

P / REFE RENCES OF DESIGN

**CUMULUS CONFERENCE
PROCEEDINGS
BUDAPEST 2024**

VOLUME 2

P / REFE RENCES OF DESIGN

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PROCEEDINGS
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VOLUME 2: Posters

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DIGITAL EXPERIENCE THEATRE. FROM DYSTOPIAN TO POST- HUMAN DIGITAL PRODUCT DESIGN.

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DIGITAL EXPERIENCE THEATRE. FROM DYSTOPIAN TO POST-HUMAN DIGITAL PRODUCT DESIGN.

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REFERENCES
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SPECULATIVE
PERSPECTIVES

Is the integration of technology in digital devices guided by sustainability across economic, social, environmental, and cultural dimensions?

Can a participatory UX/UI method, metaphorically described as a rubber band problem-focused ideation tool shifting from dystopian to micro-utopian thinking, drive innovation in socio-technological design?

These are among the issues explored in the Digital Experience Theatre (DXT), a research project and a novel problem-focused ideation tool for conceptualising technology-based, humanity-centered solutions.

The tool follows a step-by-step method inspired by Augusto Boal's Theatre of the Oppressed (TO) [1], influenced by Paulo Freire's Pedagogy of the Oppressed [2]. Freire's pedagogical approach involves critical awareness of social reality, enabling intervention and emancipation from oppressive relations. Boal, aligning with these principles, devised a methodology using theatre as a universally accessible tool to develop strategies for escaping oppressive relationships.

The DXT tool aims to enhance the ideation process, particularly focusing on the design problem before exploring a solution, offering a significant and disruptive approach to creativity for interaction designers. The method assumes that these creatives, also users of digital products, face numerous useless solutions. Adopting the TO methodology, the DXT seeks to develop innovative solutions, representing a new paradigm in post-humanist digital product design [3]. It serves as an ideation tool, operating with participant designers, contributing to transforming unsustainable realities by promoting community-based and humanity-centred digital product creation.

The research delves around significant subjects that inform the tool development, such as the Theatre of the Oppressed and the Image Theatre [1], the concepts of dystopia [4] [5] and heterotopia [6] [7], speculative design [8] [9], image-making through AI technology [10], and the notion of designing e-things [3] for a non-anthropocentric pluriverse [11], which can be understood as a glocal phenomenon that can happen within a community but aiming at a global impact that contributes to the notion of more-than-human care.

Through participatory AI image creation and speculative dystopian fiction, the DXT design practice can stimulate a better mindset for creatives in the field, focusing on the world as it could or should be. It's based on creating futures with more sustainable digital products and experiences that may serve as propositions for alternative realities. The idea is to conduct design speculations not as narratives or coherent worlds but through an experimental fictional practice that contributes to holistic thinking about difficult hurdles.

The DXT has already been experimented with students and discussed and tested in an international context with other professors and students of interaction design (Lisbon, Portugal, and Berlin and Stuttgart, Germany).

A website is being developed with resources for the development of speculative scenarios, that may leverage disruptive socio-technological design interactions, focusing on a step-by-step method inspired by Boal's Theatre of the Oppressed methodology, where designers of digital products start by exploring dystopian design fictions through AI image creation, ending with concepts for sustainable, holistic, and humanity-based digital solutions. The process of creating the image focused on the subject prompted allows creatives using the DXT to explore unexpected formulations and dare to enter a representational dystopian domain. This new groundbreaking standard of images creates adequate conditions to discuss what might be innovative solutions for the real needs of the pluriverse.

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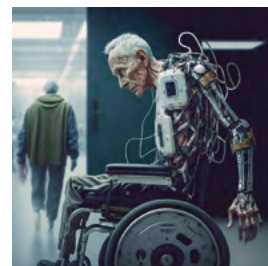
Computer vision technology and machine learning to identify and control citizens.



Computer-based systems that mimic political representatives' behaviour and interaction.



Autonomous vehicles in interchange highway.



Prosthetic AI devices to enhance the user experience of a person with Parkinson's disease.



VR-based occupational therapy for older adults.



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TRAINING STRATEGIC TRANSITION DESIGNERS: ACTION MODES AND SCALES, SKILLS AND POSTURES.

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TRAINING STRATEGIC TRANSITION DESIGNERS: ACTION MODES AND SCALES, SKILLS AND POSTURES.

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TAMING
ENTROPY:
SYSTEMS
DESIGN FOR
CLIMATE
AND CHANGE

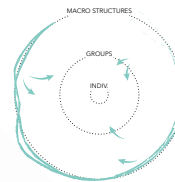
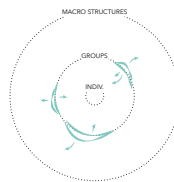
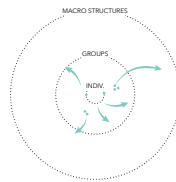
This contribution takes as its starting point the three ways envisaged by the Intergovernmental Panel on Climate Change (IPCC, 2018) to address the global climate crisis: mitigation, adaptation and resilience. We propose to consider them as three action modes, in order to draw a typology of agendas and leverage points for designers, whether they address changes in practices, organizational forms or worldviews. These three scales served as a basis to envision a master's-level educational program inspired by the Transition Design framework (Irwin & al., 2015; Tonkinwise, 2015). This visual presentation is an opportunity to explain the epistemological and methodological choices made, aiming to train conscientious, responsible and interdisciplinary designers.

1. A Typology of Agendas for Strategic Transition Designers

REGIMES (AS ACTION MODES) (IPCC, 2018)	Mitigation [of climate change]	Adaptation	Resilience
DESIGN AS	Problem-solving	Strategy and tactics	Learning process
DESIGNERS' AGENCY	Working with the existing	Changing trajectories	Living change
MODES OF INTERVENTION	Immediate and situated response	Accompanying transitioning entities	Radical imagination

2. Levers and Dynamics of Change

TYPE OF CHANGE ADDRESSED	Practices (micro level)	Organizational forms (meso level)	Worldviews (eco-systemic level)
LEVERAGE POINTS	Approaches, methods, techniques, behaviors	Knowledge, decision making, structures	"Deep leverage points" (Meadows, 1999): systems/critical thinking, representations, sensemaking (Weick, 1993; Duchek, 2019)
OUTCOMES	Designers shape things with minimal negative impact	Designers participate in the reshaping of sustainability-oriented systems	Designers reveal the obsolescence of unsustainable patterns and behaviors



3. Designers' Skills and Postures According to Their Intervention Scales

This typology highlights the need for designers to constantly adjust their posture, if they are to act as transition strategists. Awareness of systemic **intertwinement**, and a focus on **links** rather than things are necessary skills to navigate between complex scales (Le Moigne, 1999). Ideally, a **paradigm shift** at the ecosystem level would naturally lead to sustainable organizations and shapes. But in reality, while the **deepest leverage points** have the power to question and possibly transcend existing mindsets, they are particularly delicate to handle (Meadows, 1999; Woitode & al., 2021). Hence, "the Transition Design approach can be compared with Chinese **acupuncture**", based on close observation, precise interventions, but also patience and reflection "in order to **understand how the system is responding**" (Irwin, 2018).

The diagram opposite shows how the four pillars of Transition Design (**vision, action, posture and change**) combine in our educational program. The progression is **spiral-shaped**, as the expected development of skills is not chronological but related to the handling of scales. In 2024, as we launch this master's program, we are relying on this **reflective pathway** to develop young designers' ability to position themselves according to each context they will be working on.

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PATTCHITRA: A PAINTED CULTURE OF INDIA WHICH BINDS THE COMMUNITY TOGETHER.

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PATTCHITRA: A PAINTED CULTURE OF INDIA WICH BINDS THE COMMUNITY TOGETHER

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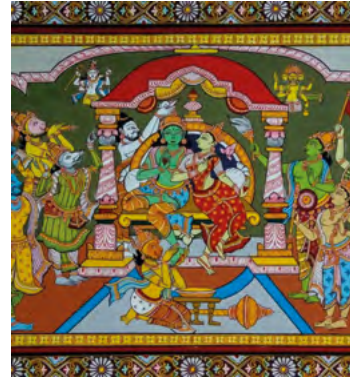
WAYS OF
LIVING
TOGETHER

ABSTRACT

Amidst the pandemic, Raghurajpur artisans embraced digital tools, preserving the ancient Pattachitra painting tradition. This art form, spanning over 2500 years, blends intricate detailing with vibrant colors, depicting mythological themes. Despite COVID-19 challenges, digital platforms offered rural artisans new opportunities for learning and broader audience reach.

OBJECTIVES

1. Document and understand COVID-19's impact on the Pattachitra artisan community.
2. Investigate the role of digital platforms in product development and marketing.
3. Assess how digital media enhances artisans' knowledge and skills.
4. Evaluate the pros and cons of social digital platforms for artisans.



Methodology

Mixed-Media Approach (Qualitative & Quantitative)

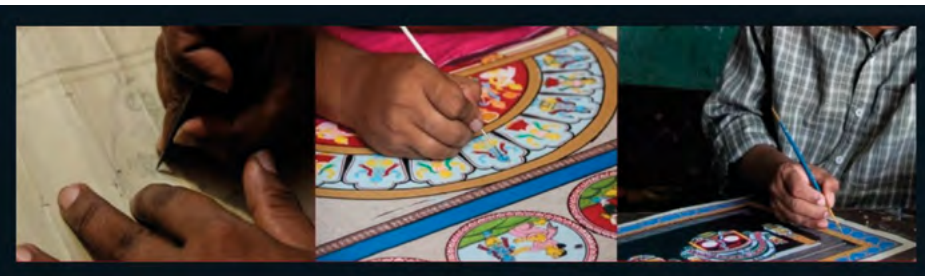
Primary Interview

Structured Guides

Secondary Sources

Integration of Primary & Secondary Data

Snowball Sampling Method



SUMMARY

- Experienced Pattachitra artisans were chosen.
- A government competition in Raghurajpur encouraged house beautification, fostering community unity.
- COVID-19 led 80% of artisans to become technologically literate, facing challenges in adapting to new sales platforms.
- Learning phone photography was challenging, with most artisans learning from younger generations.
- Over 80% utilized WhatsApp and Instagram for sales, citing WhatsApp's ease and negotiation suitability.



