DESIGN COMMIT

2ND INTERNATIONAL CONFERENCE
ON DESIGN & INDUSTRY · 2026

MARCH, 25 - 27 2026

BOOK OF ABSTRACTS

MARIA JOÃO FÉLIX | PAULO CRUZ | FÁTIMA POMBO | FERNANDO MOREIRA DA SILVA | RITA ASSOREIRA ALMENDRA

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BOOK OF ABSTRACTS FOR THE DESIGN COMMIT 2026 CONFERENCE

INTRODUCTION

This Book of Abstracts is a collective endeavor and an academic commitment from the participants of the Design Commit 2026 Conference. All abstracts have undergone a meticulous peer-review process, orchestrated by our Scientific Committee and executed under strict guidelines of anonymity and impartiality. Our goal is to present a compilation of research that not only reflects innovation and diversity in the field of design and industry but also fosters constructive dialogue on sustainable futures and social responsibility within these realms.

SUBMISSION AND REVIEW PROCESS

Each submitted manuscript underwent an initial review to ensure relevance to the conference theme and adherence to established guidelines. The subsequent double-blind peer review was employed to safeguard the integrity of both reviewers and authors, supporting fair and unbiased judgment. We recognize the importance of authentic academic discourse and as such, are dedicated to a zero-tolerance policy on plagiarism and a commitment to originality.

EDITORIAL ETHICS AND CONTENT USAGE

 We underscore the importance of ethics in academic information usage and encourage practices that promote scientific integrity and collaboration.

CONTRIBUTIONS AND AUTHORSHIP

We clearly outline the responsibilities of authors, from initial submission to the presentation process. Contributions should reflect the work of no more than five collaborators, with the designation of the corresponding author established to facilitate communication and ensure accountability. We emphasize the value of transparency and the proactive declaration of any potential conflicts of interest.

COMMITMENT OF REVIEWERS AND COMMITTEES

Both the members of the Scientific Committee and reviewers are integral parts of this process, committed to maintaining the academic rigor and excellence that are the hallmark of Design Commit. They are dedicated to thoughtful evaluations, enhancements of submissions, and the efficacy of academic communication.

CONCLUSION

The DESIGN COMMIT 2026 Secretariat wishes to express gratitude to all contributors, whose works comprise this volume. May the abstracts presented here serve as catalysts for ongoing innovation and inspiration for all those committed to the advancement of design and industry.

This edition is organised by the **School of Architecture, Art and Design of the University of Minho** (EAAD) and the **Laboratory of Landscape, Heritage and Territory** (Lab2PT), in partnership with the **School of Design** (ESD) of the **Polytechnic Institute of Cávado and Ave** (IPCA), the **Department of Communication and Art** of the **University of Aveiro** and the **Research Institute for Design, Media and Culture** (ID+), the **Lisbon School of Architecture** (FA ULisboa), and the **Research & Education in Design** research group (REDES) from the **Research Centre for Architecture, Urbanism and Design** (CIAUD), as well as the **School of Applied Arts** (ESART) of the **Polytechnic Institute of Castelo Branco** (IPCB), and **Rethink – Research Group on Design for the Territory** (CIAUD).

This conference aims to foster and actively develop a shared reflection through a transdisciplinary scientific exchange, enhancing innovation through Design and Industry towards a more sustainable and strategic future.

This edition also benefits from the strong support of the **Landscape Laboratory** and the **European Green Capital 2026** (Guimarães).

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ABOUT THE 2ND EDITION

In a rapidly transforming world, the second edition of DESIGN COMMIT is set to break boundaries, fostering a dynamic relationship between design, industry, and nature. As a global platform for dialogue and collaboration, this in-person event brings together visionary researchers, pioneering designers, creative academics, forward-thinking technology companies, startups, business associations, and policymakers.

The 2026 edition embraces the theme **"Design for Different Futures | Learning with Nature"**, reinforcing the need to integrate nature's intelligence into design and industry. DESIGN COMMIT 2026 cultivates an ecosystem where innovation and sustainability are not opposing forces but interconnected drivers of progress. By exploring cutting-edge materials, AI-driven design, and regenerative systems, we seek to reimagine the future of design and industry—one where creativity, responsibility, and resilience shape a world in harmony with nature.

Through interdisciplinary exchange and knowledge-sharing, the event serves as a catalyst for transformative ideas, empowering participants to co-create solutions that align with both technological advancements and the urgent need for environmental and social responsibility.

OUR PURPOSE

At the heart of DESIGN COMMIT 2026 lies a fundamental commitment: to redefine the role of design as a force for sustainability, inclusion, and resilience. Our purpose is to challenge conventional models and explore how nature-inspired solutions, biomimicry, and circular economy principles can drive innovation across industries.

Aligned with the UN 2030 Agenda, this edition is dedicated to fostering regenerative practices, ethical production, and responsible technological integration. We will address urgent global challenges—climate change, digital inclusion, and sustainable manufacturing—by leveraging research, experimentation, and collaboration to push the boundaries of design's impact on society and the environment.

As we navigate a world shaped by unprecedented challenges, DESIGN COMMIT 2026 is a call to action: embrace nature's wisdom, harness emerging technologies, and co-create a future where design is a tool for innovation and a catalyst for planetary well-being.

PREFACE TO THE DESIGN COMMIT 2026 CONFERENCE

Dear participants, colleagues, and collaborators,

It is with great honour and a deep sense of responsibility that we welcome you to the Design Commit 2026 – 2nd International Conference on Design & Industry, held in Guimarães, within the framework of the European Green Capital 2026.

Following the first edition, Design Commit has consolidated itself as a platform for critical reflection and transdisciplinary exchange, addressing the evolving role of design in relation to industry, society, and the planetary condition. The 2026 edition, under the theme "Design for Different Futures | Learning with Nature", marks a decisive step forward: from discussing sustainability to engaging with regeneration, from innovation as output to innovation as relational and systemic practice.

In a time defined by ecological urgency, technological acceleration, and cultural transformation, design can no longer operate within isolated disciplinary boundaries. Instead, it is called to act as a mediator between knowledge systems and a catalyst for reconfiguring the relationship between human activity and natural systems. Learning with nature, in this context, is not metaphorical; it is methodological, ethical, and operational.

Design Commit 2026 convenes a diverse community of researchers, practitioners, institutions, and industry leaders committed to exploring new modes of thinking and acting. The programme reflects this ambition through a carefully curated set of keynotes, panels, and sessions addressing systemic design, regenerative practices, material innovation, territorial intelligence, and the social responsibility of design.

The Book of Abstracts presented here is both a record and a projection. It documents a diverse body of research shaped by rigorous peer review, while simultaneously pointing towards emerging directions in design and industry. The contributions gathered in this volume reveal not only the plurality of approaches within the field, but also a shared concern for impact, relevance, and transformation.

We extend our sincere gratitude to the Scientific Committee, reviewers, organising team, partners, and all contributors whose dedication made this edition possible. Their collective effort reflects the spirit of collaboration that defines Design Commit.

We also acknowledge the importance of place. Hosting this edition in Guimarães, in alignment with its role as European Green Capital 2026, reinforces the connection between global discourse and local action, between theory and lived territory.

We invite you to engage critically with the ideas presented, to challenge assumptions, and to contribute actively to the conversations that unfold. More than a conference, Design Commit is an ongoing commitment, one that calls for responsibility, imagination, and the courage to act in the face of uncertainty.

With our warmest regards,

The Chairs of Design Commit 2026
MARIA JOÃO FÉLIX, PAULO CRUZ, FÁTIMA POMBO, FERNANDO MOREIRA DA SILVA, RITA ASSOREIRA ALMENDRA

OVERVIEW AND OBJECTIVES OF THE DESIGN COMMIT CONFERENCE

Design Commit 2026 is the second edition of an international conference dedicated to the intersection of design and industry, bringing together academic, professional, and institutional perspectives.

Held in Guimarães, within the framework of the European Green Capital 2026, the conference is structured around the theme "Design for Different Futures | Learning with Nature", which guides its scientific programme and curatorial direction.

The event is organised through a combination of keynote lectures, thematic panels, paper sessions, and co-creation sessions, promoting dialogue across different domains of knowledge and practice. Contributions are distributed across five thematic areas—ECHOES, LISTEN, NURTURE, REGENERATION, and SYSTEMIC—reflecting the conference's focus on the relationship between design, natural systems, and societal transformation.

By bringing together participants from academia, industry, and public institutions, Design Commit 2026 creates a shared space for the presentation of research, the exchange of practices, and the discussion of emerging challenges within the field of design and its interaction with industrial and territorial contexts.

OBJECTIVES

- **To Frame Design within Planetary Challenges:**
  To position design as a critical discipline in addressing ecological, social, and technological transformations, fostering approaches that move beyond sustainability towards regenerative practices.

- **To Foster Transdisciplinary Exchange:**
  To create conditions for meaningful dialogue between academia, industry, public institutions, and territory, enabling the integration of diverse knowledge systems and practices.

- **To Advance Systemic and Nature-Informed Approaches:**
  To explore how design can learn from natural systems, promoting methodologies that are adaptive, resilient, and grounded in ecological intelligence.

- **To Support Research and Knowledge Transfer:**
  To provide a platform for the presentation and discussion of peer-reviewed research, strengthening the connection between theoretical development and practical application.

- **To Enable Collaboration and Strategic Partnerships:**
  To facilitate connections that extend beyond the conference, supporting long-term collaboration across sectors and disciplines.

- **To Encourage Critical Reflection and Responsibility:**
  To promote a reflective and ethical stance within design practice, addressing its role in shaping more inclusive, balanced, and future-oriented systems.

ACKNOWLEDGMENTS TO SPONSORS, COLLABORATORS, AND SUPPORTING INSTITUTIONS

The realisation of Design Commit 2026 was made possible through the commitment, collaboration, and support of a wide network of partners, institutions, and individuals.
We extend our sincere gratitude to our sponsors and strategic partners, whose support, both financial and institutional, was fundamental to ensuring the quality, ambition, and impact of this edition.
We acknowledge with appreciation the collaboration of partner institutions and organisations, whose engagement strengthened the scientific, cultural, and territorial dimensions of the conference, enabling a meaningful connection between global discourse and local context.

Our thanks also go to the organising team, whose professionalism, dedication, and attention to detail were essential to the successful development and execution of the programme.
We are equally grateful to the Scientific Committee and reviewers for their rigorous work and commitment to academic quality, ensuring the integrity and relevance of the contributions presented.
We recognise the invaluable support of all collaborators, technical teams, and volunteers, whose efforts behind the scenes ensured the smooth operation of the event.
Finally, we thank all participating institutions and contributors for their presence and engagement, reinforcing the importance of collective knowledge-building and shared responsibility in shaping the future of design and industry.

KEYNOTE SPEAKERS

ÁLVARO CATALÁN DE OCÓN

FERNANDO LAPOSSE

ANNA HERINGER

RUI COUTINHO

ÁLVARO CATALÁN DE OCÓN

DESIGNER

Alvaro Catalán de Ocón (Madrid, 1975) is a designer known for the captivating aesthetics, simplicity, and functionality of his designs, which blend straightforwardness and social commitment. After receiving education and training at the Istituto Europeo di Design in Milan and the Central Saint Martins College of Art and Design in London, he established his studio in Barcelona in 2004.
He is part of the SoloneSatellite in 2007 and 2010 wining the Design Report Award in this last edition where he presented together with Francesco Faccin some of his most iconic products such as Cornucopia or LaFlaca later on manufactured by Metalarte and wining the Design + Award in the Frankfurt Light+Building fair.
He moved his studio to Madrid in 2009 and has since been recognised with several more awards, including the AD, ADI FAD or Ro Guiltless Plastic among others. His PET Lamp project, launched in 2012 and co-created with Enrique Romero de la Llana and Sebastián Betanzo, has gained global recognition, with collections in various countries, numerous awards, and nominations.

FERNANDO LAPOSSE

DESIGNER

Fernando Laposse's work embodies the essence of Learning with Nature. Rather than imposing form or technology, his practice begins by listening ,to materials, to territory and to the communities that have long coexisted with them.
Through research-driven processes and close collaboration with Indigenous knowledge systems, Laposse reveals the ecological, cultural and social intelligence embedded in natural materials often dismissed as marginal or low-value. Sisal, loofah and corn leaves become carriers of memory, resilience and continuity.
At Design Commit 2026, his keynote invites designers, researchers and industry leaders to reconsider material culture as a site of regeneration,where design operates not as extraction, but as care, reciprocity and long-term responsibility.

KEYNOTE SPEAKERS

ÁLVARO CATALÁN DE OCÓN

FERNANDO LAPOSSE

ANNA HERINGER

RUI COUTINHO

ANNA HERINGER

ARCHITECT

Anna Heringer is an architect, activist and educator who sees architecture as a tool to improve lives. She gained international recognition with the METI School in Bangladesh and has since developed a practice that spans Asia, Africa and Europe, grounded in the use of natural materials such as earth, bamboo and wood.
Her work positions architecture as a catalyst for local development: strengthening cultural confidence, supporting local economies and fostering ecological balance. Through participatory processes and close collaboration with communities, she creates buildings that are socially engaged, environmentally responsible and deeply rooted in place.
For Anna, sustainability is a synonym for beauty: a harmonious relationship between design, structure, materials, context and people. Her approach embodies a vision of architecture that nurtures both society and the environment: a practice guided by her enduring belief that "Form Follows Love."

RUI COUTINHO

CHIEF INNOVATION OFFICER AND EXECUTIVE BOARD MEMBER - GRUPO MOTA ENGIL

Rui Coutinho is Chief Innovation Officer and Executive Board Member at Mota-Engil Next (MEXT) and Adjunct Professor of Innovation at NOVA SBE. A globally recognized keynote speaker and author, his book The Innovation Metabolism: Building the Next Legacy in a World of Permanent Change will be published in 2026.
He previously held senior roles at NOVA SBE, as Executive Director of the Innovation Ecosystem, and Porto Business School, where he founded the Center for Business Innovation and co-created the Digital MBA (ranked #8 globally by the Financial Times).
Rui has led innovation strategies with organizations such as IKEA, Ford, Philip Morris International, Generali, Sogrape, Grupo José de Mello, Jerónimo Martins, Novo Banco, and SIBS.
DESIGN COMMIT 2026 is proud to partner with Mota-Engil Next (MEXT), through EMERGE: Mota-Engil Real Estate Developers, in a strategic collaboration focused on the future of the built environment and large-scale systems.

MARIA JOÃO FÉLIX

GENERAL CHAIR

Academic and designer whose career is marked by a deep commitment to the fields of industrial design, education, industry, circular economy, and sustainability.

Recently completed her postdoctoral research in Design, titled "Bioneurodesign: From Noetics to Supermodernity," at the Lisbon School of Architecture, reflecting her dedication to expanding the boundaries of design and practice.

In a pivotal role, Maria João Félix serves as the founder and General Chair of the international conference "Design Commit 2024," a platform that bridges the worlds of design and industry, fostering collaboration and innovation. Her leadership in this capacity underscores her passion for advancing design and industrial synergy.

PROF. PAULO CRUZ

GENERAL CHAIR

Paulo J. S. Cruz is a Full Professor of Construction and Technology at the School of Architecture, Art and Design of the University of Minho and Researcher at the Laboratory of Landscapes, Heritage and Territory (Lab2PT). President of the School of Architecture, Art and Design (2021-2023 and 2004-2011). Pro-Rector of the University of Minho for Quality of Life and Infrastructure (2017-2021). Director of Lab2PT – Laboratory of Landscapes, Heritage and Territory (2015-2017). President of the Design Institute of Guimarães (since 2015). Editor-in-Chief of the Journal "Architecture, Structures and Construction", Springer (since 2021).

EUROPEAN GREEN CAPITAL 2026
DESIGN AS A PUBLIC TOOL FOR ECOLOGICAL TRANSITION

RICARDO ARAÚJO

MAYOR OF GUIMARÃES CITY COUNCIL

Ricardo Araújo (Guimarães, 6 October 1977) has been Mayor of Guimarães since October 2025. He holds a degree in International Relations from the University of Minho, an Executive MBA from Porto Business School, and international training in leadership, strategy, and innovation.

He was part of the senior management team at EFACEC, working in the areas of strategic planning and electric mobility, and held national and international roles related to youth and sport. In this field, he stood out as President of Movijovem – Youth Mobility and Tourism, Member of the Board of Directors of the Portuguese Institute for Sport and Youth, Deputy Secretary-General of the Conference of Ministers of Youth and Sport of the CPLP – Community of Portuguese Language Countries – and Member of the Board of Directors of the OIJ – Ibero-American Youth Organization. He also served as a Member of Parliament (16th and 17th Legislatures) and has been a City Councillor in Guimarães since 2013.

ISABEL LOUREIRO

BOARD OF THE GUIMARÃES 2026 EUROPEAN GREEN CAPITAL

Isabel Loureiro is member of the Board of the Guimarães 2026 European Green Capital and Co-President of its Scientific Committee. As General Coordinator of the Guimarães 2030 Mission Structure, she contributes to connecting the multiple components of the multi-governance ecosystem underpinning Guimarães 2030. Isabel Loureiro defines herself as a strong believer in Human Capital — a curious and passionate professional committed to making things happen by consistently identifying opportunities for improvement. She is focused on effective strategic planning grounded in Purpose, Performance, People, and Process.

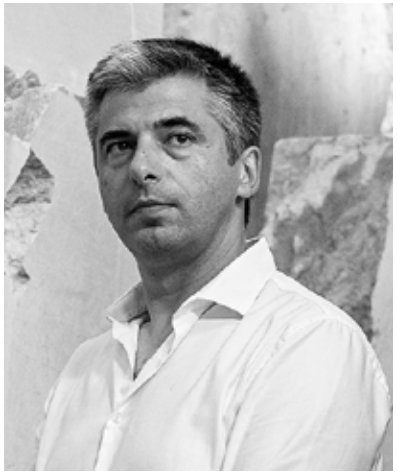
PORTUGUESE DESIGN INDUSTRY, RESPONSIBILITY AND FUTURE PRACTICE

FÁTIMA POMBO

MODERATOR | CHAIR

Fátima Pombo is Full Professor of Design, Director of the Research Institute for Design, Media and Culture [ID+] at the University of Aveiro, having performed other scientific management responsibilities. She was a visiting professor in the Department of Architecture at the University of Leuven (KUL), Belgium, for almost a decade and lectured within the Erasmus programme at other European Universities.

Engaging in international research projects and conferences, she participates in several academic activities and serving, among others, as a design jury member for the iF Design Award in Germany, for the Evaluation Panel of FCT-Foundation for Science and Technology and for the Evaluation Commission of A3ES -Accreditation of Study Programmes.



TONI GRILO

DESIGNER AND ART DIRECTOR

Designer and art director, Toni Grilo was born in France in 1979.
Graduated from Ecole Boulle in Paris in 2001, he then went to Portugal, finding his roots. He discovers a country rich in industry, a strong craft tradition and then becomes obsessed with the beauty of technical processes and materials.
After various collaborations, he founded in 2008 his own studio, drawing objects, furniture and spaces.
He creates several brands of contemporary and timeless design pieces, such as Riluc in 2009, Haymann Editions in 2012, Blackcork in 2014. He also created the fair LXD Lisboa Design Show and became art director of the prestigious centenary silver brand Topázio from 2013 to 2016.
In 2019, he founded INOT, a free edition of exceptional pieces in collaboration with craftmen.
His work is part of private collections, such as the Thierry Barbier-Mueller collection. It is present in museums such as the MUDE in Lisbon, the MADE in Évora, the Museo Automovilístico de Málaga, the MUDAC in Lausanne and the Mobilier National in Paris.

PORTUGUESE DESIGN
INDUSTRY, RESPONSIBILITY
AND FUTURE PRACTICE

FILIPE ALARCÃO

PRODUCT AND SPATIAL DESIGNER

He lives and works in Lisbon. He holds a degree in Equipment Design from Faculdade de Belas-Artes da Universidade de Lisboa and a Master's in Industrial Design from Domus Academy in Milan, the city where he lived and worked with Michele De Lucchi. He is an Associate Professor at ESAD.CR – Escola Superior de Artes e Design das Caldas da Rainha and a member of the research center LI.DA – Laboratório de Investigação em Design e Artes at the same school.
Filipe Alarcão received the National Design Award from the Centro Português de Design, and his work is represented in several public and private collections. It is included in the collection of MUDE – Museu do Design, where he held a solo exhibition in 2011–2012.
His work as a designer focuses mainly on product design and spatial design, while occasionally creating installations in gallery spaces. He has developed projects with numerous Portuguese companies such as Vista Alegre, Molde Ceramics, Amorim Cork Composites, Iduna and Larus.
In the field of spatial design, he is the author of the museographic project for Casa Ásia – Coleção Francisco Capelo, recently inaugurated in Lisbon, and the exhibition equipment for the Museu de Arte Contemporânea de Elvas. He also works as a curator and artistic director for various initiatives.

TRANSDISCIPLINARY PATHS
DESIGN, PUBLIC RESPONSIBILITY AND PLANETARY TRANSITIONS

RITA ALMENDRA

MODERATOR | CHAIR

Rita Assoreira Almendra has been a Full Professor of Design since 2023 at the University of Lisbon (FAULisboa). She holds a Habilitation and a PhD in Design from FAULisboa (2010). She earned an MBA in Management with a specialization in Marketing (2002) and a Master's degree in Design Management (2004) from the Portuguese Catholic University, as well as a Bachelor's degree in Design (1998) from the Technical University of Lisbon.

She is the Head of the Department of Project Design and the coordinator of the Doctoral Program in Design; she coordinated the 3rd cycle (Architecture, Urbanism, and Design) until May 2024. She served for eight years on the Scientific Council, where she was vice-president for two years. At CIAUD, she is an integrated researcher and coordinated the Design Research Group for 12 years, until October 2024.

HELENA FREITAS

PROFESSOR OF BIODIVERSITY AND ECOLOGY AT THE UNIVERSITY OF COIMBRA

Helena Freitas is Full Professor of Biodiversity and Ecology at the University of Coimbra and recipient of the 2024 EEF Ernst Haeckel Award for outstanding contributions to European ecological science. She coordinates the Centre for Functional Ecology, advancing research that bridges science, societal well-being, and environmental sustainability.

Her work spans Mediterranean ecosystems, agroecology, conservation biology, microbial ecology, and environmental policy, with a strong emphasis on applied research and EU-funded projects focused on agroecology, agrifood systems, and landscape management.

Since 2013, she has held the UNESCO Chair in Biodiversity Safeguard for Sustainable Development. She has founded and led major environmental organizations in Portugal and across Europe. In 2025, she was awarded the National Prize for Science.

TRANSDISCIPLINARY PATHS
DESIGN, PUBLIC RESPONSIBILITY AND PLANETARY TRANSITIONS

JOÃO PEDRO COSTA

PRESIDENT OF CIAUD

João Pedro Costa is an Architect, PhD in Urbanism, and full professor of Urbanism at the Faculty of Architecture, University of Lisbon. He is the President of CIAUD – the Research Centre of Architecture, Urbanism and Design: https://ciaud.fa.ulisboa.pt/index.php/en/

He is currently engaged in research activities, coordinating, and participating in international teams and networks focusing on urban and spatial planning policies, and adaptation to climate change. This research effort is complemented by university extension activities, notably recent contributions to the development of Timor-Leste's spatial planning system. A significant milestone was achieved in 2016 with the approval of the Spatial Plan for the Island of Ataúro, marking the country's inaugural regulatory planning instrument.

FÁTIMA POMBO

DIRECTOR OF THE ID+ RESEARCH INSTITUTE FOR DESIGN, MEDIA AND CULTURE

Fátima Pombo is Full Professor of Design, Director of the Research Institute for Design, Media and Culture [ID+] at the University of Aveiro, having performed other scientific management responsibilities. She was a visiting professor in the Department of Architecture at the University of Leuven (KUL), Belgium, for almost a decade and lectured within the Erasmus programme at other European Universities.

Engaging in international research projects and conferences, she participates in several academic activities and serving, among others, as a design jury member for the iF Design Award in Germany, for the Evaluation Panel of FCT-Foundation for Science and Technology and for the Evaluation Commission of A3ES -Accreditation of Study Programmes.

TRANSDISCIPLINARY PATHS
DESIGN, PUBLIC RESPONSIBILITY AND PLANETARY TRANSITIONS

PAULA TRIGUEIROS

PRODUCT DESIGN PROFESSOR, RESEARCHER LAB2PT

Paula Trigueiros is Assistant Professor in Product Design at the Architectural School of University of Minho. Paula has an extensive teaching and research experience that concerns the delivery of inclusive design solutions that specifically involve people with diverse characteristics and needs, e.g., older people and people with disabilities. She teaches Product and Service Design at the School of Architecture, Art and Design and promotes inclusion through Design within her academic activities and social role. Reflecting on her experience on the subject, she created a Service Design tool for promoting inclusion, which is delivered in her most recent book: "Inspiring Designers – Mapping as means to inspire Inclusion by Design" (2024. Moreover, Paula is an active member of teachers' community of practices concerning teaching innovation, Universal Design for Learning, Technologies at the classroom, and Transforming Assessment for Learning within UMinho.

