeting, as a symbolic closure and collective validation of the work done.

4 Findings

4.1 The First group: young people with human dignity

Most of the participants were women, which is linked to local gender dynamics where men tend to join informal work at an early age, while women are more available for school activities. The extracurricular space favored the generation of bonds between students who, although they shared the school environment, had no previous relationship. This context allowed for participation that contrasted with their performance in high school, where some teachers pointed out that those who participated in the project tended to show poor school performance and defiant attitudes. This contrast was observed by the teachers in subsequent activities in the community space, when they noticed a different disposition on the part of the students in relation to collaborative work. The difference can be understood from a pedagogical approach that recognizes young people as capable subjects, with voice and agency, without starting from prejudice or stigmatization. This finding shows that non-formal educational spaces can become scenarios of subjective and collective transformation. From a Freirean perspective, the learner was recognized as a subject of knowledge, capable of participating, creating and with dignity in an environment that respects his voice, his experiences and his humanity. The willingness shown by young people in this process is testimony that, when the traditional logics of control and hierarchy are broken, new forms of relationship based on trust, horizontality and mutual respect emerge.

4.2 Second group: I didn't know I could get in

The narratives reveal that this place, currently associated in the collective imagination of insecurity and restrictive administrative control, was for decades a community meeting point and daily sustenance. Several participants pointed out that, when they came to live in the colony, in its early years, "El Castillo" functioned as a space for neighborhood coexistence, where families went on weekends to have a picnic, play soccer or collect resources such as firewood, purslane or water from the canal that fed the old hydroelectric plant.

These reports contrast with the current perception, marked by the constant presence of public security elements, which has generated a sense of surveillance and exclusion. One of the interviewees said that, despite living one street away from the cultural center, she was unaware that she could access the space, if some kind of permit or formal authorization was required. This data is revealing, as it shows how the use of space has been symbolically restricted, transforming it into a place perceived as alien, despite being public.

The deterioration of the image of "El Castillo" as a space for community coexistence was linked to the accelerated growth of the colony since 2000, as well as the increase in criminal acts and accidents that marked the collective memory. Among them, the case of a high school student who fell from one of the floors of the structure, while he was on site (he was absent from school), which caused an emergency mobilization and even the arrival of a helicopter for his transfer. This and other events—such as sexual encounters, drug use, suicides, assaulting and kidnapping victims, and even lifeless human bodies—contributed to reinforcing the stigmatization of the site, especially among those who did not know its previous use.

At the same time, the testimonies highlight the function of "El Castillo" as a historical transit point for workers from the south of the city to more urbanized areas such as Lomas de Angelópolis. During the expansion of this residential area with a high purchasing power, the space was a daily route of passage for gardeners, workers and domestic workers from the surrounding neighborhoods. Over time, the space was fenced off by authorities as a security measure, but the mesh was cut by the workers themselves to maintain their daily circulation.

Despite the negative charge that the space has accumulated, the interviewees expressed their appreciation for the recent improvements in the cultural center and expressed concern about a possible new stage of abandonment. Most agree that it is necessary to strengthen the sense of community appropriation and propose the creation of a neighborhood organization for the care of the space,

recognizing in it not only a physical place, but a symbol of collective identity. This relationship with the place is linked to categories identified in the qualitative analysis, such as Heritage Preservation, Nostalgia, Transformation, and Community Participation. "La Carmela" is a territory full of memories, tensions and meanings, where historical, social and affective processes converge.

4.3 Closing meeting: is this magic?

From the joint work between young people and inhabitants of the community, it was possible to generate an aesthetic, technological and affective experience that culminated in a public presentation of the products developed: literary stories with elements of AR, as well as a community video made by the young people themselves, the latter was a proposal of the participants. The experience was significant not only for the narrative and visual content shared, but for what it implied in terms of access to technologies. The young people had contact with professional cameras, microphones, high-performance computers, editing software and 3D modeling programs.

One of the most significant moments occurred when, upon presenting one of the elements of AR, a five-year-old girl asked in amazement: Is this magic? This phrase resignifies the light of the project: it is the magic of seeing one's own history reflected in a device, of symbolically appropriating a place that had been exclusive, and of knowing that they can create narratives. As the song *En algo lugar* by the Latin American group Duncan Dhu suggests, there are territories where "many geniuses die without knowing their magic." In this case, the project opened a space where these creative powers could emerge, not as an exception, but as a transformative possibility. This finding not only points to the visible products of the process but also to the activation of collective memory as a political and aesthetic action, embodied in co-creation practices that resignify both physical and digital space.

5 Limitations

This study has limitations due to its exploratory nature and its qualitative methodological approach. First, the sample was intentional and small, which does not represent the totality of voices and perspectives existing in the community. In future studies, it would be pertinent to expand the sample and include generational, occupational and territorial diversity, as well as to make a comparison with inhabitants of neighboring neighborhoods that did not participate in the project. Second, although the use of AR was functional to activate processes of memory and symbolic appropriation, its scope was limited by environmental conditions, such as unequal access to devices, connectivity, and digital training. It is a complicated technology in terms of accessibility for socially and economically excluded spaces. Likewise, the evaluation of the impact of AR focused on immediate perceptions, without subsequent follow-up that would allow lasting changes to be observed in the appropriation of space or in the transformation of the collective imaginary.

6 Practical implications

Despite the limitations, this study offers relevant practical implications for projects of collective memory recovery and resignification of public space in marginalized contexts. Experience shows that emerging technologies such as AR can be allies in the production and circulation of community narratives, if they are mediated by critical pedagogical processes, however, developing this project required a lot of investment for equipment and personnel trained in AR, which still makes this technology complicated in terms of accessibility for marginalized spaces.

7 Original Paper Value

This study provides an original approach by integrating three key dimensions: emerging technologies, community narratives, and collective political action in a marginalized urban context. Its main value lies in demonstrating that AR, when critically appropriated by communities with limited access to technological infrastructure, can become a tool for the recovery of collective memory, the symbolic resignification of public space and the dignification of excluded voices.

Unlike traditional approaches that conceive memory as an object of study or as a passive archive, this project is inscribed in a Freirean critical pedagogy, where participants are subjects of knowledge, capable of constructing narratives from their experience and context. AR, in this sense, is not presented as a resource for entertainment or consumption, but as a technology of emancipation that enables the creation of visual stories and from a locative, community and aesthetic perspective. In short, the original value of the study lies in articulating critical theory, participatory methodology and emerging technology, to create an intervention model that not only recovers local memories, but also activates processes of subjectivation, agency and community construction of knowledge to recover the original conception of technology: to be used for the common good.

Acknowledgement

This document has been developed on the basis of a similar template provided for the International Conference of Concurrent Enterprising.

No AI has been used in the production of the content of this paper nor in text generation or correction.

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