In conclusion, digital platforms have united artisans and consumers, narrowing generational divides, while COVID-19 spurred mutual learning and heritage appreciation among younger generations. Utilizing digital media helped artisans comprehend market trends, showcasing the adaptability of communities in the face of adversity.

Picture Credits: Haritha Bhaskar, Prisha Prakash, Saumya Vibhor, Srishti Lal, Surya Pratap Rana, Sweety Sharma, Tanya Sachdeva (Students of TD 6 NIFT Delhi).
CRD Document of TD Batch 2022-2025.



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MEMORY BOX: EXPLORING THE POTENTIAL OF VR IN MEMORY AND LONELINESS HEALING.

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MEMORY BOX: EXPLORING THE POTENTIAL OF VR IN MEMORY AND LONELINESS HEALING.

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SPECULATIVE PERSPECTIVES

KeyWords: Virtual Reality, Interactive Design, Emotional Design, Nostalgia Therapy, Memory

01 Abstract

- By combining nostalgia therapy with the latest virtual reality technology, we have created a VR application called "The Memory Box".
- This design integrates the function of 3D scanning modeling, which can capture realistic scenes, store them in a memory box, and immerse users in VR, providing an immersive memory experience.
- We aim to design nostalgic scenes that can evoke emotional resonance and enhance interpersonal interaction, in order to reduce people's growing depression.

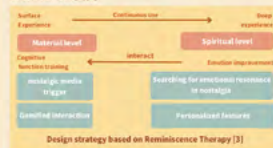


03 Methodology and tools

METHODOLOGY

1. Reminiscence Therapy

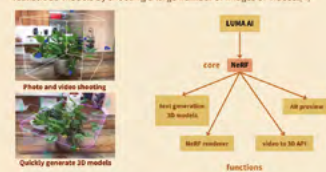
Reminiscence Therapy aims to enhance emotional well-being, increase life satisfaction by facilitating individuals' introspective exploration of past experiences, emotions in their current circumstances.[1][2]



TOOLS

1. SCAN: LUMA AI

The core technology of Luma AI is NeRF, which allows users to obtain realistic 3D models by shooting a large number of images or videos.[4]



2. EDIT: Reborn VR

Reborn VR is a platform for creating 3D experiences in VR, AR, MR.

- It supports full body tracking, including HTC Vive and Tundra trackers for motion capture.
- It also supports Blender plugins and Unity SDKs, so users can build and enjoy an immersive world with friends in VR.

02 Research objective

- Utilizing civilizationization technology to enhance memory and emotion, alleviate memory-related stress, and attain happiness.
- Establishing a direct, efficient, and meaningful connection between VR, 3D scanning technology, AIGC and the general public.

04 Research process

To solve these problems, we created a VR device called "The Memory Box", which provides a captivating 3D memory experience. This design combines 3D scanning and modeling techniques to capture real scenes, store them in storage boxes and allow users to immerse themselves in those memories via VR.[5] This project consists of three processes:

1. Recording

Users can utilize LUMA AI to capture and model current activities, generating 3D model files.



2. Rebuilding

The 3D model files can then be uploaded to Reborn VR, enabling users to reconstruct and categorize their memories using personalized tags like scene, time, or individuals.

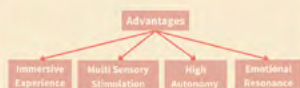


3. Reliving

After editing sounds, images, and narratives in memory scenes, users can immerse themselves in recalling the past in VR.



05 Expected results

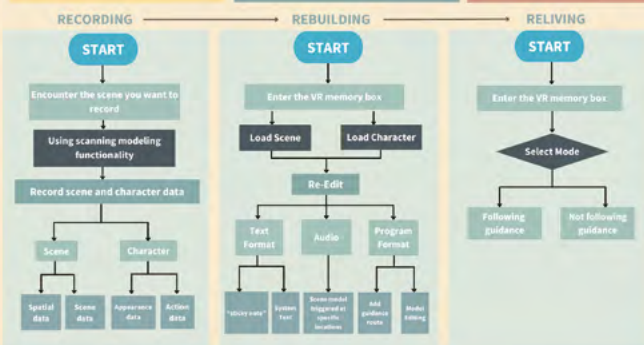


User experience

- Users can freely explore in VR nostalgic scenes, interact with the elements in the scene.
- It allows users to relive the good times of the past and share their memories and stories with others.

Design goals

The Memory Box aims to provide an emotional user experience that resonates with the user's inner world through nostalgia, enhancing their sense of participation and immersion.



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P / REFERENCES OF DESIGN



POLITICAL PAPER LAB, DESIGN FOR POLITICAL AWARENESS AND CIVIC ENGAGEMENT.

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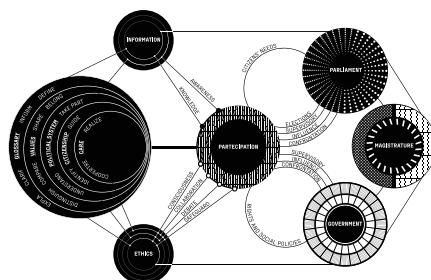
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LIVING
TOGETHER

Contemporary democratic society is pervaded by a sense of powerlessness generated by changing factors that are reshaping our society. Citizens who are informed, empowered and can express their will, influencing the decisions of the representatives are fundamental for a healthier democratic system (Giglioli, 2015). It is necessary to rethink how we include youth in the collective dimension for the exercise of citizenship (Batin, 2013). In this regard, design can operate as "Design Humanism" by activating transformative processes and developing projects that promote empowerment (Bonsiepe, 2006).

According to an Istat Report focused on the political participation in Italy (2020), in 2019 people who never inquire about politics are 27.5 percent of the population (ages 14 and older). Considering young people between the ages of 14 and 17, the percentage rises to 48.5 percent. The European Commission's Eurydice Report highlights that active citizenship education must help students develop knowledge, skills, attitudes and values in the following four macro areas of competence: effective and constructive interaction with others; critical thinking; acting in a socially responsible manner; and acting democratically. Therefore, the Political Paper Lab (PPL) project studies learning modes that involve experience and interaction to foster change and action in citizens, such as the "Experiential Learning Cycle" (Kolb & Kolb, 2006) which considers four learning stages: experiencing, reflecting, thinking, and acting. The PPL is designed with the intention of providing Italian citizens with the competences indicated by the European Commission for understanding their role in Italian society by fostering awareness and participatory behaviors in order to improve the democratic life of the country.



The project involves books that can be used by an individual user, in a workshop mode by a collective, or by a learning group led by a teacher or mentor. Each book is focused on a specific theme and is characterized by a peculiar graphic design and interaction modality designed to generate knowledge and awareness, helping the readers to fix information, generate debates and facilitate opinion sharing.



The book, as a physical object, allows an experience not only perceptual and intellectual, but also physical and tactile. The pedagogist Marco Dallari (2011) explains that the graphic book is a combination of five interacting codes: the iconic code (illustrations), the verbal code (text), the graphic code (layout, fonts...), the packaging code (materials, shape, binding...). The interaction of these codes reinforces the learning process and generates metacognition narratives capable of creating individual and collective identity consciousness.

Four basic elements have been identified in the path the users can undertake towards their own political and civic awareness: have a common vocabulary, know the basic principles stated in the first 12 articles of the Constitution, understand the forms and modes of exercising political power and be inspired by different forms of civic activism. Specific volumes have been created for each of these elements: Glossario (glossary), Valori (values), Ordinamento (political system) and Cittadinanza (citizenship).

The glossary provides the definitions of the fundamental words for understanding the Italian Constitution and political system. The volume is like an address book where words are placed in a visual and logical relationship.



The volume dedicated to the values shows the first 12 articles of the Italian Constitution. Each article is accompanied by two conflicting opinions, public statements by politicians and intellectuals; one opinion is in support and the other is contrary. At first glance, the red statements (in contrast with the constitutional dictates) are visible and cover the green ones (consistent with the Constitution), so that the latter are legible only with the help of a red filter. The filter is a metaphor for the work the citizen must do to properly navigate the political debate.



Political system's volume is a poster printed on both sides. On the first side an infographic shows the set of institutions that constitutes the division of powers. On the back there is a game board, designed to experience the legislative process of the Italian political system.



Finally, the volume dedicated to citizenship reports the stories of active civic participation. At first sight the pages are black, characterized by offensive utterances and violent news stories placed along the margins. By tearing the flaps, and therefore the sentences, the pages are opened and the stories of civic activism are revealed. Opening the pages through a tear means carrying out a non-canonical act of rupture and commitment that makes us free people in a plural society.



The laboratory will be tested with students between the ages of 14 and 25. Based on the study carried out by Pedone et al. (2023), meaningful experiences based on metaphorical, playful and interactive engagement and the co-construction of knowledge are fundamental elements for the maturation of human beings as citizens (Batin, 2013), so we expect the Political Paper Lab to foster learning and engagement in the democratic process.

The role of the designer is central to the debate on democracy because of the transformative power that designs can have on society (McCoy, 2003; Manzini & Margolin, 2017) and because he or she can contribute significantly to shaping collective values in which everyone identifies (Mari, 1997).

