



DESIGN COMMIT

1ST INTERNATIONAL CONFERENCE
ON DESIGN & INDUSTRY · 2024

MAY, 20 - 22 2024

BOOK OF ABSTRACTS >>

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[HTTPS://DESIGNCOMMIT.PT/](https://designcommit.pt/)





BOOK OF ABSTRACTS



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BOOK OF ABSTRACTS FOR THE DESIGN COMMIT 2024 CONFERENCE

INTRODUCTION

This Book of Abstracts is a collective endeavor and an academic commitment from the participants of the Design Commit 2024 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

This book is a copyright-protected work, with all rights reserved. Any use of the content herein, outside the scope of private study, research, criticism, or review, requires explicit authorization from copyright holders. 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 2024 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.



DESIGN COMMIT conference is an event organized by the **Lisbon School of Architecture** (FA ULisboa), 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 **OIKOS research group** of the **Research Institute for Design, Media and Culture** (ID+), the **School of Applied Arts** (ESART) of the **Polytechnic University of Castelo Branco** (IPCB), and **Rethink - Research Group on Design for the Territory** (CIAUD); and **School of Architecture, Art and Design of the University of Minho** (EAAD) and the **Design and Technology Group** (DeTech) of the **Laboratory of Landscape, Heritage and Territory** (Lab2PT).

The conference operates under the scope of the **Research & Education in Design research group** (REDES) from the **Center for Research in Architecture Urbanism and Design** (CIAUD).

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► ABOUT US

The first edition will be an in-person international event, consisting of a wide variety of plenary sessions, and bringing together researchers, academics, designers, rapidly expanding technology companies, emerging companies, business associations and policy makers, with the objective of fostering and actively developing a joint reflection, in a transdisciplinary scientific exchange, which enhances innovation through Design and Industry for a better future with a strategic vision.

Fields that will stimulate responses to the challenges of climate change and environmental degradation will be proposed, paving the way to achieve the goals of the 2030 agendas.

The DESIGN COMMIT 2024 will take place during the 7th Braga Economics Week, an initiative promoted by InvestBraga, aimed at addressing economic issues, involving various types of events, and promoting the exchange of ideas among economic agents, institutions, and citizens.

► PURPOSE

This international conference aims to explore models that prioritize a post-growth economy, with **modern, resource efficient, smart, sustainable** and **inclusive** principles, focused on enhancing human health and education, promoting knowledge and inter-sector collaboration, and a digital society for all. And, in this way, contribute to the transition towards a more sustainable, equitable, and resilient future that considers the well-being of both people and the planet.

Amid pandemics, wars and environmental disasters, designers and industries have been forced to imagine a world in which the only way to move forward is to look back. Design and Industry need to understand the role they can play in removing obstacles to social progress and work together to create healthier societies.

➤ **PREFACE TO THE
DESIGN COMMIT
2024 CONFERENCE**

A Word from the Conference Chairs

Dear participants and collaborators,

It is with immense pleasure and honor that, on behalf of all the chairs of Design Commit 2024, we welcome you to this unique event, dedicated to the fusion of design and industry and their vital role in shaping a resilient and sustainable future.

In a world of constant transformation, where sustainability and innovation have become imperatives, Design Commit emerges as a beacon of knowledge and collaboration. Our mission is to unite thinkers, creators, educators, and industry leaders to discuss, share, and promote practices that lead to excellence and responsible innovation.

This year's conference presents an exceptional program, filled with inspiring keynotes and discussion panels that promise to stimulate critical thinking and the exchange of ideas. Each session has been carefully planned to reflect the challenges and opportunities presented to our global community.

Through this Book of Abstracts, we offer a glimpse of the innovative research and studies that will be showcased. The abstracts reflect the depth and diversity of the participants' contributions and serve as a window into the future directions of design and industry.

We wish to express our profound thanks to the members of the Scientific Committee, the organizing team, and everyone who contributed to making Design Commit 2024 possible. Your tireless commitment to excellence and the exchange of knowledge is the driving force behind the success of this event.