CARLOS RIBEIRO

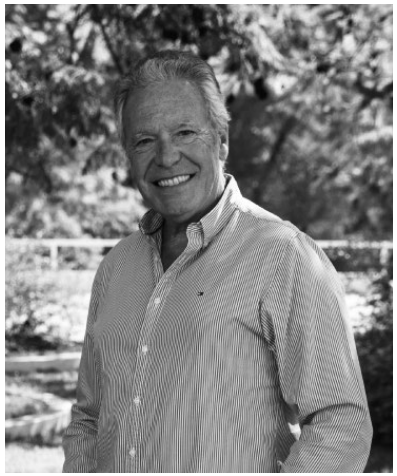
BIOLOGIST, RESEARCHER, AND UNIVERSITY LECTURER - PRESIDENT OF THE LANDSCAPE LABORATORY

He is also a member of the Executive Board of the Mission Unit for the European Green Capital 2026 and Co-Chair of its Scientific Committee, contributing to climate governance, nature-based urban strategies, and the transition towards climate-neutral cities.

Before joining the Landscape Laboratory in 2015, he spent six years as a researcher at the Institute for Molecular and Cell Biology. A European Climate Pact Ambassador, he actively promotes climate action through community engagement, education, and sustainability initiatives.

Academically, he holds degrees in Applied Biology and Molecular Genetics from the University of Minho, a PhD in Biomedical Sciences from the University of Porto, and a postgraduate qualification in Professional Football Management from the Portuguese Catholic University. He supervises graduate research and leads national and international projects at the science-policy-governance interface.

DESIGN AS A STRATEGIC DRIVER FOR PUBLIC INNOVATION, INDUSTRY AND TERRITORIAL TRANSITION



FERNANDO MOREIRA DA SILVA

MODERATOR | CHAIR

Full Professor Emeritus, with Habilitation in Design; PhD in Built Environment and PhD in Architecture – Visual Communication; MPhil in Color in Interiors; Post-Doctorate in Inclusive Design and Visual Communication Design; Integrated researcher at CIAUD – Research Center for Architecture, Urbanism and Design; Honorary Researcher at SURFACE – Inclusive Design Research Centre, University of Salford (UK); Coordinator of several Research Projects in the field of Design.

SÍLVIA GARCIA

BOARD MEMBER AT THE PORTUGUESE INNOVATION AGENCY

Sílvia Garcia is a Board Member at the Portuguese Innovation Agency (ANI). She holds a PhD in Biotechnology, a postgraduate degree in Industrial Management, and a degree in Chemical Engineering from the Faculty of Science and Technology at NOVA University Lisbon (FCT NOVA). She combines a strong scientific background with a strategic vision for innovation and public policy.

With around 20 years of experience at the intersection of science, technology and society, she has dedicated her career to promoting a culture of collaborative innovation, developing public policies that value knowledge, and building bridges between the scientific community and industry. Her work has focused on driving multidisciplinary R&D projects, both national and international, and on fostering strategic partnerships that promote emerging technologies and strengthen Portugal's innovation ecosystem.

DESIGN AS A STRATEGIC DRIVER FOR PUBLIC INNOVATION, INDUSTRY AND TERRITORIAL TRANSITION

ALEXANDRA VILELA

PRESIDENT OF THE BOARD OF COMPETE 2030

Holding a degree in Sociology and a postgraduate degree in Financial and Budgetary Management and Control, Alexandra Vilela is the President of the board of COMPETE 2030.

She was an executive member of the board of directors of ANI — National Innovation Agency, S.A., a member of the executive committee of the Innovation, Technology and Circular Economy Fund (FITEC), an executive member of the steering committee of the Operational Programme Competitiveness and Internationalisation — COMPETE2020, an executive member of the steering committee of the Operational Programme Human Capital (POCH), and an executive member of the steering committee of the Operational Programme Human Potential (POPH).

PRODEP III Manager. She served as an advisor to the Directorate-General for Regional Development (DGDR).
She was Coordinator of the Innovation and Knowledge Mission Unit (UMIC), Manager of the axes aimed at Administrative Modernization — ESF and ERDF — QCA III, integrated into the Operational Programmes Employment and Social Development (POEFDS) and Information Society (POSI).

MADALENA ALVES

PRESIDENT OF THE BOARD OF DIRECTORS OF FCT

Madalena Alves is a Full Professor of Biological Engineering at the University of Minho. She holds a degree in Chemical Engineering from the University of Porto, a Master's in Biochemical Engineering from Instituto Superior Técnico, and a PhD in Chemical and Biological Engineering from the University of Minho. She has been President of the Board of Directors of the Foundation for Science and Technology (FCT) since 1 July 2022.
She has held coordination and scientific and academic management roles at the University of Minho, having directed the Centre of Biological Engineering and actively participated in collegiate bodies, namely the School Council and the Scientific Council of the School of Engineering. Between 2007 and 2009, she was director of the founding committee of the UMinho Agency for Energy and the Environment, an institutional initiative.
Her scientific work focuses mainly on Environmental Biotechnology, with a particular emphasis on biotechnological processes associated with the production and consumption of gases. She has participated, as principal investigator, co-principal investigator, or team member, in numerous research projects funded by national and European programmes. She has developed collaborations with international research networks and has served on scientific evaluation panels for several international agencies, such as the Helmholtz Association (Germany) and the European Research Council (ERC), of which she has been a panel member since 2021.

DESIGN AT HUMAN & TERRITORIAL SCALE
MATERIAL, CULTURE AND RESPONSIBLE MAKING

HUGO SILVA

DESIGNER

Hugo Silva is a Portuguese designer working at the intersection of product, technology and applied research. Graduated in Design from theUniversity of Aveiro, he develops integrated solutions that connectstrategic thinking, mechanical design and user experience. His practicespans equipment design, interactive systems and digital interfaces, with a strong focus on feasibility, industrialisation and intellectual property.

As co-founder of DAM, Hugo has led the development of sustainablefurniture and product collections rooted in Portuguese materials andproduction culture. Alongside his studio work, he collaborates in research and innovation projects bridging academia and industry, translating experimental concepts into market-ready outcomes.

Driven by curiosity, he uses drawing as a thinking tool and approacheseach project as a structured process — balancing concept, engineeringconstraints and identity to create solutions that are both robust andmeaningful.

MATTERPIECES – LUÍS LIMA & PATRÍCIA GOMES

STONE, TERRITORY AND CONTEMPORARY MATERIAL EXPRESSION

Matterpieces is a circular design brand reimagining demolition waste as high-quality architectural surfaces. Founded by architects driven by sustainability and material innovation, the studio applies circular economy principles to transform discarded materials into refined floors, walls, furniture, and bespoke design elements. Through collaborative strategies and design-led processes, Matterpieces challenges traditional material cycles, reduces the environmental impact of construction waste, and brings aesthetic, technical, and ecological value to the built environment.

Patrícia Gomes holds a Master's degree in Architecture from the University of Minho and is co-founder of Studio8 and Matterpieces. Her work focuses on sustainability, circular design, and the reinvention of construction practices through material reuse. Between 2013 and 2019, she worked at feld72 in Vienna, developing co-housing and social housing projects while deepening her interest in public space and participatory methodologies. She also founded the collective Prosaico, dedicated to community-driven architectural interventions in public space. Her trajectory reflects a strong commitment to sustainability, innovation, and social impact, positioning circularity as a driver for transforming architecture and the built environment.

FROM LOCAL INTELLIGENCE TO GLOBAL IMPACT
CURATING DESIGN ACROSS TERRITORIES

GABRIEL TAN

PRINCIPAL OF GABRIEL TAN STUDIO AND STUDIO ANTIMATTER & CO-FOUNDER OF ORIGIN MADE

Gabriel Tan is a Singaporean designer based in Porto who founded Gabriel Tan Studio in 2016. Working at cultural intersections, he explores new approaches to tradition, craft, and technology. He designs for renowned brands including B&B Italia, Herman Miller, and Louis Poulsen, while also creative directing Japanese furniture brand Ariake and craft-driven design brand Origin Made. His interior design practice, Studio Antimatter, works on selective residential and hospitality projects. Gabriel's work has received international recognition, including the Industrial Designers Society of America's IDEA Award, Japan Good Design Award, and the 2025 President's Design Award for Designer of the Year, Singapore's highest design accolade.

Gabriel Tan co-founded Origin Made with Cherie Er as they believed in something simple: that the people who make objects matter as much as the objects themselves and that the world's vanishing artisanal traditions deserve a future. Established in Porto in 2019, the brand connects world-class designers with master craftspeople, transforming heritage skills into furniture, lighting, textiles, and collectible objects. By working directly with small family-run workshops and solo artisans, Origin Made gives new life to local materials and techniques, where each piece celebrates human handcraft.

DESIGN AS A STRATEGIC INTERFACE
TECHNOLOGY, INDUSTRY AND GREEN TRANSITION

PROF. PAULO CRUZ

MODERATOR | GENERAL CHAIR

Paulo J. S. Cruz is a Full Professor of Construction and Technology at the School of Architecture, Art and Design of the University of Minho and Researcher at the Laboratory of Landscapes, Heritage and Territory (Lab2PT). President of the School of Architecture, Art and Design (2021-2023 and 2004-2011). Pro-Rector of the University of Minho for Quality of Life and Infrastructure (2017-2021). Director of Lab2PT – Laboratory of Landscapes, Heritage and Territory (2015-2017). President of the Design Institute of Guimarães (since 2015). Editor-in-Chief of the Journal "Architecture, Structures and Construction", Springer (since 2021).

JOANA FERREIRA

HEAD DESIGNER - AMORIM CORK SOLUTIONS

Joana Ferreira is the Head of Design at Amorim Cork Solutions (Flooring), where she leads the design innovation of flooring solutions. Her professional identity is deeply rooted in a multi-generational legacy of craftsmanship, a heritage refined through specialized training at Escola Artística Soares dos Reis, followed by a Bachelor's in Graphic Engineering and a Degree in Design from the Escola Superior de Tecnologia, Gestão e Design (IPP).

In her current leadership role, Joana spearheads the development of innovative flooring collections. Specializing in digital printing technology and agile methodologies, she bridges ancestral knowledge with cutting-edge innovation. A regular presence at international design events, Joana focuses on driving growth through design-led transformation and an unwavering respect for the 'soul' of the material. For the past 14 years, her work has represented a unique synthesis of technical excellence, global trend integration, and a deep intuition for the natural essence of cork.

ANTÓNIO BRAZ COSTA

MECHANICAL ENGINEER

António Braz Costa is a mechanical engineer graduated from the University ofMinho and a senior leader of R&D organisations with more than three decadesof experience. He began his professional career simultaneously as a lecturer atthe University of Minho and working in the automotive industry. In the 1990s, hemoved into the management of research and technology organisations, takingon the role of General Manager of an RTO.

He is currently General Manager of CITEVE – the Technological Centre for theTextile and Clothing Industries of Portugal – a position he has held since 2009, following an earlier mandate between 2000 and 2005. He also serves as Executive President of CeNTI – Centre for Nanotechnology and AdvancedMaterials, after more than a decade as Executive Board Member.

At European level, he is President of TEXTRANET, the European Network ofTextile RTOs, and Vice-President of the Textile ETP – the European TechnologyPlatform for the Future of Textiles and Clothing.

FRANCISCO NEVES

STRAVILLIA SUSTAINABILITY HUB

Francisco Neves is CEO and co-founder of Stravillia Sustainability Hub, where he has worked for nearly two decades in sustainability consulting, focusing on strategy development, ESG reporting and communication, materiality analysis, stakeholder engagement, sustainable finance, and team capacity building.

He holds a degree in Environmental Engineering from NOVA School of Science and Technology (FCT-NOVA) and a postgraduate qualification in Marketing – Integrated Communication from ISCTE. Throughout his professional career, he has combined consulting experience with work in local government and in waste management and treatment, which has given him an integrated perspective on public policies, operations, and real-world implementation challenges.

PORTUGAL AS A STRATEGIC PARTNER IN GLOBAL MARKETS
INDUSTRIAL CAPABILITY, SKILLED MANUFACTURING AND INTERNATIONALISATION

SARA SANTOS

BUSINESS DEVELOPMENT MANAGER FOR HOME DECOR SECTOR / INTERNATIONAL TRADE AND PROMOTION DEPARTMENT
AICEP — PORTUGUESE TRADE & INVESTMENT AGENCY

Sara Santos holds a degree in Corporate Communication and a Master's in International Economics and Management from FEP – University of Porto, with a focus oninternational business and market expansion.

She joined AICEP in 2019 at the Copenhagen office and was based in Paris between 2020 and2023, where she managed the Home & Décor sector in the French market and supportedPortuguese companies in their international positioning. During this period, she coordinated thefirst collective Portuguese participation under the umbrella brand MADE IN PORTUGAL naturally at Paris Design Week.

Since 2024, Sara has been working as Business Development Manager for the Home DecorSector, leading the strategic development and international promotion of the Portuguese Home& Decor Cluster, and collaborating closely with the different stakeholders in the sector. She hasalso been involved in external promotion initiatives for the Home sector in multiple markets, including recently in Saudi Arabia, a market that has generated significant interest fromPortuguese companies.

LIPOR – FROM WASTE MANAGEMENT TO BIODIVERSITY SYSTEMS
CIRCULAR INFRASTRUCTURE AS REGENERATIVE DESIGN

DIANA NICOLAU

LIPOR - SUSTAINABILITY AND CORPORATE RESPONSIBILITY UNIT

Degree in Biology and Geology, from Aveiro University (Portugal) and Certificate to Trainer (CAP) with pedagogical competence.

She has been working since 2004 to actual date, in LIPOR – Municipalities Association for Sustainable Waste Management of Greater Porto (Portugal).

Currently, she is responsible for the Sustainability and Corporate Responsibility Unit. She is also the project manager on Circular Economy and on Biodiversity. As a trainer at the LIPOR Academy, she organizes and dynamizes Training Programs.

Represents and promotes the Organization in several initiatives such as conferences, seminars, meetings and working groups, internal and external (National and European level).

Between 2020 and 2024, she collaborated with ISEP – Engineering Institute of Oporto, as a teacher of a Curricular Unit "Environmental Techniques for Industry", in the Postgraduate Degree "Integrated Management Systems of Quality, Environment and Safety".

CLIMATE RESIDENCIES PROGRAMME

ANA SOUSA

LANDSCAPE ARCHITECT

Holds a Bachelor's and Master's degree in Landscape Architecture from the University of Trás-os-Montes and Alto Douro. She is a Landscape Architect at the Landscape Laboratory, with experience in planning, recovery and restoration of fluvial ecosystems, urban integration and management, as well as the design and management of urban and/or rural green areas.

HOST/MODERATOR

CARLA ASCENÇÃO

TV NEWS ANCHOR, JOURNALIST AND EVENT HOST

Award-winning TV News Anchor, Journalist and International Event Host with over 20 years of experience in broadcast journalism, live televisionand on-stage communication.

Throughout my career, I have worked as a News Anchor, Presenter andDeputy Editor on Portuguese television – RTP and Porto Canal – frontingprime-time news and covering major national and international events. I have begun my professional journey on the press – Diário de Notícias – andsoon transitioned to television, where I've developed a strong on-camerapresence and editorial rigor.

Beyond the newsroom, I have built a solid career as a conference host andevent presenter, moderating debates, leading live discussions and hostinghigh-profile ceremonies, conferences and summits.

I am currently focused on projects that value strategic communication, credibility and international reach, working across television, live eventsand public speaking. My work sits at the intersection of journalism, communication and storytelling, with a strong focus on public speaking, media presence and live events.


CONFERENCE PROGRAM

DESIGN COMMIT
2ND INTERNATIONAL CONFERENCE
ON DESIGN & INDUSTRY · 2026

DESIGN FOR DIFFERENT FUTURES | LEARNING WITH NATURE

GENERAL PROGRAM

Please note that the following is a provisional program subject to changes.
We will keep you informed of any adjustments as we finalize the details.
All the time is based on Lisbon, Portugal Time (GMT+00:00)

WEDNESDAY, MARCH 25TH

UNDERSTANDING THE PRESENT
CCVF – Centro Cultural Vila Flor

08:30 — CHECK-IN & WELCOME DESK
Reception – GA (Grande Auditório / Main Auditorium)

09:15 — TECHNICAL SUPPORT SESSION
GA (Grande Auditório / Main Auditorium)

09:30 — CONFERENCE OPENING CEREMONY

MUSIC DEPARTMENT OF THE UNIVERSITY OF MINHO
Steve Reich (b. 1936)
Music for Pieces of Wood (10 min.)

Elliot Cole (b. 1984)
Postludes (5 min.)

09:50 — WELCOME & CURATORIAL STATEMENT

OPENING FUTURES – ATTUNING TO NATURE'S INTELLIGENCE
DESIGN COMMIT General Chairs

10:00 — EUROPEAN GREEN CAPITAL 2026

DESIGN AS A PUBLIC TOOL FOR ECOLOGICAL TRANSITION
Isabel Loureiro
Board Member, Guimarães 2026 - European Green Capital
Representing the Mayor of Guimarães City Council
Ricardo Araújo

10:15 — PORTUGUESE DESIGN

INDUSTRY, RESPONSIBILITY AND FUTURE PRACTICE
Moderation: **Fátima Pombo**
Director, ID+ – Research Institute for Design, Media and Culture

Panelists
Toni Grilo
Designer
Filipe Alarcão
Designer

11:00 — COFFEE BREAK
GA – Foyer Floor 2

11:30 — TRANSDISCIPLINARY PATHS

DESIGN, PUBLIC RESPONSIBILITY AND PLANETARY TRANSITIONS
Moderation: **Rita Almendra**
Lisbon School of Architecture, University of Lisbon
Research & Education in Design Research Group (REDES)
from the Center for Research in Architecture Urbanism and Design (CIAUD)

Panelists
Helena Freitas
Professor of Ecology, University of Coimbra
Coordinator, CFE – Centre for Functional Ecology
Science for People & the Planet
João Pedro Costa
President, CIAUD – Research Centre for Architecture, Urbanism and Design
Fátima Pombo
Director, ID+ – Research Institute for Design, Media and Culture
Maria Paula Trigueiros Silva Cunha
LAB2PT – Laboratory of Landscape, Heritage and Territory
Carlos Ribeiro
President, Landscape Laboratory

12:30 — DESIGN AS A STRATEGIC DRIVER

PUBLIC INNOVATION, INDUSTRY AND TERRITORIAL TRANSITION
Moderation: **Fernando Moreira da Silva**
Lisbon School of Architecture, University of Lisbon
Research & Education in Design Research Group (REDES)
from the Center for Research in Architecture Urbanism and Design (CIAUD)

Panelists
Silvia Garcia
Executive Board Member
National Innovation Agency (ANI)
Alexandra Vilela
President of the Managing Authority
COMPETE 2030
Madalena Alves
President of the board of Directors
Foundation for Science and Technology (FCT)

13:30 — LUNCH BREAK
Restaurant Floor -1

14:30 — THEMATIC SESSIONS
Meeting Rooms – Palácio (CCVF), Floor 1

Session 1A | Thematic Echoes meeting room 1
Session 1B | Thematic Listen meeting room 2
Session 1C | Thematic Nurture meeting room 3

16:00 — COFFEE BREAK
GA – Foyer Floor 2

16:30 — THEMATIC SESSIONS
Meeting Rooms – Palácio (CCVF), Floor 1

Session 2A | Thematic Echoes meeting room 1
Session 2B | Thematic Listen meeting room 2
Session 2C | Thematic Nurture meeting room 3

18:00 — WELCOME COCKTAIL & MUSIC MOMENT
Café Concerto (CCVF) Floor -1

18:30 — EMERGING VOICES – FLASH TALKS

DESIGNING FUTURES FROM THE MARGINS
Café Concerto (CCVF) Floor -1

THURSDAY, MARCH 26TH

FROM SYSTEMS TO PRACTICE
CCVF – Centro Cultural Vila Flor

08:30 — CHECK-IN & WELCOME DESK
Reception – GA (Grande Auditório / Main Auditorium)

09:15 — TECHNICAL SUPPORT SESSION
GA (Grande Auditório / Main Auditorium)

09:30 — KEYNOTE

FERNANDO LAPOSSE
Learning with Nature: Materials, Systems and Regenerative Design Practice

10:15 — DESIGN AT HUMAN & TERRITORIAL SCALE

MATERIAL, CULTURE AND RESPONSIBLE MAKING
Speaker: **Hugo Silva**
DAM – *From Industrial Legacy to Contemporary Craft Intelligence*

Speakers: **Luís Lima & Patrícia Gomes**
Matterpieces – *Stone, Territory and Contemporary Material Expression*

11:00 — COFFEE BREAK
GA – Foyer Floor 2

11:30 — FROM LOCAL INTELLIGENCE TO GLOBAL IMPACT

CURATING DESIGN ACROSS TERRITORIES
Origin Made

Speakers: **Gabriel Tan**

12:00 — DESIGN AS A STRATEGIC INTERFACE

TECHNOLOGY, INDUSTRY AND GREEN TRANSITION
Moderation: **Paulo Cruz**
School of Architecture, Art and Design (EAAD), University of Minho
Lab2PT – Laboratory of Landscape, Heritage and Territory

Panelists
Joana Ferreira
Head of Design | Amorim Cork Solutions – Flooring
António Braz Costa
CITEVE
Textile innovation, materials research and sustainable production
Francisco Neves
Stravillia Sustainability Hub

12:45 — PORTUGAL AS A STRATEGIC PARTNER IN GLOBAL MARKETS

INDUSTRIAL CAPABILITY, SKILLED MANUFACTURING AND INTERNATIONALISATION

Sara Santos
Business Development Manager for Home Decor Sector / International Trade and Promotion Department
AICEP – Portuguese Trade & Investment Agency

13:00 — LIPOR – FROM WASTE MANAGEMENT TO BIODIVERSITY SYSTEMS

CIRCULAR INFRASTRUCTURE AS REGENERATIVE DESIGN

Diana Nicolau
Head of Sustainability & Corporate Responsibility
LIPOR

13:30 — LUNCH BREAK
Restaurant Floor -1

14:30 — THEMATIC SESSIONS
Meeting Rooms – Palácio (CCVF), Floor 1

Session 3A | Thematic Echoes meeting room 1
Session 3B | Thematic Listen meeting room 2
Session 3C | Thematic Nurture meeting room 3

16:00 — COFFEE BREAK
GA – Foyer Floor 2

16:30 — THEMATIC SESSIONS
Meeting Rooms – Palácio (CCVF), Floor 1

Session 4A | Thematic Echoes meeting room 1
Session 4B | Thematic Listen meeting room 2
Session 4C | Thematic Nurture meeting room 3

18:00 — GUIDED TERRITORIAL TOUR

LEARNING WITH NATURE – IN PLACE
CCVF → (Pousada de Santa Marinha), guided botanical tour

19:30 — GALA DINNER
Pousada Mosteiro de Guimarães

DESIGN FOR DIFFERENT FUTURES | LEARNING WITH NATURE

GENERAL PROGRAM

Please note that the following is a provisional program subject to changes.
We will keep you informed of any adjustments as we finalize the details.
All the time is based on Lisbon, Portugal Time (GMT+00:00)

FRIDAY, MARCH 27TH

FROM SYSTEMS TO REGENERATION

CCVF – Centro Cultural Vila Flor

08:30 — CHECK-IN & WELCOME DESK
Reception – GA (Grande Auditório / Main Auditorium)

09:15 — TECHNICAL SUPPORT SESSION
GA (Grande Auditório / Main Auditorium)

09:30 — THEMATIC SESSIONS
Meeting Rooms – Palácio (CCVF), Floor 1

Session 5A | Thematic Systemic meeting room 1
Session 5B | Thematic Cross-Cutting meeting room 2
Session 5C | Thematic Echoes meeting room 3

11:00 — COFFEE BREAK
GA - Foyer Floor 2

11:30 — THEMATIC SESSIONS
Meeting Rooms – Palácio (CCVF), Floor 1

Session 6A | Thematic Systemic meeting room 1
Session 6B | Thematic Regeneration meeting room 2
Session 6C | Thematic Nurture meeting room 3

13:00 — LUNCH BREAK
Restaurant Floor -1

TEATRO JORDÃO

14:30 — MUSIC WELCOME

MUSIC DEPARTMENT OF THE UNIVERSITY OF MINHO
Martin-Joseph Mengal (1784–1851)
Quartet Op. 19, No. 2 – Grazioso (6 min.)

