Weaving Noise: Making Environmental Data Visible, Making Community Knowledge Valid

Weaving Noise / Geluid Weven Installation

Merksemdok Cultural Center, Merksem, Antwerp

Artist: Lina Maria Giraldo

Opening: December 2025

Overview

Weaving Noise / Geluid Weven is an environmental data visualization project that transforms invisible noise pollution into tangible public art while challenging who gets to define environmental data. The Weaving Noise / Geluid Weven installation at Merksemdok Cultural Center bridges objective institutional measurements with subjective community experiences, asserting that qualitative, culturally-situated knowledge constitutes valid data that should inform environmental decision-making.

Working at the intersection of data equity, environmental art, and participatory design, the installation makes visible the gap between what institutions measure and what communities experience—a gap that becomes critical as AI systems increasingly shape environmental policy.

Installation Components

Exterior: Transparent Window Decals (Street-Facing)

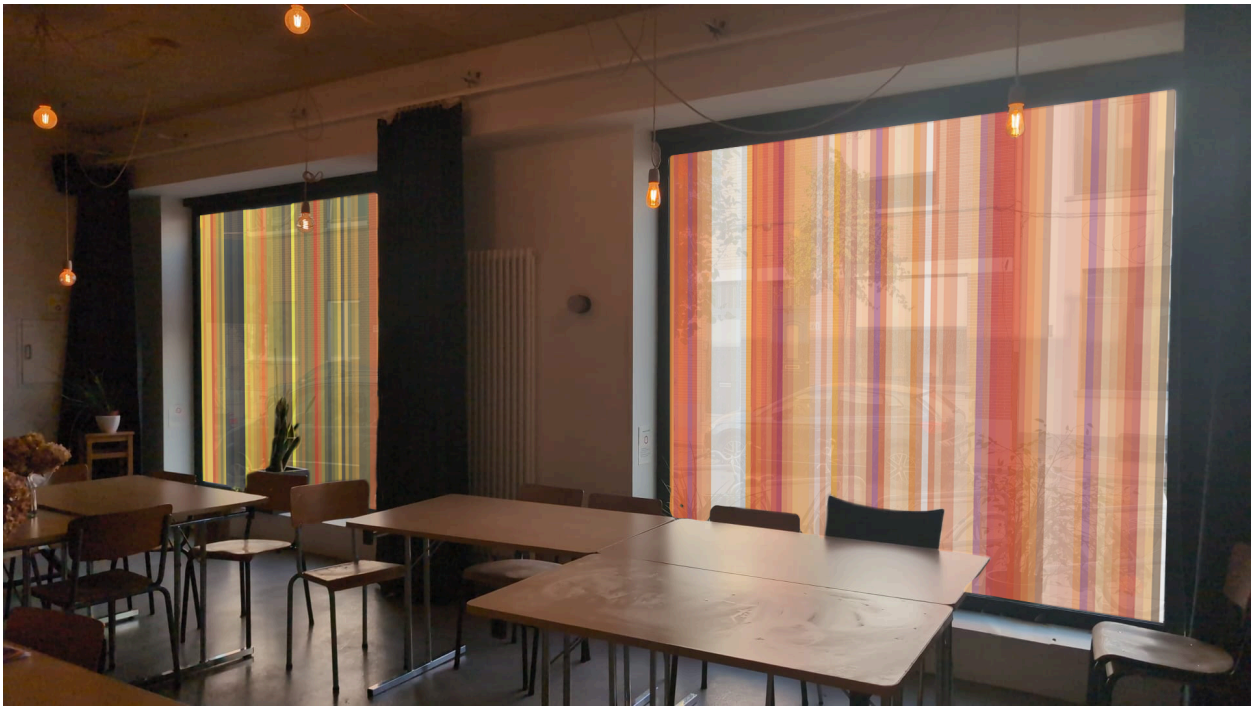
This exterior layer presents the institutional story: objective, sensor-based, scientifically validated measurements of environmental noise exposure.

Two large street-facing windows (237.5cm × 220cm each) display transparent vinyl decals visualizing European Environment Agency noise data through topographic gradient patterns. Using color gradients, the visualization represents noise levels across Merksem, from quiet residential areas (48 dB) to high-traffic zones (78 dB).

The design employs stripe patterns—discrete bands representing 5dB measurement intervals—creating a space for passersby to question and explore through a QR code. Different background colors distinguish daytime sound data from nighttime patterns, revealing how the neighborhood's sonic environment shifts across 24-hour cycles.