We invite you to delve into the following pages and join us on the journey of learning and discovery that we promote. May the discussions and insights generated here inspire actions and innovations that transcend the boundaries of this meeting.

With high expectations and a sense of enthusiastic anticipation, we move forward together to explore the boundless potential of design and industry in creating a more promising future for all.

Warm regards,

The Chairs of Design Commit 2024

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

➤ OVERVIEW AND OBJECTIVES OF THE DESIGN COMMIT CONFERENCE

➤ OVERVIEW

Design Commit stands at the forefront of interdisciplinary dialogue, bringing together innovators, visionaries, and thought leaders from the realms of design and industry. As we gather in the bustling heart of creativity, our agenda is driven by the challenges and possibilities of integrating sustainable practices within these dynamic fields.

At the core of Design Commit is the dedication to fostering a community where collaboration transcends traditional boundaries, encouraging a synergy that fuels transformation and growth. We convene under the shared belief that design is not just an aesthetic choice but a pivotal tool for societal and industrial evolution.

➤ OBJECTIVES

- **To Inspire Innovation:** By showcasing cutting-edge research and case studies, we aim to spark new ideas that participants can take back to their own work, driving the frontiers of design and industry forward.
- **To Facilitate Networking:** Providing a platform for professionals from various sectors to connect, share insights, and forge partnerships that have the power to reshape the market landscape.
- **To Educate:** Through keynotes and panel discussions, we offer learning opportunities that enhance skills, expand knowledge, and offer new perspectives on tackling the design and industry challenges of today and tomorrow.
- **To Promote Sustainability:** Emphasizing the importance of eco-friendly and socially responsible design, we encourage discussions and solutions that contribute to a sustainable future.
- **To Advance Research:** Encouraging the exchange of academic findings and engaging with the latest in scholarly work, thus nurturing a space where theory meets practical application.
- **To Advocate for Change:** Pushing the boundaries of what's possible, and advocating for a proactive stance on global issues through the lens of design and industrial development.

As we embark on this journey of discovery and innovation, the Design Commit Conference is more than just an event, it is a catalyst for change, driving a future where design and industry not only coexist but thrive together, fostering an ecosystem of sustainable development and progressive thought.

➤ **ACKNOWLEDGMENTS
TO SPONSORS,
COLLABORATORS,
AND SUPPORTING
INSTITUTIONS**

The realization of the Design Commit 2024 Conference was made possible through the generous support and commitment of our sponsors, collaborators, and supporting institutions. At this moment of gratitude, we would like to express our recognition to everyone who contributed to the success of this event.

To our sponsors, whose financial and in-kind support has strengthened the structure and quality of the conference, we offer our heartfelt thanks. Your vision and understanding of the value of innovation in design and industry are fundamental to our collective progress.

We are immensely grateful to the organizing team, who shared their expertise and passion, enriching the program with insightful talks and discussion panels. Your dedication to excellence and professional development has not gone unnoticed.

A special thank you goes to the supporting institutions, whose partnership and support were essential to expanding the reach and depth of our meeting. Your collaboration allows the ideas discussed here to resonate beyond the conference walls.

We also acknowledge the assistance of various entities and volunteers, whose help behind the scenes was vital for the logistics and organization of the event. Your hard work and attention to detail ensured a smooth and memorable experience for all attendees.

Last but not least, we thank the academic and research institutions that, by supporting their representatives and researchers to participate in Design Commit, underscore the importance of an ongoing commitment to learning and innovation.

Together, we have built a conference that reflects the intersection between creativity, technology, and business, paving the way for the future of design and industry. Our sincere thanks to all of you for being part of this journey.

KEYNOTE SPEAKERS

STUART WALKER
JOSÉ RUI MARCELINO
GUTO REQUENA
TERENCE LOVE



STUART WALKER

PROFESSOR OF DESIGN FOR SUSTAINABILITY

Stuart Walker is Professor of Design for Sustainability at Manchester Metropolitan, Emeritus Professor at Lancaster and Calgary, and Visiting Professor at Kingston University, London.