Gioacchino Rossini (1792–1868)
Six Sonatas for Flute, Clarinet, Horn and Bassoon
Quartet No. 1 in F major – Allegro moderato (6 min.)

15:00 — KEYNOTE

ÁLVARO CATALÁN DE OCÓN
Learning with Nature: Materials, Circularity and Social Impact

15:45 — KEYNOTE

ANNA HERINGER
Design as Ethical Practice: Limits, Care and the Courage to Design Differently

16:30 — KEYNOTE

RUI COUTINHO
Designing Large Systems: From Industrial Logic to Nature-Informed Futures
Powered by Moto-Engil Next

17:15 — CONFERENCE CLOSING SESSION

ANNOUNCEMENT OF THE CLIMATE RESIDENCIES PROGRAMME

Ana Sousa
Architect, Landscape Laboratory

DESIGN COMMIT FINAL STATEMENT

DETAILED PROGRAM

PROVISIONAL DETAILED PROGRAM
25-27 MAY 2026

Please note that the following is a provisional program subject to changes. We will keep you informed of any adjustments as we finalize the details.

ALL THE TIME IS BASED ON LISBON, PORTUGAL TIME (GMT+00:00)

WEDNESDAY, MARCH 25TH

	14:30 - 16:00 **Session 1A | Thematic Echoes** MEETING ROOM 1	14:30 - 16:00 **Session 1B | Thematic Listen** MEETING ROOM 2	14:30 - 16:00 **Session 1C | Thematic Nurture** MEETING ROOM 3
	Moderator: José Machado	**Moderator:** Fátima Pombo	**Moderator:** Eduardo Noronha
14:30	**PAPER ID: 3** Can Ancient Practices be entitled Biodesign? A terminology proposal based on Ancestral Knowledge and Traditional Practices Carla Paoliello and Andrea Bandoni	**PAPER ID: 79** Laurus Aurea: Bio-Inspired Adaptive Urban Systems for Environmental Comfort in Piazza dei Cinquecento, Rome Giuliana Flavia Cangelosi and Gabriella Giulia Traini	**PAPER ID: 17** A Contemporary Approach to a Traditional Method of Combating Drought: The Use of Ceramic Olla Technology in Sustainable Water Management Canan Salman
14:45	**PAPER ID: 5** Designing Regenerative Food Systems: A Systemic and Participatory Approach through Food Design Bootcamps Ricardo Bonacho, Sonia Massari, Mariana Eidler and José Simões	**PAPER ID: 84** Natural resources between ecological challenges and opportunities: insights from a Systematic Literature Review to guide regenerative design practices for territorial development Ilenia Carmela Amato	**PAPER ID: 49** Sustainable material innovation from agro-industrial by-products: trends, opportunities, and insights from a systematic literature review Sara De Toro, Maria Antonietta Sbordone and Pier Paolo Miglietta
15:00	**PAPER ID: 25** Biomimetic and Sustainability: An Integrated Model for Innovation and Resilience in Product Design Inês Secca Ruivo	**PAPER ID: 90** Drawing Attention: Emerging Design Perspectives and Methodological Pathways for Plant Awareness Research Lucia Ratti	**PAPER ID: 65** Validating a Workflow for Modular Housing: Digital Fabrication and Collaborative Construction Rodrigo Chiesse, Filipe Brandão and Ana Luísa Rodrigues
15:15	**PAPER ID: 89** Playing Against Waste: A Community-Built Board Game for Sustainability Education Rui Patrício, Helder Ferreira and Marta Henriques	**PAPER ID: 96** Re-grounding Design: Listening, Proximity, and Human Scale in Territorial Transitions Maria Cristina Falsone	**PAPER ID: 69** Integrative Design of Modular Bath Wheelchairs: A Systemic Approach to Adjustment, Folding and Tilt Mechanisms Daniela D'Orey Leal, José Sousa, Gonçalo Oliveira, Luísa Arruda, Miguel Barbosa, João Bessa, Luís Oliveira, Raul Fangueiro and Eduardo Moreira
15:30	**PAPER ID: 10** Implementing Nature-Inspired and Sustainability Principles in Design Education Madhavi Goyal and Varun Goyal	**PAPER ID: 119** Reconverting land used for extractive industries to generate renewable energy as a solution to increase territorial sustainability Cláudia Gaspar and Isabel de Almeida	**PAPER ID: 104** Contributions for a More Sustainable and Suitable Classroom Environment in Vietnam Tuong Quyen Vu and Cristina Salvador

DESIGN COMMIT
2ND INTERNATIONAL CONFERENCE ON DESIGN & INDUSTRY · 2026

PROVISIONAL DETAILED PROGRAM 25-27 MAY 2026

Please note that the following is a provisional program subject to changes. We will keep you informed of any adjustments as we finalize the details.

ALL THE TIME IS BASED ON LISBON, PORTUGAL TIME (GMT+00:00)

WEDNESDAY, MARCH 25TH

	16:30 – 18:00 **Session 2A | Thematic Regeneration** MEETING ROOM 1	16:30 – 18:00 **Session 2B | Thematic Systemic** MEETING ROOM 2	16:30 – 18:00 **Session 2C | Thematic Echoes** MEETING ROOM 3
	Moderator: Paulo Cruz	**Moderator:** Inês Secca Ruivo	**Moderator:** Rita Almendra
16:30	**PAPER ID: 57** Education in Design and Generative AI: a kind of 'Pandora's box' in the context of creative teaching Vítor Tavares, Suzana Dias, Manuel Granja, Mónica Santos and Estela Vilhena	**PAPER ID: 30** Iterative Design of an Analogue Game to Promote Healthy and Sustainable Eating Behaviours Verónica Duarte, Maria João Félix, Cláudia Viegas, Miguel de Aboim Borges and Maria João Delgado	**PAPER ID: 6** How to Peel the System: Designing Futures through Compressed Experiential Food Design Education Ricardo Bonacho, Mariana Eidler and José Simões
16:45	**PAPER ID: 54** Defining Design Criteria for Artificial Coral Reef Structures via 3D Concrete Printing J.Pedro Dias, André Castro, Maria João Félix, Filipe Brandão	**PAPER ID: 19** Do it small. Do it local. Co-designing new uses for edible by-products with SMEs Raffaele Passaro and Cristian Campagnaro	**PAPER ID: 20** Rethinking Design Through Material Innovation: Material-Centric Ecodesign of Cellulose-Based Biocomposites Mariana Marques, Demétrio Matos, Leonor Calado, Alexandre Gaspar and Renato Reis
17:00	**PAPER ID: 82** Graphic Design for Spatial Regeneration: Color, Pattern, and Participation in Architectural Environments. Gaelle Pillault, Tenna Doktor Olsen Tvedebrink and Fátima Pombo	**PAPER ID: 1** Reframing Design in a More-than-Human World Carla Paoliello	**PAPER ID: 13** Integration of Unprocessed Wood for Contemporary Furniture Gonçalo Brito, Guilherme Braga da Cruz, Fernando Rocha and Miguel Terroso
17:15	**PAPER ID: 88** A Design-Driven Framework for Integrating Bio-Based Materials into Disposable Chest Patch Design Ronghan Wang, Michele Santos and Cristina Carvalho	**PAPER ID: 33** Artisanal crafts and sustainable ecological development: A value system based on individual skills and collective dynamics Diana Vieira da Silva, Nuno Valentim, Heitor Alvelos and Júlio Dolbeth	**PAPER ID: 95** Towards the circularity of thermoformed parts for packaging industry Fernando Duarte, Ana Carvalho, Mariana Beltrão and Tânia Mendes
17:30	**PAPER ID: 52** Tradition and Innovation in Interior Design: Regional Culture and Spatial Identity in Beira Interior, Portugal Liliana Neves	**PAPER ID: 41** Research in Traditional Crafts at Design Higher Education: A Systematic Literature Review Xue Zhu, Liliana Soares and Fernando Moreira da Silva	**PAPER ID: 45** Expanding the Curriculum: Intrinsic Biophilic Interior Design as a Pedagogical Catalyst in the Studio Deniz Hasirci
17:45	**PAPER ID: 80** Emojis as Instruments of Social Care: Exploring Their Role in Promoting Religious Tolerance on YouTube Syed Gowhar Andrabi	**PAPER ID: 36** From Likes to Buys: Investigating the Drivers of Social Media-Based Consumer Influence Among Gen Z and Young Millenials Manuel Sousa Pereira, António Cardoso, Amândio Silva, Jorge Figueiredo, Isabel Oliveira, Marianna Digisi, José Carlos de Sá	**PAPER ID: 43** From sidestreams to systems: designing cross-sectoral chains. Systemic design approach to sidestream valorization and sustainable production models. Stefano Salzillo and Michela Carlomagno

PROVISIONAL DETAILED PROGRAM
25-27 MAY 2026

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ALL THE TIME IS BASED ON LISBON, PORTUGAL TIME (GMT+00:00)

THURSDAY, MARCH 26TH

	14:30 - 16:00 **Session 3A | Thematic Systemic** MEETING ROOM 1	14:30 - 16:00 **Session 3B | Thematic Echoes** MEETING ROOM 2	14:30 - 16:00 **Session 3C | Thematic Cross-Cutting** MEETING ROOM 3
	Moderator: Susana Barreto	**Moderator:** Emília Duarte	**Moderator:** Fernando Moreira da Silva
14:30	**PAPER ID: 60** Branding on the Portuguese Way of Santiago: The Case Study of the São Teotónio Hostel Manuel Sousa Pereira, Vitor Tavares and Vitória Oliveira Santos	**PAPER ID: 53** Hotel refuge for social and solitary bee species and others pollinating insects / Local hotel refuge for social and solitary species pollinating insects Fernando Miguel Marques	**PAPER ID: 120** From Material Tinkering to Biotinkering: Infrastructuring a Biodesign Laboratory for Emerging Materials Practices Ziqian Yu, Valentina Rognoli and Sofia Soledad Duarte Poblete
14:45	**PAPER ID: 66** From Waste to Recovery: Co-Designing Hair-Based Sorbents Paula Nurminen, Aino Vepsäläinen and Outi-Maaria Palo-Oja	**PAPER ID: 71** Technology and Design in Dialogue: The Sustainable Transformation of Portugal's Stone Industry and the Broot Project Isabel de Almeida and Maria João Delgado	**PAPER ID: 93** Fiber-Based Safety Underwear with pH-Responsive Sensing for Early Detection of Amniotic Fluid Leakage: A Sustainable Design and Feasibility Framework Yao Dehe and Montagna Gianni
15:00	**PAPER ID: 48** Breaking the Mold of Local Democracy – Organisational Design as Political Innovation Pedro Sancho	**PAPER ID: 58** RHAM-A. From Earth to Data: A BIM-based Model for Vernacular Adobe Architecture Nuno Rio and Filipe Coutinho Quaresma	**PAPER ID: 87** Best Guess For This Image: upcycling broken industrial end-of-line tiles Rita João
15:15	**PAPER ID: 42** Fashion-Net: Systemic Mapping and InterdepartmentalCo-Design in the Italian Fashion Industry Silvestro Di Sarno and Luigi Chierchia	**PAPER ID: 72** Microcosmos as Echoes of Nature: Biophilic Pathways to Sustainability in Ceramic Art Canan Salman, Deniz Korkmaz and Carla Lobo	**PAPER ID: 55** Food-centred regenerative design: community-led micro-infrastructures for urban ecological renewal end-of-line tiles Mariarita Gagliardi, Edoardo Amoroso and Silvana Donatiello
15:30	**PAPER ID: 99** Knitwear as an Ecosystem: Diffuse and Experiential Models for Design and Production Diletta Pucci, Davide Turrini and Gianni Montagna	**PAPER ID: 81** Postphenomenology, Immersive Media, and Spatial Design towards Media Literacy: A Research Proposal Fernando Sousa and Fátima Pombo	**PAPER ID: 38** Designing with bio-based materials: A critical perspective Ana Barroso, Joana Silva and Filipa Carneiro

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THURSDAY, MARCH 26TH

	16:30 - 18:00 **Session 4A | Thematic Echoes** MEETING ROOM 1	16:30 - 18:00 **Session 4B | Thematic Systemic** MEETING ROOM 2	16:30 - 18:00 **Session 4C | Thematic Cross-Cutting** MEETING ROOM 3
	Moderator: Filipe Brandão	**Moderator:** Rita João	**Moderator:** Paula Trigueiros
16:30	**PAPER ID: 11** Jewellery Design as a Mediator of Memory and Place: Reinventing Silk. Soraia Maduro and Mónica Romãozinho	**PAPER ID: 15** Needs Definition and Requirements Transformation for na Autonomous Foot Scanning System Ivo Rodrigues, Miguel Terroso, Adriana Amorim and Filipe Chaves	**PAPER ID: 94** Enhancing Eco-Conscious Footwear Shopping through AR and AI: A Path Toward Green Digital Consumerism Ayushi Agrawal and Susana Barreto
16:45	**PAPER ID: 27** Textile Design by Thermal Vision – Art with Human Camouflage Catarina Pimenta, Carla Pereira and Raul Fangueiro Gaspar and Renato Reis	**PAPER ID: 126** The Fashion Show and Cultural Heritage: The case of the Lérias Lace Alexandra Cruchinho	**PAPER ID: 100** AI for Circular Design: A Framework to Support Designers to Use AI Across the Circular Design Process Christopher Tait, Fabrizio Ceschin and Federico Colecchia
17:00	**PAPER ID: 74** Design in the Portuguese industrial context: The Scenic Table project Marco Balsinha, Francisco Providência and Marlene Ribeiro	**PAPER ID: 116** Design with the Community: Cultural Heritage as a Creative Catalyst in Graphic Design Higher Education – The Case of the Lenços de Namorados from Vila Verde Carla Suzana Dias, Manuel Granja and Miriam Zanini	**PAPER ID: 110** AI in Design Post-Graduation Supervision – its use challenges Rita Almendra and Fernando Moreira Da Silva
17:15	**PAPER ID: 29** Marine Bioeconomy Meets Generative Design: A Case Study in Sustainable Footwear Innovation Afonso Gonçalves, Tânia Ferreira, Maria Gabriela Ferreira, Sílvia Ferreira, Joana Antunes, Luísa M. Arruda, João Bessa, Raúl Fangueiro and Daniela Leal	**PAPER ID: 91** A Holistic Methodology for Digital Material Classification: Integrating Technical, Sensory and Emotional Dimensions in Design Ernesto Filgueiras, Caroline Loss and Rafaela Norogrando	**PAPER ID: 115** Prioritizing the installation of power plants in degraded areas – Analysis of the territorial sustainability of converting deactivated quarries into photovoltaic power plants. Cláudia Gaspar and Isabel de Almeida
17:30	**PAPER ID: 70** Designing Ecosystemic Identities: A Visual Strategy for Regenerative Rural Branding Rita Coelho, Horácio Tomé-Marques and Vítor Quelhas	**PAPER ID: 64** A Precious ecosystem project: a Hub on Jewelry Design Maria Dolores Morelli and Carmela Barbato	**PAPER ID: 103** Immaterial Placemaking – sound-based design paradigms for socially sustainable public spaces Umberto Monchiero

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FRIDAY, MARCH 27TH

	9:30 - 11:30 **Session 5A | Thematic Systemic** MEETING ROOM 1	9:30 - 11:30 **Session 5B | Thematic Cross-Cutting** ross MEETING ROOM 2	9:30 - 11:30 **Session 5C | Thematic Echoes** MEETING ROOM 3
	Moderator: Ana Moreira da Silva	**Moderator:** Isabel de Almeida	**Moderator:** Élmano Ricarte
09:30	**PAPER ID: 113** From Concept to Patent: A Design-Led Multidisciplinary Process for a Hands-Free Door Opening Interface Pedro Bandeira Maia, Vitor Maranha, Luis Roseiro and Luis Margalho	**PAPER ID: 63** Sustainable Redesign of Industrial Trolleys: Reducing Transport Volume and Environmental Impact Alexandra Meireles, Joni Regalado, Augusto de Sousa Coelho and Victor Neto	**PAPER ID: 16** Designing with Care: Multimodal Practices of Sustainability in a Laboratory-Based Workshop Emre Sünter and Dilay Kocogulları
09:45	**PAPER ID: 86** Versatility in stage clothing: costume and prop Catarina Rito	**PAPER ID: 67** Conceptualization of an Augmented Reality-based Platform for Industrial Training: A Case of Service Design Filipe Moreira, Rosana Alexandre, Beatriz Miranda, Duarte Fernandes, Maura Barbosa, Joaquim Silva and Ana Colim	**PAPER ID: 68** Between Nature and Technology: Natural Ventilation with 3D-Printed Concrete Bioinspired Elements Elis Ribeiro, João Teixeira, Barbara Rangel and Lino Manuel Maia
10:00	**PAPER ID: 23** Delphi Method - Selecting and Reducing Variables to study Fashion Designers' Self-Perceived Creativity João Barata and Rui Miguel	**PAPER ID: 34** Participatory design and active learning: an academic journey along the Camino de Santiago João Martins and Luis Mota	**PAPER ID: 7** From and For Coffee: A Design Exploration in Spent CoffeeGrounds and Aesthetics Raquel Antunes and Fabiana Aguiar
10:15	**PAPER ID: 98** Systemic Design and Cooperative Networks for the Regeneration of Artisan Leather-Goods Micro-Enterprises Matteo Ascente, Gianni Montagna, Alessandra Avella and Elisabetta Benelli	**PAPER ID: 75** Land(ing) Pages: Re-Signifying Nature through the Editorial Design Project Unconventional Guide to the Natural Space Ana Sofia Santos Afonso, Sofia Leal Rodrigues and Sónia Rafael	**PAPER ID: 28** Biomimetic Design as a Bridge to Engineering: A Multidisciplinary Approach Rui Alexandre, Raquel Antunes, Pedro R.Gomes and António Nicolau Costa
10:30	**PAPER ID: 39** The Apparition - Teacher-Generated Drawing Strategy Rui Costa, Sónia Seixas, Susana Campos and Helena Santana	**PAPER ID: 101** AN ARCHITECT'S NATURAL ABC: Elaborated Theory, Unexpected Practice Joana Ribeiro	**PAPER ID: 59** Designing Elitism: Debating Futures through Leadership Education and AI-Mediated Conversations. Francesco Galli

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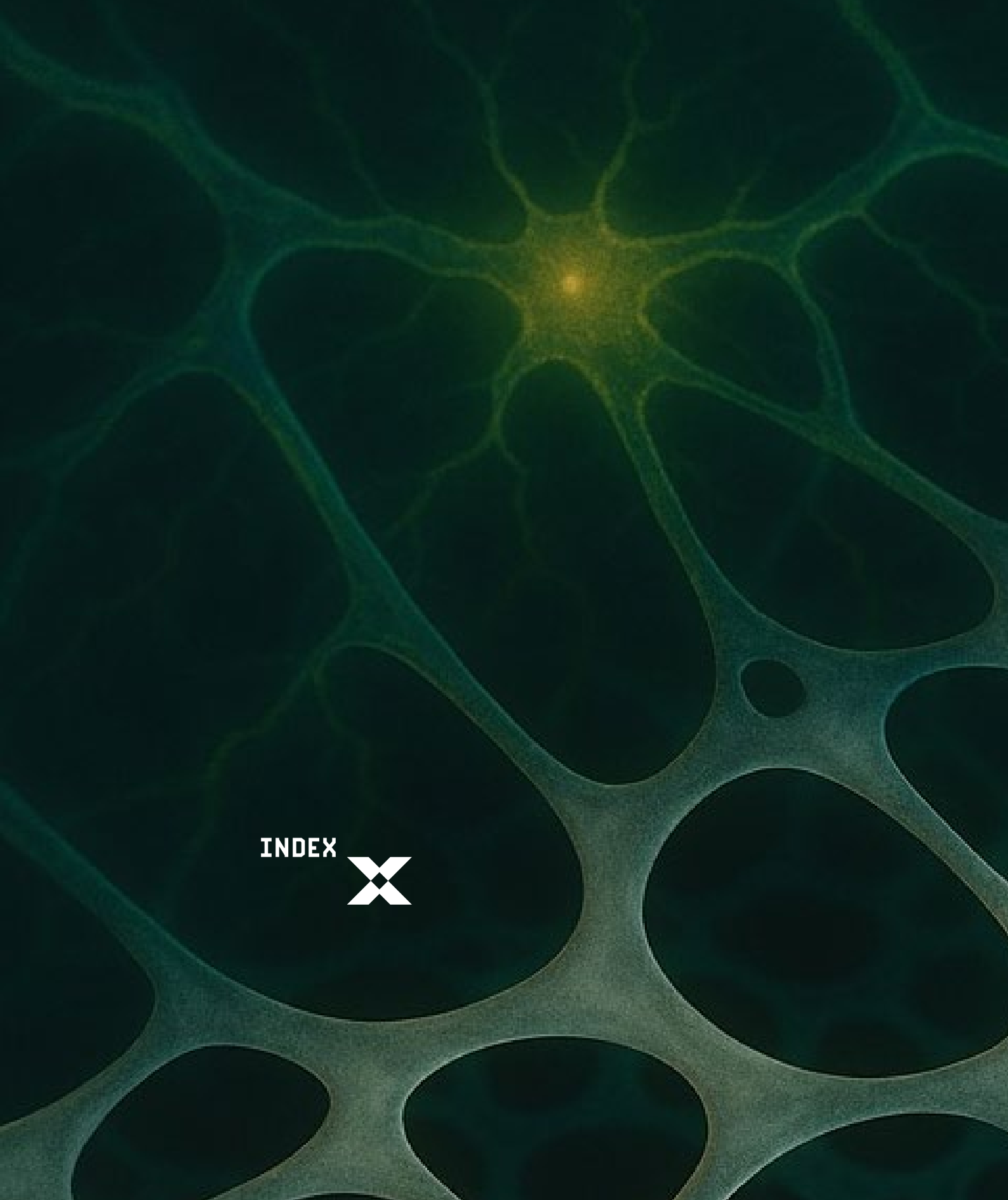
FRIDAY, MARCH 27TH

	11:30 - 13:30 **Session 6A | Thematic Systemic** MEETING ROOM 1	11:30 - 13:30 **Session 6B | Thematic Regeneration** MEETING ROOM 2	11:30 - 13:30 **Session 6C | Thematic Nurture** MEETING ROOM 3
	Moderator: Raquel Antunes	**Moderator:** Emília Duarte	**Moderator:** Catarina Rito
11:30	**PAPER ID: 9** Reframing Intelligence: A Systemic Approach to Artificial Agents in Design Gabriela Garcia, Sérgio Tavares and Sílvia Soares	**PAPER ID: 78** Bioreceptive concrete surfaces for urban regeneration: a material-driven exploration to foster biological colonization Antonella Belletti, Sofia Soledad Duarte Poblete, Barbara Pollini, Daniele Tamborini and Valentina Rognoli	**PAPER ID: 118** Textile Artifacts for Physical and Sensorial Comfort of Neurodivergent People Marina Santos and Lígia Lopes
11:45	**PAPER ID: 62** Optimizing Encapsulation Design for a Multipurpose Sensing Platform to Enhance Road Safety Sofia Cardoso, Miguel Carvalhosa, João Sampaio and Victor Neto	**PAPER ID: 114** Designing artifacts for the emotional support of children with Type 1 Diabetes: a participatory approach Mariana Regalo and Lígia Lopes	**PAPER ID: 102** The Importance of Colour in Sketches – Enhancing legibility and readability Ana Moreira da Silva
12:00	**PAPER ID: 97** Invisible Needs, Visible Mobility: Designing Inclusive Priority Systems for Sustainable Public Transport Filipa Vilares and Susana Barreto	**PAPER ID: 123** Development of a children's application for traditional stories: a Literature Review Mafalda Araújo, Nuno Martins and Cristina Sylla	**PAPER ID: 21** The UK Manchester Crafts and Design Center Five Artisans Sustainable Craft Service Design Stories Li Zhang
12:15	**PAPER ID: 8** From Funnel to Journey: A Systemic Approach to Gen Z Consumer Behavior through Design Thinking Julia Maciel and Élmano Ricarte	**PAPER ID: 92** Fashion as Art: Legitimation and Validation Processes Isabel Bieger, Sara Vaz and João Barata	**PAPER ID: 77** Development of a material from residues of the corn milling industry: Characterization and application in egg transport and marketing boxes Renan de Oliveira Saporetti, Lariane Ferlim Dias, Antonio Roberto Giriboni Monteiro and Cláudia Cirineo Ferreira Monteiro
12:30	**PAPER ID: 73** The Circular Textile Economy Model Today: An Analysis of Four Eminent European Cases Fernanda Schulz, João Pedro Teixeira, Isabel Cabral and Joana Cunha	**PAPER ID: 24** Recycling of External Prostheses Waste for Manufacturing 3D Filament. Low-Cost Hand for the E-Nable Project Daniela D'Orey Leal and Jorge Lino Alves	**PAPER ID: 18** Hibiscus: a commitment to co-evolutionary Design with nature and communities Arianna Vignati, Davide Benvenuti, Piero Fissore, Luna La Volpe, Michelle Douglas, Scott Skipworth, Monica Rossi, Alessandro Biancardi, Gaetano Cascini, Samnang Oum, Nellie Nicholas, Chi Ryan and Dirk Vos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ECHOES

ECHOES

Learning from Nature's Wisdom
Where inspiration echoes through the patterns of life.