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COLLABORATIVE DESIGN FOR URBAN BIRDS DRIVEN BY BIRDS' ACOUSTIC DATA VISUALISATION.

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COLLABORATIVE DESIGN FOR URBAN BIRDS DRIVEN BY BIRDS' ACOUSTIC DATA VISUALISATION.

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OF
BUDAPEST
2024

REDEFINING
DATA
BOUNDARIES

Digital Interactive Light Show in Sanhaowu Park, Tongji University

Digital Interactive Light Show Activity in Sanhaowu Park

At the Digital Interactive Light Show Event, we displayed moving graphics created from real-time NDSI index data on the trunks of camphor trees and the foliage of shrubs, plants like the octagonal golden disc. These fixtures are situated at a lower level in the park, which makes it easy for visitors to observe the graphics without disturbing habitats. The graphics change dynamically based on the real-time NDSI index data values, which is affected by the level of anthropogenic activity. If the sound level exceeds a particular value, it will cause a drastic change in the graphics, reminding the visitors that their behaviour is causing disturbance to the birds' habitat. The park also has sensors that trigger the lights, creating a playful and natural digital experience.

Dynamic graphics are projected onto plants at lower heights.

Citizens are interacting with dynamic graphics in Sanhaowu Park.

Abstract

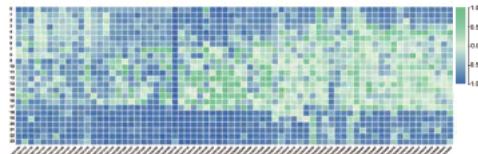
Along with the global ecological crisis, city activities profoundly affect birds' habitats. With the development of data science, birds' acoustic data is considered an ecological indicator for observing and evaluating birds' habitats in urban natural environments. Our research focuses on activating ecological spaces in urban areas that allow birds and citizens to live harmoniously through a collaborative design process. These spaces enhance the natural environment, foster community, and promote sustainable living. Research visualised birds' acoustic index dataset in a specific period to identify the characteristics of bird habitats in a particular urban space. Driven by the data visualisation findings, public events and activities are strategically designed to account for the dynamic interplay between birds and anthropogenic activities. This data-driven empirical research process provides an emerging practice and methodology for designers, urban science researchers and urban citizens to engage together in urban bird conservation.

Research Objectives

Our research aims to develop a collaborative design method for urban bird conservation by utilising birds' acoustic data. It promotes an empirical approach to activating ecological spaces in urban areas. Through analysing and visualising birds' acoustic datasets from Sanhaowu Park, located at Tongji University in Shanghai, China, we aim to learn more about the birds' habitats and how human intervention affects their activities. Drawing inspiration from data discovery, designers, urban science researchers, and citizens from different fields co-create public events or activities to promote urban bird conservation and increase ecological-friendly awareness.

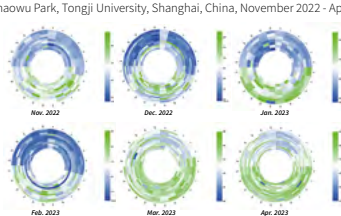
Research Process

Visualisation of the Normalised Difference Soundscape Index (NDSI) at Sanhaowu Park, Tongji University, Shanghai, China, November 2022 - April 2023



The visualization graph contains hourly NDSI values for each recording day in the six months. Values trending towards 1 indicate higher levels of biophonic than anthropogenic activity, and values trending towards -1 indicate higher levels of anthropogenic activity.

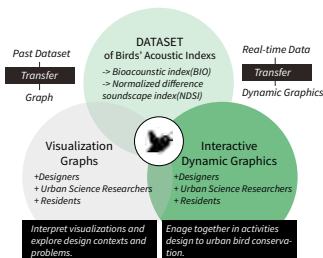
Visualisation of Bioacoustic Index (BIO) at Sanhaowu Park, Tongji University, Shanghai, China, November 2022 - April 2023



The visualization graph contains hourly BIO values for each recording day in the six months. The level of BIO values represents bioacoustics' strength, i.e., biological activity, in the natural space.

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Methodology and Tools



A Data-driven Design Process:
Transfer and Re-interpretation of Birds' Acoustic Data

This study collected birds' acoustic datasets, including the Bioacoustic Index (BIO) and the Normalised Difference Soundscape Index (NDSI), from November 2022 to April 2023 in Sanhaowu Park, Tongji University, Shanghai, China. The BIO index represents the bioacoustic intensity, indicating the activity level of birds, while the NDSI index represents the proportion of biophonic and anthropogenic activity. During the initial stage, we examined the characters of two datasets - BIO and NDSI - which contained hourly values of corresponding indexes on each recording day of the different months. After comparing various visualisation methods, we concluded that heat maps offer a more accurate and intuitive representation of changes in birds' acoustic data throughout seasons and periods. (as shown on the left.)

Then, our research organises designers, urban science researchers, and citizens from different fields to observe and interpret visualisation graphs. Based on our data discovery, we applied the Four Orders of Design proposed by Richard Buchanan - symbols, artefacts, actions and events, systems and environments - to explore how we could use birds' acoustic data to activate Sanhaowu Park as a natural space where both humans and birds can co-exist harmoniously. Inspired by NDSI index data visualisation, our study co-create a Digital Interactive Light Show Activity in Sanhaowu Park that focuses on the natural and dynamic relationship between birds and human activity. Real-time birds' acoustic data is transferred to dynamic light graphics that change based on the real-time data values. By observing the dynamic state of the graphic, individuals will notice and discern the current activity level of birds, thereby minimising any disruption to their behaviour. This activity promotes greater awareness and protection of urban birds, creating eco-friendly natural spaces within our cities.

Obtained Results

Our research employs acoustic data from birds to develop a collaborative design methodology for urban bird conservation. This approach relies on visualising complex data into diagrams to facilitate exploration, comprehension, and problem-solving among multidisciplinary teams with varying degrees of knowledge. We explore the multiple design possibilities using the Four Orders of Design framework. The Digital Interactive Light Show transfers real-time data into dynamic graphics, conveying information through symbolic language and raising awareness of protecting urban birds through the interactive process. Such a data-driven design process provides a new approach for designers, urban science researchers, residents and other groups in different fields to participate in conserving urban birds and constructing eco-friendly urban spaces.

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III O III E

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DISAPPEARING INFORMATION ON PAPER: RETHINKING THE IMPACT OF DIGITAL MEDIA OVERUSE IN DAILY-LIFE.

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DISAPPEARING INFORMATION ON PAPER: RETHINKING THE IMPACT OF DIGITAL MEDIA OVERUSE IN DAILY-LIFE

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P/REFERENCES
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SPECULATIVE
PERSPECTIVES



Interactive Exhibition
Disappearing Information on Paper
NICE 2035 Neighbourhood, Shanghai, China

ABSTRACT

Nowadays, digital media devices have become an integral aspect of modern life. Electronic screens displaying dynamic images and vast amounts of information have become the main focus for most people. However, the overuse of digital media has decreased individuals' perception of daily life in physical situations, leading to a decline in the quality of real-life communication and community connection. "What if all information disappears from daily life print media?" This hypothetical scenario involves erasing all text and pictures from print media, leaving only digital media as a source of information. It raises concerns about how over-digitization affects our perception of the physical world. Parallel to this, research also explores the potential role of print media in creating and strengthening communities. This research uses speculative design methodology to curate the interactive exhibition "Disappearing Information on Paper" in the NICE2035 neighbourhood on Chifeng Road in Shanghai, China. The exhibits gathered from the local area employ playful visuals to trigger the audience to engage in interactive experiences. Such an interaction triggers a reflection on the over-digitization in daily life and imagines the future landscape of daily life in the NICE2035 neighbourhood. The exhibits refocus on the lives of social groups such as vendors and residents to strengthen new community connections in the neighbourhood. This research aims to discuss the effects of excessive digitization on daily life pictures at a time when virtual technologies are growing explosively and using print media to offer new insight and opportunities to strengthen local community connections.

Research Objectives

Digital media overuse has weakened people's attention and perception of real-life situations. It has also reduced community communication and emotional connection between individuals. In today's digital technology era, we researched using speculative design methodology to examine the effects of digital media overuse on our perception of daily life pictures. We also explored the role of print media in strengthening community connections. Our research aims to start a conversation and raise awareness about the effects of excessive digitization. Parallel to this, our research provides new perspectives on using print media to strengthen local community bonds.

Methodology and Tools

The project involves conducting field research to gain insights into print media usage in the NICE2035 neighbourhood. Information on paper-based media frequently found on Chifeng Road is gathered, which includes its location, function, information content, paper type, and print media ownership. Observing and conducting semi-structured interviews, we investigate how individuals living or working in the neighbourhood utilize digital and print media here.

After conducting research, the curators organize an interactive exhibit on print media in the NICE2035 neighbourhood. The exhibit aims to encourage visitors to reconsider the overuse of digital media in daily life and explore alternative reality. The exhibits encourage participants to pay closer attention to the print media in their neighbourhood, including the messages and emotions it conveys. Through this process, they gain a new perspective on the picture of daily life around them. By stimulating their imagination about the community's future, the paper-based exhibits prompt participants to reflect more deeply on real-life scenarios affected by digital media and how they might evolve.

Research Process

During the field research, we visited the Chifeng Road neighbourhood in Shanghai, China and gathered information on the various print media frequently found in the area. This included job postings, rental advertisements, restaurant menus, and pharmacy receipts, which provide a snapshot of the people who live and work in the neighbourhood. We captured images of these paper-based media to document their location, content, and paper type. Additionally, we interviewed vendors, residents, teachers, and students who work and live in the area to learn about their digital and paper media usage. We also collected paper media provided by the interviewees.