He has published numerous books, over 150 academic papers, and many other articles. His award winning research has been presented internationally and his writings have been translated in various languages including Chinese, Portuguese and Persian. His conceptual designs have been featured on the BBC and exhibited in Canada, Italy, Australia and the United Kingdom. He speaks frequently on the media and had the first ever Design for Sustainability exhibitions at the Design Museum, London and Brantwood, John Ruskin's home in the English Lake District.

<https://www.stuartwalker.org.uk/about>



JOSÉ RUI MARCELINO

CEO & DESIGN MANAGER | ALMADESIGN BOARD MEMBER | AED
CLUSTER PORTUGAL

Born in Porto, **Rui Marcelino** boasts a Bachelor's degree in Mechanical Engineering from IST-ULisbon, a Master's in Transport Design from SPD Milan, and a PhD in Design from FAUL-ULisbon.

With a foundational experience at Centro Stile Alfa Romeo, he established Almadesign in 1997, a design studio that specializes in Transport, Products, and Interiors. Under his leadership, the studio has completed over 700 design projects, ranging from industrial machinery to public transportation vehicles like buses, trains, boats, and aircraft.

KEYNOTE SPEAKERS

STUART WALKER
JOSÉ RUI MARCELINO
GUTO REQUENA
TERENCE LOVE



GUTO REQUENA

BRAZILIAN ARCHITECT
CREATIVE DIRECTOR + CEO | ESTUDIO GUTO REQUENA

Brazilian architect **Guto Requena** creates projects through the use of digital technologies, guided by sustainability, aiming to offer innovative and affective experiences. Estudio Guto Requena – based in São Paulo, Brazil – develops projects for buildings, interiors, urban planning, product design and interactive art.

The architectural and artistic production aimed at building better cities has earned the architect several national and international awards, who has exhibited his works in several countries.



TERENCE LOVE

ESPECIALIST IN CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED) AND DESIGN OUT CRIME AND A PUBLIC INTEREST TECHNOLOGIST

Terence Love is a researcher and designer with over 50 year's experience across multiple fields of design. Terence's projects have been typically many decades ahead of public adoption. Examples from the 1970s include development of AI-based design optimization software; open-source software; a word-processor; a digital music recorder/player; use of early Internet (JANET); developing design research theories; design of hooped tents, rock climbing equipment, micro wind turbines and appropriate technology. 1980s included eco-design and sustainable design; heritage restoration; building energy use; aerial tree seed planting for reducing desertification; and using computers and AI for design; social business design; measuring and building social capital in deprived communities.

SPEAKERS
CONFERENCE OPENING



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.



RICARDO RIO
MAYOR OF BRAGA CITY COUNCIL

Graduated in Economics at the Faculty of Economics of Porto and (FEP) and, before the public service, he was University Professor and Advisor of several public and business companies, as Euronext Lisbon, Porto Business School, CCDRN, a Casa da Música, and many other.

In 2013 he was elected as Mayor of Braga and was re-elected in 2017 and 2021.

He is also President of Global Parliament of Mayors, Chairman of the Executive Board of Cavado's Inter-municipal Community and of two municipal companies Teatro Circo and InvestBraga. He is also member of Committee of the Regions and Board member of ATP – Associação de Turismo do Porto e Norte, A.R. – Porto Convention & Visitors Bureau.

**TRANSDISCIPLINARY PATHS:
RESEARCH LEADERS IN
ADVANCING DESIGN AND
INDUSTRY FOR A RESILIENT
FUTURE**



ANTÓNIO BOB SANTOS

MEMBER OF THE FCT BOARD OF DIRECTORS
PHD IN ECONOMICS

He has a PhD in Economics from ISCTE-IUL, with the thesis “Public Policy oriented to Open Innovation” and a Master in Labor Sciences (2002) and a degree in Economics (1998), from ISCTE.