Biomimetic Design
Natural Patterns in Design
Nature-Inspired Product Design
Sustainable Innovations from Nature
Bio-Inspired Engineering

Areas | biomimicry, bio-design, natural forms, design theory, epistemology

This track listens to the murmurs of nature's wisdom and invites us to echo them in our creative practices. From the spiral of a shell to the memory of a forest, ECHOES explores how natural forms, behaviours and principles can inspire design processes that resonate with both ancestral knowledge and future innovation. It is a space to reflect on why we turn to nature, and how that encounter transforms what and how we design.

ECHOES

PAPER ID [3]

CAN ANCIENT PRACTICES BE ENTITLED BIODESIGN? A TERMINOLOGY PROPOSAL BASED ON ANCESTRAL KNOWLEDGE AND TRADITIONAL PRACTICES

Paoliello, Carla [1*[0000-0003-0186-0507]], **Bandoni, Andrea**[1[0000-0002-7033-8870]]

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Biodesign characterizes a strategic approach in which designers collaborate with living organisms. Although often framed as an emerging discipline, similar principles have long been practiced and refined by Indigenous and traditional communities worldwide. This article examines whether such time-honored practices should be retrospectively classified as "Biodesign" or whether alternative terminology is more appropriate. The study is based on a qualitative analysis of existing literature, curated case studies, and documented examples drawn from design, urbanism, and archaeology, without recourse to primary fieldwork. Through this comparative, desk-based methodology, ancestral and contemporary practices are examined to identify points of convergence and divergence. While ancestral practices align with several contemporary biodesign principles, significant epistemological and contextual differences remain. Accordingly, we propose that terms such as ancestral, vernacular, indigenous, or traditional accompany "Biodesign" to more accurately distinguish ancient practices from their contemporary interpretations.

Keywords: *Terminology; Ancestral Knowledge; Traditional Practices; Biodesign; Biocraft.*

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PAPER ID [5]

DESIGNING REGENERATIVE FOOD SYSTEMS: A SYSTEMIC AND PARTICIPATORY APPROACH THROUGH FOOD DESIGN BOOTCAMPS

Bonacho, Ricardo [1 2*[0000-0001-6804-7188]], **Massari, Sonia** [3[0000-0003-1471-1199]], **Eidler, Mariana** [4[0000-0002-3183-7677]], **Simões, José** [1[0000-0003-4455-1317]]

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This study explores 4–6-day food design bootcamps (2022–2025) in Portugal, Thailand, France, and Italy as short-format infrastructures for regenerative transitions in local food systems. Using

ethnographic fieldwork, participatory action research, post-bootcamp surveys (N=64), and artefact analysis, the paper compared the outcomes produced by these intensive formats and the ways in which participants learn. Across cases, teams created system maps, stakeholder narratives, co-designed food rituals, and speculative edible prototypes that facilitated discussions among local actors about ecological relations, cultural knowledge, and food politics. Five recurring outcomes emerged: (i) regenerative ecological practice; (ii) participatory co-design with distributed agency; (iii) critical speculation; (iv) cultural anchoring; and (v) systemic understanding. Questionnaire responses showed high levels of experiential and relational learning (Likert means 4.06–4.44/5), particularly in recognizing interdependencies, collaborating with stakeholders, and imagining situated food futures. The study proposes a replicable bootcamp framework that operationalizes regenerative principles through outcome-focused immersion and rapid prototyping, offering a complementary pathway to (not a substitute for) long-term living labs for educators, practitioners, and communities.

Keywords: *food design, systemic design, holistic design, regenerative design, participatory design, design for sustainability.*

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PAPER ID [6]

HOW TO PEEL THE SYSTEM: DESIGNING FUTURES THROUGH CLOSE EXPERIENTIAL FOOD DESIGN EDUCATION

Bonacho, Ricardo [1 2*[0000-0001-6804-7188]], ***Eidler, Mariana*** [3[0000-0002-3183-7677]], ***Simões, José*** [1[0000-0003-4455-1317]]

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This study investigates the transformative potential of short-format Food Design courses—intensive, 24-hour educational experiences that blend theory, practice, and multisensory engagement. Through a convergent mixed-methods approach involving pre- and post-course surveys, semi-structured interviews, and project analysis across three higher education institutions (N = 45), the research explores how such interventions influence learners' systems thinking, sensory literacy, creative confidence, and emotional engagement. Framed by theories of experiential and transformative learning, systems thinking, and transdisciplinary approaches, the results show substantial shifts in participants' conceptual understanding of food systems and their food design agency. Participants reported heightened awareness of food's cultural, ecological, and symbolic dimensions, and expressed renewed purpose in using food design as a tool and methodology for socio-ecological transformation. The investigation contributes empirical evidence to the evolving field of Food Design education, suggesting that immersive micro-courses, effectively anchored in education environments, can effectively foster

transdisciplinary literacy and regenerative design competencies. These insights carry implications for curriculum innovation, pedagogical strategy, and the broader role of food design education in addressing global food system challenges.

Keywords: *food design education, experiential learning, transdisciplinary pedagogy, systems thinking, immersive micro-courses*

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PAPER ID [7]

FROM AND FOR COFFEE: A DESIGN EXPLORATION IN SPENT COFFEE GROUNDS AND AESTHETICS

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This paper explores the role of design in enhancing the aesthetic and functional value of organic waste, with a focus on coffee, one of the most widely consumed products in Europe, particularly in Portugal. Taking a critical and ecological approach and using the Double Diamond methodology, the study is structured into three phases: researching coffee waste and its potential for reuse; analysing case studies; and developing the concept for a design object. The outcome is a modular utensil — an espresso serving plate/tray inspired by the shape of a coffee bean — designed to promote the Delta Cafés brand identity and enhance the user experience. The proposal seeks to integrate symbolic value, functionality, and environmental considerations. Although experimentation with SCG materials has not yet been conducted, this is clearly an essential future step. The project contributes to the debate on sustainable design and SDG 12 by proposing a solution that, although still in the exploratory phase, points to viable avenues for ecological innovation in product design. Collaborating with an actual company demonstrates the practical applicability of the proposal and shows the potential of design as a transformative tool in the context of the circular economy.

Keywords: *Product Design, Spent Coffee Grounds, Sustainable Design, Material Reuse, Circular Economy.*

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PAPER ID [10]

IMPLEMENTING NATURE-INSPIRED AND SUSTAINABILITY PRINCIPLES IN DESIGN EDUCATION

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In response to escalating environmental and socio-technical challenges, design education must evolve to embed sustainability and nature-inspired principles at its core. This paper proposes an interdisciplinary framework grounded in Kolb's Experiential Learning Model to integrate these principles into design curricula. Product design subjects are classified by their potential to incorporate sustainability, guiding targeted curricular reform. Building on prior research, the study presents a structured workshop agenda centered on the "Materials Exploration" subject, aligning hands-on activities with the four stages of experiential learning: concrete experience, reflective observation, abstract conceptualization, and active experimentation. A comparative analysis of alternative learning models reinforces Kolb's suitability for design education. To assess impact, a weighted scorecard-based evaluation method is introduced, enabling quantitative measurement of conceptual growth, sustainability awareness, and design integration skills. The paper concludes with insights on broader applicability, future research directions, and alignment with global education goals for sustainable development.

Keywords: *Nature-Inspired Design, Biomimicry, Sustainability, Interdisciplinary Collaboration, Kolb's Experiential Learning Model, Materials Exploration*

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PAPER ID [11]

JEWELLERY DESIGN AS A MEDIATOR OF MEMORY AND PLACE: REINVENTING SILK

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This article proposes a reflection on the relationship between design and craft within the context of contemporary jewellery, considering the jewel as a cultural artefact that embodies material, symbolic, and relational values. It is based on the hypothesis that the convergence of artisanal know-how and the project-oriented design thinking can give rise to more sensible, resilient, and territorially rooted practices. The research adopts a qualitative and exploratory approach, using practice as a means of generating knowledge. In particular, it examines the use of natural silk, produced through artisanal methods in the Trás-os-Montes region, as a starting point for the creation of contemporary jewellery, as well as the collaborative processes between artisans and designers. It argues that this relationship can contribute to the revaluation of peripheral territories, the enhancement of both tangible and intangible heritage, and the development of alternative forms of production and consumption in design.

Keywords: *craft design, contemporary jewellery, natural silk, Trás-os-Montes, collaborative processes*

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PAPER ID [13]

INTEGRATION OF UNPROCESSED WOOD FOR CONTEMPORARY FURNITURE

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With advances in the industry, concerns about sustainability and the need for sustainable practices have driven innovations in various sectors, including the furniture industry. In the wood industry, there are several types of waste based on forest biomass and processed wood residues, which are often burned for heating, transformed into pellets, or discarded in landfills, contributing to negative environmental impacts. However, this same waste can be creatively reused to produce furniture, offering a pleasant, natural aesthetic. Unprocessed wood is found in furniture used as interior decoration, which allows designers to create welcoming and comfortable environments while at the same time fostering a connection with nature. This approach could be considered a sustainable answer, as it reduces the number of processes and treatments applied to furniture. This project focused on product design in the furniture sector, exploring ways to integrate unprocessed wood pieces, directly from the natural environment, in the creation of contemporary pieces. The objective of this research was to find solutions for reusing pieces of raw wood, previously considered waste, by repurposing them into decorative and functional furniture for exclusive environments with a specific decoration, therefore contributing to a more sustainable industry.

Keywords: *Furniture, Contemporary, Integration, Unprocessed Wood, Sustainability*

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PAPER ID [16]

DESIGNING WITH CARE: MULTIMODAL PRACTICES OF SUSTAINABILITY IN A LABORATORY-BASED WORKSHOP

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This paper explores the role of care as a conceptual and practical framework in sustainable design through a detailed case study of an interdisciplinary, laboratory-based workshop conducted at BioLab Lisbon. By analyzing the workshop's processes—ranging from microbial cultivation and field sampling to creative co-design—the paper proposes four interrelated modalities of care: biopolitical-ecological, curatorial, material, and pedagogical. These modalities are treated not as abstract ideals, but as concrete, entangled practices that emerge through affective, epistemic, and multispecies relations. Rather than positioning care as a moral supplement to design, we argue that care constitutes the generative infrastructure through which sustainability becomes possible. Through attunement to microbial agency, transformation, and decay, participants practiced forms of design grounded in responsiveness, non-mastery, and speculative engagement. The workshop thus functions both as a situated learning environment and as a prototype for future sustainable practices oriented around care, transformation, and more-than-human collaboration.

Keywords: *care modalities; sustainable design; bioart and biodesign; more-than-human relations; participatory pedagogy*

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PAPER ID [18]

HIBISCUS: A COMMITMENT TO CO-EVOLUTIONARY DESIGN WITH NATURE AND COMMUNITIES

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With climate instability, ecological degradation, and growing social and cultural fragmentation, designers are increasingly turning to nature for guidance. This article presents the Hibiscus project, a modular, collapsible bamboo-based infrastructure developed for the village of Marou in Fiji, as a case study in the integration of humanity-centered design and biomimetic principles. Hibiscus offers a resilient, community-owned ecosystem that responds to local needs while echoing nature's wisdom. It is a commitment to a regenerative design ethos grounded in ecological intelligence and

Indigenous knowledge. It advocates for a post-anthropocentric paradigm in which designers co-evolve with communities and environments, resisting extractive models of innovation. The project has been developed within the framework of the Lagi 2025 Fiji international competition, adopting ethnographic research and a humanity-centred design approach (HCD+) for the Fijian communities, and the application of biomimicry's Life's Principles. It combines renewable energy sources, water-harvesting systems, and a flexible architectural language inspired by the protective geometry of flowers. The result is an adaptive infrastructure that supports the social, environmental, and educational functions of the Marou community while remaining responsive to extreme weather events. Hibiscus demonstrates a design model that is systemic, inclusive, and regenerative because it invites us to listen, learn, and design with nature.

Keywords: *Humanity-Centred Design, Biomimicry, Design Thinking, community-centred project, sustainable design, Pacific communities, co-evolutionary design.*

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PAPER ID [20]

RETHINKING DESIGN THROUGH MATERIAL INNOVATION: MATERIAL-CENTRIC ECODESIGN OF CELLULOSE-BASED BIOCOMPOSITES

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This study examines the fundamental role of sustainable material development as a cornerstone in the design of environmentally responsible products, within the scope of the PRR From Fossil to Forest: WP4 Biocomposites. Grounded in Ecodesign principles and inspired by the transformative vision of the New European Bauhaus, the research advances a material-driven design paradigm that positions bio-based and biodegradable composites at the core of sustainable innovation. By integrating iterative design methodologies inspired by design thinking frameworks such as the Double Diamond, the study focuses on cellulose-reinforced, biodegradable, and compostable biocomposites optimized for a range of manufacturing processes, including additive manufacturing, extrusion, and injection molding. These materials are developed to replace fossil-based plastics with bio-certified matrices, aligning with bio- and circular-economy objectives by minimizing the use of fossil-based resources and decreasing environmental impact. The findings highlight how embedding ecodesign methodologies and normative standards at the material development stage fosters systemic industrial and ecological

transitions. Ultimately, this work contributes to the ongoing discourse on sustainable product design by demonstrating how material innovation, guided by comprehensive design frameworks, can effectively address the urgent global imperative for genuine sustainability beyond superficial greenwashing and ensure compliance with evolving European regulations, including the Ecodesign for Sustainable Products Regulation (ESPR).

Keywords: *Biocomposites, Ecodesign, Sustainability, Cellulose, Material-Driven Design*

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PAPER ID [25]

BIOMIMETIC AND SUSTAINABILITY: AN INTEGRATED MODEL FOR INNOVATION AND RESILIENCE IN PRODUCT DESIGN

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Observation of nature has guided human creation since ancient times. This ancestral relationship between natural systems and artificial solutions has evolved conceptually, from intuitive empiricism to scientific formalization in fields such as biotechnology, bionics, and, more recently, biomimetics. This article revisits and synthesizes the genealogy of biomimetic thought, focusing on its implications for design. Through a discussion of classic and actual authors, the article explores recent advances in biomimetics applied to sustainability, focusing on conceptual and methodological models that connect the study of the natural world, technological innovation, and resilient, regenerative strategies. The analysis is centred on contemporary studies that present emerging trends in the evolution of Biomimetic processes, culminating in the updated proposal of a transdisciplinary model for Sustainable Biomimetic Product Design.

Keywords: *Biomimetic Design, Sustainability, Transdisciplinarity, Innovation, Regeneration.*

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PAPER ID [27]

TEXTILE DESIGN BY THERMAL VISION – ART WITH HUMAN CAMOUFLAGE

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This work presents the development of textile patterns and prototypes of women's clothing designed to camouflage the human body thermally in indoor environments. It contributes to the development of new concepts in artistic performances that create illusions, effects, and contrasts using thermal vision. Studies were conducted on various factors influencing thermal imaging (body, environment, clothing/textile material), as well as on the combination of different techniques in pattern making, garment construction, and textile printing. The results suggest possibilities for integrating thermography as an immersive experience in which the audience perceives the performance through a different spectrum—infrared vision—while the performer or artistic act interacts with the space by drawing with heat and disappearing into cooler areas, revealing silhouettes, gestures, or traces.

Keywords: *Thermography; Camouflage; Design; Textile; Fashion; Art.*

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PAPER ID [28]

BIOMIMETIC DESIGN AS A BRIDGE TO ENGINEERING: A MULTIDISCIPLINARY APPROACH

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This study explores a multidisciplinary approach to developing biomimetic urban furniture that integrates physical health monitoring technologies in public green spaces. Bringing together the fields of design and engineering, the project aims to promote preventive healthcare by creating unobtrusive and inclusive infrastructure embedded in the urban landscape. Taking inspiration from natural systems, the design process followed a biomimicry design spiral methodology involving the stages identify, translate, discover, abstract and emulate. The process includes moodboarding, mind mapping, sketching, 3D modelling, technical drawing and prototyping. The resulting product enables users to engage with non-invasive sensors that track vital signs such as weight, height and BMI, while providing an aesthetically pleasing resting spot in park environments. Biomimetic principles informed the design's organic formal language and structural efficiency, energy autonomy through solar integration. Collaboration between designers and engineers was essential in balancing usability, technology and

environmental sensitivity. This section presents the multidisciplinary creative process that is expected to be validated in society soon.

Keywords: *Biomimetic Design; Urban Furniture; Health Monitoring; Multidisciplinary; Public Spaces*

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PAPER ID [29]

MARINE BIOECONOMY MEETS GENERATIVE DESIGN: A CASE STUDY IN SUSTAINABLE FOOTWEAR INNOVATION

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This article presents a case study on the ecodesign and development of a marine-sourced espadrille, emphasizing the integration of marine-derived resources into sustainable footwear design. The project followed the ecodesign methodology outlined in the UNEP Manual, focusing on the first three of its seven strategic actions: (1) selection of materials with low environmental impact, (2) reduction of material consumption, and (3) optimisation of manufacturing processes. Porphyridium cruentum algae was selected for integration into the footwear prototype. Its biomass was embedded in a bio-based polyurethane (PU) matrix and applied via knife coating onto a recycled polyamide fabric, forming the espadrille's upper. The sole design incorporated Phases 1, 2, 3, and 7 of the UNEP methodology, utilising a biodegradable, bio-based filament aligned with end-of-life sustainability principles. Generative design software was employed to develop a biomimetic internal structure inspired by octopus suction cups, featuring a gradient density matrix tailored to foot pressure zones. The sole was optimised for additive manufacturing using FDM. The resulting prototype demonstrates the viability of combining marine biomass, digital design strategies, and sustainable materials in the creation of functional and ecologically responsible footwear—offering a scalable and replicable model for eco-innovation in the fashion and footwear industries.

Keywords: *Circular Economy, Design Innovation, Waste Minimization, Resource Efficiency, Generative Design, Footwear*

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ECHOES

PAPER ID [36]

FROM LIKES TO BUYS: INVESTIGATING THE DRIVERS OF SOCIAL MEDIA-BASED CONSUMER INFLUENCE AMONG GEN Z AND YOUNG MILLENNIALS

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Social media has evolved from a communication tool into a primary driver of consumer purchasing decisions, both online and offline. This study examines how social media platforms influence consumer behavior through algorithmic content delivery, influencer marketing, and the integration of digital and physical retail to create a seamless phygital experience. Using an original survey of 122 validated responses, predominantly from Gen Z and younger Millennials, the research examines platform usage, engagement patterns, trust in influencers, and the influence of online reviews on purchase decisions. Statistical analysis, including descriptive measures, chi-square tests, Pearson correlations, and multiple linear regression, reveals that daily time spent on social media ($\beta = 0.39$) and platform diversity ($\beta = 0.28$) are significant predictors of purchase influence, while age shows a negative association ($\beta = -0.21$). Heavy users demonstrate higher brand engagement and greater susceptibility to influencer recommendations, with 71.4% of participants abandoning purchases after reading negative reviews. The findings highlight the dominance of Instagram and TikTok, the commercial impact of micro-engagement, and the need for brands to adopt multi-platform, authenticity-driven, and reputation-focused strategies. This study offers actionable insights for marketers and contributes to academic discourse on the algorithm-to-action pathway that drives contemporary consumer behavior.

Keywords: *social media, consumer behavior, online shopping, digital marketing, physical experience, social proof, recommendation algorithms.*

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PAPER ID [39]

THE APPARITION - TEACHER-GENERATED DRAWING STRATEGY

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The aim of this article is to explore the potential of historical paintings as metaphors for theoretical content in higher education. To do this, we used the Teacher Generated Drawing Strategy. In this strategy, at the time of the lesson the teacher generates a drawing of the content he or she wishes to transfer to the class. Having identified a gap in innovative teaching strategies in higher education, we have been exploring, developing and documenting this strategy in order to understand its limitations and potential. We present a session in which we tested the drawing of two historical paintings made by the teacher in a 3rd year Music Degree class at the University of Aveiro, in which these paintings create a metaphor for the theoretical content to be transferred to the class, thus evaluating the communicative potential and the aesthetic experience it provokes. We communicated with the class by drawing representations of two famous paintings: 'The Great Wave of Kanagawa' by Katsushika Hokusai and 'The Starry Night' by Vincent van Gogh. At the end of the session, we collected the students' anonymous answers to the evaluation questionnaire. The data collected allows us to conclude that the use of historical paintings as metaphors to materialise abstract concepts in theoretical teaching optimises communication in the classroom, stimulating students' emotions and motivation and supporting interactions in the classroom. The interdisciplinary approach of two different scientific areas - Design and Music - working together was met with pleasure by the students, demonstrating that the power of drawing lies in its often overlooked ability to create moments of happiness.

Keywords: *Teacher-generated drawing; Teaching strategy; Theory through drawing; Theory through art; Aesthetics;*

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PAPER ID [45]

EXPANDING THE CURRICULUM: INTRINSIC BIOPHILIC INTERIOR DESIGN AS A PEDAGOGICAL CATALYST IN THE STUDIO

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This paper investigates intrinsic biophilic interior design as a pedagogical framework for interior design education, analyzing two decades of studio projects that look to nature as the genesis and guide for methodological, spatial, and conceptual development. The study explores how integrating biophilic principles, such as spatial rhythms, sensory engagement, natural light, and materiality, can foster ecological awareness, critical thinking, and creativity among design students, enabling conceptual consistency in projects from the urban scale to the production scale. Situating these projects within broader discourses of sustainable respect, established terminology such as 'human-centered design' is questioned from the perspective of more harmonious living with nature. Drawing on selected case studies, the paper examines the significance of intrinsic biophilic design strategies that have been employed to shape design briefs, influence studio culture, and reframe the relationship between nature and the built environment. It is argued in the study that intrinsic biophilic design offers a powerful pedagogical tool for preparing future designers in creating nature-conscious, restorative, and ethically responsive interiors, and how students become more aware of their natural surroundings as an inspiration, a teacher, as well as a reflection of themselves. Presented applied and theoretical work are expected to enable understanding how to actively instigate necessary, biophilic behavioral change.

Keywords: *Intrinsic biophilic design, interior design, interior architecture, design education, Türkiye*

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PAPER ID [53]

HOTEL REFUGE FOR SOCIAL AND SOLITARY BEE SPECIES AND OTHERS POLLINATING INSECTS

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When redesigning a study object to include new data, it makes sense to rethink the study. The new data in this paper is based on the incorporation of a nesting site for solitary insects into the aBEElhário. This project, intended for installation in private residences, aims to facilitate pollination for various types of pollinating insects that visit home gardens. This paper analyzes the result of a new door to the refuge for pollinating insects that works in conjunction with a drinker so that pollination can be carried out more effectively. The project, grounded in an animal-centered design philosophy, prioritizes the needs of pollinating insects to foster a harmonious coexistence between humans and the environment.

Keywords: *bees; nature-centered design; animal-centered design; pollination; solitary bee; nest boxes;*

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PAPER ID [58]

RHAM-A. FROM EARTH TO DATA: A BIM-BASED MODEL FOR VERNACULAR ADOBE ARCHITECTURE

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This paper presents RHAM-A — Rural Habitat Algarve Model (Adobe) — a computational emulator developed to support the design and construction of adobe-based vernacular architecture in the southwestern region of the Algarve, Portugal. Built entirely within a BIM environment, RHAM-A translates local constructive logic and empirical data into a parametric system that enables the simulation of material, formal and operational outcomes. The emulator integrates technical and territorial knowledge drawn from bibliographic sources and morphological surveys. Based on four wall typologies, resulting from the combination of two adobe sizes and two construction systems documented in the region, the model generates predictive values for the number of adobe units required, the volume of mortar needed and the estimated construction time per wall. These parameters are encoded into native BIM components and updated automatically in real time. RHAM-A aims to support early-stage design, construction planning and the rehabilitation of traditional adobe buildings. By enabling comparative simulations, it contributes to more informed decisions in terms of material efficiency and sustainable strategies fostering local knowledge, bridging digital computation and vernacular knowledge through a critical methodology.

