POLITECNICO DI TORINO
Repository ISTITUZIONALE

Archeology in Transit

Original
Archeology in Transit / Peruccio, P.P.. - ELETTRONICO. - 13, book 4:(2024), pp. 1789-1817. (Design Across Borders - United in Creativity Monterrey (MEX) Ottobre 16-18, 2024).

Availability:
This version is available at: 11583/3005793 since: 2025-12-11T17:59:08Z

Publisher:
Cumulus

Published
DOI:

Terms of use:

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

Publisher copyright

(Article begins on next page)

03 November 2026

Cumulus Association

DESIGN ACROSS BORDERS UNITED IN CREATIVITY

CUMULUS CONFERENCE PROCEEDINGS SERIES

MONTERREY 2024

UDEM | UNIVERSIDAD DE MONTERREY

Tecnológico de Monterrey
Escuela de Arquitectura, Arte y Diseño

DESIGN ACROSS BORDERS
UNITED IN CREATIVITY

Cumulus conference: Design Across Borders - United in Creativity
Co-hosted by the Universidad de Monterrey (UDEM) and the Tecnológico de Monterrey (Tec)
Monterrey, Mexico, on October 16-18, 2024
Conference website: **https://cumulusmonterrey2024.udem.mx/**

Published by Cumulus
Cumulus the Global Association of Art and Design Education and Research.
Aalto University, School of Arts, Design and Architecture
PO BOX 31000, FI-00076 Aalto
https://cumulusassociation.org/

ISSN 2490-046X
ISBN 978-952-7549-06-3 (pdf)
No. 13 Cumulus Conference Proceedings Series

Editor-in-Chief: Cumulus President Lorenzo Imbesi
Editors: Alessandra Perlatti

Publications in the Series:
01/17 Kolding, REDO
02/17 Bengaluru, Letters to the Future
03/18 Paris, To get there: designing together
04/18 Wuxi, Diffused Transition & Design Opportunities
05/19 Rovaniemi, Around the Campfire – Resilience and Intelligence
06/19 Bogotá, The Design After
07/21 Rome, Design Culture(s) Volume #1, Volume #2
08/23 Guayaquil, Arts imagining communities to come
09/23 Detroit, Design for Adaptation
10/23 Antwerp, Connectivity and Creativity in times of Conflict
11/24 Beijing, Narratives of Love
12/24 Budapest, P/References of Design
13/25 Monterrey, Design Across Borders – United in Creativity

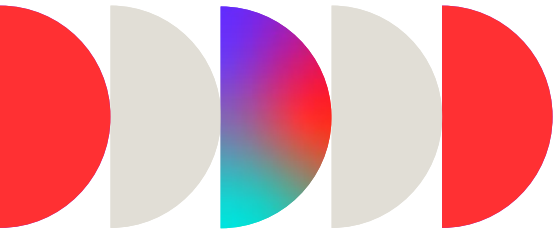
Design Across Borders: United in Creativity.
Cumulus Conference Proceedings Monterrey 2024
Conference Co-chairs:
Alessandra Perlatti (Universidad de Monterrey) &
Yadira Ornelas (Tecnológico de Monterrey)
Design: Jessica Ochoa
Layout: Jerome and Zimmerman
© Universidad de Monterrey
© Tecnológico de Monterrey
© Cumulus Association International Association of Universities and Colleges of Art, Design and Media.

All content remains the property of authors, editors and institutes.

UDEM | UNIVERSIDAD DE MONTERREY

Tecnológico de Monterrey
Escuela de Arquitectura, Arte y Diseño





Preface

In a world shaped by constant transformation and global interconnectedness, design emerges as a bridge between people, places, and ideas. Cumulus Monterrey 2024: Design Across Borders – United in Creativity invited the international design community to reflect on the profound potential of design to transcend cultural, geographic, and disciplinary boundaries, uniting us in the shared pursuit of innovation, inclusion, and positive change.

This edition of the Cumulus Proceedings gathers contributions that respond to urgent questions: How can design foster empathy and intercultural understanding? In what ways does it become a catalyst for social transformation in a complex, globalized world? Can design truly become a universal language—and what are the challenges in achieving that ideal?

The richness of perspectives represented in these proceedings speaks to the global nature of the Cumulus network. Authors, researchers, educators, and practitioners from across continents have come together to share insights, experiences, and provocations within four thematic tracks:

- Design for Change explores design's role in social innovation, sustainability, equity, and the circular economy—highlighting projects that place co-creation and inclusion at their core.
- Speculative Futures ventures into emerging territories shaped by technology, artificial intelligence, and immersive experiences, imagining the future of creative practice.
- Education in Art and Design focuses on pedagogical innovation, interdisciplinarity, and the challenges and opportunities of digital transformation in global learning environments.
- Translocality brings critical attention to issues of migration, decolonization, and the Global South, recognizing the importance of diverse voices and perspectives in shaping a more equitable world through design.

Together, these contributions reflect a collective commitment to harnessing creativity as a force that transcends barriers—linguistic, political, cultural—and brings people together around shared values and visions.

We are proud to present this volume as a testament to the power of design to imagine, inspire, and unite. May it serve not only as a record of this important moment in time but also as a spark for continued dialogue, collaboration, and transformation in the global design community.

Design Across Borders: United in Creativity

Lorenzo Imbesi
Full Professor, Sapienza University of Rome
President, Cumulus Association

The Cumulus Monterrey 2024 Conference marked a timely and vital moment in the global conversation about the role of design in shaping a better world. Hosted at the prestigious design institutions of Tecnológico de Monterrey and Universidad de Monterrey (UDEM), the international gathering has been further enhanced by the unique Monterrey's rich heritage and cultural identity, contributing to a thriving ecosystem of creative exchange for scholars, researchers, and practitioners across various design disciplines.

The central theme of the conference, "Design Across Borders: United in Creativity," provided an inspiring gateway for exploring how design holds the possibility to transcend geographical, cultural, and disciplinary boundaries. In particular, the conference was framed by four imperative trajectories: "Design for Change," investigating how design practices can drive social innovation and sustainable development; "Design Futures," exploring the interplay between technology and creativity, immersive experiences, virtual realities, and the implications of artificial intelligence; "Education in Art and Design," investigating pedagogical approaches in the field; and "Translocality," addressing complex issues of migration, decolonisation, and North-South dynamics. Themes highlight the broad scope of contemporary artistic and design pursuits.

At the heart of the conference was a shared recognition that design can be a dynamic force for empathetic understanding and intercultural dialogue. Through a rich program of keynote lectures, panel discussions, workshops, exhibitions, and informal exchanges, the international community demonstrated determination to work collaboratively across geographical and cultural divides, confirming the foundational premises of the conference: that creativity knows no boundaries, and through design, we can forge connections that transcend the limitations of space, time, and cultural difference. In an era of unprecedented global challenges, from climate change to technological acceleration, from cultural conflicts to social inequities, designing without boundaries means identifying areas of commonality, intersection, and convergence, highlighting them in ways that resonate with and reflect the spirit of our transborder region. As traditional confines between nations, disciplines, and cultural contexts become increasingly permeable, the design community must find itself uniquely equipped to harness this fluidity. Rather than resisting uncertainty, design must embrace it, transforming constraints into opportunities for innovative problem-solving and cross-cultural exchange.

The proceedings collected in this edition offer an extensive variety of perspectives on the ideas and projects discussed at the event. They include case studies, speculative work, educational reflections, and practical strategies, all pointing to the evolving role of design to shape societal interactions, encouraging intercultural dialogue, and building a more harmonious and interconnected world. However, these proceedings capture only a portion of the energy and insight shared during the conference, with the remaining impact continuing to reverberate through ongoing collaborations and dialogues within our global community.

As we move forward, the conversations from Cumulus Monterrey 2024 remind us that creativity thrives not in isolation, but in community. And in a time marked by division and uncertainty, design, when practiced with care and intention, can truly serve as a bridge. One that brings us together to learn, to act, and to imagine a positive change.

Reviewers

Scientific Committee

Aleksandra Krstikj	Scientific Committee Co-Chair, Tecnológico de Monterrey
Mariel García Hernández	Scientific Committee Co-Chair, Universidad de Monterrey

Track Chairs

David Sánchez	Design for Change Track Co-Chair, Tecnológico de Monterrey
Juan Ignacio Piedras	Design for Change Track Co-Chair, Universidad de Monterrey
Martha Nuñez	Education in Art and Design Track Co-Chair, Tecnológico de Monterrey
Miroslava Petrova	Education in Art and Design Track Co-Chair, Universidad de Monterrey
Cristóbal Guerra	Speculative Futures Track Co-Chair, Universidad de Monterrey
Ruth León	Speculative Futures Track Co-Chair, Tecnológico de Monterrey
Iliana Moreno	Translocality Track Co-Chair, Universidad de Monterrey
Pier Paolo Peruccio	Translocality Track Co-Chair, Tecnológico de Monterrey

Reviewers

Alejandro Acuña	Emanuele Giorgi	Mariano Garcia
Alejandro Gutierrez	Enrique Garcia	Mariel García Hernández
Aleksandra Krstikj	Esther Kang	Marisol Ugalde Ugalde
Alessandra Cireddu	Eugen Reséndiz	Martha Beatriz Cortés Topete
Alfredo Narvaez	Florencia Guillén	Martha Elena Núñez López
Amalin Pedrozo	Gianluca Carella	Martín Alejandro Galván
Amelia Martínez Quiroga	Gibrán Sayeg-Sánchez	Melissa de La Luz Díaz Quiroz
Americo Mateus	Gloria Varinia Hernández	Miguel González
Ana Correia de Barros	Guillerma Legaspi Mendoza	Mine Küçük
Ana Cristina Garcia-Luna Romero	Han Chen	Miroslava Petrova
Anahita Suri	Hatice Server Kesdi	Monika Choudhary