In 2021, he assumed the position of Executive Coordinator of the Programs “Impulso Jovens STEAM” and “Impulso Adultos” (Recovery and Resilience Plan), in the Directorate General of Higher Education. He joined the Board of Directors of ANI – National Agency for Innovation (2018 2021), as well as the Executive Committee of FITEC – Fund for Innovation, Technology and Circular Economy, being also representative of the areas of Science and Technology in the Economic and Social Council since 2017.



FÁTIMA POMBO

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

Professor of Design, director of the ID+ Research Institute for Design, Media and Culture, and director of the Master in Product Design and Engineering at the University of Aveiro, Portugal. She was a visiting professor at the University of Leuven, Belgium, at the Architecture department for almost a decade until 2016. Engaging in international research projects and conferences, she is a sought-after expert, participating in academic activities and serving, among others, as a design jury member for the iF Design Award in Germany. Her research appears in scientific publications, including Routledge, Idea Journal, the Journal of Interior Design, Springer, Journal of the British Society for Phenomenology, and Architectoni.ca. Fátima Pombo, an Alexander von Humboldt Foundation postdoctoral fellow, conducted research at the University of Munich and at the University of Heidelberg. Beyond academia, she is cellist, perceiving music as the heartbeat of the world.

**TRANSDISCIPLINARY PATHS:
RESEARCH LEADERS IN
ADVANCING DESIGN AND
INDUSTRY FOR A RESILIENT
FUTURE**



JOÃO CABELEIRA

ASSISTANT DIRECTOR OF THE LABORATORY OF LANDSCAPE, HERITAGE AND TERRITORY (LAB2PT)

Associate Professor at the School of Architecture, Art and Design, of the University of Minho, and researcher of Lab2PT and the associate laboratory IN2PAST, coordinates courses in the areas of geometry and graphic representation, heritage and architectural culture.

His research focus upon the representation and visualization of the built environment through its instruments, scientific resources and methodologies, within a trans-scalar (from the object until the cosmographic scale) and trans-chronological (cross referencing models) framework.



JOÃO PEDRO COSTA

PRESIDENT OF CIAUD THE RESEARCH CENTER OF ARCHITECTURE, URBANISM AND DESIGN

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.

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.

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JOÃO VILAÇA

PRO-PRESIDENT FOR RESEARCH AND INNOVATION (IPCA)

João L. Vilaça graduated in Industrial Electronics and Computers at University of Minho, Portugal in 2004. In 2008, he obtained the PhD degree in Industrial Electronics from the University of Minho, Guimarães, Portugal. From 2009, he has been at the Technology Department of the School of Technology, Polytechnic Institute of Cávado and Ave – IPCA, Portugal, where he is Associate Professor. From 2009 to 2018, he was also researcher at the ICVS/3B's Laboratory, university of Minho, Portugal. In February 2018, he joined the 2Ai as researcher, where he is currently its Director. Since 2021 he is pro-president for R&I at IPCA.

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RITA ASSOREIRA ALMENDRA

FULL PROFESSOR AT LISBON UNIVERSITY, LISBON SCHOOL OF ARCHITECTURE (FA ULISBON)

Rita Assoreira Almendra is a Full Professor at the Lisbon School of Architecture (FA ULisbon), part of the University of Lisbon. She holds a PhD in Design (2010), a Master's in Design Management (2004), and an MBA with a specialization in Marketing (2002) from Universidade Católica Portuguesa. She graduated in Design from the Technical University of Lisbon in 1998.

Currently, she is the Head of the Project Design Department, a member of the Scientific Council, Coordinator of the Design Doctoral Program, and a Researcher at CIAUD. She has published extensively, including 20 journal articles, 30 book chapters, and 2 co-authored books. Rita has supervised 20 completed PhD theses, over 70 MSc dissertations, and has numerous ongoing supervisions.

Her research interests include Design Education, Design Research, Social Design, Sustainable Design, Design Management, Competitiveness, Innovation, Collaboration, Participatory Design, and Service Design.