Materials: Orajet 3551 transparent vinyl with Oraguard 215G gloss laminate (18.5 square meters total)

Data Source: European Environment Agency NOISE platform



Interior: Participatory Community Map (Data Collection for AI Training)

Inside the cultural center, visitors encounter a large-scale neighborhood map where they're invited to contribute their own noise experiences through a color-coded sticker system. Rather than reporting decibel levels, community members

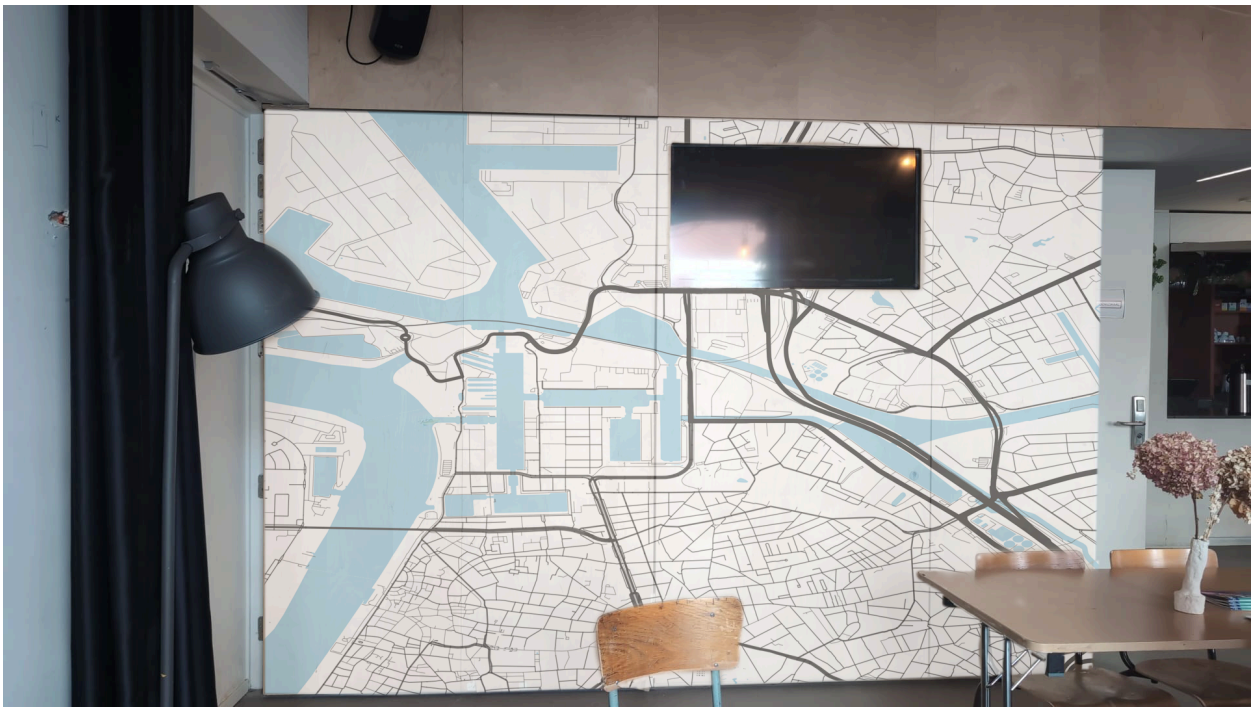
mark specific locations with colored stickers representing how sound makes them feel in those spaces.

Color system for community conversations about sensory experience:

- **Blue:** Calm, quiet, restful spaces
- **Red:** Jarring, stressful, overwhelming noise
- **Yellow:** Energizing, vibrant sounds
- **Green:** Familiar, comfortable neighborhood noise
- **Orange:** Chaotic, disorienting soundscapes

Critically, participants define their own sonic categories. The question isn't "How many decibels?" but "How does this sound affect your body, your emotions, your sense of place?"

This participatory mapping serves a dual purpose: it creates a collective portrait of Merksem's sonic environment in the present, while simultaneously generating a unique dataset that could train future AI models to understand noise as lived experience rather than mere measurement. The community-generated emotional and sensory data collected through this installation could become the training foundation for AI systems that can recognize the human dimensions of environmental conditions.



Digital Layer: Responsive Animation

Interior screens display generative animations that respond to audience presence, creating a third data layer that bridges the objective measurements on the windows with the subjective experiences on the participatory map.

Conceptual Framework

Weaving Noise / Geluid Weven operates on the principle that environmental data visualization should democratize access to information while validating community knowledge. The installation makes three interconnected arguments:

1. **Official environmental data is incomplete.** Decibel measurements tell us sound intensity but nothing about sound quality, cultural meaning, or emotional impact.
2. **Community knowledge is data.** When residents describe noise as "tight," "bright," "heavy," or "thin"—words that don't exist in environmental engineering—they're generating essential information about environmental conditions.
3. **Community-generated data can train AI systems.** Rather than using AI to analyze existing institutional data, this project inverts the model: community

members create the foundational dataset that can teach future AI systems to understand environmental conditions in human terms. The colored stickers mapping emotional responses to sound become training data for AI models that recognize the lived dimensions of noise pollution.