Andrea Wilkinson
Andrzej Klimczuk
Angel Daniel Munoz Guzman
Ángel Martínez
Angeles Castillo
Ángelica Piedrahita
Arantxa Rivera
Asad Abbas
Ayça Kınık
Barak Pelman
Brenda García Parra
Camelia Chivaran
Carlos A. Ramírez
Carlos Alberto Chaveznava T.
Carlos Ramírez
Carlos Zepeda Gil
Catalina Mayela Lozano Cantú
Christiam Mendoza
Christian Camacho
Christian Chávez López
Christian Javier Méndez Aquilar
Claudia Elsa Rodriguez Medellin
Claudia López
Claudia Mont'Alvão
Claudio Formicola
Claus-Christian Eckhardt
Clémence Montagne
Colleen Cocotos
Cristina Guzmán
Cristobal Rodolfo Guerra Tamez
Diana Susana Urías Borbón
Dr. Krishma M Jadav
Edgar Ludert
Edgar Morejón Flores
Eduardo Guizar
Elfide Rivas Rivas
Eli Josue Tello Bragado
Elisa Bertolotti
Horacio Rodríguez
Iliana María Moreno Guzmán
Inés Álvarez Icaza
Irma Peñúñuri
Isaac Olvera
Israel Zamora-Hernandez
Jason Wiggin
Javier Ramos
Javier Topete
Jesús Eduardo Oliva Abarca
John Paul Dowling
Jordan Taylor
Jorge A. González-Mendívil
Jorge Cantú-Sanchez
Jorge Sanabria
Juan Carlos Marquez Canizares
Juan Carlos Yurrieta Ugarte
Juan Ignacio Piedras Madrazo
Juan-Carlos Rojas
Juhri Selamet
June Jordaan
Kalpana Diviyarajan
Karen Hinojosa
Kimberly Bediako
Krishnakumar Gopal
Laura Picca
Lei Mao
León Guillermo Staines Díaz
Leslie Olán
Leticia Gaytán Hernández
Lorena Zazueta
Lucía Martín López
Luis Miguel Gutierrez Contreras
Luminita Albisoru
Ma. Fernanda Marquez
Ma. Luisa Melgoza del Angel
Marco Rigamonti
Mariana Flores Garcia
Nan O'Sullivan
Nan Xia
Naoko Takeda
Natacha Poggio
Natalia Ceballos
Niina Marjatta Turtola
Nike Romano
Nitika Sharma
Oliver Szasz
Ory Bartal
Paolo Caratelli
Paolo Franzo
Patricio Ortiz
Paulo David Soasti B.
Peter Jones
Piedad Martínez
Raul Díaz
Ritesh Ranjan
Rocío Romero
Rubén Vázquez Esquivel
Rupa Narayan Agarwal
Ruth León
Santiago Útima Loaiza
Sara Velez
Serkan Güneş
Sindy Melissa Godinez
Sky Lo Tian Tian
Sneha Pataria
Spyros Bofylatos
Tao Huang
Taryn Mead
Ulrike Rahe
Veronica Barnes
Xiaochao Xi
Xóchitl Arias
Yadira Ornelas
Zaida Montañana Palacios
Zita Carolina González G.

Index

PAPERS **21**

Ngaua Te Pae Hamuti: Rise To The Challenge: Tethering Commonality And Contrast To Create Opportunities For Positive Social And Environmental Change **22**

3D Printing Of Energy-Efficiency Windows **45**

Analyses Of Sustainable Development In City Visual Image Design: A Study Based On Citespace Knowledge Mapping Method **58**

“The European Fusilli Project In The City Of Turin: The Systemic Design Of Circular Agri-Food Proposals Involving Local Actors Of Mirafiori Sud District” **87**

An Analysis of Inclusive Design Integration And Intersectionality In Design Education Curricula **112**

A Contrastive Study of Service Design in Public Transportation System in Shanghai and Turin **136**

Collaborative Design Explorations With Augmented Reality **159**

Biomaterials and Biodesign Transferring Knowledge From Academia to Secondary Schools **179**

“The ‘Maraña’ as a Dysphoric Notion for Staying with the Troubles of Revolts”. **200**

Research on Fashion Clothing Design Strategies for the Young Elderly From an Inclusive Perspective **218**

Beyond Boundaries: Enhancing Human Experience Through Inclusive Design **239**

The Development and Logic of Digital Fashion From The Perspective of the Design **253**

Strategic Foresight and Worldbuilding With Companies **282**

A Design-Led System Towards Circularity **304**

Speculative Design Education: Identifying and Analyzing Critical Moments in the Process of Extrapolating Future Scenarios **326**

Design for Being Home and Connected: Emerging Types of Dwelling at Home Toward Smart Furnitures **352**

Adaptive Learning Experience for Art and Design Graduates in a Changing World **376**

“Deconstructing the Traditional Boundaries of the Automotive System Through the Recycling of Composite Materials in the Design and Production of the Future Car” **388**

Bridging The Gap: Linking Transferable Skills to Potential Futures in Graphic Design **410**

Design for Children's Active School Commuting Environmental Safety Empowered by Artificial Intelligence and Augmented Reality **432**

"Ensurance" Environmental Insurance: Research And Practice Based on Social Innovation Design **452**

Research on Health Detection Product Design Based on Affordance and Traditional Chinese Medicine (Tcm) Wellness Concepts **467**

Cross-Cultural Design Innovation Through Technology And Creativity **481**

Research on the Experience Product Design of Intangible Cultural Heritage "Song Dynasty Kites" Based on the Perspective of User Needs **501**

Research on Environmental Regulation Design of Sustainable Community from the Perspective of Thermodynamic System **522**

Extended Curriculum Programmes in South Africa: A Focus on Social Justice and Arts-Based Pedagogies **547**

Multidimensional Artistic Processes and Strategies for Conversational Practices Between Women **570**

Packaging and Cultural Accessibility. Designing Product Comprehensibility for All Users **586**

Research on the Emotional Value of Traditional Residences from the Perspective of Daily Life — Take the Example of the Eagle River Diaolou Group **607**

"Blockchain Applied to Systemic Design: Ensuring Project Authenticity Through Quantitative Report Verification" **625**

Untold Stories: The Graphic Design of Maria Keil and Cristina Reis During the Portuguese Dictatorship and the Path Towards Inclusiveness **640**

Cultural Dimensions in Design: Research on the Shifts of Interactive Relations **663**

Navigating Challenges in Participatory Design: Exploring Handover Tools when Designing for People with Dementia **688**

Time for (S)Heroes to Enhance Circular Fashion and Costume, Art Installations, Devising for Design, State-of-the-Art Technology, Inclusion and Diversity **713**

Data Sonification and the Power of Audio: Breaking Boundaries of Information Design with Creativity, Accessibility, and Innovation **737**

"Places to Learn – Cultural Heritage Enrichment Model (Chem) for Transformation and Innovation Through Art and Design" **763**

How can Generative AI Transform Smartphone Communication?: Exploring New Design Landscapes for Everyday Experiences **785**

Regenerative Design in Tibetan Regions: Place-Based Learning Through Storymaking **801**

Shifting Graphic Design Pedagogy: Co-Creating With Cancer Survivors for Inclusive Clinical Trials **824**

Research on Brand Experience Design Strategy for Mr Virtual Community Based on Ahp-Qfd Model **841**

Design and Biomaterials: Integrating New Models for Sustainable Design **863**

Cultural Regeneration of Domestic Wastes From Participatory Design Perspective **883**

Design-Driven Innovation (DDI) as a Catalyst for Transformation: A Case Study of the Air-Membrane Version of Huo-Yan Laboratory **914**

Pemo, Positive Emotion: A Gamified AI Journaling Website Centered on Facilitating Users in Developing More Positive Narrative Identities **936**

Puli Project Semillas Del Futuro: Implementing Design-Led Education to Transform Communities **957**

Design Futures for Traditional Craft: A Collaborative and International Approach **974**

A Study on Modular Concept Design for Street Vendor Markets in the Context of Consumption Downgrading **993**

Sustainable Choices, Fresh Approaches: Redesigning Meal Kits Using Activity Theory **1013**

Research on Daily Spatial Practices in Traditional Chinese Villages: A Case Study of Fujian Tulou Villages **1030**

Extending the Lifecycle of Designed Products for Sustainable Development: Insights From Zisha Teapot **1051**

“Designed By Women (DPM): Approaches for a Historical, Non-Sexist, and Co-Creative Study on Pioneering Women Designers In Chile” **1079**

“Co-Creation and Design of Tools for Cultural Mediations in Art Museum of Ciudad Juárez” **1100**

From Dystopia to Micro-Utopia: Societal Change Through Digital Design Innovation **1121**

Crafting Immigrant Narratives of Belonging: Art and Design for Social Innovation with the Latino, Latina, and Latinx Community of Iowa City **1137**

Artistic Resistance in the Post-Privacy Era: Reflection, Imagination, and Reconstruction Under Liquid Modernity **1153**

Empathy Engine: Using Game Design and Real-Time Technology to Cultivate Social Connection **1172**

Digital Droplets: Shaping the Appreciation Experience of “Spring Water” **1194**

Care of New Knowledges - Educene **1213**

Co-Designing for Equity: Addressing Anti-Black Racism in the Arts in Canada- A Working Paper **1232**

Experience prototyping with an Educational Robot Platform: Development and Pedagogical Reflection from an Interaction Design Course **1256**

Onlife. Exhibit Design in the Time of the Mangrove Society **1276**

Aigc and Vernacular Creativity: A Study of Chinese Rural Children’s Aesthetic Education From the Perspective of Capability Approach **1295**

‘Re-Wilding’ The Cultural Landscape. Breraplus, an Ethical and No Borders Museum Experiment **1318**

Design-Driven Innovation for Natural Capital: Mapping Criticisms Among Conservationbodies to Implement Accessible Technological Tools for Conservation **1333**

Pastry as a Medium: Design for Social Innovation of Catering Service in a Chinese Nursing Home **1354**

Augmenting the Double Diamond: Critically Integrating Generative AI in the Creative Process **1371**

