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Collective Imagination through Immersive Interactive Digital Narratives: A Research-through-Design Approach to Urban Futures

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Abstract

Positioning immersive installations as IDNs for civic imagination, the project explores how groups can co-author possible urban futures—focusing on mobility in Milan. An initial data-driven installation elicited aesthetic emotions and reflection, but it felt paternalistic and abstract. A second iteration replaces nudging with a shared, first-person environment that transforms in real time based on participants' movement choices. The work reframes narrative as emergent, privileges imagination over persuasion, and treats aesthetic experience as a driver for critical reflection. Future efforts will fully realize the collective environment and study its impact on real communities.

Keywords: Collective Imagination, Urban Futures, Research-through-Design, Procedural Environments, Mobility, Public Space

1. Introduction

This extended abstract presents a research project that investigates the transformative potential of immersive and collective digital experiences as a form of interactive digital narrative (IDN). The work originates in interaction design but deliberately stretches beyond its traditional scope, seeking to frame design as both a connector across disciplines and an activator of public imagination. The project explores how immersive environments can be used not to persuade or "nudge" users toward predefined outcomes, but to enable participants to collectively author emergent stories of possible urban futures.

2. Background and Motivation

Interactive digital narratives have been defined as systems that allow users to enact stories within designed frameworks (Koenitz, 2015). Much of the field has focused on fictional characters and branching storylines,

yet the concept of narrative can also encompass procedural and spatial experiences (Aarseth, 1997; Ryan, 2001). This project positions immersive environments as a narrative medium in which the evolving storyline is not scripted but emerges from collective interaction.

The case study concerns urban mobility, a theme of both practical and cultural relevance. Most large cities, including Milan where the research was situated, are still organized primarily for cars, reinforcing patterns that make it difficult for citizens to imagine alternative uses of public space. Small-scale interventions, such as the transformation of Piazza Spoleto in Milan, demonstrate how re-appropriating public space from cars to people can spark processes of social innovation. As Manzini (2015) argues, design can support forms of "diffuse creativity" in which citizens become co-designers of their environments. This project extends that principle into the domain of IDN: rather than physically altering a square, it constructs a virtual environment where citizens can experiment with futures collectively.

The daily commute crystallizes this issue. Scientific consensus highlights that active modes of transport (walking, cycling) should dominate journeys under five kilometers, given their benefits for health, well-being, and the environment. Yet adoption remains low due to cultural inertia and perceptions of safety and comfort. The research challenge is therefore not only infrastructural but also imaginative: how to support citizens in envisioning different urban futures.

3. Research Approach

The project was conducted during a double Master's program between Politecnico di Milano and Tongji University, following a research-through-design methodology (Zimmerman et al., 2007). The process alternated between theoretical inquiry, field research, ideation, prototyping, and user testing.

Twelve semi-structured interviews with commuters in Milan provided qualitative insight into how perceptions of safety, enjoyment, and cultural norms shape modal choice. These findings revealed that rational factors such as travel time were often secondary to experiential ones. Initially, the design approach drew inspiration from persuasive design and nudging (Thaler & Sunstein, 2008). However, this proved limited in creating authentic engagement and was ultimately abandoned. The research was reframed: rather than directing choices, the goal became constructing an IDN space in which participants collectively imagine and enact possible futures.

4. Prototyping and Iterations

Phase 1: Data-driven installation.

Participants contributed commuting data, which were aggregated and transformed into an abstract audiovisual representation comparing collective habits with environmental and health outcomes. Personalized flyers detailed the results. Two groups (10 and 20 participants) experienced the installation. Responses were evaluated using the AESTHEMOS scale for aesthetic emotions (Schindler et al., 2017). Results indicated that the installation triggered critical reflection on mobility, evoking emotions such as awe and fascination but also discomfort and confusion. Yet two limitations emerged: the paternalistic tone of the feedback created unease, and the abstract visuals made it difficult to perceive interconnection.

Phase 2: Collective interactive environment.

Building on these insights, the second iteration abandoned the rhetoric of nudging. Instead of presenting diagnostics, participants entered a closed immersive space where procedural urban environments evolved in real time according to collective choices. Floor markings indicated transportation modes; as participants moved freely, the surrounding projections transformed, frame by frame, into an urban scenario shaped by the group's collective behavior. This approach emphasized exploration and co-creation over evaluation. Preliminary simulations suggested that first-person perspectives enhanced empathy and identification with

the evolving cityscape, strengthening reflection on mobility and public space.

Discussion

The project demonstrates how IDN can extend beyond fictional storytelling into the domain of public imagination and collective reflection. Three contributions emerge:

1. Reframing narrative. The narrative here is not a linear plot but an emergent story authored by participants as they collectively transform a shared environment. This extends Koenitz's definition of IDN toward civic and spatial domains.
2. From persuasion to imagination. Moving away from nudging and persuasive design (Bogost, 2007), the project highlights the value of IDN as spaces for imagination rather than direction. Participants are not guided toward a single "correct" outcome but instead explore the consequences of collective choice.
3. Aesthetic experience as driver of reflection. Building on Dewey's notion of *art as experience* (1934) and Grau's history of immersive art (2003), the project situates immersive installations as aesthetic experiences with transformative potential. The use of AESTHEMOS provided an empirical lens to capture emotions such as beauty, awe, and insight, alongside discomfort and confusion, showing how both positive and negative aesthetic responses can activate critical reflection.

Conclusion and Future Work

This study positions immersive installations as interactive digital narratives for public imagination, enabling participants to co-author collective stories of possible urban futures. By embedding citizens in evolving environments shaped by their choices, the project shifts the function of IDN from entertainment or persuasion toward collective reflection and dialogue about shared responsibilities and opportunities.

Future work will focus on realizing the second phase as a fully operational installation, testing its capacity to stimulate discussion in real urban communities. More broadly, the research argues for an approach to interaction design that integrates aesthetic experience, procedural narrative, and collective agency—pointing to the potential of IDN to contribute to societal and planetary futures.

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