**SYNERGY AND STRATEGY,
PIONEERING INNOVATION
THROUGH DESIGN AND
INDUSTRY FOR FUTURE
GROWTH**



ANTÓNIO GRILO

PRESIDENT OF THE NATIONAL AGENCY FOR INNOVATION, SA (ANI)
PROFESSOR OF INDUSTRIAL ENGINEERING AND MANAGEMENT

Full Professor of Industrial Engineering and Management currently holding the position of President of the National Agency for Innovation, SA (ANI). He has previously held academic management positions at NOVA School of Science and Technology as Head of the Department of Mechanical and Industrial Engineering, Director of the research center UNIDEMI, Member of the Board of NOVA.ID, Director of the PhD Program in Industrial Engineering, Chairman of the Board of Directors of the Madan Parque Incubator, and Member of the Board of Directors of UNINOVA.



CRISTINA GÓIS AMORIM

MANAGER OF THE CULTURAL AND CREATIVE INDUSTRIES SECTOR OF
PORTUGUESE TRADE & INVESTMENT AGENCY (AICEP)

Studied and graduated in Modern Languages and Literatures, variant of Portuguese Studies, at the Faculty of Letters of the Classic University of Lisbon. In 1987 she joined the staff of the then ICEP – Institute of Foreign Trade of Portugal, currently aicep Portugal Global – Agency for Investment and Foreign Trade. She went through several areas, within the entities, namely in the fields of international promotion, in which he collaborated and organized multiple actions to promote the image of Portugal abroad.

**SYNERGY AND STRATEGY,
PIONEERING INNOVATION
THROUGH DESIGN AND
INDUSTRY FOR FUTURE
GROWTH**



NUNO MANGAS

PRESIDENT OF COMPETE 2030 - INNOVATION AND DIGITAL TRANSITION THEMATIC PROGRAM

President of COMPETE 2030 – Innovation and Digital Transition thematic Program.

Electrotechnical Engineer from the University of Coimbra and PhD in Education Sciences from the University of Extremadura.

Was President of IAPMEI and the Polytechnic Institute of Leiria, non-executive Director of ANI – the Portugal's Innovation Agency, and national representative on the SME Envoy Network (2018 – 2020).



RAMIRO BRITO

VICE-PRESIDENT OF AEMINHO
CEO GRUPO ÉRRE

It was in car racing that he found, from a very young age, the adrenaline that has always accompanied him in life. It was love at first sight, leading him to the highest stages of the sport as an FIA race official, roles in which he has operated on four continents, being one of the most international of his generation. In his free time, as a pilot, he takes to the wheel in occasional speed, mountain, and rally races. He has always been drawn to communication, which led him to a degree in international relations at the University of Minho, and later pursued a degree in law at the University Portucalense, which he promises to finish one day

**SYNERGY AND STRATEGY,
PIONEERING INNOVATION
THROUGH DESIGN AND
INDUSTRY FOR FUTURE
GROWTH**



RICARDO SIMÕES

HEAD OF INNOVATION AT THE NORTE REGIONAL COORDINATION AND DEVELOPMENT COMMISSION

Ricardo Simoes is currently the Head of Innovation at the Norte Regional Coordination and Development Commission (CCDR-NORTE), responsible for the Regional Innovation System, Industrial Licensing, and Project Evaluation and Management, in the Norte Region of Portugal. He is also an Associate Professor (Tenured) with Habilitation at the Polytechnic Institute of Cávado and Ave (Portugal). He has a Ph.D. in Materials Science and Engineering from the University of North Texas (USA).