Eco-Data Informed Processes. Nature as a Co-Designer to Face Environmental Change **1386**

Hauntological Speculation Device: Designing Lost Futures with Design Students to Explore Socio-Technological Scenarios **1413**

Depictions of Sustainability and Unsustainability: AI-Generated Images as Part of our Semiosphere **1431**

Reassembling Resilience In Breakdown: How Mexico City Recovered Food Security Through Micro-Innovations During the Covid-19 Pandemic **1444**

Design-Led Circularity for Furniture Manufacturing. An Application on Montessori Kindergarten **1462**

Towards A Post-Anthropocentric Creative Framework To Support Designers In Envisioning More-Than-Human Futures Brand Strategy Empowers the Revitalization of Rural Areas and Social Innovation in China **1491**

A Study Of Multisensory Stress-Relieving Product Design for Female Office Workers **1510**

Brand Strategy Empowers the Revitalization of Rural Areas and Social Innovation in China **1528**

Artificial Intelligence as a Catalyst for Individual and Collaborative Creativity in Design Conceptualization **1544**

"Design for Chronicity: The Case of Pharmaceutical Packaging in Medical Treatment for Elderly" **1558**

Enhancing Pro-Social Experiences Through Cross-Cultural Interactions for the Campus of the Future **1577**

Across Borders: A Pilot Phd Programme in Design, Art And Technologies. Open Questions for A Post-Disciplinary Education & Research Model **1597**

Design in the Multidisciplinary Era: Collaborative Approaches to Cultural and Territorial Reactivation **1616**

Hospitals or Homes: Where Will We be Cured in the Future? Design Challenges and Visions in the Rapidly Evolving Home Care Sector **1643**

"Design to Create Value: *Made In...* Paraguay for Transition" **1658**

Design as Resilience: A Model for Global Collaborations **1684**

Space Exploration: Community of Intercultural Identity Through Memory Sharing **1706**

Application Strategies of Artificial Intelligence Technology in Art And Design Education: A Multi-Case Study from the Perspective of Interdisciplinary Thinking Cultivation Feasibility **1721**

Updating Wayfinding Literature and Teaching Methodology **1738**

Explore Boundary Space: Design Strategies for Street Renewal in Beijing's Hutong Neighborhoods Based on the Idea of Symbiosis **1758**

Identity Construction and Spatial Production: The Evolution of Milan's Chinatown **1771**

Archeology in Transit **1789**

Exploring the Concept of Multiespecies Design: Perspectives from Mexico **1818**

Event-Based Education in Design: A Case Study on Fostering Critical Thinking and Social Impact **1846**

Empowering Design: A Framework for Stigma-Free Design and Human Augmentation **1874**

Designing a Participatory Process to Implement Technology-Based Projects in Vulnerable Communities. **1892**

Architecture of Degrowth: A Spectrum **1908**

The Future Evolution of Design-Oriented Practices in the Context of Human and Non-Human Collaboration **1936**

Designing for Durability: How Fashion Brands are Encouraging Longer Garment Life Through Consumer Behaviour Change **1956**

Prototyping a Migrating Virtual Re-Ceptionist Using Physical and Virtual Reality Tools: Implications for Design Competency and Tool Development **1975**

Designing Hybrid Welfare Spaces and Services: Exploring The Intersectionof Physical and Digital Dimensions for Social Inclusion In Urban Contexts and Peripheries **1998**

“Alles Richtig Ist Nicht Richtiges Für Alle” **2011**

Co-Designing with Humans **2030**

Economic Generation Project for Indigenous Women in Northern Cauca **2047**

A Materials Design Practice Between Crafts, Creativity and Technology **2074**

Higher-Order Factors of Creativity: An Analysis of an Attributes Database **2097**

POSTERS **2119**

The Evolution of Graphic Poster Design: A Meta-Analysis Of Media Technology’s Influence On Creative Practice **2120**

Enhancing Child Development Through Interactive Illustration Design In Picture Books: An Interdisciplinary Approach Talavera Of Puebla, Design As An Element Of Cultural Identity Of Puebla, Mexico **2122**

Talavera of Puebla, Design as an element of Cultural Identity of Puebla, Mexico. **2124**

Digital Fashion Education: A Collaborative Approach to Preparing Students for Indutry 4.0 **2126**

Global Collaboration For Sustainability: An Innovative Educational Approach **2128**

Human Mobility And Design **2130**

WORKSHOPS **2132**

Designing for Social Justice and Human Rights: Building Networks for Victims of Violence and Families of the Disappeared **2133**

CMF Strategy Design Using Generative AI **2134**

New Turn In Design Research And Education - A Panel Discussion **2136**

Dear AI, What Do I Want To Say And What Does It Look Like? Tools And Methodologies For Image Making **2137**

Physicalising Symptoms: The Role of Materials in Supporting Intimate Data Collection to Improve Awareness and Communication In Healthcare **2139**

Codex Artificialia: A New Creative Act to Resist the Hype of Smart Commodification and Decolonising Tomorrow **2146**

Design As Community Care: Drafting a New Manifesto for Design Education **2148**

Refugeoly Gam 2149

Co-Creating Collaborative Cultures: How To Teach Collaboration In Design School 2150

Rethinking Design Education: Teaching if We Could be Risky 2152

Designing With The Desert: Crossborder Pedagogies For Sustainable Bioregions 2156

Designing Plural Futures 2163

Green Threads: Sustainable Fashion Jam 2165

Beyond Words: Image, Gesture & Empathy 2166

Application Workshop Cumulus Conference Monterrey 2024 2168

Robotics With Us in our Meaningful Places: Combining Art-Based Methods With AI to Build Empathy Between Human-Robot Interaction 2171

The Country of Origin Effect: Mapping Design Values and Patterns 2176

Systemic Design Interventions: Understanding the Transformation Towards the Circular Plastic Economy Through the Lens of Aquaculture Case 2179

Strange Strangers In Strange Lands: A Collaborative Storytelling Game For Community Biodiversity Activism 2196

SLIDE DECKS 2202

Art and Design Activities as Data 2203

Cultivating Community Collaborations to Foster Societal Change 2204

Gota and Gulshan: Poetic Adornment 2206

Transformation to a Circular Campus 2208

Technology and Māori Narratives in Design Education and Research 2210

Co-Designing Health Communication for Neurodevelopmental Disorders in South Asia 2212

Representing Risk: Radical Collaboration In A Design Classroom 2215

Kinesthetics and Interoception: Future Designs for More Than Five Senses 2218

Decolonizing Design: Equity in Participation 2219

Strategic Foresight for Social Impact: Utilizing Design to Promote Empathy and Intercultural Understanding 2221

The Evolution of Collaboration: Tracking Benefits of Alternative Instruction Methods 2224

We All Need A Home: Co-Creating Sustainable Shelter 2226

Off Road, Try Out & The Choreography of Making 2229

The Future of Craft 2232


PAPERS

ARCHEOLOGY IN TRANSIT

José Rodrigo de la O Campos [a], Pier Paolo Peruccio [b]

[a] *TEC Monterrey (Mexico)*
[b] *TEC Monterrey (Mexico), Politecnico di Torino (Italy)*

ABSTRACT | The paper outlines the research methodology and initial results of the exhibition "Arqueología en Tránsito" opened in Tijuana (Mexico) and San Diego (USA) during two Design Weeks (Tijuana on May 4-5, 2024 and San Diego on September 19-25, respectively). The project employed a collaborative design research strategy involving researchers from Tecnológico de Monterrey across various Mexican territories, from Chiapas to Chihuahua, to collect and analyze artifacts reflecting migrant experience.

"Archaeology is the only way to access the present," philosopher Giorgio Agamben writes at the beginning of his essay "Creazione e anarchia" (Agamben, 2017). Grounded in these premises, the research and the exhibition emphasized the analytical exploration of the relationship between individuals and artifacts as an essential framework for examining the complexities of contemporary migration.

The methodology was centered around generative and co-creative workshops, where participants selected and scrutinized artifacts based on designated criteria. The selected artifacts, which included everyday items such as modified plastic bottles alongside more symbolic objects, transformed from mere silent witnesses into central figures in a narrative that vividly portrays the profound human stories intertwined with issues of migration and borders. The exhibition served as a reflective platform to consider the dynamics of current global borders, highlighting the paradox whereby the construction of more barriers coincides with increased migrations and conflicts. It invited attendees to delve deeper into understanding the objects silently accompanying migrants on their journeys. In addition, this project suggests that the archaeological study of objects can enhance the design process by offering insights into the potential impacts of functional objects. Through "Arqueología en Tránsito," the project

provided valuable insights into the complex interplay between human lives and the objects that are both part of and witness to these life-changing experiences, enriching the dialogue on migration, cultural heritage, and human resilience. Furthermore, the exhibition underscored the transformative power of design and research in fostering greater empathy and awareness about global societal challenges.

KEYWORDS | OBJECTS, HUMANS, BEHAVIORAL CHANGE, COLLABORATIVE DESIGN RESEARCH, MIGRANT EXPERIENCE, GENERATIVE DESIGN WORKSHOPS, ARCHAEOLOGICAL RELEVANCE

Introduction

Mexico is experiencing a significant shift in its migration landscape, transitioning from being primarily a country of emigration to one facing substantial internal migration flows. The country is now receiving an increasing number of migrants who transit through and settle within its territory, along with a rise in the arrival of asylum seekers and refugees. Despite the growing importance of migration, Mexico lacks a comprehensive and coordinated policy to effectively integrate newcomers, leading to potential social cohesion issues and increasing the vulnerability of migrants (Sánchez-Montijano & Ortega, 2022).