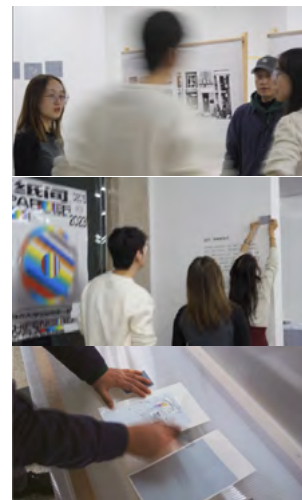
Using speculative design methodology, the research curated an interactive exhibition based on print media collected from the NICE 2035 neighbourhood, Disappearing Information on Paper. The research used silver ink to conceal all text and images on paper media, rendering it useless as an information medium. Silver ink is a material that can be scratched off to reveal the information written underneath while still covering the original content on the paper.

As visitors step into the exhibition space, they are drawn towards an assortment of neatly arranged papers in various sizes - the textual parts covered with a silver-colored coating. Visitors, driven by curiosity, scratch off the coating to reveal the text underneath. This text is closely related to the daily life on Chifeng Road and includes advertising slogans from fried chicken restaurants, information about houses for rent, job announcements in print stores, and more. Despite being relevant to daily life, these texts are often overlooked in a world consumed by digital media. The richness of the content on these print media creates a collage of everyday life on Chifeng Road. As the viewer scratches away the coating, which is the hard way to access the textual information overlooked in everyday life, they read the content of these messages carefully and begin to reflect on their value to the Chifeng neighbourhood. This tactile interaction prompts participants to notice the daily life captured by paper media and evokes them to contemplate a future where digital information dominates the community.

Obtained Results

Our research has curated an interactive exhibition called "Disappearing Information on Paper" in the Chifeng Road neighbourhood of Shanghai, China. The purpose of this exhibition is to encourage participants to reflect on the effects of overusing digital media on our perception of daily life pictures. Through interactive and tactile means, the exhibition aims to spark visitors' curiosity and draw their attention back to the print media still in their community's daily life and the critical information and emotions it carries.

In today's world of explosive growth in virtual and digital technologies, this study takes a speculative design approach to discuss the impact of over-digitization on our perception of daily life. In parallel, it provides new perspectives on using print media to strengthen local community ties.



Field Notes on Preparing for the Exhibition.

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DAWN CHORUS: DIGITAL ART INSTALLATION FOR PUBLIC HEALING BASED ON AUDITORY-VISUAL STIMULATION.

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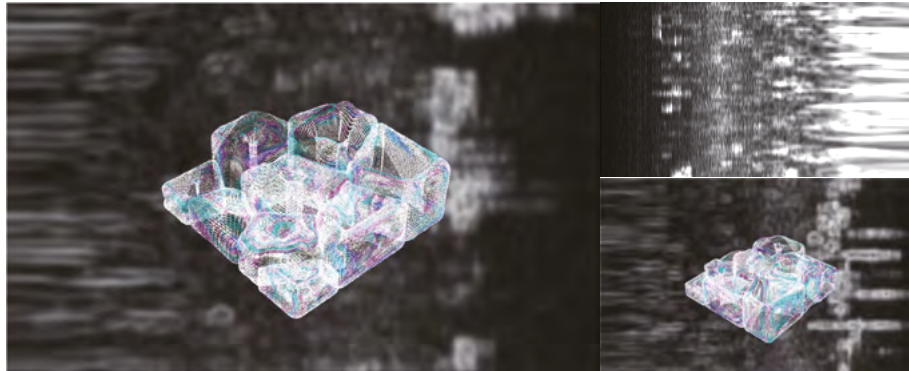
DAWN CHORUS: DIGITAL ART INSTALLATION FOR PUBLIC HEALING BASED ON AUDITORY-VISUAL STIMULATION.

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CONVERGING
BODIES OF
KNOWLEDGE



Dawn Chorus: A Digital Art Installation for Spiritual Healing Based on Auditory-Visual Stimulation



The Energy of Soundscape: Creation of Basic Three-dimensional Geometry

Abstract

The 2023 White Paper on the Mental Health of Urban Residents in China has highlighted that the fast-paced and high-stress urban lifestyle negatively affects the physical and mental health of people living in cities. Addressing issues such as anxiety and depression has become a growing concern for society as a whole. In recent years, digital technology has been employed to develop physical and mental healing art installations, combining art and technology features. These installations use software and hardware to offer unique sensory experiences to participants. This study aims to explore the design of an immersive digital art experience using the sound of birds chirping at dawn to create a healing effect. Real-time audio recordings of the birds' dawn chorus will be used to create dynamic visual images through sound visualization design. The digital art installation, called "The Dawn Chorus," will be placed in a public indoor space with low noise interference, making it easily accessible to the public daily. The installation will use visual and auditory sensory resonance to provide a unique and immersive digital art experience that can help alleviate physical and mental stress. The effectiveness of the installation healing function will be evaluated using randomized interviews and a subsequent quantitative assessment. This study utilizes digital media art to create an open-ended scenario for physical and mental healing in daily life, introducing new perspectives and methods to healing among urban residents.

Research Objectives

In today's fast-paced and high-stress urban life, the mental health of modern city dwellers has become a significant concern. To address this issue, the study aims to create digital healing experiences that can help improve urban residents' mental and physical health. The study has utilized the soothing sounds of birds chirping at dawn to design a healing digital art experience that the public can access easily. The art installation triggers visitors' sensory experience and diverts their attention, thereby helping to relieve brain fatigue and promote healing of the body and mind. This study explores new ways of creating healing scenarios for urban residents to incorporate into their daily routines.

Methodology and Tools

The enchanting dawn chorus of birds is a natural symphony that typically commences at 5 a.m. and varies based on temperature and location. A field study was conducted in an urban natural park to gain firsthand insight into this delightful occurrence during the spring season. Through the analysis of personal perceptions and interviews with esteemed ornithologists, the researcher has come to appreciate the biological significance of the dawn chorus and its potential to inspire spiritual healing programs.

This study uses sound visualization design to transform the audio of the dawn chorus into a dynamic image. The rhythm of the image is influenced by the input audio, creating a visual and auditory resonance that provides an immersive sensory experience. This digital installation can help to divert or slow down the directed attention of the participants and enhance their visual and auditory senses.

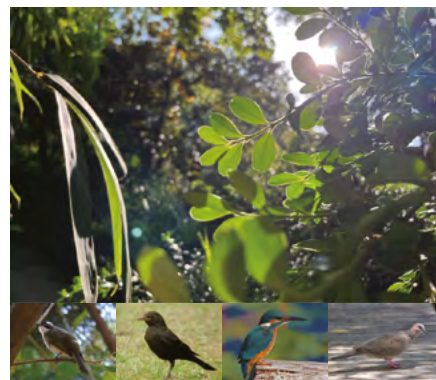
This project aims to develop a design methodology for real-time avian sound visualization involving real-time audio collection, processing, and imaging. The study involves the creation of a digital art installation using the TouchDesigner visual application and Arduino hardware. To make this digital experience accessible to the public in everyday life scenarios, we plan to place the installation in an open indoor space with low noise interference. Subsequently, we will conduct random interviews with visitors to assess the healing function of the digital art installation.

Research Process

A field survey was conducted in Sanhaowu Nature Park, Shanghai, China, to study the dawn chorus of birds at 5 a.m. during the spring season. The birds chirp continuously during courtship, feeding and other behaviours, releasing sound energy that travels through natural space. The experience of observing and discussing the dawn chorus of birds in Sanhaowu Nature Park has profoundly influenced the transfer and expression of the dawn chorus in healing digital art.

In the healing design process, we create 3D basic graphics of the soundscape by using geometric shapes to express the enrichment and flow of sound energy at different times. Utilizing TouchDesigner, a visual software, the birdsong sound is transferred into a visual light, flowing, gentle and colourful light, which serves as a surface finish for the 3D soundscape model. Through the serial communication between real-time audio collection components and the visual software platform, the rhythm of the dynamic images is aligned with the input real-time audio, creating a visual and auditory resonance in the immersive digital experience.

The study will conduct follow-up research by collecting participant feedback through questionnaires and interviews. This will help qualitatively evaluate the effectiveness of the healing digital art installations. The study also plans to develop a quantitative assessment to evaluate and improve the healing function from a more scientific perspective.



Early morning of the Sanhaowu Nature Park in the spring season, Shanghai, China.
Common birds in Sanhaowu Nature Park.

Obtained Results

The study transforms the real-time audio of the birds' dawn chorus into visual dynamic images through sound visualization design. The Dawn Chorus, a digital art installation, creates an immersive digital art experience by triggering visual and auditory sensory resonance. In addition, this digital installation will be placed in an indoor public space with low noise interference, making it accessible to the public in everyday life scenarios. According to the feedback from randomized interviews, the Dawn Chorus digital art installation can effectively divert or diminish the participants' directed attention, thus reducing brain fatigue and relieving physical and mental stress.

This study creates healing digital scenarios for urban residents in their daily lives that use the chorus of birds at dawn as input. It offers a fresh perspective and approach to public healing design. In the future, the study plans to develop a quantitative assessment for the healing function to evaluate and improve the experience of healing digital art installations more scientifically.

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A PLAYFUL RELATIONSHIP BETWEEN CHILDREN AND INSECTS: FOSTERING NATURE CONNECTION THROUGH INTERACTION DESIGN.

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A PLAYFUL RELATIONSHIP BETWEEN CHILDREN AND INSECTS: FOSTERING NATURE CONNECTION THROUGH INTERACTION DESIGN.