MODERATOR



FERNANDO MOREIRA DA SILVA

EMERITUS PROFESSOR OF DESIGN AT FACULTY OF ARCHITECTURE OF UNIVERSITY OF LISBON

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;

**THE MATRIX WHERE DREAMS,
DESIRES AND DESIGNS CAN
MESH TOGETHER, POWERED BY
ARTNETIC**



ANDRÉ FONSECA FERREIRA

LEADER IN INNOVATION, CURRENTLY SERVING AS THE CEO OF
MOONSHOT VENTURES GROUP

Entrepreneur, professor, and leader in innovation, currently serving as the CEO of Moonshot Ventures Group. With an academic background in Economics and Management, he specialized in Strategic Design and its Strategic Innovation Methodologies, having obtained specializations at the Design Thinkers Academy and Singularity University, complemented by an MBA in Management from INSEAD.

He began his career at renowned companies such as Proudfoot, where he developed skills in project management, innovation, and business strategy. This experience inspired him to create his own companies, focused on driving change and transformation.

PERFORMER



RUI BARREIRA

WRITING WITH DRAWINGS – TEACHER-GENERATED DRAWING

Designer and Illustrator. He has been a Guest Assistant at the Department of Visual Arts at the Instituto Politécnico de Bragança – Escola Superior de Educação, since 2018, a Guest Assistant at the Design Department of the Instituto Politécnico do Cávado and at Ave-Escola Técnica Superior Profissional since 2020, a Guest Assistant at the Department of Design of the Faculty of Architecture of the University of Lisbon, since 2021. He is completing his PhD in Design at Faculdade de Arquitectura da Universidade de Lisboa. He is a Collaborating Researcher member of CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture.

**ADVANCING ADDITIVE
MANUFACTURING: FUTURE-
READY DESIGN SOLUTIONS
POWERED BY CODI**



MOISÉS DOMINGUES
CEO | CODI

Born in Marinha Grande, Moisés Domingues began his professional activity in 1982, at the company Calazans, as a technician designing molds for injection and blowing polymers, and in 1985 he started as a freelancer. Since then, he has pursued a professional path, in Portugal and other countries, linked to product development in various industries and technologies. He is also a consultant and trainer in the areas of CAD, CAM, CAE, and AM-Additive Manufacturing.

**PRESIDENT OF
LOVING THE PLANET**



EDUARDO RÊGO
BBC VIDA SELVAGEM

Eduardo Rêgo, responsible for the Portuguese version of the TV shows VIDA SELVAGEM and O NOSSO MUNDO – of which he is also the narrator – has won the sympathy and preference of viewers over the 32 years of SIC's existence.

At the age of 73 and with a holistic view of the world and life, he has dedicated the best of himself to the need for balance on the planet.

The NGO LOVING THE PLANET – which he founded in 2018 – is a global communication platform, based on awareness, to combat the countless attacks on nature and the climate committed by the human species.

According to him, it's too late to stand still. The planet is sick, but there is a cure.

**IMPACT OF ROBOTICS AND AI
IN THE FUTURE OF DESIGN
AND INDUSTRY**



GERMANO VEIGA

CTO OF AGT ROBOTICS GROUP

Mechanical Engineer with a PhD in Mechanical Engineering (Robotics and Automation) (2010) by the University of Coimbra.

In 2005 he was an invited researcher at the University of Lund, Sweden, and was a researcher (2002-2011), Invited Professor (2007-2011) at the University of Coimbra, and Auxiliar Professor at the Faculty of Engineering of the University of Porto from 2016 to 2022. Germano Joined INESC-TEC in 2012, being Co-Coordinator for the Centre of Robotics and Intelligent Systems from 2016 to 2023.

His research interests are mostly focused on future industrial robotics including, plug-and-produce technologies, robot programming, mobile manipulators and Human Robot Interfacing.



JOSÉ MANUEL MACHADO

DIRECTOR OF THE ALGORITMI CENTRE

José Machado is Professor of the Department of Informatics, School of Engineering, University of Minho. He got his PhD in Computer Science in 2002 and Habilitation in 2011. He taught dozens of curricular units in the topics of Data Science and Artificial Intelligence, and in different and related fields of Computer Engineering. He has always prioritized work geared towards application in industrial domains and public services, in particular courts, hospitals, and city councils. He is one of the authors of the AIDA platform, which is an example of the success of the strategy followed in terms of technology transfer from the University to abroad.