Migration patterns between Mexico and the United States have undergone significant transformations in recent years, driven by a confluence of economic, social, and policy factors. These changes have notably affected migration flows' demographics, volume, and nature. The demographic profile of Mexican migrants has diversified, with a noticeable increase in the number of women and older individuals participating in migration. Additionally, the geographic origins of migrants have expanded, now including previously considered stable states (E. Valdez et al., 2015; R. Sáenz, 2015). The migration of women and children from Mexico and Latin America to the United States has been a significant phenomenon in recent years. This movement is driven by various factors, including economic opportunities, family reunification, and the need to escape violence or persecution. Understanding the trends and patterns of this migration is crucial for developing effective policies and support systems. Men primarily migrate for employment opportunities, while women are motivated by both family reunification and economic reasons. Notably, daughters exhibit a high propensity to migrate for work, paralleling their male counterparts. The increase in the number of women and children migrating from Mexico and Central America to the United States can often be attributed to structural vulnerabilities and traumatic experiences (E. Valdez et al., 2015; G. Valdéz-Gardea, 2009; Marcela Cerrutti & D. Massey, 2001). The migration dynamics in Mexico have evolved significantly, with the country increasingly becoming a transit

route for migrants from Central and South America heading to the United States. Various socioeconomic and political factors, including violence, economic opportunities, and immigration enforcement policies, drive this shift. As a result, Mexico has become a crucial transit country for migrants from Central America, particularly from the Northern Triangle (El Salvador, Guatemala, and Honduras), who are fleeing violence and seeking better economic opportunities in the United States. However, the journey through Mexico is fraught with significant violence and exploitation. Migrants often face organized crime and human rights abuses, exacerbating their already precarious situation. Particularly vulnerable are migrants, especially children, who encounter severe humanitarian challenges during their transit through Mexico. These challenges include exposure to violence, exploitation, and inadequate access to healthcare (Benjamin J. Roth et al., 2020; F. M. Flores, 2020; L. Pries et al., 2023; Laura Naranjo et al., 2023; W. Vogt, 2013).

Tijuana, a city on Mexico's northern border, has emerged as a significant hub for migrants, particularly those aiming to enter the United States. Various factors have shaped this role, including legal frameworks, economic opportunities, and the city's strategic location. Notably, Tijuana's position as an industrial center and its location on migration routes from Central and South America to the U.S. attract both internal and international migrants (J. Hennebry et al., 2018; M. Marchand & Adriana Sletza Ortega Ramírez, 2019).

The city's export-processing areas create a complex interaction between local and global labor markets, reinforcing its status as a migration hub. Many migrants initially arrive in Tijuana with the intention of crossing into the United States. However, due to various obstacles, they often settle temporarily, which can become permanent as they find work and other commitments in the city—additionally, deported Mexican men in Tijuana experience a state of "permanent temporality," navigating their lives in a borderscape that mediates their mobility and emotional wellbeing. This phenomenon underscores the complex social and emotional dimensions of migration in Tijuana, highlighting the multifaceted challenges migrants face in this critical border city (Renato de Almeida Arao Galhardi, 2022).

As designers, educators, and researchers, it is essential to understand complex situations deeply through a design perspective. The migration phenomena should no longer be perceived merely as a constant emergency to manage. Instead, it must be approached as a multidisciplinary, interconnected, and complex issue. Addressing migration requires implementing a systemic approach, which allows for a comprehensive understanding of its various dimensions and interdependencies. This exhibition emphasizes the importance of a holistic and strategic perspective in dealing with migration. Specifically, product design plays a crucial role in shaping the relationship between objects and society by creating artifacts that reflect human life's cultural, emotional, and functional aspects. These artifacts act as boundary objects, bridging

knowledge gaps and fostering emotional and identity connections. By learning from long-lasting artifacts for sustainability, understanding the mutual influence between products and societal change, and using previous products as carriers of engineering knowledge, product design underscores its multifaceted role in creating meaningful and sustainable connections between objects and society. Design artifacts promote shared representation, transform design knowledge, mobilize for action, and legitimize design expertise, highlighting the importance of design in our daily lives (D. Orth et al., 2018; G. Mark et al., 2007; L. Bucciarelli, 2002; S. Walker, 2006). The intersection of design and anthropology provides a unique perspective to understand contemporary living conditions, particularly for migrants. By examining material cultures and relational paradigms, researchers can gain deeper insights into the lived experiences of migrants, including their challenges and adaptive strategies. This interdisciplinary approach is crucial for uncovering the complex realities of migrant lives and their socio-economic integration. It enhances our understanding of contemporary living conditions and offers practical tools to support migrants' journeys (D. Schultheiss et al., 2011; P. Basu & S. Coleman, 2008).

With the specific issue of migrations, it is a good start to see what objects are left behind from these activities. The objects that migrants leave behind in inhospitable areas while crossing the border, such as in Sonora, provide us with a deeper understanding of their situation in various ways. Firstly, these objects reflect the bodily techniques and repeated experiences migrants have developed to face the dangers of crossing. For example, the visible wear on shoes, bloodstained socks, and sweat-stained clothing can offer intimate details about the hardships of the crossing process, evidencing their daily suffering (De León, 2013).

This research was genuinely inspired by Jason De León's work by identifying the water bottle as an agent of change: De León argues that the water bottle emerges as a crucial change agent in the migrant experience, particularly in the context of crossing the Sonoran Desert. It is essential for survival, as the lack of water is a leading cause of migrationrelated injuries and deaths, primarily due to hyperthermia. The bottle provides hydration and symbolizes resilience and adaptation in the face of harsh desert conditions and border surveillance. Additionally, water bottles have been modified to attempt to evade Border Patrol detection.

Migrants have adopted black plastic gallon bottles, which are less recognizable from a distance. This adaptation illustrates how an everyday object can become a tool of deception, highlighting the creativity and ingenuity of migrants using their material culture to avoid detection. Over time, changes in the design and use of these bottles reflect the socio-economic and political conditions migrants face. For example, before 2009, many bottles were clear plastic, making them more detectable. The shift to camouflaged bottles indicates a response to increased border security.

Furthermore, some companies have capitalized on the preference for black bottles among migrants. After 2009, certain companies began producing black plastic gallon bottles, reflecting a technological shift in response to migrant necessities. Migrants perceive these dark bottles as a tactical advantage for avoiding detection, although this assumption does not always hold up against the surveillance technology used by authorities. In addition, the year 2009 emerged as a significant chronological marker for archaeologists, distinguishing a clear shift in bottle color from white to black. This change is particularly noteworthy as it illustrates the dynamic relationship between supply and demand; the necessity for adaptation prompted a response from the market, which accommodated to this new demand. Finally, the repeated use and recontextualization of the water bottle by migrants reveal patterns of suffering and vulnerability. Dependence on these objects while navigating a hostile environment normalizes the experience of migration, which is fraught with constant risks.

In summary, the water bottle symbolizes the struggle for life and resilience in a context of violation and oppression, playing a central role in the experiences and hardships of migrants attempting to cross the border (De León, 2012). Understanding the complexities of artifacts and their relationship with people and culture is essential for design scholars. This knowledge aids in creating designs that are not only functional but also culturally relevant and meaningful. The water bottle example by De León serves as an excellent case study for this research. We also recognize that the outcome of this research should be an exhibition. Research like this, disseminated through public exhibitions, can engage participants in community conversations and elicit thoughtful, in-depth responses. Collaboration between academic researchers, curators, and designers is crucial in presenting academic research in an engaging and visually appealing way in physical exhibitions (Alyssa Tang & I. Nakarada-Kordic, 2022; Anda Boluža, 2023)

Methodology

The School of Architecture, Art, and Design (EAAD) at Tecnológico de Monterrey holds a unique position compared to other institutions due to its presence on 19 campuses nationwide (ITESM, 2024). This provides a significant opportunity to conduct research incorporating diverse perspectives, localities, and scopes to understand migration through the artifacts left behind by migrants.

Criteria

To effectively identify, evaluate, and align the criteria for this study, we needed to efficiently involve various design researchers, faculty members, and other stakeholders.

Given the impracticality of gathering all participants in a physical space, we faced the challenge of engaging faculty members in a time-effective manner. We needed to

involve them quickly, allowing them to work independently while producing high-quality content. The first challenge was to align how all participants analyze the objects through specific criteria. Aligning research criteria and analysis is crucial in design research and archaeology, especially when analyzing artifacts. This alignment ensures that the methodologies used are appropriate for the research questions and hypotheses, leading to more reliable and valid conclusions (Hoadley, 2004).

The first criterion was to analyze the relevance between fabrication and use. Understanding the intersection of design and manufacturing enables design scholars to create designs that are not only innovative but also feasible and efficient to produce (Fillingim et al., 2020; Pradel et al., 2018). By applying this criterion, we excluded informal and handcrafted artifacts that might present attractive individual solutions but fall outside the scope of this research.

The second criterion analyzed how emotionally charged the objects were, as this can create a significant emotional connection with their users (D'Souza et al., 2010).

The third criterion considered the product's impact on behavioral change among individuals, industries and institutions. Understanding objects as agents of behavioral change allows designers to integrate key insights from behavior change theory into the traditional design process (Cash et al., 2017).

Finally, the last criterion analyzed the archaeological relevance, which was necessary to understand this particular situation's contemporary narratives. The water bottle served as an excellent example for understanding more objects that would build this exhibition research, assuring that our design researchers could find similar, impactful artifacts:

1. **Fabrication and Use:** Water bottles are essential for migrants, serving as practical objects designed to help them survive in a hostile environment. They are crucial for providing the necessary hydration to combat hyperthermia in the desert, effectively keeping people alive.
2. **Emotionally Charged Objects:** For migrants, water bottles symbolize the struggle for survival and the experiences endured during a dangerous journey. These objects become touchpoints connecting to the personal narratives of those attempting to cross the border, evoking emotions of hope and despair.
3. **Agents of Behavioral Change:** Migrants' selection and use of water bottles influence their behavior and interactions with their environment. Migrants understand that using dark-colored water bottles might help them avoid detection by border authorities, representing a shift in their survival strategies despite potential health consequences. And the bottle has also has an impact on the local area by causing a behavioral change in some entrepreneurs who have been starting to produce the bottle using the color black since 2009.