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REFERENCES OF DESIGN
CUMULUS BUDAPEST 2024 15-17 MAY 2024

CONVERGING BODIES OF KNOWLEDGE

Research Background

- The human-nature connection are gradually weakening
- Nature education is essential in child development
- Beetle could be a gateway to foster kids nature connection

Research Main Focus

How can we reconnect children with nature through interaction design, using beetle science popularization as an example?

Abstract

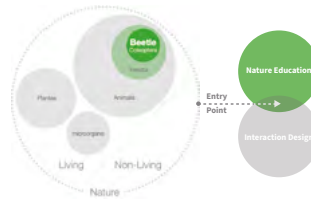
Being called to spend more and more time interacting with or through screens and devices, has a major impact on the relationship between humans and nature - which is gradually diminishing - especially for children. Nature connectedness and nature-deficit disorders are widely studied, and there is a growing need to reinforce the nature connection in children. The role of interaction design to foster nature connections presents several opportunities. In this research, we identify game design as a pivotal opportunity for nature-children interaction; through games dynamic, natural science education can be integrated with a direct interaction format, and allow forms of experiential learning. Mixed-methods approach in the user research process helps a comprehensive understanding of the user base and informs the development of the prototypes. The final outcome is "Playful Beetle", a game that entices kids to explore the world of beetles in an engaging and playful manner, provides children with knowledge about beetles, and meets their observe, learn, interact, and experience needs with these creatures. The outcome fills the gap in the current nature education field and also offers valuable cases for future researchers.

Why Choose Beetle?

Insects play vital role in the ecosystem, and they fill our lives all the time, recognizing and understanding them is an important way to foster nature connection among childrens.

Children have very limited knowledge about insects. Some even hold negative perceptions such as fear and aversion. In fact, most of what we know about insects comes from beetles.

The characteristics and knowledge of beetles are unique, which could help children stimulate their curiosity and encourage them to take an active role in learning about insects and nature.



Target Users

6-12 Years Old Children

The stage when logical thinking matures and can understand and explain natural phenomena.

User Research Methods



Playful Beetle

A beetle-themed nature education game, provides children with knowledge about beetles, meets their observe, learn, interact and experience needs.

How to Play

1 Beetle figures

Four beetle figures of different species for free play such as close handling and observation.

2 Beetle cards

Three different types comprise a total of 90 cards. Filled with beetle knowledge, which could be read independently or used with the toy figures together to support board game mode play.

3 Board game mode

2-4 players. Start as larvae, evolve with dice, move on the map, draft cards, and collect tokens from cards. The player with the most tokens wins. The initial concept came from kids' ideas in earlier workshops and was redesigned to align with educational goals.

4 Digital mode

Based on a tablet. Supported by NFC (Near-field communication), reads corresponding data once placing beetle figures. Players can interact with beetles in the digital environment, observing, feeding, and recording. Additionally, the digital mode offers an entertaining guide and encyclopedia, helping kids to learn about beetles in a fun and easy way.

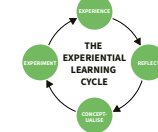
Prototype



Action Research Fieldworks



Theoretical Framework



The experiential learning cycle is defined as "the process of creating knowledge through transformation of experience." It emphasizes a learner-centered method, promoting active participation, exploration, and reflection in practice to foster knowledge acquisition, personal development, and emotional growth.

Results

The prototype has been validated by a usability test, which positively shapes children's feelings and understanding towards beetles and nature and has a positive effect on promoting children's nature connection.

Anticipated Impact

This research fills the gap in beetle-related educational products in the current nature education field and also offers valuable interaction design cases for future nature educators, insect educators, interaction designers, and game designers.

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BRIDGING TRAUMA TO TRANQUILITY: PIECES OF PEACE.

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BRIDGING TRAUMA TO TRANQUILITY: PIECES OF PEACE.

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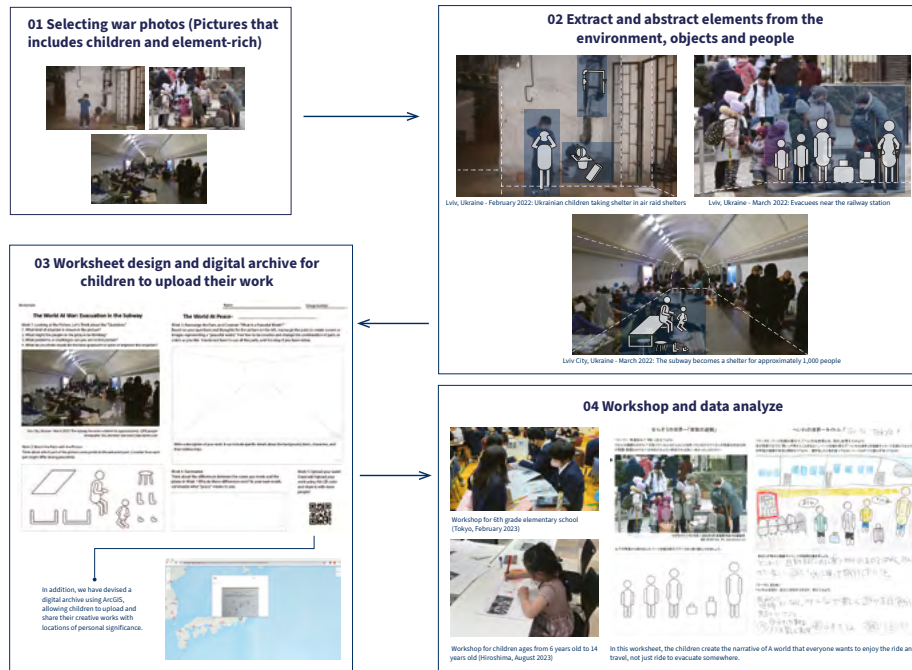
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REFERENCES
OF
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CUMULUS
BUDAPEST
2024
16-17 JULY
2024

WAYS
OF
LIVING
TOGETHER

Abstract

For children raised in peaceful environments, war seems distant from their everyday experiences. Pieces of Peace provides a new approach to linking the realities of war with their peaceful daily lives. It is a tool for re-narrativization by using photographs of war, extracting elements from the environment, objects and people that both present in wartime and peacetime, and engaging children to use these elements to rebuild narratives of peace to reflect on the differences between them. We have already conducted workshops in Tokyo, Hiroshima, and Nagano.



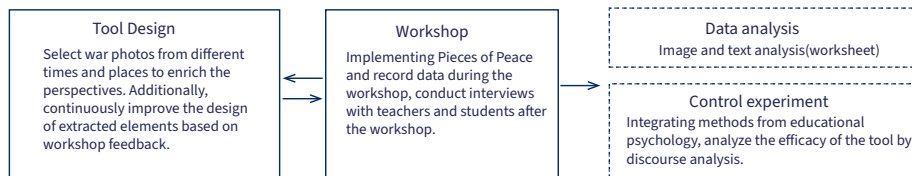
Research Objectives

1. Introduce Pieces of Peace as a tool for children to reflect on their daily experiences with war, transforming the abstract concept of "peace" into a specific, personalized understanding while fostering empathy for those currently enduring war.
2. Put forth a new visual narrative design method, articulating the process of extracting abstract elements from a photo as an innovative form of re-narrativization.

Methodology and Tools

1. The practice of workshops involves using Pieces of Peace as an educational tool, recording changes in the content of discussions through video and audio, analyzing the dialogue, and assessing whether there is an increase in connections to one's own life and empathy during the workshop.
2. Questionnaires and interviews conducted after the workshop. Interviews are conducted with students who participated in the workshop, as well as relevant teachers.
3. Analysis of the images and text in the worksheets created by students. Examine the narrative tendencies in the works and the understanding of peace conveyed through the works and written explanations.

Research Process



Obtained Results

After the conclusion of the workshop, students' understanding of peace transitions from abstract to concrete, with discourse analysis revealing an increased incorporation of personal experience when discussing war and peace. Simultaneously, we conducted an exhibition featuring children's works, which also served to inspire awareness of peace among adults.



Video Introduction



P / REFERENCES OF DESIGN

ASSESSING USER NEEDS OF ADOLESCENT GIRLS DURING PHYSIOLOGICAL CHANGES TO OPTIMIZE THE DESIGN CRITERIA OF BEGINNER'S BRA.

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DOI: 10.63442/VYVB2879

ASSESSING USER NEEDS OF ADOLESCENT GIRLS DURING PHYSIOLOGICAL CHANGES TO OPTIMIZE THE DESIGN CRITERIA OF BEGINNER'S BRA.

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P/REFERENCES
OF
DESIGN

THE
FUTURE OF
WELL-BEING

ABSTRACT

This research paper aims to assess the unique needs and preferences of adolescent girls during physiological changes to optimize the design criteria of beginner's bras. A survey was conducted to understand the preferences of adolescent girls for beginner's bras. The results of the survey indicate that most girls preferred beginner's bras made of soft and comfortable fabric, with adjustable straps, a wide underband, and providing light support and coverage. These design criteria were used to enhance the design of beginner's bras for adolescent girls, ensuring comfort and support during breast growth. However, it is important to note that every adolescent girl is unique, and personal preferences can vary. Therefore, it is recommended to try on different styles and brands to find the one that feels the most comfortable and suits individual needs. This research provides valuable insights into designing beginner's bras that meet the unique requirements of adolescent girls during physiological changes.