The installation makes visible the gap between what institutions measure and what communities experience, while actively building the infrastructure for community voices to reshape how AI understands environmental data.

Context & Impact

The project addresses a critical environmental equity issue: 8% of Antwerp residents experience continuous 70-decibel noise exposure, with disproportionate impact on working-class neighborhoods and immigrant communities. Yet these communities rarely appear in environmental datasets in ways that reflect their actual lived experiences.

Weaving Noise / Geluid Weven creates infrastructure for community environmental knowledge-making in two phases. First, the installation collects community-generated emotional and sensory data through participatory mapping. Second, this dataset can train AI models to understand noise not just as decibel levels, but as lived experience with cultural, emotional, and bodily dimensions. The project asks: if AI systems increasingly shape environmental policy, whose data should train those systems? And crucially: what if communities generated that training data themselves?

Artist Statement

This installation extends my broader work creating participatory eco-infrastructures where marginalized communities build sensors, generate datasets, and shape the AI systems that affect their environments. Through projects like Data Para Todes in Boston and Equitable Noise in Amsterdam, I work with immigrant communities, students, and residents to challenge the monopoly on environmental data held by institutions.

I believe data is not given—it is made. And when communities make data for themselves, the story changes.

Weaving Noise demonstrates that environmental equity requires not just access to institutional data, but the power to generate alternative datasets that center community knowledge, sensory experience, and cultural meaning.

About the Artist

Lina Maria Giraldo is a Colombian-born, Boston-based civic designer, educator, and interactive media artist whose work lies at the intersection of storytelling, ethical design, and community empowerment. As an Assistant Professor of Journalism at Emerson College, she specializes in data visualization, participatory research, and civic design with an inclusive and ethical approach. Her practice centers on amplifying community narratives and advancing environmental equity, particularly through projects that engage underrepresented populations.

As a Latina immigrant, Giraldo has witnessed firsthand how marginalized communities often become invisible in dominant data narratives. Growing up in Colombia, a country marked by socio-political and environmental disparities, and later transitioning to life in the United States, she observed how ecological hazards such as noise pollution, poor air quality, and unaffordable housing disproportionately affect communities of color. These experiences drive her research and creative work, which uses data literacy, design, and collective storytelling to challenge oppressive narratives and advocate for equity.

Her project, Data Para Todes, embodies this commitment by democratizing data and empowering marginalized communities to use it as a tool for storytelling and advocacy. By combining open data, participatory methodologies, and community co-creation, the project transforms abstract metrics into tangible, culturally resonant narratives. This approach reimagines data not simply as a technical resource, but as a cultural artifact shaped by the people it represents. Through installations, workshops, and collaborative storytelling, Giraldo's work makes data both accessible and meaningful.

Her creative process begins with deep engagement: conducting interviews, analyzing open datasets, and integrating diverse knowledge systems. Projects like Weaving Noise extend this practice by working with immigrant craft groups to translate daily noise experiences into color-coded weavings, blending participatory sensing, storytelling, and traditional craft. In these projects, digital

and physical forms of storytelling converge, underscoring the power of collective expression.

Giraldo's contributions have been recognized widely. She currently serves on the Board of Trustees of the Massachusetts College of Art and Design. She served as a Journalist in Residence at Emerson College, an Artist-in-Residence for the City of Boston (Boston AIR 2.0), and participated in the Now + There Accelerator program, where she created public art in Boston. She received the Creative City Grant and has collaborated on award-winning projects such as JFK50.org while working as an Interaction Designer at ESI Design. Her academic achievements include a Master of Professional Studies in Interactive Telecommunications from NYU's Tisch School of the Arts, supported by Paulette Goddard and Tisch Scholarships, and a Tsongas Scholarship at Massachusetts College of Art and Design.

Her interviews for the JFK Library include high-profile figures such as Madeleine Albright, Stephen King, Harry Belafonte, and Nancy Pelosi. Her work has been featured by The Boston Globe, ABC News, WBUR, WGBH, NPR, and The Artery. Through her teaching, research, and creative practice, Giraldo continues to expand the role of data as a medium for cultural expression, advocacy, and reimagining equity.

Technical Details

Dimensions: 18.5 square meters total window coverage

Materials: Orajet 3551 transparent vinyl, Oraguard 215G gloss laminate

Data Sources: European Environment Agency NOISE platform, community-generated participatory data (for future AI training)

Timeline: 10 weeks from concept to installation

Opening: December 2025

Venue:

Merksemdok Cultural Center

Merksem, Antwerp, Belgium

Credits

Artist & Project Lead: Lina Maria Giraldo

Affiliation: Emerson College

Data Sources: European Environment Agency

Community Partners: Merksemdok Cultural Center, Merksem residents

For more information about participatory data projects and environmental equity work, contact Lina Maria Giraldo.