Keywords: *Parametric Modeling; Adobe architecture; Computational design; Vernacular construction; BIM – Building Information Modeling; Sustainable rural housing.*

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PAPER ID [59]

DESIGNING ELITISM: DEBATING FUTURES THROUGH LEADERSHIP EDUCATION AND AI-MEDIATED CONVERSATIONS

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Design for Different Futures calls for a rethinking of how design responds to crises, acceleration and shifting geopolitical dynamics. These conditions, together with the rise of AI-generated texts in contemporary knowledge production, require a rethinking of elitism and leadership in design.

The paper reclaims elitism through its etymological roots—eligere, "to choose." Elitism is reframed not as social privilege but as an ethical practice of discernment through which excellence and civic responsibility are cultivated. On this basis, the authors introduce Elitist Leadership: a systemic and distributed form of leadership in which power is understood as the capacity to foster responsible change within complex networks.

Elitist Leadership unfolds through three interrelated dimensions: distributed agency, education to power and discernment (eligere). These dimensions are operationalised through AI-mediated "conversations in action" with a large language model (ChatGPT 5.1 Thinking). These situated dialogues become both an arena for exercising elitist discernment and a traceable form of evidence, allowing to stress-test notions of expertise, authorship and design as speculative projectual thinking rather than problem solving.

The paper concludes by outlining implications for design education, proposing Elitism Education as a framework for cultivating designers capable of navigating AI-saturated complexity with choice.

Keywords: *Leadership, Elitism, Complexity, AI Conversations, Critical Futures*

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PAPER ID [68]

BETWEEN NATURE AND TECHNOLOGY: NATURAL VENTILATION WITH 3D-PRINTED CONCRETE BIOINSPIRED ELEMENTS

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This study explores the application of biomimetic principles in 3D Concrete Printing (3DCP) to develop innovative design solutions. Biomimetics involves studying nature to discover methods for developing solutions for human necessities. It serves as a powerful approach to design. When combined with 3DCP, biomimetics can facilitate the creation of more efficient solutions inspired by the complexity of nature. 3D Concrete Printing offers a way to integrate and promote biomimetic designs, making them more accessible to a broader audience. This collaboration aims to enhance both fields for overall improvement. This article presents the development of a 3D printed architectural façade element that incorporates marble powder as a sustainable alternative in cementitious mixtures. The research demonstrates how marble powder can be effectively utilised as a waste material to partially replace conventional components in 3DCP applications. To illustrate the potential of combining these two fields, we drew inspiration from the cobogó as a reference point to develop a printed piece that can be joined

with others to form a façade, thereby enhancing natural ventilation in the environment. Our biomimetic inspiration comes from the honeycomb structures built by Manduri bees. The results indicate the viability and potential of merging these two methods for more sustainable applications.

Keywords: *Biomimetic; 3D Concrete Printing (3DCP); Design; Cobogó; Natural Ventilation.*

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PAPER ID [70]

DESIGNING ECOSYSTEMIC IDENTITIES A VISUAL STRATEGY FOR REGENERATIVE RURAL BRANDING

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This paper presents the design of a visual identity system for Quinta da Borgonha, a multifunctional agricultural estate and farm-to-table destination situated in S. Pedro de Rates, Portugal, as a case of ecosystem-informed design. Located on the Camino de Santiago and deeply rooted in local geography, agricultural tradition, and natural cycles, Quinta da Borgonha exemplifies how brand systems can align with nature-based values while addressing industrial and commercial demands. The project evolved from a single-entity identity challenge into a strategic and scalable visual ecosystem integrating restaurant, cheese dairy, and artisanal ice cream sub-brands. By grounding the visual identity in symbolic representations of the land and building a modular system that balances coherence and distinctiveness, the project demonstrates how visual identity can act as an ecosystem design strategy, supporting natural, cultural, and economic resilience. The paper discusses the project's design process, place-based methodology and competitive relevance. This project positions visual identity design as a vital contributor to agri-food innovation, within the emerging field of nature-inspired design, while also underscoring its relevance as a catalyst for approaches to shape more resilient futures, expanding the documentation for further research in the field.

Keywords: *Visual identity, packaging design, ecosystem-informed branding, integrated design systems, rural industry*

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PAPER ID [71]

TECHNOLOGY AND DESIGN IN DIALOGUE: THE SUSTAINABLE TRANSFORMATION OF PORTUGAL'S STONE INDUSTRY AND THE BROOT PROJECT

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Industry 4.0 (I4.0) has brought digital disruptions to supply chains (SC), attracting the attention of researchers and practitioners. This paper presents a theoretical and conceptual approach that explores how technological advances are changing SC processes in the Portuguese ornamental stone (POS) industry. It reveals innovative capabilities within the Supply Chain Operations Reference (SCOR) model that enhance sustainable performance and contribute to achieving the 17 Sustainable Development Goals (SDGs). A systematic literature review links I4.0 capabilities to SCOR processes and assesses their impact on the SDGs. To complement this framework, the paper integrates the *Broot – Dialogues from Within* project as a case study, showing how design-driven initiatives can strengthen stakeholder collaboration, valorise cultural and territorial resources, and project the sector internationally. The findings suggest that while I4.0 supports POS-SC sustainability, the success of the SDGs depends not only on collaboration and training, but also on initiatives such as Broot that embed design, creativity, and identity into SC transformation. This study, therefore, sheds light on the interplay between I4.0, sustainability, and design within the POS-SC, highlighting the importance of combining technological and cultural innovation to drive systemic change.

Keywords: *Design Innovation; Ornamental Stones; Supply Chain 4.0; SDGs; Broot Project*

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PAPER ID [72]

MICROCOSMOS AS ECHOES OF NATURE: BIOPHILIC PATHWAYS TO SUSTAINABILITY IN CERAMIC ART

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This paper presents the Microcosmos series as a biophilic and sustainable approach in ceramic art, designed to echo the cycles of nature. By uniting fired clay with living seeds under glass domes, the works create micro-ecosystems where soil, atmosphere, and water are symbolically and materially reimagined. The germination process transforms each piece into process art, allowing growth, change, and temporality to become integral to the artistic form. Philosophically, the series reflects Anaxagoras' concept of spermata as origins of being, Heraclitus' principle of perpetual flux, and Hegel's dialectics, positioning the seed as a metaphor of continuity and renewal. As "echo chambers" of nature's wisdom, the works highlight how art can amplify ecological rhythms, fostering both aesthetic experience and ecological awareness. In doing so, Microcosmos demonstrates that sustainability in art is not only structural but also a cultural and ethical responsibility.

Keywords: *echoes of nature, biophilic design, ceramic art, sustainability, seeds, process art*

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PAPER ID [74]

DESIGN IN THE PORTUGUESE INDUSTRIAL CONTEXT: THE SCENIC TABLE PROJECT

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This article presents the role of design in the Portuguese industrial ecosystem through the development of the Scenic Table project. The case enabled the observation of interdepartmental dynamics integration of design (or its absence) in decision-making systems and on conservative operational methods. Vertical design management, as practiced by leading companies, demonstrates its strategic relevance and ability to generate cross-disciplinary innovation. However, Portuguese industry still resists this integration, with design's interdisciplinary contribution remaining ambiguous. The lack of measurable indicators in Portugal for valuing industrial products through design reinforces this misunderstanding. In this context, the relevance of design is emphasized, alongside the ambition of cultivating a holistic and interconnected design culture. The study highlights an awareness of design in the project mainly as a technical mediator, rather than as an inventive force. The Scenic Table project, internationally recognized with the A' Design Award, demonstrates how design can drive differentiation, innovation, and competitiveness by exploring cultural dimensions absent from the organization. In conclusion, design should be recognized not only for its operational role but also as a critical, creative, and interdisciplinary practice, a strategic agent essential to the vitality of Portuguese industry.

Keywords: *Industrial design, Project management, Portuguese industry, Design performance, Interdisciplinarity*

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PAPER ID [80]

EMOJIS AS INSTRUMENTS OF SOCIAL CARE: EXPLORING THEIR ROLE IN PROMOTING RELIGIOUS TOLERANCE ON YOUTUBE

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While social design has traditionally been associated with social responsibility, its scope now encompasses community development and broader social transformation. A key aspect of this evolution is the establishment of 'spaces of care' or 'tolerance' through design-based participatory co-creation methods. However, these spaces remain limited in their effectiveness unless they directly address various forms of intolerance, particularly religious intolerance. As social media, particularly YouTube's comment sections, have become a primary platform for the expression of religious intolerance, with discussions often escalating into inflammatory exchanges, there is a pressing need to develop tools that foster religious tolerance in digital environments. Recent research indicates that positive emojis can significantly reduce hostility and promote reconciliation during religious discussions in the comment sections. When used strategically, emojis can help soften hostile interactions, offering users tools for reconciliation and dialogue. This paper explores the potential of emojis as tools for promoting social care on social media, with a particular focus on promoting religious tolerance in comment sections and facilitating respectful religious discussions within online communities.

Keywords: *Regeneration, Social Design (Community-Led Design), Spaces of Care, Co-Creation, Emoji Design, Religious Tolerance.*

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PAPER ID [81]

POSTPHENOMENOLOGY, IMMERSIVE MEDIA, AND SPATIAL DESIGN TOWARDS MEDIA LITERACY: A RESEARCH PROPOSAL

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Digital technologies shape human experiences, perceptions, and societal practices by mediating and co-constituting reality. As information and communication technologies (ICTs) become increasingly embedded in daily life, they raise critical ethical concerns about their neurobiological, cognitive, and psychosocial impacts on the human subject, demanding renewed approaches to media literacy studies. This article addresses a significant gap in contemporary research: the absence of established frameworks for designing immersive, technologically mediated environments that actively promote the

development of media literacy. Moving beyond traditional, competence-based, and content-focused models, the research synthesises perspectives from postphenomenology and posthumanism to reframe media literacy as an embodied, situated, and relational capacity. From a postphenomenological perspective, technology is a multistable, transformative, non-neutral mediator that actively shapes human subjectivity and experience. The text outlines a seven-phase research program, grounded in constructivist principles and Grounded Theory Methodology, to develop a practice-oriented framework comprising actionable design guidelines, spatial and visual representation techniques, and embodied interaction models for designing hybrid atmospheres – immersive, technologically mediated physical environments – to support media literacy development. The framework will serve as a practical bridge between philosophical inquiry and design practice, providing conceptual and actionable tools to advance critical media literacy theory and application.

Keywords: *Spatial Design, Postphenomenology, Media Literacy, Hybrid Atmosphere, Embodiment.*

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PAPER ID [95]

TOWARDS THE CIRCULARITY OF THERMOFORMED PARTS FOR PACKAGING INDUSTRY

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According to current projections, global plastic consumption is expected to increase in the coming decades, intensifying plastic waste generation and related environmental impacts. This highlights the urgent need to reduce plastic consumption through the implementation of strategies that promote reuse and closed-loop recycling, especially in short-term applications such as packaging. The food sector is primarily responsible for the use of plastics in packaging. Consequently, Polyethylene is among the most widely used and discarded polymers worldwide. In this regard, the present study aimed to develop a thermoformed polyethylene food packaging intended for closed-loop recycling and suitable for reuse. The packaging development process was guided by requirements defined according to the context of use - transport and storage of nuts in shell in a B2B business model. The process of conceptualising incorporated bio-inspiration (from the nuts themselves) as a central element. Several units of the packaging were manufactured and results demonstrated compliance with the previously defined requirements. Considering this, it was concluded that the methodology employed in the development of this packaging can be extended to other case studies, including in the development of larger-scale solutions capable of meeting market demands, as the current work represents primarily a proof of concept.

Keywords: *Packaging, Closed-Loop Recycling, Reuse, Product development*

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LISTEN

LISTEN

Attuning to Natural Systems
To design is first to listen — to rivers, winds, and unseen patterns.

Environmental Data in Design
Observational Methods in Natural Systems
Ecosystem-Informed Design
Nature-Based Decision Making
Adaptive Design from Nature

Areas | environmental data, eco-feedback, data-driven design, adaptive systems

Before we act, we must observe. LISTEN is a call to attune ourselves to the silent intelligence of ecosystems, to read landscapes like texts and to decode the signals of the living world. This track values design that begins with listening, through data, observation, immersion, or contemplation, guiding processes that respond with sensitivity and respect to natural rhythms and complexity.

LISTEN

PAPER ID [79]

LAURUS AUREA: BIO INSPIRED ADAPTIVE URBAN SYSTEMS FOR ENVIRONMENTAL COMFORT IN PIAZZA DEI CINQUECENTO, ROME

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The research explores the architectural and urban redevelopment of Piazza dei Cinquecento in Rome through a bio-inspired, computational, and climate-adaptive approach. Inspired by the bay leaf and its microscopic structure, the design process translates biological principles into spatial, environmental, and technological strategies. Leaf venation geometries are reinterpreted through Voronoi structures to define functional areas of the square, while the behavior of stomata informs responsive pavilions that open and close according to solar radiation, enhancing passive cooling. The project integrates computational design tools and environmental simulations, enabling comparative evaluation before and after the intervention in terms of thermal comfort and heat island mitigation. IoT and AI systems support real-time monitoring of climatic conditions and human presence, activating dynamic strategies for spatial management. Digital fabrication with numerical control ensures precision and sustainability in producing modular pavilions. This research exemplifies a transdisciplinary design approach, where architecture, biology, environmental physics, design, climate sciences, and digital technologies converge to generate a resilient and intelligent urban system rooted in the cultural context of Rome.

Keywords: *Bio-inspired architecture, Environmental design, Computational design, Urban Heat Island, Transdisciplinarityt*

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PAPER ID [84]

NATURAL RESOURCES BETWEEN ECOLOGICAL CHALLENGES AND OPPORTUNITIES: INSIGHTS FROM A SYSTEMATIC LITERATURE REVIEW TO GUIDE REGENERATIVE DESIGN PRACTICES FOR TERRITORIAL DEVELOPMENT

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The proliferation of invasive alien plant species (IAS), driven by global warming, poses an escalating ecological challenge, particularly in the Mediterranean, where ecosystems are vulnerable and

under high anthropogenic pressure. Without sustainable forest management strategies focused on valorization, residual biomass from IAS is often directed to composting or energy recovery. Circular Economy and Bioeconomy paradigms provide an alternative by promoting cascading valorization of residual biomass into bio-based products with varying added value, reintegrated into new product and service systems, reshaping territorial value chains. This study investigates the valorization potential of Robinia pseudoacacia, one of Europe's most widespread IAS, through a critical literature review, identifying key plant fractions and their industrial applications while highlighting interdisciplinary connections. IAS are ambivalent: they threaten ecosystems but can also serve as strategic resources within circular and bio-regenerative models, generating environmental, social, and economic value. Design is approached systemically, translating heterogeneous data into actionable knowledge through action-research and fostering a regenerative culture. In response to climate crises, resource scarcity, and ecosystem disruption, design guides stakeholders, reconfigures production, services, and innovation models, and supports territorial regeneration in vulnerable contexts.

Keywords: *Natural resources; Circular economy; Regenerative design; Sustainable materials; Intersectoral industrial valorization; Product-service System Design*

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PAPER ID [90]

DRAWING ATTENTION EMERGING DESIGN PERSPECTIVES AND METHODOLOGICAL PATHWAYS FOR PLANT AWARENESS RESEARCH

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Plant Awareness Disparity refers to the human tendency to overlook plants and undervalue their ecological significance. This condition is intensified in urban environments where opportunities for meaningful encounters with vegetation are often limited. This paper, developed within a PhD research project at Politecnico di Milano aims at contributing specifically to the methodological renewal of PAD studies by exploring how design-led approaches can support attentional and relational engagement with plants. Drawing on a literature review of 60 empirical studies, the paper highlights the prevalence of cognitive and quantitative approaches, while emphasising the increasing demand for methodological diversification and the proven benefits of creative and experiential engagement with plants. Recent design research contributions demonstrate how design tools can facilitate situated observation and multisensory attunement. Focusing on research tools, the literature suggests drawing as a promising modality for assessing and improving Plant Awareness, as it has been shown to externalise thought processes, enhance observation, support model-based reasoning and promote emotional engagement. Finally, the paper introduces "Drawing Attention" as a situated design-led methodological

framework to be further developed within the author's doctoral research. Here, the aim is to enrich the methodological landscape of Plant Awareness research by proposing a generative, context-sensitive, and structured integration of design theories and practices into the field.

Keywords: *Plant Awareness Disparity; Design Research Methods; Drawing to Learn; Urban Public Space; Transdisciplinarity.*

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PAPER ID [96]

RE-GROUNDING DESIGN: LISTENING, PROXIMITY, AND HUMAN SCALE IN TERRITORIAL TRANSITIONS

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In a context marked by accelerating ecological, social, and technological transformations, design is called to rethink its role as a practice capable of listening to, interpreting, and regenerating territorial systems. This paper develops the theoretical and methodological framework of an ongoing research project that investigates "listening to territories" as a situated approach to orient design toward regenerative innovation, in alignment with the LISTEN track and the conference challenge "Circular Materials and Local Production." Drawing on situated design (Suchman, 1987), autonomous design (Escobar, 2018), and human-scale economics (Schumacher, 1973), the research will adopts a qualitative methodology based on in-situ exploration, observation of material and cultural landscapes, territorial mapping, and collective feedback practices. Through preliminary case studies in Sicily and Lisbon, the study examines how listening operates within small-scale production ecosystems rooted in local resources and collaborative infrastructures. The findings suggest that listening functions simultaneously as an epistemic practice of situated knowledge production, a political act that redistributes agency within territorial networks, and an ecological orientation that repositions design within living material systems. In this sense, listening emerges not merely as a method, but as a critical infrastructural condition for context-sensitive and regenerative design practices.

Keywords: *Situated design; Territorial listening; Human-scale Economics; Regenerative practices; Local Communities.*

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PAPER ID [115]

FROM EXTRACTION TO ENERGY: LAND-USE TRANSITIONS IN QUARRY LANDSCAPES

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The expansion of renewable energy infrastructures is a central component of contemporary sustainability transitions. However, the rapid deployment of large-scale photovoltaic power plants increasingly raises concerns regarding land-use competition, ecosystem integrity, and territorial sustainability. In many regions, renewable energy facilities are installed in natural or forested areas, generating new socio-environmental pressures. At the same time, landscapes degraded by extractive activities remain underused and often require long-term ecological regeneration. This study explores the potential of post-extractive landscapes, particularly decommissioned quarries, as suitable sites for photovoltaic power plants. Adopting a socio-ecological systems (SES) perspective, the research develops an exploratory analytical framework and compares alternative land-use scenarios to assess their territorial sustainability implications. The results suggest that converting degraded quarry sites into renewable energy infrastructures may support environmental regeneration, reduce land artificialisation, and contribute to more balanced land-use transitions within regional SES.

Keywords: *Land-use transitions; Socio-ecological systems; Post-extractive landscapes; Photovoltaic power plants; Territorial sustainability; Renewable energy transition.*

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PAPER ID [119]

RECONVERTING LAND USED FOR EXTRACTIVE INDUSTRIES TO GENERATE RENEWABLE ENERGY AS A SOLUTION TO INCREASE TERRITORIAL SUSTAINABILITY

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The environmental challenges facing humanity in this second quarter of the 21st century are slowly and partially being resolved, with some of the solutions themselves presenting new challenges. The rapid construction of photovoltaic power plants is beginning to put negative pressure on socioeconomic systems, causing economic impacts and reducing sustainability in the territories, while areas degraded

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by mining continue to require natural regeneration. These two current issues, intertwined in the organization of land use in the context of transitions to sustainability, may have a common solution by converting these areas into renewable energy generation sites. This study proposes to explore them together as a complex system through a geographic lens, compare the impact on territorial sustainability and stakeholders through a comparative model, propose a conceptual framework and supporting this hypothesis as a potential future public policy.

Keywords: *Transitions to Sustainability, Public Policies, Socio-Ecological System, Quarries Reconversion, Photovoltaic Power Plants, Spatial Justice.*

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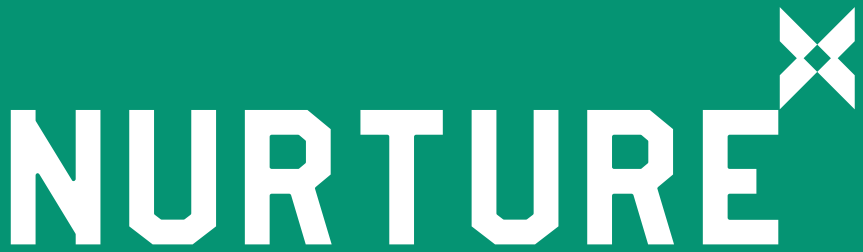
NURTURE

NURTURE

Cultivating Sustainable Practices
Design as care. Growth as reciprocity. Making as healing.

Design for Soil and Food Futures
Permaculture in Urban Design
Biodiversity-Supporting Products
Eco-friendly Manufacturing Practices
Sustainable Consumer Goods

Areas | sustainable materials, permaculture, eco-products, circular economy

NURTURE embraces design as a regenerative gesture—one that cultivates instead of extracts, that nourishes instead of consumes. Rooted in permaculture, circular practices, and eco-ethics, this track explores how we can design with the patience of a gardener, with the humility of a steward, and with the awareness that every material choice is also a moral one.

NURTURE

PAPER ID [17]

A CONTEMPORARY APPROACH TO A TRADITIONAL METHOD OF COMBATING DROUGHT: THE USE OF CERAMIC OLLA TECHNOLOGY IN SUSTAINABLE WATER MANAGEMENT

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This article examines the contemporary and sustainable solutions offered by traditional olla irrigation technology, which has a history dating back thousands of years, to global water scarcity and drought problems. Porous clay pots called 'ollas' are buried in the soil and water plants directly at the root zone through a self-regulating mechanism. This passive system adjusts water flow based on soil moisture levels, achieving water savings of 50-80% and minimising evaporation losses. Ollas, which were used in ancient China, North Africa, and South America, have once again become the focus of attention due to their low cost, energy independence, and environmentally friendly design. They have a wide range of applications, from small gardens to field-scale and ecological systems (including saline soils). The article highlights the advantages of the olla, such as water and energy savings, contributions to soil health, and low maintenance requirements, while also addressing challenges such as labour requirements and frost risk in large-scale applications. Future prospects suggest that the potential of this method could be enhanced through the integration of smart systems and scientific research. Olla technology offers a valuable solution for sustainable agriculture and water management, both economically and ecologically.

Keywords: *Ceramic olla, olla irrigation, sustainable water management, water conservation, fighting drought*

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PAPER ID [21]

FIVE UK MANCHESTER CRAFTS AND DESIGN CENTER ARTISANS SUSTAINABLE CRAFT SERVICE DESIGN STORIES

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The primary objective of this study is to construct narratives about sustainable craft services through contextualized interviews with five craft artisans working at the UK's Manchester Craft and Design Centre. The aim is to identify what they currently offer in their daily craft operations regarding sustainable craft practices and services; these results help understand how artisans provide sustainable craft services and the motivations behind these practices. Thus, it establishes an initial

understanding of sustainable craft service in practical terms and enriches our understanding of the essential aspects of sustainable craft making. More importantly, the study's results lay a theoretical foundation for this area of research.

Keywords: *Sustainable Craft; Service Design; Design ethnography; Storytelling; Contextual interviews.*

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PAPER ID [49]

SUSTAINABLE MATERIAL INNOVATION FROM AGRO-INDUSTRIAL BY-PRODUCTS: TRENDS, OPPORTUNITIES, AND INSIGHTS FROM A SYSTEMATIC LITERATURE REVIEW

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The concept of design as care goes beyond the simple creation of objects or services and is understood as an ethical and relational practice guided by responsibility, reciprocity, and regeneration. This practice is reflected in participatory and regenerative design approaches, in which communities and territories are considered organized systems within which regenerative cycles are redefined. From this perspective, the possibilities of recovering and transforming agro-industrial by-products into new products and materials contribute to the definition of new models of responsible consumption and production, in line with Goal 12 of the United Nations 2030 Agenda. Design addresses circularity and sustainability, emerging as a key discipline in ecological transition processes, intervening through the development of alternative materials, the adoption of environmentally friendly practices, and the design of consumer goods from by-products. The bibliometric study presented provides a systematic overview of scientific research on the valorization of agro-industrial waste. There has been exponential growth in publications over the past decade, along with the emergence of distinct thematic clusters, ranging from recovery technologies to systemic approaches geared towards circularity. Despite significant progress, the analysis highlights knowledge gaps, particularly regarding innovative applications that could play a strategic role in the transition to more sustainable industries.