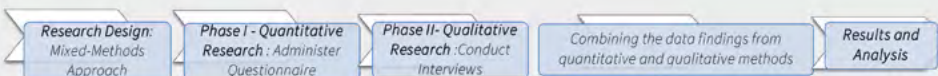
Key words: adolescence, physiological changes, comfort, support, beginner's bra



OBJECTIVES

1. To study the physiological changes experienced by adolescent girls during puberty, focusing specifically on discomfort or challenges related to bra usage.
2. Investigate the unique needs and preferences of adolescent girls regarding beginner's bras to understand factors such as comfort, support, aesthetics, and functionality.
3. To study the current design criteria of beginner's bras available in the market, evaluating their effectiveness in addressing the identified needs and preferences of adolescent girls during puberty.

METHODOLOGY



To assess the user needs of adolescent girls, a survey was conducted among a sample of 100 girls aged between 8 to 13 years. The survey included questions about various aspects related to understanding their requirements, emotional aspects of the girl's experiences, correlations between breast development and changes in activity levels

RESULTS

The survey findings provide valuable insights into the preferences of girls regarding beginner's bras.



CONCLUSION

Designing a beginner's bra that meets the needs and preferences of adolescent girls requires understanding their unique requirements. The survey conducted revealed that most girls preferred a beginner's bra that provided light support and coverage, made of soft and comfortable fabric, with adjustable straps and a wide under band. Understanding user needs in bra design for adolescent girls goes beyond providing physical support. It also involves addressing their psychological well-being and promoting a positive body image during a time of significant change and self-discovery. By offering bras that cater to their evolving bodies and lifestyles, designers can empower adolescent girls to embrace their uniqueness and feel comfortable and confident in their skin.

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12. Picture Credit: The picture used in the research is clicked by the author

P / REFERENCES OF DESIGN

MENSURAL PANTIES AND ENVIRONMENTAL SUSTAINABILITY: AN ECONOMIC AND ECOLOGICAL ANALYSIS.

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DOI: 10.63442/YHBV9392

MENSURAL PANTIES AND ENVIRONMENTAL SUSTAINABILITY: AN ECONOMIC AND ECOLOGICAL ANALYSIS.

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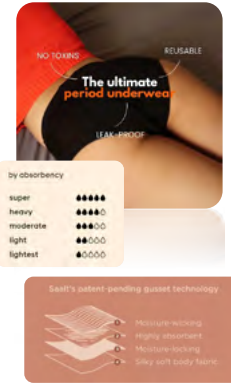
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ABSTRACT

Menstrual hygiene management has been a major concern worldwide due to the environmental impact and health hazards associated with disposable menstrual products. Mensural panties, also known as period panties, have emerged as a promising alternative to traditional menstrual products. Mensural panties are designed to provide a sustainable and eco-friendly alternative to traditional menstrual products. The paper discusses the background and challenges of menstrual hygiene management, the design and functionality of mensural panties, and user experiences. The use of disposable menstrual products has been linked to various environmental and health hazards, and mensural panties offer a promising solution by providing leak protection, comfort, and convenience.

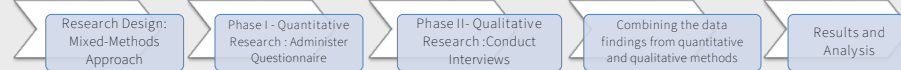
The design and functionality of mensural panties are explored, including the absorbent materials used, moisture-wicking properties, and additional features. User experiences of mensural panties have been largely positive, with individuals reporting greater comfort and convenience compared to traditional menstrual products. The paper concludes by highlighting the potential of mensural panties to revolutionize menstrual hygiene management, while also acknowledging the need for further research on their durability and potential risks associated with prolonged wear.



OBJECTIVES

- To identify the socio-cultural factors influencing the adoption of menstrual panties and their implications for sustainable menstrual health management.
- To offer insights and recommendations to encourage the widespread adoption of menstrual panties as a sustainable substitute for conventional disposable menstrual products.

METHODOLOGY



The research was conducted in two phases: an initial quantitative survey to gather broad data on user experiences, costs, and environmental impacts, followed by in-depth qualitative interviews and focus group discussions to explore these themes in greater detail.

The study targeted female participants aged between 18 to 45 years. A total of 250 participants were surveyed, and from this group, 40 were selected for follow-up in-depth interviews and focus group discussions based on their varied experiences and willingness to share detailed personal narratives. The majority (60%) were between the ages of 18 and 30, with 40% aged 31 to 45. Approximately 70% had completed secondary education or higher.

RESULTS

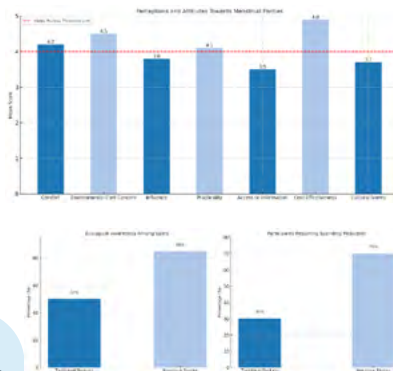
The study reveals a trend towards sustainable menstrual hygiene, with 40% of participants using menstrual panties, highlighting both economic and environmental benefits. While 60% still rely on traditional products, 85% express environmental concerns, yet only half were initially aware of the ecological advantages of menstrual panties. A positive correlation ($r = 0.45$, $p < 0.001$) indicates growing ecological awareness boosts the adoption of menstrual panties.

Despite this shift, especially among younger women, cultural and access barriers remain, particularly in smaller cities. The findings suggest a need for increased education and community initiatives to enhance awareness and support for sustainable menstrual options. Overall, menstrual panties are viewed favorably for their comfort and sustainability, signaling a significant, yet challenged, move away from traditional products towards more environmentally friendly practices.

CONCLUSION

This study delves into the sustainability and practicality of menstrual panties as an alternative to traditional menstrual products, focusing on urban women's adoption, perceptions, and the broader implications for menstrual hygiene management (MHM). Findings highlight a positive reception towards menstrual panties, driven by comfort, economic savings, and environmental benefits. However, cultural stigmas, accessibility, and lack of awareness pose challenges to widespread adoption.

The economic and ecological advantages underscore the potential of menstrual panties to revolutionize MHM, aligning with global sustainability goals and gender equity. Future efforts should concentrate on dismantling barriers, enhancing product accessibility, and elevating ecological awareness to foster the adoption of menstrual panties. This shift not only promises to mitigate the environmental impact of menstrual products but also to advance women's health and empowerment, marking a significant step towards sustainable and inclusive MHM practices.



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P / REFERENCES OF DESIGN

CULTURAL-CREATIVE CROWDFUNDING: EXTENDING THE CONCEPT THROUGH DEVELOPING THE PLATFORM TYPOLOGY.

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CULTURAL-CREATIVE CROWDFUNDING: EXTENDING THE CONCEPT THROUGH DEVELOPING THE PLATFORM TYPOLOGY.

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REFERENCES
OF
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BRIDGING
DESIGN AND
ECONOMICS

Abstract

Cultural-creative crowdfunding (CCCF) – obtaining financial resources for cultural and creative projects from a potentially large pool of micro investors providing small monetary contributions – is a contemporary digital phenomenon that intersects the culture sector production chain and alternative finance technology. The current study explores how CCCF has evolved and offers a broader typology of crowdfunding platforms (CFPs) that can better serve the culture-creative circuit.

This work is among the first to pursue a CCCF typology of relational forms in a meta-effort of bridging scholarly understanding and real-world practices. This research therefore offers implications for practitioners and policymakers by enabling the nuanced understanding of CCCF, and expanding its boundaries, amid a broader umbrella of possible (sub-)models to be adopted and legitimized in (and by) the culture sector.

Research objectives

- ✓ To explore (and potentially extend) the CCCF concept and different models developed within multiple platforms under the CCCF umbrella
- ✓ To offer a broader typology of CFPs that can better serve the culture-creative circuit

Methodology & research process

- ✓ Delphi method – expert panels with crowdfunding scholars and cultural economists to validate our CCCF conceptualization
- ✓ Mapping of CFPs associated with CCI in Europe and Latin America (through tracking and trawling) → resulted in the database with around 90 platforms (Figure 1)
- ✓ Categorization of the CFPs in the database
- ✓ Clustering effort to systematize the CFPs in groups of different communities of practice

		Pre-2009		2010-2015		Post-2015	
		10		67		8	
Categoric Dimensions	CF Business Model	«Pure»	Total: 38	Hybrid Model	Total: 51		
		Donation	12	2 models	37		
		Reward (+ Pre-order)	12	> 3 models	14		
		Subscription	6	Subscription option	5		
		Other (i.e., investment logic)	8	Match-funding option	12		
				Investment logic	10		
	Governance Spectrum	Non-profit		Some sort of partnership		For-profit	
		20		29		35	
	Sectorial focus	Specialized	Culture-specialized	CCI generalist	Socio-generalist	Generalist	
		27	4	18	15	21	
Geographical scope	Local (municipal)	Local/regional	National		Global		
	5	34	24		26		

Figure 1. Number of platforms per categoric dimension



CCCF typology

Results

The typology (Figure 2) demonstrates the following:

- ✓ CCCF is a combination of diverse relational practices manifested in various types of platforms
- ✓ A clear systematization of the CCCF relational forms can foster its integration in the culture sector ecosystem of funding, financing, and functioning

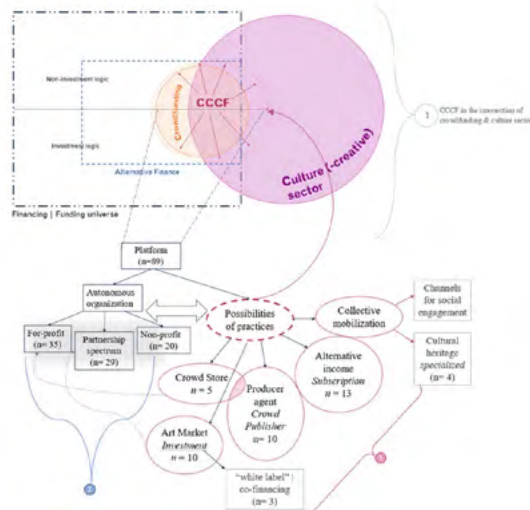


Figure 2. Expanding the CCCF concept – mapping the possibilities of practices

P / REFERENCES OF DESIGN

LAYERED SUSTAINABILITY. DESIGN INFERENCE FOR CIRCULAR ECONOMY IN ADDITIVE MANUFACTURING.