4. **Archaeological Relevance:** Water bottles, commonly found at migrant stations, allow for studying the use and evolution of border-crossing practices over the years. Analyzing the "use" of these bottles highlights patterns reflecting migrants' suffering and experiences, providing valuable insights into the historical and contemporary narratives of migration.

As we can see, water bottles not only fulfill practical functions but are also intrinsically linked to migrants' emotional narratives and the changes they provoke in their behaviors and surroundings. This multifaceted understanding is crucial for design scholars aiming to create culturally resonant and impactful designs.

Co-Creative Workshops

Having established criteria, we needed to design a way to bring all interested participants together for collaboration. We decided that remote co-creation workshops were the most cost-effective method. Utilizing platforms like MIRO and Zoom, these workshops effectively united diverse stakeholders to align criteria, workflows, and quality standards in archaeological analysis. They offered increased flexibility, reduced costs, and high levels of engagement and interactivity (A. Boone et al., 2023).

We designed the co-creative activities in two workshops. The first workshop focused on brainstorming, where participants identified artifacts in their localities related to migrants. Early brainstorming sessions are valuable for initiating archaeological research, especially involving many participants (Runa M. Korde & P. Paulus, 2017; T. Connolly et al., 1993). Each participant then used MIRO boards to analyze the artifacts, focusing on fabrication and use, archaeological relevance, emotional impact, and their role as agents of behavioral change. The session concluded with presentations and feedback from the group.

Following the brainstorming session, participants conducted self-managed research using ethnographic interviews, news articles, and academic papers to validate their ideas. Integrating evidence from these sources is essential for generating comprehensive insights. Academic papers provide rigorous, peer-reviewed data; news articles offer timely and broad coverage; and ethnographic interviews deliver deep, contextual understanding. By combining these sources, researchers can achieve a more balanced and thorough perspective, enhancing the reliability and depth of their findings (Michael K. Martin et al., 2013; Simon Cottle, 2007). This validation process took about two weeks. The second workshop was then held to present the results and select the most exciting artifacts identified by participants. Invitations to the online co-creative workshops were distributed through the design department chairs in each region, resulting in about 15 participants.

One challenge we faced was that some participants needed help understanding the importance of the constraints of the criteria, often disregarding the manufacturing

criterion and bringing artifacts that were more anecdotal than empirical. These anecdotal artifacts were not selected as participants could not find further evidence of their importance. Another challenge was commitment. Some participants who attended the first session did not participate in the second one; if they did, they needed to work more on validating their findings. While commitment issues may go beyond our methodology, group research activities must combine group and individual participation and validate findings through ethnographic research, academic papers, or news articles. Nevertheless, after this exercise, we collected many artifacts that provided valuable insights into the migrant situation in Mexico.

The Exhibition

The objects selected for the Tijuana Design Week 2024 were clustered for the exhibition curatorship according to 5 macro areas, representative of the changes in behavior that occurred at the company, migrant, user, and designer levels (figure 1).



Figure 1. Exhibition Arqueología en Tránsito at CECUT, Tijuana, May 2024



Figure 2. Exhibition Arqueología en Tránsito at CECUT, Tijuana, May 2024

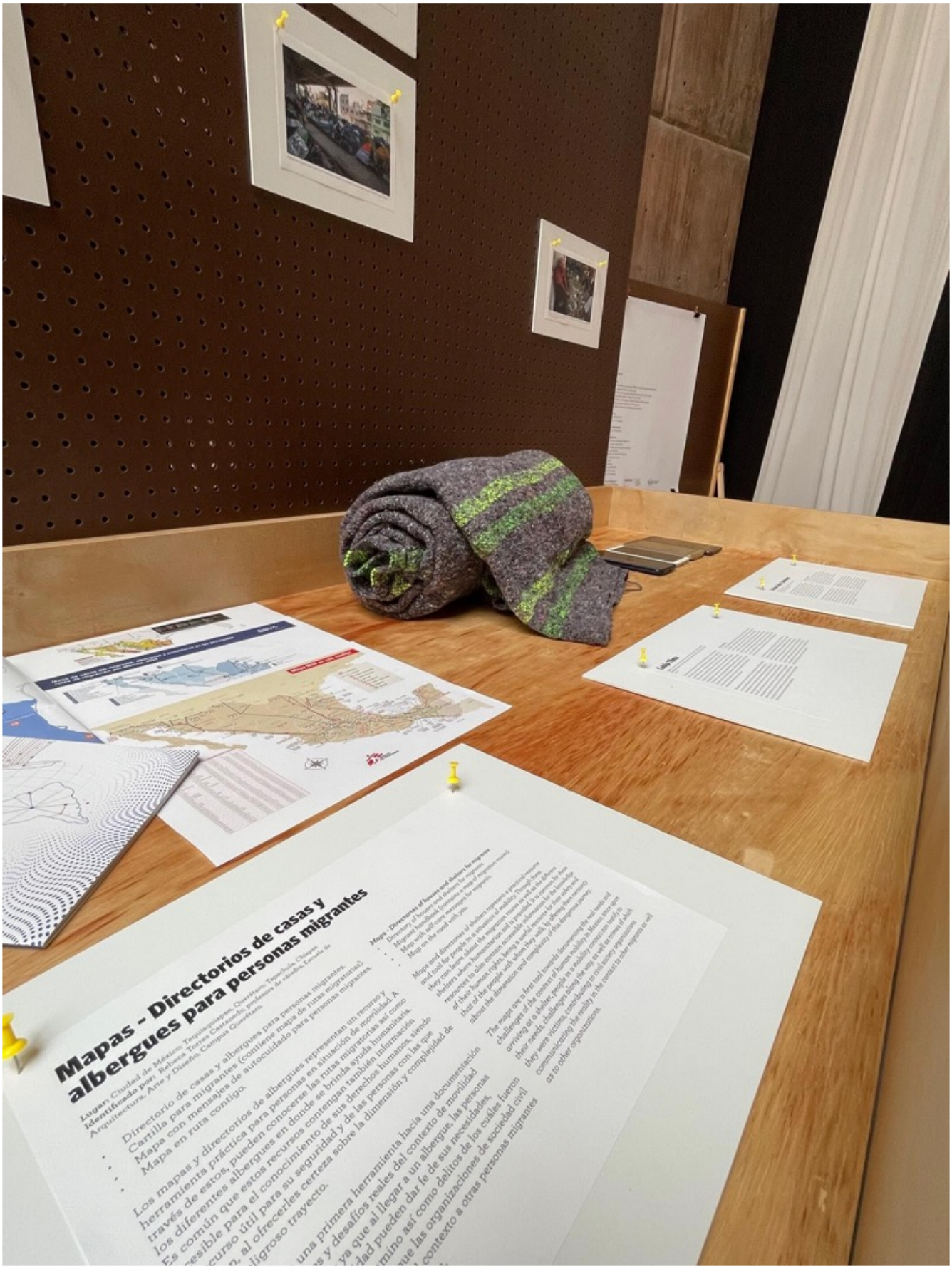


Figure 3. Exhibition Arqueología en Tránsito at CECUT, Tijuana, May 2024



Figure 4. Exhibition Arqueología en Tránsito at CECUT, Tijuana, May 2024



Figure 5. Exhibition Arqueología en Tránsito at CECUT, Tijuana, May 2024



Figure 6. Exhibition Arqueología en Tránsito at CECUT, Tijuana, May 2024

1) The first section is **"Tools"**. The tools migrants use are vital to their journey toward the border area. These tools include a wide range of resources and equipment that enable them to overcome obstacles and navigate unknown territories safely. Among them, we find ropes, which serve as anchors and support while crossing rugged terrains, ensuring a safer passage. Colored bracelets identify migrants, encoding important information such as their place of origin, health status, and those who have paid a fee to cross. Modes of transportation, such as trains, buses, planes, and trucks, are another crucial element, allowing migrants to cover long distances efficiently and economically. Shoes are a fundamental item, often overlooked but extremely important, as they provide protection and support during long walks on variable terrains, including paved roads, rugged trails, or arid deserts. The objects included here are as follows:

Polypropylene Hollow Braided Rope:

The rope is a historical object whose use has persisted across various cultures since prehistoric times. It is an instrument employed in many fields, including construction, navigation, sports, and recreation. In the absence of safe mobility options, undocumented migrants seek irregular migration routes to reach U.S. territory. Often, these routes are well-known by smuggling groups, coyotes, or organized crime bands, who, in exchange for large sums of money, promise to help migrants cross through "weak" points of the border with less surveillance or seemingly lower risk. However, any situation endangers their integrity. The Mexico-U.S. border has become the "most dangerous" land migration route in the world, according to the United Nations (UN), with a significant number of deaths due to drowning. Ropes have become a commonly used tool among these smuggling groups, who use them as a safety measure to face the currents of the Rio Grande and to help groups of migrants cross into U.S. territory.

Location: Piedras Negras and Ciudad Juarez.
Identified by: Zara Alexandra González Aguirre, Director of ESC Entry and Director of the LDI Program, Campus León.

Camouflaged Shoes

The shoes worn by migrants along their journey between Mexico and the United States are emblematic of the migration experience, representing one of this journey's most significant and symbolic objects. These shoes can be considered part of the "tools" category for migrants, playing an instrumental and functional role in the migration process and being indispensable for reaching the desired destination.
The footprints left on the soles and the evident wear are tangible testimony of the challenges, efforts, and sufferings people face during their journey. These marks not only tell individual stories but also represent a tangible symbol of the collective struggles

and shared experiences of migrants on their path to a new life. Some models of footwear used by migrants are modified to minimize the footprint left on the ground during their journey. These shoes are characterized by having additional layers of material, such as carpet or other soft fabrics, applied underneath the sole. This measure plays a crucial role in optimizing the effectiveness of such footwear in masking footprints. In the desert context, where even a minimal footprint can attract the attention of authorities or individuals monitoring the border, these additional layers can enable a more discreet crossing and avoid detection.

Location: Sonoran Desert.
Identified by: Pier Paolo Peruccio, Visiting Professor at the School of Architecture, Art, and Design, Campus Mexico City.