Keywords: *Design as care, regenerative design, by-product valorization, biomass recovery , bibliometric analysis, network analysis*

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PAPER ID [65]

VALIDATING A WORKFLOW FOR MODULAR HOUSING: DIGITAL FABRICATION AND COLLABORATIVE CONSTRUCTION

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This paper explores the integration of digital fabrication, parametric design, and participatory construction methods to address the pressing challenge of affordable housing in Portugal. Using the WikiHouse system as a case study, a workflow was developed to generate customizable, modular housing units, allowing end users to actively participate in the construction process, even without prior architectural or construction experience. The research combines computational design, CNC fabrication, and collaborative assembly to produce accessible, low-cost dwellings while enabling iterative, expandable configurations. A full-scale demonstrative project validated the feasibility and efficiency of the system, revealing critical insights into workflow optimization, user interaction, and construction logistics. The findings highlight the potential of combining shape grammars, digital tools, and community-driven approaches to foster inclusive, adaptable, and sustainable housing solutions, providing a foundation for future pilot projects and broader application within cooperative housing contexts.

Keywords: *Digital fabrication; Parametric design; Modular housing; Participatory construction; Affordable housing.*

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PAPER ID [69]

INTEGRATIVE DESIGN OF MODULAR BATH WHEELCHAIRS: A SYSTEMIC APPROACH TO ADJUSTMENT, FOLDING AND TILT MECHANISMS

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This paper presents the development of an innovative modular shower wheelchair, designed through an iterative process focused on modularity, ergonomics, compactness, and resistance to humid environments. The project followed a structured design methodology, gradually refining solutions through multiple iterations to address structural and functional challenges.

The final design incorporates adjustable modules that allow adaptation to different anthropometric profiles, including seat width and depth, backrest height and inclination, neck support with lateral stabilization, armrests with height adjustment, and footrests with both angle and height regulation. In addition, two key systems were developed: a tilt-in-space mechanism, enabling controlled seat inclination up to 30° with gas springs, and a folding system that allows compact storage and transport while maintaining stability.

The outcome is a shower wheelchair that integrates structural robustness, user comfort, and caregiver ergonomics, representing a systemic and holistic approach to assistive product design.

Keywords: *Modular Design, Assistive Technology, Systemic integration, Ergonomics, Shower Wheelchair, Iterative Design*

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PAPER ID [77]

DEVELOPMENT OF A MATERIAL FROM RESIDUES OF THE CORN MILLING INDUSTRY: CHARACTERISATION AND APPLICATION IN EGG TRANSPORT AND MARKETING BOXES

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The widespread use of petroleum-based plastics creates significant environmental problems, which are further compounded by challenges related to disposal and recycling. This research proposes the development and characterisation of a biodegradable material derived from waste generated by the dry corn milling industry. The main objective of the study was to evaluate this new material and demonstrate its practical application by creating a box for transporting and marketing quail eggs, a product commonly made from single-use plastic. The material was prepared using corn residue with a pregelatinized corn binder. The formulations were tested in a factorial design, varying the amounts of water, potassium sorbate, and calcium carbonate. Characterisation tests revealed that the formulation containing more water and sodium carbonate had significantly higher mechanical strength (72.3 N). Based on these results, a prototype quail egg box was developed, confirming the material's viability. The study concludes that, although this biomaterial has strength limitations, it is a promising substitute for plastic in applications with low mechanical requirements and a short life cycle, effectively valorising agro-industrial waste and reducing plastic use.

Keywords: *Biomaterial, Agro-industrial waste, Sustainable packaging, Corn residue, Plastic substitute*

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NURTURE

PAPER ID [89]

PLAYING AGAINST WASTE: A COMMUNITY-BUILT BOARD GAME FOR SUSTAINABILITY EDUCATION

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This study presents a community-based design project developed in collaboration with an NGO and two primary schools to address household food waste through play. In this project, a board game that integrates narrative, competition, and collaborative tasks was developed and evaluated to promote children's critical awareness of food waste. An iterative, design-driven approach was employed: two game prototypes were tested in classrooms and refined into a final version based on insights from children, teachers, and parents. Qualitative data were collected through participant observation during play sessions, semi-structured interviews with students and teachers, and online questionnaires completed by parents. Taken together, the results suggest that the game increased children's knowledge of food-waste practices, stimulated classroom dialogue, and supported the development of teamwork and communication skills. Meanwhile, parents recognized the relevance of the topic and expressed interest in using the game at home. Building on these results, the paper discusses how a board game co-developed with NGO experts and school communities can serve as a boundary object, connecting educational content, civic campaigns, and family practices. It outlines design principles for community-informed educational games that link sustainability education across school and home contexts.

Keywords: *design for sustainability, design for learning, game-based education, behavioural change, food waste, participatory design.*

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PAPER ID [102]

THE IMPORTANCE OF COLOR IN SKETCHES | ENHANCING LEGIBILITY AND READABILITY

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Architects and designers have long used freehand drawing to foster creative thinking. In the ideas generation initial phase of a project conception in Architecture and in Design is where sketches are more frequently used. A colorful sketch can more easily study and communicate the concerning

materials, dimensions, and structure. Colors in sketches provide important visual definitions, allowing the materials recognition without words and instantly change the drawing perception and clarify or emphasize the ideas intention or communication. Under qualitative research, based on literature review methodology, through the study and interpretation of several authors' statements, and a survey with two groups of elderly people who work and live in rural communities. Based on the observation of colored sketches produced by architects and designers, we can understand how older people perceive the importance and legibility of the information contained in sketches both with and without the use of colors. This paper investigates the importance of color use, aiming to stimulate reflection and bring new perspectives on color relevance when used in sketches.

Keywords: *Color, Sketches, Architecture, Design, Readability, Older People.*

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PAPER ID [104]

CONTRIBUTIONS FOR A MORE SUSTAINABLE AND SUITABLE CLASSROOM ENVIRONMENT IN VIETNAM

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This paper reports a study, which is part of a research project, aiming to help create a better classroom environment for Vietnamese children, especially those in underdeveloped areas, who need more suitable and sustainable classroom furniture. A large proportion of primary school children in Vietnam is still using inadequate classroom facilities and equipment, where durability, stability and sustainability of materials and objects are overlooked, and classroom organization is not student-centred. This study aims to search for data regarding bamboo-based materials' production and behaviour and propose a flexible solution for chair and desk in Laminated Bamboo Lumber (LBL), anthropometrically adapted for children aged 6-10 years by allowing flexibility in dimensions, which can support them in healthier postures. Therefore, this research addresses questions regarding sustainability and adaptability to the Child. Review of literature and active project development are the methods applied to allow a clearer comprehension of these issues and search for solutions. The result is a proposal for chair and desk, which materialized to test with children, aiming to provide a set of guidelines or directives for designers, architects and producers involved in projects of classroom furniture and its spatial organization.

Keywords: *Product Design, Laminated Bamboo Lumber, Classroom Furniture, Body Position, Learning Environment.*

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NURTURE

PAPER ID [118]

TEXTILE ARTIFACTS FOR PHYSICAL AND SENSORIAL COMFORT OF NEURODIVERGENT PEOPLE

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This paper explores the development of sensory textile artifacts designed to promote the physical and emotional comfort of neurodivergent children, specifically those with Autism Spectrum Disorder (ASD) and Attention Deficit Hyperactivity Disorder (ADHD). Within the "Design for Health" framework, the research addresses the intensified and poorly regulated sensory experiences of these individuals through a person-centred, ethical, and sustainable approach. Using a qualitative and participatory methodology, the study combined Garment Biographies and Customer Experience Audit to map affective histories and material preferences. Fieldwork involved participation with children, occupational therapists, and caregivers in therapeutic and domestic contexts. The process resulted in two primary prototypes: a light compression vest with an acoustic hood and a soft animal-shaped textile object with varied textures and weighted elements designed to provide deep pressure and calming tactile stimulation, both constructed mostly from local textile deadstock. Results indicate that integrating sensory, affective, and environmental criteria into textile design significantly enhances well-being and self-regulation in neurodivergent children. The research challenges mass production models by highlighting the value of personalised, sustainable, and participatory design in promoting mental health and inclusion. It further positions textile artifacts as nurturing mediators of care.

Keywords: *Neurodiversity; Sensory Textiles; Design for Health; Participatory Design; Sustainability; Emotional Design.*

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REGENERATION

REGENERATION

Designing for Renewal
To restore is to imagine again. To heal is also to design.

Ecological Restoration Projects
Resilient Infrastructure Design
Social Impact of Regenerative Design
Urban Renewal and Green Spaces
Community-Led Environmental Projects

Areas | urban renewal, social design, community-led design, restoration projects

Beyond sustainability lies the promise of renewal. REGENERATION celebrates design as a force that can restore ecosystems, repair social fabrics, and re-enchant places wounded by extraction or neglect. This track honours the power of design to bring life back—to land, to community, to future possibility and asks how we might co-create spaces of care, resilience, and shared belonging.

PAPER ID [24]

RECYCLING OF EXTERNAL PROSTHESES WASTE FOR MANUFACTURING 3D FILAMENT. LOW-COST HAND FOR THE E-NABLE PROJECT

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This project addresses Medical Industrial Waste generated in the production of external prostheses by proposing a circular design strategy for recycling Thermoplastic Urethane (TPU) and Polyurethane (PU) powder into a new 3D printing filament. TPU misprints from prosthetic cosmesis and PU powder generated from CNC-milled limb models were collected, processed, and reformulated into composite materials. The study tested formulations with 10–60 wt.% PU in an injection moulding process to evaluate surface quality, processability, and mechanical properties. The best results were obtained with 10% PU and 90% TPU. This formulation demonstrated suitable hardness, extrudability, and tensile strength, using a MultiTest-dV Mecmesin machine with EN ISO 527-2:1996 specimens. After that, the material was extruded into pellets using a twin-screw extruder (Coperion ZSK 26) and then processed into filament using a 3Devo machine. Calibration tests defined optimal extrusion parameters: 210 °C, 5 rpm, and 90% cooling. Printing tests confirmed good flexibility, surface quality, and a skin-tone-like colour. A passive mechanical hand was developed using this filament. The project demonstrates the feasibility of producing a 100% recycled filament for prosthetic applications and is currently being applied in a real case within the E-Nable community, offering sustainable, low-cost solutions for users with limb differences.

Keywords: *Recycling; 3D Printing; Polyurethane; Prosthetics; Prostheses; Design*

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PAPER ID [52]

TRADITION AND INNOVATION IN INTERIOR DESIGN: REGIONAL CULTURE AND SPATIAL IDENTITY IN BEIRA INTERIOR, PORTUGAL

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This article examines how regional culture informs interior design as a driver of spatial identity. It combines a narrative review of the literature, drawing on phenomenology and design/heritage studies,

with a comparative analysis of two case studies from Portugal's Beira Interior (Bode Country House, designed by PLATAFORMArq, and Orca House, designed by dbA. arquitectura). The theoretical review highlights spatial identity as a relational construct emerging from the interplay between materiality, construction logic, and cultural memory, articulated through lived experience and everyday use. Building on this framework, the study identifies three operative strategies for balancing tradition and innovation in contemporary interiors: heritage-inspired reinterpretation, hybridization between artisanal processes and new technologies, and cultural sustainability as a guiding design criterion. These strategies are applied consistently to both case studies, focusing on interior materiality, spatial organization, and experiential qualities. The analysis demonstrates that vernacular resources, such as stone, wood, and regional constructive logic, can be critically recontextualized to meet present-day functional and environmental requirements while reinforcing identity and cultural meaning. The article contributes an integrated framework linking theory and interior design practice and offers guidelines for context-sensitive design that resists homogenization without resorting to nostalgic pastiche.

Keywords: *spatial identity; regional culture; heritage-inspired design; interior design; Beira Interior.*

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PAPER ID [54]

DEFINING DESIGN CRITERIA FOR ARTIFICIAL CORAL REEF STRUCTURES VIA 3D CONCRETE PRINTING

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Coral reefs are among the most vital ecosystems on Earth, yet projections indicate their extinction by 2050, with severe ecological consequences. Artificial reefs have emerged as a strategy to mitigate reef degradation by replicating key ecological functions such as habitat protection, regeneration, and biodiversity enhancement. This paper, part of a broader design investigation, focuses on identifying development criteria for artificial coral reef structures and evaluating the feasibility of 3D concrete printing (3DCP) as a manufacturing process. A systematic literature review, using inclusive criteria and a snowballing approach across multiple databases, was conducted to establish a framework for

reef design and manufacturing. Key criteria identified include modularity, topological adaptability, disassembly, parametric design, and material toxicity, with emphasis on ecosystem-aware and species-oriented approaches. Extrusion-based additive manufacturing, particularly 3DCP, offers advantages in scalability, shape optimization, and material efficiency, yet presents challenges such as anisotropy and rheological constraints. Experimental toxicity tests of Weber 3D mortar were conducted at the Oceanário de Lisboa using saltwater aquaria, confirming chemical stabilization after approximately 45 days. Findings highlight the potential of research-driven design combined with 3DCP to develop ecologically viable artificial reefs, while underscoring the importance of integrating environmental, material, and design considerations in reef restoration strategies.

Keywords: *"Artificial Reef Design"; "Marine Habitat Restoration"; "3DCP Ecological Applications"; "Ecological Restoration Parametric Design"; "3DCP Materials Biocompatibility"*

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PAPER ID [57]

EDUCATION IN DESIGN AND GENERATIVE AI: A KIND OF 'PANDORA'S BOX' IN THE CONTEXT OF CREATIVE TEACHING

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Generative Artificial Intelligence (AI) is rapidly transforming creative practices, raising profound questions about its role in design education. This study investigates how design students perceive this emerging technology, questioning whether it is primarily regarded as an automated tool that executes tasks or as a genuine collaborator in the creative process. A two-phase methodology was adopted: (1) a survey conducted with 243 students from IPMAIA, IPCA, ESMAD, ESAP, and ISLA, which gathered data on usage patterns, motivations, ethical concerns, and perceptions of AI's impact on design education and the future of the profession; and (2) the implementation of a classroom activity designed to explore the conscious integration of AI into creative practice. Findings indicate that 40.6% of students have already experimented with generative image AI, although significant obstacles persist, particularly

technical limitations and ethical reservations. While more than half of the participants recognize AI as a valuable partner in design practice, many also express concerns about replacement and the erosion of authenticity. By addressing these perceptions, this study contributes to the ongoing debate on the pedagogical integration of generative AI, emphasizing the need for its critical, ethical, and educator-mediated use to safeguard the value of human creativity

Keywords: *Generative AI; Design; Creative Process; Design Education; Higher Education.*

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PAPER ID [78]

BIORECEPTIVE CONCRETE SURFACES FOR URBAN REGENERATION: A MATERIAL-DRIVEN EXPLORATION TO FOSTER BIOLOGICAL COLONIZATION

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Urbanization intensifies environmental pressures and reduces natural habitats, highlighting the need for new strategies to integrate living organisms into built environments to foster urban regeneration. This study investigates the development of non-structural bioreceptive materials designed to support the growth of algae, mosses, and lichens in urban contexts. The research combined an ecological profiling of pioneer species with the experimental modification of concrete substrates. Species were selected using databases of ecological indicators, and their ecological preferences guided the choice of concrete as the base material, due to its alkaline pH favorable to their growth and its widespread presence in urban environments. Modifications included tinkering to adjust ratios and incorporate porous aggregates, natural fibers, and biomineralized fillers to enhance porosity, water retention, and pH conditions. Results demonstrated clear correlations between material properties and biological colonization, while also revealing trade-offs with mechanical performance. The study discusses these tensions and explores how surfaces and material design strategies could further support colonization and shift public perceptions of biological growth from decay to deliberate aesthetic and ecological value. This research contributes to the field of material-driven design by proposing bioreceptive concretes as a pathway for regenerative and sustainable urban surfaces.

Keywords: *Bioreceptive materials, regenerative design, material-driven design, materials for transition, built environments.*

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PAPER ID [82]

GRAPHIC DESIGN FOR SPATIAL REGENERATION: COLOR, PATTERN, AND PARTICIPATION IN ARCHITECTURAL ENVIRONMENTS.

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This article explores the contribution of graphic design to regenerative approaches in architecture, urban and built environment through colour, pattern, materiality, and collective experience. Drawing on the evolving relationship between graphic design and architecture, it positions visual communication as a spatial and emotional medium that shapes atmosphere, identity, and collective experience. Through selected case studies, the article reflects on the potential for graphic interventions to generate inclusion, belonging, and well-being across different, sometimes vulnerable, contexts. From a phenomenological perspective, design is seen as a situated and affective practice, capable of renewing connections between people, materials, and places. Ultimately, the article argues that graphic design can act as an agent of cultural and spatial regeneration, facilitating embodied experience, empathy, and care within lived environment.

Keywords: *Graphic Design, Spatial Regeneration, Participatory Design, Atmosphere, Well-being*

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PAPER ID [88]

A DESIGN-DRIVEN FRAMEWORK FOR INTEGRATING BIO-BASED MATERIALS INTO DISPOSABLE CHEST PATCH DESIGN

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Disposable wearable chest patches have raised growing environmental concerns due to their reliance on synthetic materials, creating a distinct design challenge. Previous studies have explored bio-based polymers for skin-contact applications, yet few have examined how such materials can be systematically integrated into design processes to realize consumer-level products. This study develops a conceptual framework for integrating bio-based materials into disposable chest patch design. Using a qualitative approach grounded in Research for Design (RFD), the study synthesizes literature on

material performance, user comfort, and sustainability. The resulting framework connects material, user, and system dimensions through a bio-based multilayer stack composed of polylactic acid (PLA), cellulose, and chitosan, which functionally mimics biological stratification. It further outlines a design-driven technical development process linking user requirements, material selection, and sustainability scaling. Validated through expert evaluation (CVI = 0.96), the framework demonstrates high consensus regarding its clarity and applicability, providing a theoretical foundation for sustainable, user-centered disposable wearables. In the long term, this approach supports the industry's transition away from synthetic reliance toward ecologically responsible design solutions.

Keywords: *Bio-based materials; Sustainable fashion; Wearable design; User-centered framework; Research for Design; Environmental sustainability*

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PAPER ID [92]

FASHION AS ART: LEGITIMATION AND VALIDATION PROCESSES

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Fashion, often associated with functionality and consumption, has been gaining space in the artistic field through complex legitimation processes for centuries.
This article seeks to analyse how fashion is inscribed as art by exploring determining factors such as the creative intentionality of the designer, aesthetic innovation, the symbolic dimension, the performance of the presentation, the critical and institutional validation and the way in which the justification and proof of veracity is given. As a methodology, a bibliographic review and analysis of paradigmatic cases are used, in order to problematize the intersection between fashion and art and discuss the conditions that allow their registration in the artistic field. Aesthetic innovation, symbolic weight and performance acting as critical and cultural language are discussed, dialoguing with themes such as body, identity and technology once factors that allow us to generate meaning and dialogue with the cultural transformations of the contemporary world.

Keywords: *fashion; art; aesthetic legitimation; performance; visual culture.*

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PAPER ID [114]

DESIGNING ARTIFACTS FOR THE EMOTIONAL SUPPORT OF CHILDREN WITH TYPE 1 DIABETES: A PARTICIPATORY APPROACH

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Type 1 diabetes (T1D) is a chronic disease whose enormous emotional and psychosocial impact stems from the complexity of treatment and permanent changes in patients' routines. As part of this impact, children with this disease are often diagnosed with disorders such as depression, anxiety, and suicidal tendencies. This study demonstrates the participatory methodology applied to the development of emotional support artifacts for children with T1D. Individual workshop sessions were held at São João Hospital in Porto, where the children's creative skills were enhanced in the definition of the artifact's design. The results achieved with the children's creative tools reflect a set of preferences and formal patterns representative of this community. Despite the various constraints imposed by the hospital on the workshops, the study shows that individual activities can produce valuable collective results. The participatory approach applied highlights the power of design as a tool for promoting social sustainability and emotional support in healthcare contexts.

Keywords: *Participatory Design; Design for Health; Children's Health; Emotional support; Social Sustainability*

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PAPER ID [123]

DEVELOPMENT OF A CHILDREN'S APPLICATION FOR TRADITIONAL STORIES: A LITERATURE REVIEW

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Education plays a fundamental role in the developing of inclusive, cognitive and emotional skills in early childhood. In recent years, design has served as a mediating practice capable of supporting educational transformation through participatory processes and engagement-driven learning environments. This article analyses the evolution of digital literature, as well as his characteristic and benefits for children; educational gamification and cultural diversity, discussing the role of design as

a tool for social regeneration and sustainable learning in childhood; it also discusses the main design principles of interface for children, defining the user's necessities and obstacles, as well as their role in design. The review analyses theoretical contributions and empirical studies addressing gamification as a motivational strategy in education, participatory and community-centred design approaches, and the use of storytelling as pedagogical resources. By synthesising these perspectives, the paper discusses how design can promote educational experiences with meaningful engagement and inclusivity while supporting cultural sustainability and community knowledge. The findings highlight the potential of combining gamification with participatory design methodologies to create learning environments that go beyond instrumental knowledge acquisition, fostering creativity, critical thinking and cultural awareness.

Keywords: *Children Interface Design; Educational Gamification; Digital book; Design with Communities; Regeneration; Listen*

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SYSTEMIC

SYSTEMIC

Integrative and Holistic Approaches
All things are connected. Design is a thread in the web.

Systems Thinking in Design
Integrated Ecosystem Design
Holistic Product Development
Interconnected Network Solutions
Cross-Disciplinary Design Approaches

Areas | systems thinking, cross-scale design, integration, ecosystem-level design

SYSTEMIC invites us to zoom out—to see design as part of greater networks, flows and feedback loops. From micro to macro, from matter to meaning, this track embraces complexity and seeks integration across disciplines, actors and scales. It's a space to explore design as choreography, as ecology, as a practice of linking what was once seen as separate.

SYSTEMIC

PAPER ID [1]

REFRAMING DESIGN IN A MORE-THAN-HUMAN WORLD

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The prevailing paradigm in design has focused primarily on human needs, desires, and our control over the natural world. However, it is time to reconceive design through a more-than-human lens in light of escalating ecological crises, biodiversity loss, and the limitations inherent in anthropocentric perspectives. This paper investigates the more-than-human's ontological and historical dimensions, situating it within the evolution of ecologically informed design practices. The literature review and conceptual analysis incorporate Indigenous knowledge systems and posthumanist theory. Our discussions reveal a conceptual web that broadens the designer's role and challenges the boundaries between human and nonhuman entities. As a result, our research evolved into a speculative exploration that sought to add layers to the Double Diamond Framework. Within the four phases, Discover, Define, Develop, and Deliver, which have been guiding the design projects, Attune, Co-sense, Grow, and Reintegrate are suggested. It also led to reinterpreting Dunne and Raby's A/B Manifesto. This perspective seeks to transcend both commercial problem-solving (Design A) and speculative critique (Design B) to embrace ecological entanglement, reciprocity, and care across diverse species and systems (Design C). By integrating pluriversal and interspecies perspectives, design, understood as a non-static, evolutionary, and transformative process, can evolve into an ethical, regenerative, and relational practice capable of contributing to sustainable futures.

Keywords: *More-than-human, Posthumanism, Nature-centred Design, Design framework, Design Manifesto*

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PAPER ID [8]

FROM FUNNEL TO JOURNEY: A SYSTEMIC APPROACH TO GEN Z CONSUMER BEHAVIOR THROUGH DESIGN THINKING

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The traditional linear funnel model has long served as a foundational framework in marketing. However, its adequacy has diminished in light of the increasingly complex, participatory, and emotionally driven behaviors of Generation Z. This paper critically revisits the dominant logics of consumer

decision-making and proposes two interrelated conceptual frameworks – the *Continuous Consumption Cycle* and the *Trust Cycle* – as tools for understanding how brand relationships are formed, sustained, and regenerated in digital ecosystems. Grounded in systems thinking and design theory, these models reflect a shift from persuasion to participation, from exposure to co-creation, and from transactional messaging to value-based and emotionally engaging interactions. Drawing from contemporary literature and cultural market analysis, this study reframes the consumer journey as a cyclical, adaptive, and affective process shaped by identity, community, and feedback. By situating marketing within a broader design practice – attuned to rhythms, reciprocity, and relational dynamics – the paper advocates for a regenerative approach to brand strategy, trust-building, and long-term relevance in the attention economy.