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LAYERED SUSTAINABILITY. DESIGN INFERENCE FOR CIRCULAR ECONOMY IN ADDITIVE MANUFACTURING.

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P REFERENCES
OF DESIGN

TAMING
ENTROPY:
SYSTEMS
DESIGN FOR
CLIMATE
AND CHANGE

Abstract

This contribution explores the intersection of Additive Manufacturing (AM) technology and Circular Economy (CE) models through a Design lens. In contrast to the current limitation of AM processes, the layer-by-layer deposition results in jointless lightweight structures that can be customized, on-demand, and eco-efficient, presenting fundamental ecological implications such as resource efficiency, waste reduction, and lower material and energy consumption. The study delves into both the theoretical foundations and practical applications, emphasizing the potential for circularity in AM.

A case-based reasoning method is used to examine the Design variables of inference across micro, meso, macro, and meta (SM) scales, combining the Issue-Concept-Form (ICF) model for a semantic analysis of case studies. This investigation contributes to design learnings and adaptive guidelines for transformative interventions, providing insights into mitigative design solutions to drive paradigm changes towards CE models in AM. Moreover, the involvement of animate materials, which introduce programmable and adaptive material properties, provides a glimpse into future challenges.

Methodology

By employing a case-based reasoning method across micro, meso, macro, and meta (SM) scales, the research contributes design insights and adaptive guidelines for transformative interventions, suggesting mitigative design solutions to drive circular changes towards CE models in AM. The SM scales framework, derived from the Design for Sustainability Evolutionary Framework by Cserch and Gazduly (2016), forms the basis for case studies classification. The contribution involves the ICF model designed by Omani (1994) for breaking down, interpreting, and deducing learnings from case studies and refined by Zambelli (2002) for design purposes. Through the model, the author deconstructed the cases' data (gathered by triangulating scientific resources and grey literature) into conceptual keywords regarding questions or goals of the projects (issues), potential design solutions to solve issues (concept) and physical features to materialize concepts (form).

A network of contents is designed through a backward review by tracing and linking ICF keywords from lower-order to higher levels. The flexibility of the models allows further connection among variables and multiple cases. The map displaying the correlation between design variables can be helpful for designers to derive information from the concrete experience of a sample and understand and improve changes in that or other realms. Moreover, it underlines the design potential to deal with multi-scale complexities when designing circularity through transformative interventions.

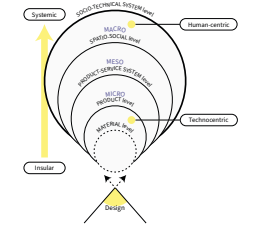
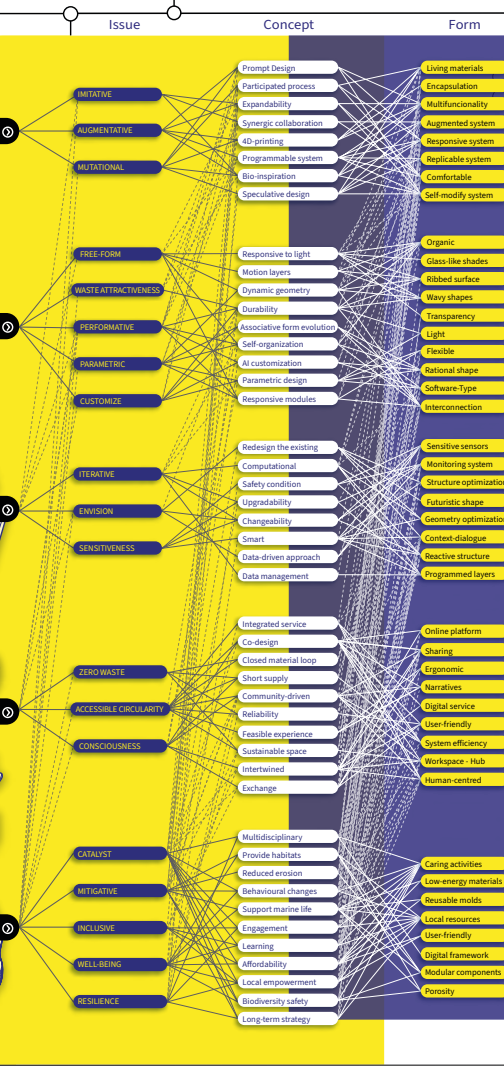
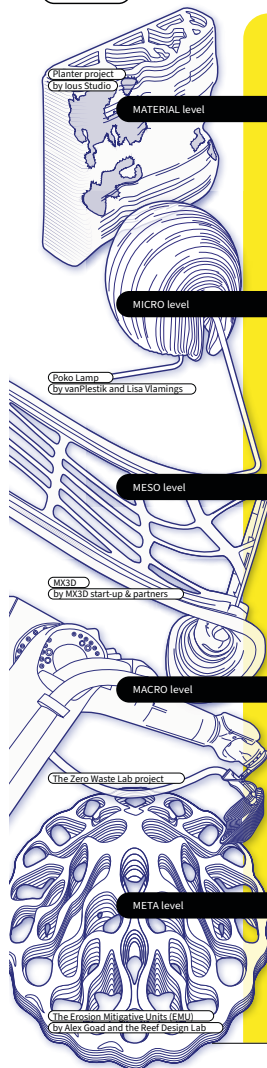


Figure 1: The methodological approach of the SM scales: Material, Micro, Meso, Macro and Meta.

Research



Results

The network diagram showcasing the relationships among the ICF keywords depicts the interrelated relations across SM levels, highlighting potential design learnings and emphasizing the need for interdisciplinarity capabilities necessary to address challenges and drive innovation across various scales within the larger design ecosystem.

The connections allow to recognize and depict the broader implications on social, cultural, ecological, and technological levels and emphasize the need for interdisciplinarity capabilities necessary to address challenges and drive innovation across various scales within the larger design ecosystem.

Circularity principles such as reuse, reduce, remanufacture, repair, and recycle are prevalent in the case studies, emphasizing (i) the use of recycled materials in higher-value perceived applications; (ii) source for local resources in terms of energy, materials, and knowledge; (iii) the involvement of local communities into the design process; (iv) provide customization options for increasing products sustainability; (v) optimize product circularity by conscious design agency; (vi) envision and make reliable long-term maintenance strategies.

The research emphasizes Design's transformative role as a catalyst for sustainable changes (Earley, 2017), aligning advanced technologies with societal and ecological needs. The increasing availability of new materials for AM processes due to good recovery practices (Romani et al., 2021) enables the development of innovative AM-based approaches (Omani, 2021). As merged by cases, a systemic-thinking mindset could stimulate the strengthening of powerful collaboration (Pierro & Barbero, 2020), leveraging community knowledge for valuable sustainable contributions. In addition, by providing reference contexts and making AM processes more affordable, Design can attract stakeholders, fostering greater awareness and social responsibility as well as new co-production, consumption, and resource management models that prompt systemic changes (Niemann et al., 2018). By adapting advanced technologies to societal and ecological needs, Design facilitates transformations in behavior, production, and consumption patterns, aligning with the goals of Circular Economy models.

Despite advancements, challenges persist along social perspectives, regulatory frameworks, and technological impacts. The contribution advocates for a holistic environmental impact assessment that encompasses the entire lifecycle of digital AM processes. This could be included into long-term strategies, involving local efforts alongside low-impact materials (Romani et al., 2021), which can mitigate ecological implications. More political and industrial efforts should be focused on the standardization of AM and new circular materials (Hegde et al., 2023) in order to disseminate sustainable strategies that meet societal needs. Additionally, the exploration of new frontiers of matter (The Royal Society, 2021; Pollini et al., 2022; Emidi, 2023) incorporating animate materials into AM products introduces programmable and adaptive properties, providing a glimpse into future challenges – such as ethical, technological, performances, evolution factors – and suggesting further establishing a nature-artificial symbiosis to efficiently use the right amount of energy and resources while eliminating waste.

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P / REFERENCES OF DESIGN

EXPLORING SUSTAINABLE DESIGN THROUGH RECYCLE CORK. A CASE STUDY ON A CIRCULAR DESIGN AND MATERIAL REUSE.

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CUMULUS BUDAPEST 2024
BRIDGING DESIGN AND ECONOMICS

WE DISPOSE OF 100 BILLION TONNES OF MATERIAL ANNUALLY ONLY 9% ARE RECYCLED EACH TONNE DISCARDED RESULTS FROM DESIGN DECISIONS

It's essential to recognize that sustainability isn't just a responsibility - it's an opportunity for positive change. By rethinking our design processes and consumption habits, we can collectively move towards a more regenerative and equitable future.

As designers, every choice we make - from selecting materials to conceptualizing products - has an impact. Our decisions influence not only the aesthetics and functionality of the final product but also its environmental footprint. We can minimize waste and contribute to a more sustainable future. Our contributions to causes such as addressing the issue of stray cats extend beyond the final products we create.