Bracelets

Plastic wristbands commonly used for identification and control at events, concerts, and hospitals emerge in the migration context as a perverse strategy to mark and categorize people who, unfortunately, traverse territories governed by cartels. These bracelets, often brightly colored and inscribed with the words “deliveries” and “arrivals,” indicate that the wearer has paid their “ticket” to access areas controlled by coyotes and clandestine networks, allowing them to continue their journey. For migrants, they represent an “amulet” or “code” that provides some security against robbery, kidnapping, or even death. Each bracelet carries an emotional and significant information load: it reveals personal stories names, has been in contact with the wearer’s skin, indicates how much they paid and consequently their status, where they have walked, and who the traffickers involved are. The cost of these “protection” bracelets ranges from 300 to 700 dollars, a sum that goes directly into the pockets of the cartels that plan these operations. These sophisticated and structured criminal organizations have created a “business model” that ruthlessly profits from the dignity of vulnerable human beings desperately seeking a better life.

Location: Banks of the Rio Grande, U.S.-Mexico border.
Identified by: Edgar Ludert, Regional Director of Art and Design, Campus Sonora Norte.

2) The second area of investigation is **“Evolving Needs.”** The “Evolving Needs” section aims to highlight the ongoing changes in the profile of immigrants. Until about ten years ago, the migration flow across the United States-Mexico border was mainly composed of young single men from rural areas, especially from Mexico. The migration landscape has changed considerably: families, often with children, are the primary migrants crossing the border. Even the objects left behind or forgotten by migrants reflect this new identity: alongside backpacks and caps, we now see baby slings for carrying infants during the journey, document holders for the family, or simply stuffed animals. These

are now the essential accessories of the journey. Here we have the following items selected for the exhibition:

Fular

The northern regions of Central America, Mexico, Haiti, and Venezuela host one of the largest and most complex child migrant crises in the world. Currently, the largest group of child and adolescent migrants consists of those under 11 years old, representing up to 91% of displaced children. Some flee violence, political persecution, and extreme poverty, compounded by political conflicts, climatic phenomena, and the chronic dysfunction of state institutions. Others leave accompanied by their parents seeking more significant opportunities and a better future for their children or wanting to reunite with family abroad. Additionally, it is essential to note that many women in transit give birth along the way, although there are no exact figures. The physical risks along these irregular routes are innumerable, especially for children. Parents traveling with their infants use the full as a means of transportation to provide warmth and containment and ensure infants' care and integrity in migration situations. "This year in Latin America and the Caribbean, a record number of children in transit on the main migration routes has been reached. Even more worrying is that the majority group of child migrants is made up of those under 11 years old," said Garry Conille, Regional Director of UNICEF for Latin America and the Caribbean.

Location: Migrant Caravans from Honduras, Haiti, Guatemala, and Mexico.
Identified by: Zara Alexandra González Aguirre, Director of ESC Entry and Director of the LDI Program, Campus León.

Document Holder Bag

Identity and health documents, along with family photographs, are more than just papers for migrants; they are symbols of resistance and humanity in contexts where fundamental rights are denied. These artifacts carry the narratives of their lives, roots, and hopes, revealing stories of struggle and connection with often distant loved ones. Each document affirms identity and existence, demanding recognition and respect from the institutions responsible for protecting migrants. These emotional objects act as tools of modern archaeology, allowing the discovery and retelling of hidden narratives of resistance through the ages. Essentially, documents and photographs are living testimonies of human dignity, challenging perceptions and social dynamics and fostering change toward greater understanding and protection of migrants in our contemporary world.

Location: Querétaro, Querétaro.
Identified by: Rebeca Torres Castañedo, Professor at the School of Architecture, Art, and Design, Campus Querétaro.

Plush Toy

Historically, plush toys have been companions for children in various contexts; in the case of migration, they become valuable companions. They vary depending on personal taste and are mostly simple and industrially manufactured, although some can be crafted or handmade by their families. Their primary purpose is play, but they often become more than that. They should be light, soft, and preferably small to be carried throughout the journey, as there is only space for the essentials during the trip. In many cases, they are also used as pillows and comfort objects, showing a strong connection between the children and their families during migration. These objects are laden with stories and emotions that remind children they are loved. They are gifts from parents or grandparents that become friends and loyal companions, even helping children feel brave and protected when separated from their families. In other cases, plush toys are given to children in migrant shelters or refugee centers to lighten the emotional burden of the journey. They have also been used in campaigns and protests, symbolizing the innocence and rights stripped from children when separated from their families.

Plush toys represent the significant change in migration trends. Initially, migrants were single men who had left their families searching for a better future for them. Later, couples migrated, and then pregnant women migrated. Currently, whole families are migrating with small children.

Location: Monterrey, Nuevo León.
Identified by: Griselda Esthela Oyervides Ramírez, Assistant Professor, Department of Design, Tec de Monterrey, Campus Monterrey.

3) The third is the **"Functional"** section. It focuses on practical and functional tools that facilitate migrants' journeys in all aspects. Among these, the cell phone stands out as an essential travel companion for migrants: the device offers a wide range of crucial functionalities during the journey, enabling quick and reliable communications with family and friends and access to vital information such as maps and other services. In addition to digital maps, migrants also carry physical maps, which are more reliable because they are consistently functional, independent of phone infrastructure, and provide valuable information about essential services, such as the location of shelters, food and water distribution points, and safe resting areas. Blankets and other accessories to protect against cold or adverse weather conditions are also essential for facing problematic conditions along the migration route. These devices can make the difference between the success and failure of a journey, especially considering the long distances and environmental challenges that migrants must face on their way. The following items were selected in this section:

Maps - Directories of Migrant Houses and Shelters

The directories of houses and shelters for migrants represent a practical resource and tool for people in mobility situations. Through these, migrants can learn about migratory routes and the various shelters providing humanitarian aid. It is common for these resources also to contain accessible information about their human rights, serving as a valuable resource for their safety and the people they travel with, offering them certainty about the dimension and complexity of this dangerous journey. Maps are a primary tool for documenting the real needs and challenges of the human mobility context in Mexico; upon reaching a shelter, people in mobility contexts can attest to their needs, challenges along the way, and crimes they were victims of. These maps contribute to civil society organizations communicating the reality of the context to other migrants and organizations.

Material and Manufacturing Process: Digital Printing on Couché Paper, Bond, or similar.
Location: Mexico City, Mexico; Tequisquiapan, Querétaro; Tapachula, Chiapas (most houses/ shelters have this material).
Identified by: Rebeca Torres Castanedo, Professor at the School of Architecture, Art, and Design, Campus Querétaro.

Tilma Blanket

In various shelters in Mexico City and other regions of the country, blankets are widely distributed to migrants, becoming an essential and common item among them. This textile, characterized by its softness to the touch, offers refuge against the cold, providing a sense of warmth and tranquility to those who often face adverse conditions. The design of these blankets generally features a grid graphic in various scales and colors, adding an element of visual diversity that breaks the monotony and reflects the cultural variety of the users. Besides serving as a personal cover, these textiles have a multifunctional use within the shelters; for example, they are used as insulators in tents, offering additional protection against the cold ground. This versatile use of blankets not only improves the temporary living conditions of migrants but also provides small yet significant comfort in their arduous journey, demonstrating how a simple object can profoundly impact the daily lives of people in vulnerable situations.

Material and Manufacturing Process:
30% Cotton, 30% Polyester, 30% Acrylic, 10% Various.
Location: Migrant camps in major city centers (Mexico City).
Identified by: Gerardo Sandoval Osio, Full Professor, Campus Mexico City.

Cell Phone / Smartphone

Cell phones have transformed the way migrants travel. Thanks to technology, the migratory journey seems more manageable and more achievable. Digital maps and real-time location allow them to find directions and follow routes without getting lost. Instant messaging and internet access provide communication channels with smugglers and coyotes who offer their services for border crossing through social media posts, somewhat professionalizing these human trafficking services. On the other hand, cell phones allow migrants to keep in touch with their families occasionally and have photographs of their loved ones. These objects strongly speak of human connections; a cell phone in today's culture is an extension of the person, carrying significant information and the intimacies and stories of the owner. In this sense, it functions as a double-edged sword: providing security through contact with loved ones while increasing the chances of being located, leaving a trace of their crime when crossing the border.

Material and Manufacturing Process:
Cell phones are manufactured through various industrial processes and assembled in manufacturing cells. Regardless of the brand, modern cell phones are made from a wide variety of materials, such as aluminum, copper, plastic, cobalt, tungsten, silver, neodymium, gold, indium, and palladium.

Location: Monterrey, NL.
Identified by: Griselda Esthela Oyervides Ramírez, Assistant Professor, Department of Design, Tec de Monterrey, Campus Monterrey.

4) The **"Emotional"** section delves into the most emotional dimension of the migratory journey. It examines how particular personal objects gain significant importance on the emotional level for migrants. These objects range from family photographs to religious items such as the Bible or a rosary and even include identity objects like the flag of the country of origin or a hat of a specific color. The portfolio stands out among this range of objects, undergoing a transformation in its function during the journey. From simply a container for money, it becomes an organizer for images or other elements of symbolic personal value. The objects included here are as follows:

Phillies Cap

In daily life, caps are helpful for outdoor activities. In the migrant context, caps offer protection against the sun and rain and serve as a representative object for a person in a state of mobility. White caps are the most characteristic because their color helps reflect sunlight and prevents the head's temperature from rising. Additionally, this color symbolizes peaceful transit; in contrast, dark or black caps are associated with criminal groups. Strong bonds form between groups traveling together throughout the journey. They rest in the same shelters, eat together, take care of each other, and often

only cross once everyone is ready. In the case of the Phillies, the cap goes beyond its purpose of sun protection; it symbolizes the union of a group in a state of mobility. Additionally, it serves as a place to write down phone numbers or other personal information so that in case of death, this information can help identify the body and locate their relatives. “It was more of a gift to distinguish ourselves from each other,” adds Elmer Josué Rivera, a native of Santa Bárbara. “They saw that we got along very well and gave them to us.”