Keywords: *Gen Z, Consumer Journey, Participatory Design, Trust Cycle, Affective Economy, Systemic Marketing*

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PAPER ID [9]

REFRAMING INTELLIGENCE: A SYSTEMIC APPROACH TO ARTIFICIAL AGENTS IN DESIGN

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As artificial intelligence becomes increasingly present in design processes, critical questions arise about the forms of intelligence it promotes and the values it embeds. This paper reconsiders the notion of intelligence in AI-assisted design, arguing for a shift from computational performance toward systemic, ethical, and ecological understanding. By viewing artificial agents as participants in socio-ecological systems, the study proposes a framework of systemic intelligence and reciprocal collaboration. Rather than treating AI as a tool for solving predefined problems, this perspective explores how intelligent systems can engage in co-creative processes that foster more context-sensitive, responsible, and regenerative design outcomes. This approach repositions AI not as a substitute for human creativity, but as a contributor to design practices grounded in care, cultural awareness, and collective responsibility.

Keywords: *design intelligence, responsible AI, regenerative design, AI ethics, co-creation, socio-ecological systems*

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PAPER ID [15]

NEEDS DEFINITION AND REQUIREMENTS TRANSFORMATION FOR AN AUTONOMOUS FOOT SCANNING SYSTEM

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This article presents a structured approach to identifying needs and defining requirements in the development of an autonomous foot scanning device, carried out within the scope of the FAIST Project – Sustainable and Technological Smart Agile Factory. Addressing the growing demand for personalization, ergonomic adaptation, and sustainability in the footwear industry, the adopted methodology focuses on the analysis of usage scenarios and the functional application of the system. Based on a process that combines a review of the state of the art with the definition of a usage guide, the study translates operational, technical, and aesthetic needs into clear and concrete system requirements. The resulting framework contributes to the development of more efficient and coherent devices, designed for effective performance in real usage contexts within the footwear sector.

Keywords: *Foot scanning, Footwear industry, Sustainability, Customization, System requirements*

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PAPER ID [19]

DO IT SMALL. DO IT LOCAL. CO-DESIGNING NEW USES FOR EDIBLE BY-PRODUCTS WITH SMES

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This paper analyses the integrated application of Systemic Design and Food Design principles across three experiments conducted by the PoliTo Food Design Lab with local Small and Medium-sized Enterprises (SMEs). The objective of this study is to evaluate the potential of this approach in facilitating the valorisation of agro-industrial by-products and activating more circular production models. Through a comparative analysis of the case studies, the contribution reflects on the lessons learned and addresses the question of how co-design between academia and industry can generate a transformative impact within the local agro-industrial context. The results suggest the potential of design, as a discipline, to promote the transition towards more circular models, activating transformative

processes within SMEs, facilitating new synergies among small local actors. Furthermore, the research indicates that design can promote a dialogue between innovation and the renewal of the territorial entrepreneurial network.

Keywords: *Systemic Design Approach, Food Design, Co-Design, Byproducts, Small and Medium-sized Enterprises, Case Studies.*

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PAPER ID [23]

DELPHI METHOD — SELECTING AND REDUCING VARIABLES TO STUDY FASHION DESIGNERS' SELF-PERCEIVED CREATIVITY

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This study aims to demonstrate the application of the Delphi Method for selecting specific variables to assess Portuguese fashion designers' self-perceived creativity through a questionnaire. Recognizing that creativity is not an isolated trait but is influenced by various surrounding contexts, an in-depth literature review identified many potentially relevant variables, resulting in an excessively long initial questionnaire (226 items). To refine and reduce the number of items, the Delphi Method was employed, involving 12 specialists currently active in the field. This article outlines the methodological procedures, from expert selection to the analysis of results. The objective was achieved over two survey rounds, during which the expert panel worked toward consensus on which topics and variables should be included in the final instrument. Statistical validation was conducted using Kendall's coefficient of concordance (W) and descriptive measures such as mean and standard deviation, supporting the reliability of expert consensus across rounds. As a result, the number of items was reduced from 226 to 72, covering individual, team, organizational, and societal factors, with academically grounded criteria supporting each decision.

Keywords: *Delphi Method, Questionnaire, Creativity, Fashion Design, Portugal*

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SYSTEMIC

PAPER ID [30]

ITERATIVE DESIGN OF AN ANALOGUE GAME TO PROMOTE HEALTHY AND SUSTAINABLE EATING BEHAVIOURS

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Food has a direct impact on health, well-being, and the environment. Therefore, it's crucial that promoting healthy and sustainable food choices begins in children. In this study, we present the iterative development of an analogue game, which involved a cycle of testing with children, game improvements, and validation in a family context. Usability testing was complemented by a heuristic analysis and a questionnaire survey. Non-probability sampling was used. Since most variables were qualitative, descriptive statistical analysis was used. The effective contributions of this study lie in demonstrating the game's motivating potential to facilitate the teaching-learning process regarding the different phases of the food life cycle. Furthermore, validation of the game revealed that the gameplay – including cooperation and dialogue between children while solving the game's challenges – generated conscious eating behaviours in most of these children. The expected results highlight the need to carry out additional studies on the application of the game in other contexts, valuing applied research in Design.

Keywords: *Analogue game; Game-based learning; Design practice; Healthy and sustainable food; Children.*

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PAPER ID [33]

ARTISANAL CRAFTS AND SUSTAINABLE ECOLOGICAL DEVELOPMENT: A VALUE SYSTEM BASED ON INDIVIDUAL SKILLS AND COLLECTIVE DYNAMICS

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SYSTEMIC

This paper explores how contemporary craft-based practices in Portugal can inform systemic approaches to sustainable ecological development in design and architecture. Grounded in qualitative research with practitioners working in locally embedded artisanal contexts, the study maps how individual skills and collective dynamics articulate environmental, social, cultural and economic dimensions of sustainability. Through an abductive, practice-oriented approach, the article proposes a value system that links physical, emotional and cognitive skills with collaborative, territorial and economic dynamics at the community level. Rather than prescribing methods, this framework offers a systemic lens for understanding how local craft ecologies can support more autonomous, resilient and balanced design practices. The contribution is twofold: it highlights the role of affective competencies in contemporary craft-based design, and it positions artisanal systems as laboratories for rethinking sustainable design education and practice from a bottom-up, territorially grounded perspective.

Keywords: *Craft-based Design Practices, Embodied and Affective Learning, Sustainable Ecological Development, Value Systems, Systemic Design, Local Artisanal Ecologies, Design Education*

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PAPER ID [41]

RESEARCH IN TRADITIONAL CRAFTS AT DESIGN HIGHER EDUCATION: A SYSTEMATIC LITERATURE REVIEW

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Traditional crafts, as an integral component of intangible cultural heritage (ICH), have increasingly been incorporated into higher design education to promote skill transmission, cultural understanding, and innovative practice. However, existing research remains largely fragmented, with limited systematic reviews and comprehensive comparisons. This review adopted a Systematic Literature Review (SLR), followed PRISMA 2020 guidelines, limited the time span to 2010–August 2025, focused on traditional craft courses and projects in higher design education, included 13 empirical studies from multiple countries, and analysed them using the Constructive Alignment (CA) framework. Results indicate that learning objectives (LOs) mainly concerned craft knowledge and skills, followed by cultural understanding, while research and inquiry competences were markedly under-represented; teaching and learning activities (TLAs) mainly involved craft practice and community engagement, and digitisation and research-oriented training remained at an exploratory stage. Assessment practices relied predominantly on summative assessment, and formative mechanisms had not yet been widely

adopted. These courses have made progress in the transmission of skills and culture but remain limited in cultivating research capacity and in implementing process-oriented assessment.

Keywords: *Traditional crafts; Intangible cultural heritage; Higher design education; Systematic literature review; Constructive alignment*

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PAPER ID [42]

FASHION-NET: SYSTEMIC MAPPING AND INTERDEPARTMENTAL CO-DESIGN IN THE ITALIAN FASHION INDUSTRY

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The article explores the Italian fashion system from a systemic and interdisciplinary perspective. The initial stage of the investigation involved developing a detailed picture of the contemporary national industry, with a particular focus on the main players and the tools accompanying the current sustainable and digital transitions. In this context, data visualisation is an interpretative tool that uses symbols and visual representations to make the complex dynamics of the fashion sector understandable. The article guides the reader through the maps, which are designed to represent the dynamic process of shared design in a non-linear way. The aim of this contribution is to investigate the complexity of the contemporary fashion system through the development of a qualitative visualization device, conceived as a sense-making tool capable of revealing the articulation of departments, the relationships among ecosystem actors, and the ways in which design tools intervene within design processes.The project introduces visualisations that outline the fashion ecosystem, highlighting the connections between companies, professionals and digital technologies, and offering a new perspective on the co-creation processes underlying the creation of a collection. To verify the accuracy and readability of the maps, an online questionnaire was created, divided into two main sections: the first dedicated to "comprehension" and the second to "critical interpretation". The involvement of a diverse sample, consisting of professionals and students in the sector, made it possible to collect significant data both on the validity of the representations and on possible directions for future development and integration.

Keywords: *Fashion System, Fashion Mapping, Twin Transition, Co-Design, Made in Italy.*

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PAPER ID [43]

FROM SIDESTREAMS TO SYSTEMS: DESIGNING CROSS-SECTORAL CHAINS. SYSTEMIC DESIGN APPROACH TO SIDESTREAM VALORIZATION AND SUSTAINABLE PRODUCTION MODELS.

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This paper examines how systemic thinking and design can facilitate the transition from linear models to circular and regenerative systems, to develop a participatory model for the cross-sectoral valorization of agri-food byproducts. The study combines qualitative approaches, system mapping, and participatory design within a four-phase process developed through the involvement of companies, institutions, and research centers. The data analysis was conducted by applying the leverage points perspective, adopted to interpret challenges and opportunities at different levels of the system investigated. The analysis highlights challenges of regulatory, economic, technical-operational, and cultural nature, along with priority areas of intervention related to collaborative governance and eco-design. From these findings, three design trajectories emerge as the foundation of a cross-sectoral production model: the first aims to establish the structural conditions necessary for integration; the second focuses on enabling the adoption of new models through supporting tools; and the third is oriented toward consolidating the system through collaborative networks, public–private agreements, and new market assets. The contribution demonstrates that cross-sectoral integration, when supported by enabling and participatory processes, represents an effective strategy for building sustainable, resilient, and place-based value chains, contributing to the co-creation of economic, social, and environmental value.

Keywords: *circular economy, systemic thinking, leverage points perspective, cross-sectoral value chains, sidestream upcycling*

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PAPER ID [48]

BREAKING THE MOLD OF LOCAL DEMOCRACY - ORGANISATIONAL DESIGN AS POLITICAL INNOVATION

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Over the past decade, design has moved into political arenas. It has been mobilized in neighborhoods, workshops, municipal innovation labs, and speculative projects reimagining participatory governance. These experiments within local government show creativity and promise, yet their effects often remain shallow: tools and instruments are built, processes tested, but the infrastructures of local democracy remain largely untouched. Scholars of Political Innovation (Mair, Kindt, & Mena, 2023) remind us that renewal requires more than new instruments, it depends on how institutions, organizational routines, and cultural norms shape whether citizen input makes a difference. This article examines local government, where democratic experimentation is most visible yet particularly fragile. Building on Kurkela's organisational perspective, it adapts and mobilises the three interdependent dimensions of democratic infrastructures: institutional, operational and cultural, as an analytic lens for participatory governance. The paper's contribution is agenda-setting: it offers this structure as a lens for analysing municipal participation and issues a call to action for designers. It argues that meaningful democratic innovation requires organisational design approaches capable of reconfiguring rules, workflows and cultural norms so that participation becomes a stable and consequential part of everyday governance.

Keywords: *political innovation; democratic innovation; organisational design; local government; citizen participation;*

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PAPER ID [60]

BRANDING ON THE PORTUGUESE WAY OF SANTIAGO: THE CASE STUDY OF THE SÃO TEOTÓNIO HOSTEL

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This study primarily seeks to analyze brand management in the hotel sector. Within the scope of this study, the opportunity and interest arose in understanding the operation of the São Teotónio Municipal Hostel, located on the Portuguese Way of Santiago. The main objective is to analyze how the hostel can be better recognized through its brand and name to promote a better accommodation experience for pilgrims. To this end, a questionnaire was developed for pilgrims on the Way of Santiago route, in order to evaluate the communication strategies used by the São Teotónio Hostel. This study sought to identify the main factors that limit and enable the recognition of the hostel as a brand. This case study is an investigation within the context of religious tourism in Portugal. The methodology employed was a quantitative and qualitative analysis, using a questionnaire administered to 115 pilgrims, as well as interviews. The scientific relevance of this study lies in contributing to a better understanding of the management of the "public hostels" brand and the importance of branding for religious and

cultural tourism. The sample results showed that, even as a publicly managed municipal institution, communication and marketing strategies are crucial for disseminating information and guiding pilgrims.

Keywords: *Marketing, Branding, Way of Santiago, Religious Tourism, São Teotónio Hostel*

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PAPER ID [62]

OPTIMIZING ENCAPSULATION DESIGN FOR A MULTIPURPOSE SENSING PLATFORM TO ENHANCE ROAD SAFETY

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Intelligent Transportation Systems (ITS) are essential for reducing the 1.19 million annual road accident fatalities, yet deploying sensitive electronic monitoring systems on public highways presents significant challenges regarding harsh weather exposure, thermal management, and mechanical integration. This paper describes the development of a weather-resistant encapsulation system for a road safety sensing platform. Adopting a design research approach structured by the Kano Model prioritization, the project evolved from a comprehensive analysis of guardrail typologies and environmental constraints to the engineering of a modular enclosure. The final solution, manufactured using UV-stabilized Acrylonitrile Styrene Acrylate (ASA), features integrated passive thermal management and a sintered filter system to ensure IP65 protection without compromising gas sensing capabilities. Field validation with 20 prototypes over six months demonstrated effective internal temperature buffering and resulted in a 15% improvement in data collection accuracy compared to earlier iterations. This study contributes a validated technical solution for outdoor sensor protection and offers a replicable methodological framework for developing robust hardware within the constraints of intelligent road infrastructure.

Keywords: *road safety; sensor encapsulation; environmental monitoring; design for excellence; intelligent transportation systems.*

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PAPER ID [64]

A PRECIOUS ECOSYSTEM: A HUB ON JEWELRY DESIGN

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This paper is part of a research project developed within a Doctorate of National Interest program, focusing on the themes of identity, innovation, and sustainability in the jewelry sector, one of the hallmarks of Made in Italy. Italy is distinguished by a broad, diverse, and excellent jewelry production network, rooted in an entrepreneurial culture of family-run SMEs with a strong artisanal vocation. The research, supported by a network of universities, production centers, gemological institutes, and associations already established and developed in the Campania region, explores jewelry materials and techniques—traditional, innovative, and experimental—through a typological and topological investigation of the scientific-entrepreneurial network of districts and a multicriteria analysis. The aim of the research is to define strategies that incorporate new models and tools linked to a concept of comprehensive sustainability. Adopting an innovation-oriented design methodology, supported by multi-criteria and qualitative analyses, as well as desk and on-site research tools and cross-sector networking activities, the research aims to build a physical and virtual Jewelry Material & Workhandship Library. This interdisciplinary system is conceived as a scientific resource for academic communities and professionals in the production and cultural sectors, and at the same time as a place for interaction and co-working between craftsmanship and new digital logics.

Keywords: *ecosystem, interdisciplinarity, systemic thinking, jewelry library*

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PAPER ID [66]

FROM WASTE TO RECOVERY: CO-DESIGNING HAIR-BASED SORBENTS FOR REGENERATIVE, CIRCULAR OIL-SPILL RESPONSE

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This paper investigates the potential of human hair as a regenerative and sustainable material within design-driven circular economy frameworks. Drawing on a recent applied research project, this study examines how underutilised organic fibres, such as human hair and animal fur, can be repurposed from waste into high-value materials for environmental recovery, particularly oil spill response. The study

applies a qualitative, multi-method approach that combines co-design workshops, laboratory and field testing, and expert interviews. Guided by systems thinking, the research identifies key phases in material and product development while analysing how participatory processes facilitate the cultural and emotional acceptance of unconventional materials. The findings confirm that hair-based fibre mats are superior in terms of absorbency, durability, and reusability compared to conventional polypropylene products, and they also embody social and environmental benefits. The process highlights how stakeholder collaboration and iterative experimentation enable the reframing of waste as a design resource. By integrating technical performance with social meaning, the study contributes to the discourse on systemic innovation, material agency, and the designer's role in advancing sustainable transitions. Also, it positions human hair as an example of how design can mediate between cultural perception and ecological responsibility.

Keywords: *Human hair, oil spill response, circular materials, co-design, systems thinking, regenerative design, material acceptance*

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PAPER ID [73]

THE CIRCULAR TEXTILE ECONOMY MODEL TODAY: AN ANALYSIS OF FOUR EMINENT EUROPEAN CASES

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The textile and clothing industry is globally recognised for its environmental impact, ranging from excessive resource consumption to the increasing volume of textile waste, which necessitates an urgent transition towards sustainable models. The circular economy has emerged as a central paradigm in mitigating these impacts, with its cyclical structure contrasting the dominant linear logic of production and consumption. In this context, the present article proposes a reflection on the application of the circular economy model applied to the textile and clothing sector, focusing on reuse, repair and recycle. To this end, scientific literature is articulated with contemporary evidence disseminated through specialised media, mobilising the Buzz Report approach as an analytical resource. In recent years, greater public visibility has been given to environmental concerns and positive initiatives within the sector, intensifying debates in social and industrial spheres. Thus, the analysis of journalistic publications enabled the academic discussion to be brought closer to real dynamics observed in the textile and fashion industry, revealing concerns that extend beyond scientific discourse. This articulation made it possible to identify and illustrate emergent practices through four European case studies.

Finally, it is argued that, although promising, the transition towards such a model requires collaborative efforts among companies, governments, designers, and consumers to address future sustainability challenges within the sector.

Keywords: *Fashion Textile Industry, Recycle, Reuse, Repair, Sustainability.*

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PAPER ID [86]

VERSATILITY IN STAGE CLOTHING: COSTUME AND PROP

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The version of the play Twelfth Night, by William Shakespeare, by director Ricardo Neves-Neves, from Teatro Elétrico, offers the spectator surprising moments, as is the case with one of the costumes for the character Olívia, with a role that extends to its basic and obvious function, simply dressing and framing the character. The focus of this article is to demonstrate the versatility of the costume, which is simultaneously a stage prop. As creativity can be a solution, specific in this case, to resolve a situation, which normally uses an external prop and in this case the prop comes from a piece of clothing that is on the scene, one of the costumes used by one of the main characters, Olivia. The methodology used in the investigation supporting the article is a mixed one: interventionist and non-interventionist. The costume designer's work can be extended to other areas to achieve creative solutions in order to answer staging issues, addressing the transdisciplinarity.

Keywords: *Costume Design, Theater, Scene Prop, Holistic Design.*

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PAPER ID [91]

A HOLISTIC METHODOLOGY FOR DIGITAL MATERIAL CLASSIFICATION: INTEGRATING TECHNICAL, SENSORY AND EMOTIONAL DIMENSIONS IN DESIGN

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SYSTEMIC

This article explores an innovative approach to addressing key challenges in the fashion and textile industries. It introduces a comprehensive methodology aimed at creating a universal system for cataloging and characterizing materials based on physical, sensory, and emotional attributes. The central objective of the study is to establish a digital library that democratizes access to diverse materials—industrial, regional, and artisanal—while fostering sustainable and inclusive design practices. The methodology outlined is structured into four interconnected phases: the identification and cataloging of materials, the development of a sensory and emotional classification framework, the advanced digitalization of materials, and the creation of a dynamic, interactive digital platform. Using tools such as PrEmo, UEQ, and PANAS, the study measures emotional responses and usability, ensuring the system captures both technical precision and emotional resonance. Advanced digital tools, including 2D, 3D, and 360° visualizations, are employed to simulate real-world interactions with materials in a digital environment, enabling designers to explore textures, behaviors, and emotional impacts remotely. The proposed innovation lies in its holistic approach to material characterization, which integrates sensory and emotional dimensions into the design process. This represents a significant shift from conventional material libraries, which focus predominantly on technical properties. By prioritizing emotional and sensory aspects, the methodology enhances the connection between materials and end-users, providing designers with deeper insights into their material choices. The conclusions of this study emphasize its contributions to sustainability in fashion design. By reducing reliance on physical samples, the project minimizes waste and carbon emissions associated with material transportation. Moreover, the inclusion of small-scale, regional, and artisanal materials in the digital library promotes economic empowerment and cultural preservation. This approach aligns with Sustainable Development Goals (SDGs) by fostering innovation, reducing environmental impact, and supporting the global transition to more ethical and sustainable design practices. In summary, the article presents a pioneering framework that bridges the gap between traditional material practices and the digital demands of contemporary design. Its focus on emotional and sensory attributes, coupled with sustainability-driven innovation, sets a new standard for how materials are explored, understood, and integrated into the fashion industry.

Keywords: *Digital Material Library; Sustainable Fashion; Emotional Design; Textile Digitalization and Artisanal Material Preservation*

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PAPER ID [97]

INVISIBLE NEEDS, VISIBLE MOBILITY: DESIGNING INCLUSIVE PRIORITY SYSTEMS FOR SUSTAINABLE PUBLIC TRANSPOR

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SYSTEMIC

This paper examines the challenges faced by people with hidden diseases and disabilities in accessing public transportation, focusing on how the lack of visible indicators restricts mobility, social recognition, and equitable access. Limited public awareness and empathy often lead to uncomfortable interactions, discriminatory behaviours, and difficulties in obtaining priority seating, revealing shortcomings in current signage and communication systems. The study follows a human-centred design methodology, combining interviews, participant observation, image analysis, and co-design sessions with individuals living with hidden disabilities or health conditions. Prototype development and testing will be carried out iteratively with transportation operators and the Centro de Reabilitação Profissional de Gaia, ensuring contextual relevance and ethical responsibility. Building on the Wallflower Project, the research aims to create a hybrid physical–digital system that facilitates the recognition of priority needs within Porto's bus network. The system integrates visual symbols, NFC-enabled artefacts, and inclusive communication tools tailored for public transit, with the goal of fostering empathy, improving recognition, and supporting equitable access for passengers with invisible conditions.

By enhancing visibility and social understanding, the project seeks to improve mobility experiences and establish a pilot model adaptable to other public services and priority-based environments. It also contributes to more inclusive and environmentally sustainable mobility, aligning with the European Green Capital agenda.

Keywords: *Inclusive Sustainable Mobility, Invisible Disabilities, Sustainable Public Transport, Human-CentredDesign and UrbanAccessibility.*

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PAPER ID [98]

SYSTEMIC DESIGN AND COOPERATIVE NETWORKS FOR THE REGENERATION OF ARTISAN LEATHER-GOODS MICRO-ENTERPRISES

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The artisanal fashion sector, grounded in manual skills and territorial knowledge, is currently experiencing fragility due to production fragmentation and limited access to competencies, resources, and technologies. Design—understood as a cultural process and mediator between production systems and material practices—becomes the connective factor that supports the twin transition through digital prototyping, fostering a balance between innovation, sustainability, and identity. This paper, developed

within a doctoral research project on design for artisanal leather goods, examines the organization of a systemic cooperation network among micro-enterprises in Tuscany and Campania as a strategy for sectoral regeneration. The network is conceived as a collaborative ecosystem capable of facilitating knowledge exchange, shared training, collective acquisition of digital tools, participation in funding programs, and the promotion of innovation and sustainability.

Within this framework, parametric digital prototyping (CLO3D, Lectra) emerges as an enabling technology for the design phase, consistent with Hand Made in Italy regulations, which allow digital tools exclusively before production. The exploratory methodology — based on desk research, interviews, and questionnaires — made it possible to identify the needs and expectations of artisans, revealing a strong interest in collaborative models and shared digital resources.

The network thus appears as a systemic approach and a modular, replicable model of territorial innovation, integrating artisanal culture, technology, and local development policies.

Keywords: *Design for Leather, Craftsmanship, Cooperation Network, Digital, Made in Italy.*

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PAPER ID [99]

KNITWEAR AS AN ECOSYSTEM: DIFFUSE AND EXPERIENTIAL MODELS FOR DESIGN AND PRODUCTION

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The fashion and textile sector is undergoing a structural crisis that is economic, ecological, and cultural. Productive delocalisation, the loss of know-how, and global competitive pressure have weakened industrial districts, challenging the role of manufacturing as a form of cultural expression. Within this context, design can act as a systemic practice connecting people, technologies, and territories. This contribution introduces an integrated vision of contemporary knitwear through the model of the Diffuse–Experiential Knitwear Factory, conceived as a glocal ecosystem oriented towards sustainable regeneration. The Diffuse Knitwear Factory describes a distributed production system composed of digitally interconnected micro-units, where the logic of "moving data" replaces that of "moving goods", fostering proximity, traceability, and territorial cooperation. The Experiential Knitwear Factory extends this perspective to the cultural and relational dimensions of manufacturing, transforming production into a space of co-creation and shared experience where artisans, designers, and users collaborate

on processes and meanings. The integration of these two dimensions defines a systemic and human-centred model of Italian knitwear, in which sustainability emerges from a network of material and immaterial relationships. Within this framework, design assumes a mediating role between technology, culture, and territory, guiding the transition towards more conscious and regenerative forms of manufacturing.