The products we choose to buy and use reflect our values and priorities. By supporting companies that prioritize sustainability and ethical practices, we send a clear message to the market about the kind of world we want to live in. Whether it's opting for products made from recycled materials, supporting brands that minimize packaging waste, or choosing reusable alternatives, our choices matter.



This research aims to explore the unique properties of cork and showcase its potential as a renewable resource for design applications in urban context. Cork is recognized as an ecological alternative as its production is highly sustainable. Cork is harvested from the cork oak tree, which continues to grow and regenerate after extraction promoting the continued health of cork oak forests. This research investigates the feasibility of utilizing cork composites (recycled cork from other existing products) to design a sustainable and circular modular shelter tailored for feral or stray cats. This innovative urban product aims to inspire transformative change about the importance of our social responsibility towards other species, especially in the context of urban environments.

ABSTRACT

This study focuses on the innovative use of recycled cork as a primary building material, emphasizing its potential to mitigate deforestation while promoting sustainable and circular design principles.

Research objectives

- 1 | Explore the unique properties of cork and showcase its potential as a renewable resource for design applications to improve feral or stray cats community life;
- 2 | Investigate the feasibility and durability of utilizing cork composites in urban and modular product solutions;
- 3 | Explore the use of cork composites within circular design and inspire transformative change regarding sustainability and circular economy principles.

Methodology

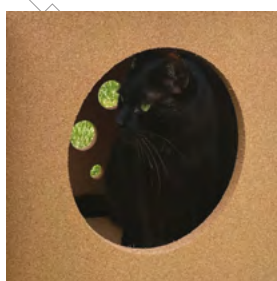
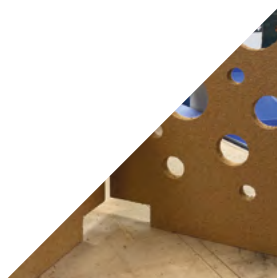
Qualitative and exploratory approach to ensure that the shelter design addresses the needs effectively and to understand the context in which the shelter will be used, considering factors such as climate and urban environment. Insights were collected through ethnographic observation to inform refinements and improvements to the shelter design to better meet the needs of both the cats and the caretakers, and considering the ethical considerations related to animal welfare.

Research Process

Design concept development considering, shape, durability, insulation, comfort, and adaptability to urban environment. Several iterations were done to evaluate the feasibility of the design concept by considering factors such as cost, materials, manufacturing processes, and scalability. CNC prototyping was used to create high fidelity prototype, ensuring consistent quality. The prototype was tested with a group of cats to evaluate the durability and effectiveness of the modular cork-based solutions. A single shape layout was used for practical applications and considering a sustainable manufacturing process.

Results

The findings underscore the potential of recycled cork as a sustainable material for design applications under adverse conditions. The durability and resilience of cork composites options make it a practical and reliable choice for shelters intended to provide comfort and protection for feral and stray cats in outdoor environments. As a primary outcome this product represents a pioneering system solution that embodies sustainability, circularity, and the cats ecosystem needs, providing a practical and environmentally conscious solution. As a modular product, designed with a singular shape, can be easily disassembled, replaced and resource recovery, reducing the amount of waste generated over time and promotes a more efficient use of materials by extending the product's lifespan. Furthermore, and considering cork's potential to be combined with other materials like recycled rubber, it can be optimized to provide a diverse range of options in terms of grain size and colors, enhancing urban aesthetic. As part of this project, we aim to integrate AI technology to offer additional guidance on the reuse and replacement of modular components. We are confident that through this innovative cork-based design system solution, we can make a meaningful contribution to fostering a more eco-friendly urban environment, while protecting this urban species and ecosystem. This cork-based design system solution can be strategically placed in public spaces, such as parks where feral and stray cats are frequently observed. Additionally, it is adaptable for indoor use and animal welfare organizations



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THE VOTE THAT MATTERS: THE APPLICATION OF SERVICE DESIGN ON THE VOTING PROCESS IN PAKISTAN.

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THE VOTE THAT MATTERS: THE APPLICATION OF SERVICE DESIGN ON THE VOTING PROCESS IN PAKISTAN.

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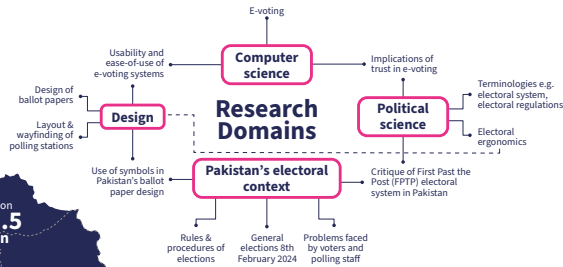
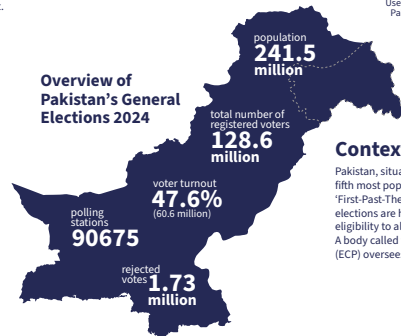
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Elections are the backbone of democracy, and service design can play a vital role in transforming the process of voting to be simpler, easier and more meaningful to voters

Abstract

The electoral process in any country is often designed by public administrators and policy-makers, resulting in arduous, opaque and inaccessible electoral processes. Design's crucial role in the electoral process has been somewhat recognized, however, the application of service design and design for policy to voting processes remains relatively novel. By focusing on the voting process in Pakistan, this research hypothesizes that the application of service design can lead to streamlined and user-friendly voting services, which can strengthen a country's democracy in the long term. The research covers both micro and macro level service design implementation strategies in Pakistan's voting process, and also discusses the challenges and risks of implementing service design in this context.



The most recent elections in Pakistan were held on 8th February 2024, with official results released on 11th February. 302 newly elected parliamentarians were sworn in on 29th February, the new Prime Minister was elected on 3rd March and the new President was elected on 9th March. The ECP spent about \$150 million on the election organization in 2024.

Applying Service Design to the Journey of a Voter in Pakistan (simplified & summarized)

Steps	Send text message to get information about polling station	Find out the names & symbols of the candidates	Locate and arrive at polling station, stand in line	Get name verified in voter lists and place thumbprint next to name	Get indelible ink-mark on thumb	Cast vote using a stamp on a ballot paper, put ballot paper in ballot box	Wait for results
Problems	The message costs the voter money to be sent; when mobile phone connections are closed on election day for security reasons, those without a text message are left stranded	Often similar looking symbols are assigned to different parties/ candidates or symbols based on objects which are not familiar to all the voters	Locating the polling station is a confusing task for many voters; the lines are often too long and some people are not able to vote even after standing in line for hours	There can be human error in the manual identification of each voter; this also causes the process to be slow resulting in long waiting lines	—	The ballot paper can be confusing and overwhelming with 20 names and respective symbols; any mistaken mark can cause the vote to be invalidated	The waiting period for final results and formation of government can take weeks or even a month, which can cause frustrating for the voters
Strategies for improvement	Information can be disseminated through multiple, readily accessible touchpoints, especially for those who do not have access to a mobile phone (e.g. kiosks at small grocery stores in each area)	Usage of symbols is a good strategy for an audience where 50% are not literate, however, the choice and drawing/ printing style of symbols can be improved	Effective wayfinding can be placed inside and outside the polling station for the ease of voters	This process can be digitized to reduce error and make the process faster, and also to reduce the effort of polling staff spent at this stage	This indelible mark works as an "evidence" in this service, and can be somehow retained even if the rest of the process is changed as the inked thumb is a source of pride for the voters	The act of voting can be redesigned to be partially or fully digitized, reducing the amount of rejected votes	Apart from digitization of the voting process which can produce faster results, there can be better transparency and communication about any factors causing delays in the result announcement

Macro Level Implications of Transforming the Electoral Process

A simpler & more effective voting process can lead to better transparency and trust-worthiness of the process.	A redesigned voting process could result in a larger turnout as lines would move faster in polling stations and the ease & credibility of the election might convince more people to cast their vote.	It could also lead to a more equitable distribution of voters, including more voters from currently marginalized voter groups in Pakistan such as women and the disabled.	Extensive research with voters could help the ECP understand the mental model of the population regarding voting and the various social, economic, cultural and political factors that affect people's experience of voting.
The cost incurred in the orchestration of elections could be reduced or at least justified with a higher turnout.	Detailed service-blueprints of the whole voting process could also help simplify the tasks of all the polling and support staff.	The application of service design could help identify inherent policy constraints within the electoral process which hinder the improvement of the voting process, leading to policy & law reforms.	Scholars (Hussain et al.; Moosvi, 2021) have identified flaws in the usage of the FPTP electoral system in Pakistan, rethinking and re-evaluating the electoral process can contribute to evaluating & testing alternative electoral systems, such as Proportional Representation (PR).

Risks and Challenges of Redesigning the Electoral Process

- Pakistan's heterogeneous population presents challenges in implementing standardized solutions.
- Political timescales differ from the timescales and iteration designers are used to.
- Any failures in the voting process may be attributed to design choices and practitioners, making them susceptible to political scapegoating.
- It may take multiple election cycles to observe long-term effects.

Main Insights

In a complex and multi-layered context such as that of Pakistan, where various political, social, economic, cultural, religious and climate-related factors can play a role in affecting the experience of elections; service design can be instrumental in making the voter's journey simpler, more effective and more trustworthy. In the long-term, this transformation of the electoral process could have a profound effect on the stability and credibility of democracy in the country. Although the example discussed here is of Pakistan, the lens of service design to view and transform elections could be applied to many other countries, especially ones which have a similar context to that of Pakistan in terms of heterogeneity and size of population.

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