Material and Manufacturing Process: Personal accessories made from common materials such as synthetic fabrics, cotton, polyester, plastic, and embroidered brands that are predominant in our visual culture. Their practical and functional purpose is mainly to protect the head from the sun, offer shade to the eyes, and protect the face from rain and sweat. They can also be used as a form of personal expression or style. Manufacturing a cap involves several steps, including material selection, cutting, assembling, sewing, and finishing.
Location: This object was identified in a migrant caravan from Honduras to Mexico. Among the sea of people, 18 men and 2 women stand out, all wearing the same cap: the Phillies of Philadelphia. These are the Phillies of Honduras, or the Red Cap group, friends who met during the journey and now want to arrive and live together in the United States. (https://www.plazapublica.com.gt/content/personajes-de-la-caravana-migrante-los-phillies-de-honduras)

Identified by: Zara Alexandra González Aguirre, Director of ESC Entry and Director of the LDI Program, Campus León.

Wallet

Wallets, commonly used by migrants, function as essential objects for storing money and important documents such as IDs and photographs, prayers, and personal mementos. These objects are foldable and have multiple compartments that facilitate access and organization of their contents, making them portable guardians of personal stories and symbolic values. In the migratory context, wallets acquire a more profound meaning by transforming into “containers” of migrants’ identity and memory. These objects not only hold items of economic value but also carry significant emotional weight, being repositories of the ties and memories of loved ones left behind. The variety in their designs, from dark leathers to colorful embroidered fabrics, reflects the diversity of their owners and their cultures, contrasting visibly with the personal images and saint cards they protect, evidencing their faith and hopes. Laura M. Holson relates a relevant anecdote in The New York Times, where Tom Kiefer, a janitor at the Customs and Border Protection Office in Arizona, discovered numerous discarded wallets in 2012, still with intact IDs and credit cards. “It was so cruel. They were safe with me, but it didn’t seem right that a janitor could find these things. They should be secure,” Kiefer commented. This story highlights the vulnerability of migrants and the importance of these objects as links to their identity and dignity.

Material and Manufacturing Process:
Wallets, traditionally made from tanned leather in black or brown colors, have evolved in design since the late 20th century, diversifying into materials such as PVC and embroidered fabric and enriched with a variety of colors and designs since the 1980s, following the introduction of Velcro closures in the 1970s.
Location: The Border Patrol finds these items as confiscated items and takes them to the Customs and Border Protection Office, where they are cataloged, stored, and discarded.
Identified and Reconstructed by:
Luis Arturo Gil Islas, M.A. Professor and Coordinator of Transversal Concentration in Design, Innovation, and Technological Entrepreneurship, Campus Estado de México.

Scapular

Scapulars, more than simple garments or accessories, are symbols deeply rooted in Catholic religious tradition. Initially, scapulars manifested devotion, representing the yoke of Christ, and were worn by monks and nuns as part of their religious habit. However, in the hands of Norma, a Honduran migrant sheltered in an association in Chiapas, they acquire a new dimension of meaning and transformation in the migration context. These scapulars, acquired by Norma and her daughter before embarking on their dangerous journey to the United States, represent their faith and their search for divine protection in a journey filled with uncertainty and danger. As they face the journey's challenges, the scapulars become emotional anchors, reminding them of their connection to faith and their desire for safety for themselves and their daughter. As they progress, the scapulars acquire new layers of meaning, transforming from simple devotional objects into potent symbols of hope and resilience amid adversity. They are silent witnesses to their determination and maternal love, providing comfort and strength in the most challenging moments of the journey. In this sense, Norma's scapulars illustrate how traditional religious objects can adapt and acquire new meanings in the migration context, serving as sources of comfort, protection, and hope for those facing extraordinary challenges in their quest for a better life.

Location: Chiapas, at the Hospitality and Solidarity A.C. shelter.
Identified by: Zita Carolina González Guzmán, Full-Time Professor, Campus Guadalajara.

5) Finally, the **"kit"** section represents a set of essential food products, ranging from tortillas to rice beans and nutritional bars and water, designed to face the migratory journey. These kits are primarily conceived and produced for humanitarian purposes by people who care for migrants, such as "Las Patronas," and by humanitarian associations and organizations. Besides food, the kit includes sanitary towels, specific medications for menstrual pain, and personal hygiene products. These elements are a significant indicator of the evolving migrant profile, with increasing attention to the female gender. Including specific products for female needs indicates greater awareness and sensitivity

to the challenges and requirements of women migrants. This highlights a shift in how society and humanitarian organizations address and understand the complexities of the migratory phenomenon, recognizing the importance of considering gender as a significant factor in providing assistance and support to migrants during their journey. The items shown in this section are:

Migrant Kit

The migrant kit includes wet wipes, a roll-on deodorant, a razor, a 500 ml water bottle, a small sunscreen, a sizeable black-handled bag, a small toy if the recipient is a child, and a map of migrant houses, shelters, and food kitchens along the main migration routes in Mexico. To avoid theft, these items are provided inside a conventional, unmarked plastic bag to migrants passing through Casa del Migrante Galilea in León, Gto. Migrant kits provide people in mobility situations with essential items to meet their basic needs, even for a short time. Addressing needs such as food, hygiene, and medical care helps preserve people's dignity regarding mobility, including a toy for children that explicitly targets their emotional well-being and helps mitigate the psychological impact of migration. The specific contents of migrant kits can vary depending on the context, migration routes, and the particular needs of people in mobility situations.

Location: Human Mobility Center Casa Del Migrante Galilea, A.C. in León, Gto.

Identified by: Zara Alexandra González Aguirre, Director of ESC Entry and Director of the LDI Program, Campus León.

Food and Water Bags for Direct Aid on Train Tracks

Thousands of people in human mobility contexts use freight train cars to cross Mexico. Known as "La Bestia" or "The Death Train," migrants are exposed to high temperatures, without water or food reserves, organized crime, and security guards patrolling the trains. The train, connected to Mexico's railway network, often passes through different communities where many residents, primarily laypeople, live their faith radically by providing food, water, and personal hygiene items to migrants traveling on the freight train.

In Tequisquiapan, Querétaro, a family-formed civil organization, has dedicated over 20 years to assisting people in mobility contexts. Each day, they provide direct and immediate humanitarian aid to an average of 400 migrants. This organization is mainly sustained by donations and is known among migrants for the bread and cakes often included in the food bags. It is common to hear migrants shouting, "Thank you, mother," as the train passes.

Location: Estancia del Migrante González y Martínez, A.C. Tequisquiapan, Querétaro.
Identified by: Rebeca Torres Castanedo, Professor at the School of Architecture, Art, and Design, Campus Querétaro.

UNHCR Kit

Menstruation during mobility poses a significant challenge for women and adolescents. UNHCR, known for its work with asylum seekers and refugees, provides self-care kits that are not conditional on refugee status. These kits include essential items such as sanitary pads, laundry soap, diapers, and multipurpose soap, which are crucial for personal hygiene and well-being. In Mexico, some civil organizations complement these kits with emergency pills, addressing the gender-based violence faced by women in mobility. During an interview, the experience of a teenager who had her first menstruation in transit was highlighted. Access to this kit allowed her mother to explain the changes in her body, making the experience less traumatic. This support addresses immediate needs and dignifies women and girls in migration contexts, recognizing their specific challenges from a gender perspective. The kits, funded by civil society, not only provide essential items such as food and water but also emphasize the complexity of gender needs in migration and humanitarian aid efforts, underscoring the importance of hygiene and ongoing care in the lives of migrant women.

Location: Estancia del Migrante González y Martínez, A.C. Tequisquiapan, Querétaro.
Identified by: Rebeca Torres Castanedo, Professor at the School of Architecture, Art, and Design, Campus Querétaro.

Conclusion:

"Arqueología en Tránsito" provides a window into the human stories behind each artifact, inviting deep reflection on migration and its inherent challenges . Through these objects, visitors gain insights into the complexities of migratory experiences and the indomitable hope of those seeking new lives far from home. The exhibition underscores the transformative power of design and research in fostering empathy and awareness about global societal challenges. From an academic perspective, this project illustrates that archaeological analysis of objects can significantly contribute to the design process by providing a foresight into the potential impacts of functional items. For designers, it is crucial to consider not only usability but also the emotional resonance of a product to enhance the overall user experience (Demir et al., 2009).

There are more than 80 borders worldwide, most erected in the past two decades. Despite this, increased barriers correlate with heightened migration and conflict. The exhibited objects, representing human suffering and resilience, underscore the deep-rooted human instinct for creating boundaries, tracing back to Jericho's earliest known barriers from 12,000 years ago. Barrier, wall, fence, and fortification indicate a physical infrastructure or natural element (like the Mediterranean) separating two or more sides. They can all evoke a range of ideas, including separation and terror. After the terrorist attacks of 11 September 2001,

and especially in the last two to three years, they seem to be playing a central role again around the world.

The theme of the exhibition is, therefore, very relevant. Once silent witnesses, objects speak to us of human suffering and become protagonists of a diverse migration narrative. Moreover, the subject and research methodology can be easily replicated in other geographical contexts with partners such as local universities and non-profit organizations working with migrants. Based on the behavioral changes provoked by objects, we envision replicating this investigation methodology in locations currently central to migration flows, such as southern Italy, a primary destination for migrants from Africa heading to northern Europe. The scalability of the research and the potential design of an exhibition to present the findings will need to be evaluated on a case-by-case basis with local partners. Furthermore, this approach underscores the research's universal relevance and adaptability, making it a powerful tool for understanding migration dynamics in different regions. By collaborating with local entities, we can ensure that the exhibitions resonate with each area's specific experiences and contexts, thereby enriching the overall narrative and impact. This strategy not only enhances our comprehension of migration but also fosters a more nuanced and empathetic dialogue about the experiences of migrants worldwide.