**IMPACT OF ROBOTICS AND AI
IN THE FUTURE OF DESIGN
AND INDUSTRY**



NUNO VILHENA LOURENÇO

PRESIDENT OF THE BOARD OF THE COLLABORATIVE LABORATORY + ATLANTIC

Director of the Space and Ocean Unit at CEIIA. He was a member of the Board of Directors at IPMA, I.P. Holds a Ph.D. in Marine Sciences from the University of Algarve. He was a geophysical consultant at Partex E&P. He worked in the Task Force for the Extension of the Continental Shelf where he led the Research and Development Office. He is an assistant professor at the University of Algarve. He has participated in 26 national and international scientific campaigns in deep-sea (mission chief in 7 of them); he was responsible for the acquisition projects of the ROV LUSO and the Ship NI Mário Ruivo.

MODERATOR



PAULO CRUZ

FULL PROFESSOR AND DEAN OF THE SCHOOL OF ARCHITECTURE, ART AND DESIGN OF THE UNIVERSITY OF MINHO | PRESIDENT OF THE DESIGN INSTITUTE OF GUIMARÃES

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).

**DESIGN AND INDUSTRY IN THE
NEXT ERA**

**SUSTAINABLE INNOVATION
IN FURNITURE DESIGN: THE
MOVECHO JOURNEY**



LUÍS ABRANTES

ADMINISTRADOR - MOVECHO, SA

Born in Oliveira do Hospital, Coimbra district, Luís Abrantes pursued his academic journey in Germany, attending Hauptschule Bruhl in Solingen. Fluent in both Portuguese and German, he refined his skills through recurrent technical and behavioral training in Germany, Switzerland, and France. Throughout his professional career, held key positions in various companies, such as Operations Director at Central de Cervejas and as Director of the BP fuels and related products business area at Grupo JMA in Oliveira do Hospital. Also led the Planning and Methods Office at Sonae Industria, at Oliveira do Hospital unit.

Additionally, founded Movsteel, Lda and the optical group Luxópticas.

**DESIGN AND INDUSTRY IN THE
NEXT ERA**

**LARUSDESIGN. URBAN
FURNITURE ADAPTED TO
CULTURE AND PLACES**



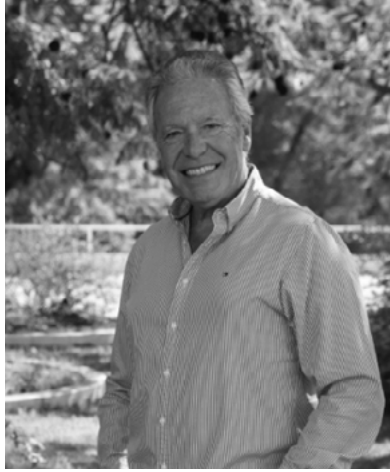
PEDRO MARTINS PEREIRA

FOUNDER AND MANAGING PARTNER OF LARUS

Born in Albergaria-a-Velha, with a degree in Metallurgical Engineering from U.P, a Navy Officer, participant in the first JEEP Project – Young Entrepreneurs of High Potential (1985), Head of the Foundry Department at ALBA Factories (1977 – 78), Technical Director of ALBA Metallurgical Factories (1981 – 89), Founder (1988) and Managing Partner of LARUS, dedicated to the design and manufacture of urban furniture, Founder (2003) and Administrator of METAFALB, S.A., which acquired the ALBA Factories, Founder (2009) and Managing Partner of the company ProjectoAlba unipessoal, Lda., which acquired the Alba brand and its catalog products, Member of the Materials Engineering College, Order of Engineers (2012-20).