Keywords: *Systemic Design; Knitwear; Distributed Manufacturing; Experiential Manufacturing; Fashion Sustainability; Glocal Ecosystems*

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PAPER ID [113]

FROM CONCEPT TO PATENT A DESIGN-LED MULTIDISCIPLINARY PROCESS FOR A HANDS-FREE DOOR OPENING INTERFACE

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Human interaction with shared-use surfaces represents a structural problem of the built environment, particularly in high-traffic contexts such as hospitals, public facilities, and commercial spaces. Inconsistent hygiene behaviours make it inadequate to assume an ideal user as a design premise and expose the limitations of solutions that overlook the diversity of users' physical abilities. These conditions reinforce the need for preventive, inclusive, and systemic approaches in interface design. Although the COVID-19 pandemic intensified this issue, it constitutes a persistent challenge that precedes and extends beyond situations of sanitary emergency.

This article presents a critical reflection on a multidisciplinary, practice-led design process developed within an academic laboratory, which led to the conception of a hands-free auxiliary door opening device. The project integrated contributions from design, engineering, and ergonomics and culminated in

the granting of a patent, positioning the solution as an example of applied design for public interfaces.

Rather than focusing on the object as a purely technical solution, the article examines the role of design as a mediating discipline within a collaborative context, addressing form, functional, and material decisions, as well as challenges related to knowledge transfer between academia and industry. The discussion highlights the contribution of design to inclusive approaches.

Keywords: *Interaction design; inclusive design; systemic design; public hygiene; research through design*

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PAPER ID [116]

DESIGN WITH THE COMMUNITY: CULTURAL HERITAGE AS A CREATIVE CATALYST IN GRAPHIC DESIGN HIGHER EDUCATION – THE CASE OF THE LENÇOS DE NAMORADOS FROM VILA VERDE

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This paper documents a pedagogical practice implemented in the 1st year of the Bachelor's Degree in Graphic Design. The proposal structured the conception of a social awareness campaign rooted in activism, taking the Lenços de Namorados (Valentine's Handkerchiefs) from Vila Verde as a reference—a cultural heritage and symbolic artifact subject to critical reinterpretation within the context of higher design education. Methodologically, the process was anchored in the Double Diamond model, integrating immersion in the territory and dialogue with research on activist textile art to deepen reflection on craftsmanship and tradition. The analysis of two student projects evidences the efficacy of this approach in constructing a critical perspective on the traditional artifact, validating ethno-artistic tradition as a strategic resource for creative differentiation (Rohotchenko et al., 2023). The presented pedagogical practice highlights the importance of integrating heritage into educational contexts, both as a creative catalyst and as a device for contextualized learning. It is concluded that the articulation between educational institutions and the territory promotes living laboratories of co-production, capable of generating solutions sensitive to local knowledge and safeguarding heritage from its reduction to a decontextualized commodity.

Keywords: *Design with communities; Design education; awareness design; cultural heritage*

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SYSTEMIC

PAPER ID [126]

THE FASHION SHOW AND CULTURAL HERITAGE: THE CASE OF THE LÉRIAS LACE

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All societies have cultural, social and historical elements in common and they all need to create their own identity to differentiate themselves from others. This fact is not new but has existed since our existence as a community. Identity, which becomes a differentiating element, is created by the abundance of creative processes that are repeated and maintained between generations. Portugal is a country very rich in cultural elements that characterize the different regions and that, at the same time, tell their stories. Traditional, artisanal techniques may be common in different regions, however, they become unique due to the attribution of unique characteristics and make them unique and easily associated with the region that holds them. Renda das Lérias is an important traditional element that marks the culture and history of a small village in the District of Fundão. Its history dates back to the last century and stories are told that mark the identity of this community. The creation and production of a fashion show where the lérias are present requires an exercise of creativity and great respect for the cultural heritage of this region. Creating a parade that values the identity of these people becomes the biggest challenge for a producer. The focus is no longer clothing, fashion, new proposals, but rather the way in which tradition or history can be told quickly, visually and that touches an audience looking for something different but as contemporary as the presentation of new fashion show trends. The research methodology developed for this investigation is based on a mixed, non-interventionist and interventionist methodology. In a first approach, the exploration and definition of themes and concepts resulting from the bibliographic review lead to the development of an interventionist methodology where the researcher goes into the field and seeks to create a new parade model where the concepts explored throughout the research are respected and valued. The results are very interesting and respect for identity is ensured. The dissemination of this culture and this traditional technique is guaranteed by the numerous situations created throughout the parade that arouse curiosity in learning about this ancestral technique.

Keywords: *Identity, Lérias Lace, Cultural Heritage, Fashion Show Production, Arts & Crafts.*

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CROSS-CUTTING

CROSS-CUTTING SUBMISSIONS

DESIGN COMMIT 2026 welcomes hybrid or cross-cutting proposals that span multiple thematic areas. If your work intersects two or more thematic areas or explores the broader integration of design, nature and industry, please select the 'Cross-cutting' option during submission. You may also indicate relevant keywords to help us assign the most suitable reviewers.

PAPER ID [34]

PARTICIPATORY DESIGN AND ACTIVE LEARNING: AN ACADEMIC JOURNEY ALONG THE CAMINO DE SANTIAGO

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This article explores the contribution of design research to improving the pilgrimage experience on the Camino de Santiago. Developed within a Master's programme, the study adopted a Studio-Based Learning approach, integrating active learning, critical reflection, and interdisciplinary collaboration. The methodology combined documentary research, direct observation, interviews, surveys, specialist lectures, and fieldwork, enabling a comprehensive understanding of the phenomenon and its contextual challenges, such as inconsistent signage, limited rest areas, and scarce real-time information. Rather than emphasising individual solutions, the research highlights how participatory processes and applied methodologies foster essential competencies for contemporary design practice: critical thinking, empathy, sustainability, and cultural awareness. Findings reaffirm the relevance of design as an agent of social and cultural transformation and demonstrate the value of education as a platform for generating actionable knowledge. By consolidating applied research methods and promoting direct interaction between designers, users, and real contexts, this work contributes to the advancement of design research and to the preparation of professionals capable of addressing complex problems.

Keywords: *Innovation, Creativity, Camino de Santiago de Compostela, Design education, Social design, Studio-Based Learning.*

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PAPER ID [38]

DESIGNING WITH BIO-BASED MATERIALS: A CRITICAL PERSPECTIVE

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The increasing demand for sustainable products has driven a notable trend toward replacing conventional materials with bio-based alternatives and bioplastics. While this shift is essential for reducing environmental impact, this study provides a critical perspective on the implications of

replacement, emphasizing that other ecodesign principles can sometimes offer more effective solutions. It explores the multifaceted approach to ecodesign, highlighting strategies such as reducing components and enhancing reusability, which can significantly improve sustainability and user experience. Designers play a vital role in assessing the specific context and requirements of each product, determining when bio-based materials can be effectively integrated. Furthermore, designers can educate and raise awareness about sustainability through their work, creating eco-friendly products that promote the common good for the environment and society. As a case study, the development of a medical device concept exemplifying these principles is presented. By streamlining the design, we minimized components and incorporated reusable elements, thereby increasing user confidence and safety. This study highlights the importance of a comprehensive approach to ecodesign, where optimizing functionality and usability can be as impactful as material innovations in achieving sustainability goals.

Keywords: *Bio-based, Bioplastics, Ecodesign, Product design, Packaging, Medical device.*

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PAPER ID [55]

FOOD-CENTRED REGENERATIVE DESIGN: COMMUNITY-LED MICRO-INFRASTRUCTURES FOR URBAN ECOLOGICAL RENEWAL

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In an era marked by environmental, social and political crises, design is called upon to redefine its role within processes of territorial regeneration. This paper investigates how food, conceived as ecological and cultural infrastructure, can operate as driver of urban renewal. It addresses how food-centred, community-led design practices can function as regenerative micro-infrastructures supporting ecological and social transformation in urban contexts. The study adopts a qualitative, design-oriented case study approach and analyses two Italian projects with different degrees of maturity: Le Serre dei Giardini Margherita in Bologna, a consolidated example of community-led urban regeneration, and Demetra in Naples, an ongoing research and pilot project focused on aquaponics-based urban food systems. The former enables the observation of implemented regenerative practices, the latter is examined as a design experiment, emphasising its infrastructural configuration and expected impacts rather than empirical outcomes. Through a comparative and interpretative analysis grounded in regenerative design and design-for-transition literature, the paper explores the conditions through which design enables collaborative practices, reactivates urban spaces through the construction of urban commons. The findings highlight food's role as a mediating device between space, relationships and design, positioning design as a situated practice of care that shapes the conditions for renewal and shared belonging.

Keywords: *Regenerative design, Community-led design, FoodscapeUrban food infrastructures, Aquaponic systemSocio-technical transition, enabling infrastructureSystemic food design*

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PAPER ID [63]

SUSTAINABLE REDESIGN OF INDUSTRIAL TROLLEYS: REDUCING TRANSPORT VOLUME AND ENVIRONMENTAL IMPACT

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This paper presents the sustainable redesign of industrial washing trolleys to address the limitations of conventional welded and bulky structures. Traditional models generate inefficiencies in transport and storage, resulting in higher logistics costs, wasted space, and increased carbon emissions. A modular and dismantlable approach was developed using the DREAM methodology, enabling a significant reduction in transport volume while preserving structural robustness and operational functionality. Prototyping and load tests validated the feasibility of the proposed solutions, confirming their suitability for demanding industrial environments. The redesigned trolleys demonstrated clear benefits, including improved logistical efficiency, reduced material consumption, and lower CO_2 emissions. Beyond technical gains, the study illustrates how ecodesign principles and modularity can be integrated into industrial product design as strategic tools to align operations with circular economy practices and environmental sustainability targets. The results highlight the potential of design as an agent of sustainability, contributing to increased competitiveness and, at the same time, to the decarbonisation of industrial logistics.

Keywords: *Modular Design, Ecodesign, Industrial Logistics, Circular Economy, Sustainability, Product Redesign.*

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PAPER ID [67]

CONCEPTUALIZATION OF AN AUGMENTED REALITY-BASED PLATFORM FOR INDUSTRIAL TRAINING: A CASE OF SERVICE DESIGN

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This article presents the development of a Research and Development project aimed at optimizing the training of new workers on the factory floor. Through a collaborative approach involving a non-profit organization and a partner company, a digital platform was developed to enable the creation and delivery of training content with augmented reality (AR), without the need for programming. Based on a human-centered approach, using design thinking and co-design methodologies from a service design perspective, the project combines technological innovation with participatory and contextual processes. The result is a mobile application that empowers trainers and workers in a furniture manufacturer in northern Portugal. The findings highlight how collaboration and user-centered design shape more effective, inclusive, and sustainable training practices and demonstrate AR's potential as an accessible and effective training tool, respecting users' sociocultural context and real needs.

Keywords: *Service Design, Co-design, Augmented Reality, Industrial Training, Digital Transformation.*

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PAPER ID [75]

LAND(ING) PAGES: RE-SIGNIFYING NATURE THROUGH THE EDITORIAL DESIGN PROJECT UNCONVENTIONAL GUIDE TO THE NATURAL SPACE

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This article examines how editorial design can support ecological reconnection and the de-alienation of "natural" space through the project *Unconventional Guide to Natural Space*, an interactive toy-book. The study addresses the research question: How can an editorial object foster a critical, sensory, and playful engagement with natural environments in a sustainable way?

The research combines a qualitative literature review with the development of an editorial prototype and a usability study involving nine participants. The *Guide* integrates theoretical perspectives on space, the human–nature relationship, sustainable editorial design, and multisensory reading into a series of playful, object-based exercises.

Findings from the usability study indicate that the *Guide* effectively promotes reflection on ecological concepts, increases sensory awareness of the surrounding environment, and challenges the intuitive separation between humans and nature. While some difficulties were identified in the clarity of specific instructions, the results suggest that editorial toy-books can operate as accessible pedagogical and experimental devices for fostering critical engagement with natural space.

Keywords: *Editorial Design, Human-Nature Relationship, Editorial Design for Behaviour Change, Interactive Book; Ludic Practice;*

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PAPER ID [87]

BEST GUESS FOR THIS IMAGE: UPCYCLING BROKEN INDUSTRIAL END-OF-LINE TILES

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This paper presents a Research Through Design (RtD) case study, analysing the archive of the Best Guess for This Image solo show, a breakpoint project in the development of the Grão technique and authorial language by Pedrita Studio. The fundamental goal of the Grão technique is to create an exploratory system that adds value to and resells discarded, end-of-line Portuguese industrial tiles, directly addressing issues of waste and material reputation within the national ceramic industry. The innovation detailed is the project's shift from city-scale to interior-scale art products, achieved by a technical breakthrough: trimming the 15x15cm units into quarters. This systematic process leveraged industrial waste – including broken pieces – to significantly enhance the visual resolution of the final tile panels, effectively turning discarded material into high-resolution artistic output. Positioned at the intersection of Portuguese material heritage and digital logic, the work conceptualises the tile as a complex, compound-coloured "pixel" and utilises systematic design methodologies. The conceptual narrative further explores themes of image reproduction, identity, and algorithmic reasoning by integrating Google Image search results into the artwork's core storytelling. By critically reviewing this pivotal milestone, the paper demonstrates how systemic design practice can be a powerful driver for principles, offering new perspectives for future developments that advance both the contemporary design industry and the sustainability goals of a post-growth economy.

Keywords: *Research Through Design (RtD), Material Agency, Portuguese Industrial Tiles, Upcycling*

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PAPER ID [93]

FIBER-BASED SAFETY UNDERWEAR WITH PH-RESPONSIVE SENSING FOR EARLY DETECTION OF AMNIOTIC FLUID LEAKAGE: A SUSTAINABLE DESIGN AND FEASIBILITY FRAMEWORK

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Preterm birth remains a major cause of neonatal illness and death worldwide, and a considerable proportion of these cases are linked to preterm prelabour rupture of membranes (PPROM). Early identification of membrane rupture is important for timely medical care, but in many low-resource settings, clinical testing is often difficult to access. Therefore, there is a need for a simple and affordable wearable screening method. Existing approaches such as pH Nitrazine strips, disposable panty-liner tests, and biomarker kits each have limitations: pads are single-use and prone to false readings, while biomarker tests are costly and require laboratory facilities. This study presents a design framework for maternity underwear that integrates a pH-responsive sol–gel indicator window. When exposed to alkaline fluid (pH ≥ 7.0), the indicator changes from yellow to blue within one minute and remains readable. A dual-criterion rule combining pH threshold and time persistence is proposed to reduce false positives. The framework outlines prototype materials, bench tests, and validation steps, providing a practical pathway for developing washable, low-cost wearable screening devices suitable for resource-limited environments.

Keywords: *pH-responsive sensor; Nitrazine; amniotic fluid leakage; maternity safety underwear; low-resource settings; sol–gel.*

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PAPER ID [94]

ENHANCING ECO-CONSCIOUS FOOTWEAR SHOPPING THROUGH AR AND AI: A PATH TOWARD GREEN DIGITAL CONSUMERISM

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This study proposes the design of FitCal, an Augmented Reality smart plugin that footwear brands can integrate into their existing mobile applications. The plugin enables real-time foot scanning and personalized size recommendations using device-specific camera calibration for accurate measurements. The Artificial Intelligence engine examines biometric parameters like arch height, foot width, and alignment of the toes to recommend the right styles. The recommendation engine improves over time through reinforcement learning, using user feedback and return data to refine future predictions.
The more users interact with the plugin, the more accurate and personalized its recommendations become. By aligning user foot profiles with brand-specific sizing standards, the plugin enhances the online footwear shopping experience through fit accuracy and personalization. This study aims to explore how immersive technologies like Augmented Reality, and intelligent systems can be combined to transform the online footwear shopping that can reduce product returns and enhance customer satisfaction. As a design-based exploratory study, this paper puts FitCal in the context of the green

digital consumerism discourse by suggesting that better fit evaluation at the point of purchase can indirectly lead to more sustainable e-commerce behaviors by alleviating size-related uncertainty and decreasing avoidable returns. To validate the plugin's design and functionality, the study incorporates usability testing through direct user interaction. In essence, the plugin provides an adaptable and future-ready solution for footwear brands to enhance their digital user experience, foster greater consumer trust through technology, and contribute to the broader vision of sustainable e-commerce.

Keywords: *augmented reality, artificial intelligence, footwear e-commerce, user experience, sustainability, usability*

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PAPER ID [100]

AI FOR CIRCULAR DESIGN A FRAMEWORK TO SUPPORT DESIGNERS TO USE AI ACROSS THE CIRCULAR DESIGN PROCESS

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This paper presents an overview of ongoing research into the intersection of Artificial Intelligence (AI) and circular design. A literature review outlined to understand which AI tools and technologies can support circular design, and how they can best be used. To rationalise current research and provide a categorisation system for future research findings, the 'AI x Circular Design' framework was developed to map AI tools across the design process and to highlight their value towards circular design. The aim of this framework is to inform researchers and practitioners how AI can facilitate circular design across different stages of the design process. This paper provides an introduction to the topic, the methodological approach of the literature review, broad findings, structural overview of the framework, and discusses future research activities.

Keywords: *Circular Design, Circular Economy, AI, Design Process, Product Development. "Special Call – Emerging Voices." Short Paper.*

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PAPER ID [101]

AN ARCHITECT'S NATURAL ABC UNEXPECTED PRACTICE, ELABORATED THEORY

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Flower, Stem, Seed – Is there a chance to cooperate with nature, designing better futures, with this same ethical responsibility? Venustas, Utilitas, Firmitas — can we recognize a relationship? Amidst the environmental crisis and the prevalent artificiality of design, this paper seeks an ethical balance towards the origins, reinterpreting the Vitruvian triad through the archetypal lens of plant growth. The argument emerges from an unexpected practice designed in a natural and spiritual frame — the context revealing the metaphorical framework. The narrative expands precise teachings of three architects, each inspired by plants at critical periods of the 20th century — Fuller, Schwarz, Steiner — to anchor fundamental principles of architectural design. The findings are organized as an open tool, the natural ABC of an architect, seeking the core of a resilient ethic to operate in crisis times. In the end, it is discussed whether the botanical metaphor could today be an alternative Operating Manual to that sought in the 1960s through a technological one. The idea is implicit that, to last, design innovation would benefit from balancing technological originalities with awareness of the eternal origins of Creation. This would imply, at the very least, asking: do we recognize the deeper ethics of an archetypal ABC?

Keywords: *Design Ethics, Environmental Crisis, Design Manual, Botanical Vitruvius, Creation Origins*

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PAPER ID [103]

IMMATERIAL PLACEMAKING SOUND-BASED DESIGN PARADIGMS FOR SOCIALLY SUSTAINABLE PUBLIC SPACES

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This research explores the auditory component in public spaces, understood not only as sound insulation or absorption solutions but also as the exploration of intangible, musical and poetic sensory components that may improve our relationship with a space. The project adopts an interdisciplinary approach – between design and contemporary arts, between physics and the humanities – with the aim of outlining a new design paradigm able to enhance people's comfort and experience in public spaces.

Keywords: *Sound Design, Auditory Experience, Social Sustainability, Placemaking, Urban renewal.*

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PAPER ID [110]

AI IN DESIGN POST-GRADUATION SUPERVISION – ITS USE CHALLENGES

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The production of scientific knowledge is being transformed through artificial intelligence (AI), but it faces significant ethical, transparency, and reliability challenges. The integration of AI into higher education has created new paradigms for learning, mentoring, and creative practice. In the context of investigative processes, AI analyzes large volumes of data, optimizing evaluation processes and resource allocation efficiently. In the context of supervising postgraduate projects, AI presents both transformative opportunities and critical ethical challenges. This article focuses on the responsible use of artificial intelligence in the supervision of postgraduate students in Design, highlighting the need for a balance between innovation and ethical practice. Using a mixed methodology, combining literature review and an analysis of AI tools currently used in design education, a critical reflection on the topic was promoted, considering both enthusiasm and concern. Developing guidelines for the responsible use of AI in education and science, promoting broad access and ethical practices, the article concludes by proposing a framework for the responsible integration of AI in the supervision of design projects.

Keywords: *Design Education; Artificial Intelligence; Post-Graduation Supervision; Human-AI Collaboration; Ethical Literacy.*

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PAPER ID [120]

FROM MATERIAL TINKERING TO BIOTINKERING: INFRASTRUCTURING A BIODESIGN LABORATORY FOR EMERGING MATERIALS PRACTICES

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Biodesign laboratories have increasingly emerged within design research contexts as spaces for material experimentation. However, the practical setup and operation of these laboratories in relation to emerging materials remains underexplored, especially from a biodesign perspective. This paper adopts a practice-based research approach, with the aim to examine the establishment and early operation of a Biodesign Lab embedded in the emerging materials design research. Drawing on situated observations, the study conceptualizes lab formation as an evolving infrastructural process shaped through spatial configuration, equipment organization, material practices, and governance mechanisms. Through an analysis of material tinkering and biotinkering practices, the paper investigates how emerging materials actively participate in shaping laboratory infrastructures and how responsibility, care, and experimentation are negotiated through adaptive arrangements rather than fixed models. By approaching biodesign as a situated extension of materials design practices and the laboratory as a materials design infrastructure accommodating biological agency and uncertainty, the paper contributes a practice-oriented perspective on infrastructuring to materials design and biodesign research, offering insights into how laboratory environments can more responsibly support material experimentation.

Keywords: *biodesign, biodesign laboratory, emerging materials, biotinkering, materials design for transition, practice-based design*


PRACTICAL INFORMATION
FOR PARTICIPANTS

ACCESS & TRANSPORTATION GUIDE

MAPS AND FLOOR PLANS OF THE VENUE

HTTPS://DESIGNCOMMIT.PT/VENUE/

Located 55 km from Porto and just 40 minutes from Francisco Sá Carneiro International Airport, Guimarães is one of Portugal's most enchanting and historically rich cities — often called "the birthplace of the nation".

Surrounded by green hills and medieval architecture, Guimarães combines heritage with a bold commitment to the future. As the European Green Capital 2026, the city embraces design, innovation, and sustainability as forces for social and ecological transformation.

All venues are located in the Zona de Couros, the city's creative district, where the sound of flowing water once animated the leather tanneries that gave Guimarães its identity.

HOW TO ARRIVE

Centro Cultural Vila Flor
Av. D. Afonso Henriques, 701
4810-431 Guimarães
(+351) 253 424 700
geral@ccvf.pt

GUIDED TERRITORIAL TOUR

LEARNING WITH NATURE — IN PLACE

CCVF → (POUSADA DE SANTA MARINHA), GUIDED BOTANICAL TOUR

Registered participants are kindly requested to gather at Foyer 1 of the Centro Cultural Vila Flor (CCVF) at 17:50.

A dedicated bus will transport participants to the Pousada Mosteiro de Guimarães (Pousada de Santa Marinha), where a guided botanical tour will take place in the historic gardens of the monastery.

The visit will be accompanied by specialised guides who will present the natural, landscape and historical heritage of this unique site, offering insight into the relationship between nature, territory and culture, in alignment with the conference theme "Learning with Nature."

This moment has been specially designed for the participants of DESIGN COMMIT 2026, in articulation with the spirit of Guimarães – European Green Capital 2026 (CVE), providing a direct experience of the territory and its local biodiversity. The tour takes place at the same location where the conference dinner will be held, allowing a natural transition between the botanical walk and the social gathering of the event.

After dinner, a return bus will be available to take participants back to the Centro Cultural Vila Flor (CCVF).

19:30 — Gala Dinner Pousada Mosteiro de Guimarães

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When citing works from Design Commit 2026, we ask that you follow the recommended citation style, which for our conference is the APA (American Psychological Association) style, 7th edition. For instance, when citing a presentation from the conference, the format should be as follows:

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CITATION EXAMPLE FOR AN ABSTRACT:

Cardoso Braga, J., Aparecido Pereira, J., Moreira da Silva, F., & Paschoarelli, L. C. (2024) Sustainable product development strategies: An alternative for the micro and small furniture industry in emerging economies. In M. J Félix, F. Pombo, F. Moreira da Silva, P. Cruz, & R. Almendra (Eds.), *Design Commit 2024, 1st International Conference on Design & Industry: Book of abstracts, May 20-22* (p. 145). Forum Braga, Portugal. ISBN 978-972-789-914-2. https://doi.org/10.48528/40cz-rc04.

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