1 The exhibition was part of Tijuana Design Week which was held from the 1st to the 5th of May at CECUT in the City of Tijuana. Attended by design professionals and students, primarily from the San Diego-Tijuana region and bilingual in Spanish and English, it also attracted design enthusiasts and users from the same region, mainly from the middle class, as well as the general public and casual visitors, including organic visitors to showrooms, tourists, and attendees of CECUT and its surroundings. The event, held in over 40 venues, featured more than 300 designers and drew an estimated 8,000 attendees over the 5 days. This included 3,796 participants via the WHOVA app and approximately 3,400 visitors to showrooms, with 60-100 attendees per day (Tijuana Design Week, 2024). The exhibition also served as a reflective platform to consider contemporary border dynamics. It gained recognition within the local design community and was featured by the San Diego Local Press (Aere, 2024). Furthermore, the exhibition was opened in San Diego in September 2024 as part of San Diego Design Week, following an invitation from the board of the World Design Capital. Additionally, the School of Architecture, Art and Design at Tec de Monterrey is working on book on the exhibition, which will include a catalogue of the objects and detail the research methodology employed.

References

G. Agamben, (2017). Creazione e anarchia: L opera nell età della religione capitalistica. Neri Pozza. Milano.

P. Basu & S. Coleman. (2008). Introduction: Migrant Worlds, Material Cultures. Mobilities, 3, 313–330. https://doi.org/10.1080/17450100802376753

A. Boluža. (2023). RESEARCHERS, CURATORS, AND DESIGNERS: THE EXHIBITIONS AS THE SPACE FOR COLLABORATIONS. Culture Crossroads. https://doi.org/10.55877/cc.vol22.444

A. Boone, L. Braeckman, Nele R Michels, H. Kindermans, E. Van Hoof, K. Van den Broeck, & L. Godderis. (2023). Accessibility, Retention and Interactivity of Online Co-Creation Workshops: A Qualitative Post-Hoc Analysis.

International Journal of Qualitative Methods. https://doi.org/10.1177/16094069231180169
L. Bucciarelli. (2002). Between thought and object in engineering design. Design Studies, 23, 219–231. https://doi.org/10.1016/S0142-694X(01)00035-7

T. Connolly, R. Routhieaux, & Sherry K. Schneider. (1993). On the Effectiveness of Group Brainstorming. Small Group Research, 24, 490–503. https://doi org/10.1177/1046496493244004

J. De León,(2012). “Better to Be Hot than Caught”: Excavating the Conflicting Roles of Migrant Material Culture.

American Anthropologist, 114(3), 477–495. https://doi.org/10.1111/j.1548-1433.2012.01447.x
J. De León, (2013). Undocumented migration, use wear, and the materiality of habitual suffering in the Sonoran Desert.

Journal of Material Culture, 18(4), 321–345. https://doi.org/10.1177/1359183513496489
Demir, E., Desmet, P., & Hekkert, P. (2009). Appraisal Patterns of Emotions in Human-Product Interaction. International Journal of Design.

F. M. Flores. (2020). The Effects of Enhanced Enforcement at Mexico’s Southern Border: Evidence From Central American Deportees. Demography, 57, 1597–1623. https://doi.org/10.1007/S13524-020-00914-3

J. Hennebry, Francisco Barros-Rodríguez, & K. Kopinak. (2018). Moving to Stay or Staying to Move? Borderlanders & Internal Migrants Negotiating Work and Mobility in Export Processing Areas of Tijuana and Tangier-Tetouan. Localized Global Economies on the Northern Borderlands of Mexico and Morocco. https://doi.org/10.1007/978-3-319-96589-5_7

R. M. Korde & P. Paulus. (2017). Alternating individual and group idea generation: Finding the elusive synergy. Journal of Experimental Social Psychology, 70, 177–190. https://doi.org/10.1016/J.JESP.2016.11.002

M. Marchand & A. Sletza Ortega Ramírez. (2019). Globalising cities at the crossroads of migration: Puebla, Tijuana and Monterrey. Third World Quarterly, 40, 612–632. https://doi.org/10.1080/01436597.2018.1540274

Marcela Cerrutti & D. Massey. (2001). On the auspices of female migration from Mexico to the United States. Demography, 38, 187–200. https://doi.org/10.1353/dem.2001.0013

G. Mark, K. Lyytinen, & Mark Bergman. (2007). Boundary Objects in Design: An Ecological View of Design Artifacts. J. Assoc. Inf. Syst., 8, 34. https://doi.org/10.17705/1jais.00144

M. K. Martin, J. Pfeffer, & Kathleen M. Carley. (2013). Network text analysis of conceptual overlap in interviews, newspaper articles and keywords. Social Network Analysis and Mining, 3, 1165–1177. https://doi.org/10.1007/s13278-013-0129-5

L. Naranjo, Y. Williams, J. Levy, R. Obando, J. A. González, M. Pachar, R. Chen, C. Franco-Paredes, N. A. Higuita, A. Henao-Martínez, Yamilka Díaz, & J. A. Suárez. (2023). The Endless Vulnerability of Migrant Children In-Transit across the Darién Gap. The American Journal of Tropical Medicine and Hygiene. https://doi.org/10.4269/ajtmh.22-0765

L. Pries, Oscar Calderón Morillón, & Brandon Amir Estrada Ceron. (2023). Trajectories of Forced Migration: Central American Migrants on Their Way Toward the USA. Journal on Migration and Human Security. https://doi.org/10.1177/23315024231216109

B. J. Roth, J. Doering-White, K. A. Flynn. (2020). Central American Migration to the United States. Social Work. https://doi.org/10.1093/obo/9780195389678-0289

R. Sáenz. (2015). A Transformation in Mexican Migration to the United States. https://doi.org/10.34051/P/2020.238 Renato de Almeida Arao Galhardi. (2022). Territories of migrancy and meaning: The emotional politics of borderscapes in the lives of deported Mexican men in Tijuana. International Journal of Cultural Studies, 26, 697–713. https://doi.org/10.1177/13678779221144758

E. Sánchez-Montijano., & R. Z. Ortega, (2022). Migration in Mexico: Complexities and challenges.

Simon Cottle. (2007). Ethnography and News Production: New(s) Developments in the Field*. Sociology Compass, 1, 1–16. https://doi.org/10.1111/J.1751-9020.2007.00002.X

D. Schultheiss, J. Watts, Ljaja Sterland, & M. O'Neill. (2011). Career, migration and the life CV: A relational cultural analysis. Journal of Vocational Behavior, 78, 334–341. https://doi.org/10.1016/J.JVB.2011.03.013

A. Tang, I. Nakarada-Kordic. (2022). Unpacking notions of community: Critical design and exhibition as a creative participatory research method. The Design Journal, 26, 97–120. https://doi.org/10.1080/14606925.2022.2144493 D. Orth, C. Thurgood, & E. V. D. Hoven. (2018). Designing objects with meaningful associations. International Journal of Design, 12, 91–104.

Tijuana Design Week. (2024). Tijuana Design Week. https://www.tijuanadesignweek.com/
E. Valdez, L. Valdez, & Samantha Sabo. (2015). Structural Vulnerability Among Migrating Women and Children Fleeing Central America and Mexico: The Public Health Impact of "Humanitarian Parole." Frontiers in Public Health, 3. https://doi.org/10.3389/fpubh.2015.00163

G. Valdéz-Gardea. (2009). Current Trends in Mexican Migration. Journal of the Southwest, 51, 563–583. https://doi.org/10.1353/jsw.2009.0015

W. Vogt. (2013). Crossing Mexico: Structural violence and the commodification of undocumented Central American migrants. American Ethnologist, 40, 764–780. https://doi.org/10.1111/AMET.12053

S. Walker. (2006). Object Lessons: Enduring Artifacts and Sustainable Solutions. Design Issues, 22, 20–31. https://doi.org/10.1162/074793606775247763

About the Authors:

José Rodrigo de la O Campos
Professor at the School of Architecture, Art and Design at Tecnológico de Monterrey, where he specializes in human-centered design, speculative design, and educational innovation. He leads projects that blend critical design and technology, focusing on sustainability and cultural insights in both academic and real-world contexts. His work includes international collaborations, such as design exercises with global companies, where he integrates critical thinking and problem-solving methodologies to address contemporary design challenges

Pier Paolo Peruccio
Architect, PhD, Pier Paolo is Visiting Professor at Tecnológico de Monterrey and Full Professor of Design at the Politecnico di Torino. He is Founder and Director of the SYDERE (Systemic Design Research and Education) Center and Member of the Board of Directors of several organizations such as World Design Organization (2019-2023); the Italian Scientific Society of Design (2021-2024), the PLART Foundation (2020-) and the Aurelio Peccei Foundation (2018-). He is author of books and scientific articles on design history, systems thinking and innovation in design education.

Acknowledgements: We would like to express our gratitude and extend our thanks to the following colleagues at Tec de Monterey: Roberto Iniguez, Ramiro Estrada, Zara Alexandra González Aguirre, Rebecca Torres Castañedo, Griselda Esthela Oyervides Ramírez, Luis Arturo Gil Islas, Zita Carolina González Guzmán, Gerardo Sandoval Osio, Edgar Ludert, David Sánchez and Jorge Diego Etienne.

Cumulus conference: Design Across Borders - United in Creativity
Co-hosted by the Universidad de Monterrey (UDEM)
and the Tecnológico de Monterrey (Tec)
Monterrey, Mexico, on October 16-18, 2024
https://cumulusmonterrey2024.udem.mx/

Published by Cumulus
Cumulus the Global Association of Art and Design Education and Research.
Aalto University, School of Arts, Design and Architecture
PO BOX 31000, FI-00076 Aalto
https://cumulusassociation.org/

ISSN 2490-046X
ISBN 978-952-7549-06-3 (pdf)
No. 13 Cumulus Conference Proceedings Series

DESIGN ACROSS BORDERS
UNITED IN CREATIVITY



UDEM | UNIVERSIDAD DE MONTERREY

Tecnológico de Monterrey
Escuela de Arquitectura,
Arte y Diseño