**FOUNDATIONS AND FUTURE:
A JOURNEY THROUGH DESIGN**

SPEAKER



FERNANDO MOREIRA DA SILVA

EMERITUS PROFESSOR OF DESIGN AT FACULTY OF ARCHITECTURE OF UNIVERSITY OF LISBON

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;

CONFERENCE PRESENTER



ALEXANDRE PEREIRA

DESIGN FOR SUSTAINABILITY AND REGENERATION CONSULTANT

In the last 20 years, had dedicated his professional life working in non-profit organizations from social economy sector, where he put into practice a transdisciplinary training path, with formal and non-formal education in areas as diverse as Interior Design and Architecture, Fine Arts – Painting (FBAUL – LISBOA), among other training courses. Postgraduate in Communication, Image and Marketing (IADE – LISBOA), with training in Culinary Arts (Cátedra Ferran Adrià, Madrid, Spain), Basic Holistic training (UNIPAZ, Portugal), Group Facilitation, and SDG Facilitation (Gaia Education, Findhorn, Scotland), has worked in various cross-cultural contexts. Completed in 2023 the Postgraduate Degree in Internal Communication and Well-being in Organizations (FCSH-NOVA, LISBOA); studying since this academic year in a Master's degree in Communication Sciences (FCSH-NOVA, LISBON).

CONFERENCE PROGRAM



PROGRAM

MONDAY, MAY 20TH

08:30	WELCOME DESK REGISTRATION
09:15	TECHNICAL SUPPORT SESSION Small Auditorium
CONFERENCE OPENING CEREMONY	
09:30	MUSIC DEPARTMENT OF THE UNIVERSITY OF MINHO György Ligeti [1923-2006] Bagatelles [1953], for wind quintet [c. 13]'
09:50	DESIGN COMMIT GENERAL CHAIR Maria João Félix
10:00	MAYOR OF BRAGA CITY COUNCIL Ricardo Bruno Antunes Machado Rio
10:15	STUART WALKER Keynote Speaker
11:00	COFFEE BREAK Foyer Floor 1
11:30	<p>TRANSDISCIPLINARY PATHS: RESEARCH LEADERS IN ADVANCING DESIGN AND INDUSTRY FOR A RESILIENT FUTURE</p> <p>MODERATION: RITA ALMENDRA <small>Lisbon School of Architecture (FA Ulisboa) and Research & Education in Design Research Group (Redes) from the Center for Research in Architecture Urbanism and Design (CIAUD).</small></p> <p>ANTÓNIO BOB MOURA SANTOS Board Member of the Foundation for Science and Technology (FCT)</p> <p>JOÃO PEDRO COSTA President of the Research Center of Architecture, Urbanism and Design (CIAUD)</p> <p>FÁTIMA POMBO Director of the Research Institute for Design, Media and Culture (ID+)</p> <p>JOÃO CABELEIRA Assistant Director of the Laboratory of Landscape, Heritage and Territory (LAB2PT)</p> <p>JOÃO VILAÇA Pro-President for Research and Innovation (IPCA)</p>

12:30	<p>SYNERGY AND STRATEGY, PIONEERING INNOVATION THROUGH DESIGN AND INDUSTRY FOR FUTURE GROWTH</p> <p>MODERATION: FERNANDO MOREIRA DA SILVA <small>Lisbon School of Architecture (FA Ulisboa) and Research & Education in Design research group (REDES) from the Center for Research in Architecture Urbanism and Design (CIAUD).</small></p> <p>ANTÓNIO GRILO President of the National Innovation Agency (ANI)</p> <p>RICARDO SIMÕES Head of Innovation at the Norte Regional Coordination and Development Commission (CCDR-NORTE)</p> <p>RAMIRO BRITO President of Minho Business Association (AEMINHO)</p> <p>NUNO MANGAS President of the Directive Commission of COMPETE 2030</p> <p>CRISTINA GÓIS AMORIM Manager of the Cultural and Creative Industries Sector of Portuguese Trade & Investment Agency (AICEP)</p>	
13:30	LUNCH BREAK Foyer Floor 1	
	2:30 PM - 4:00 PM SESSION 1A THEMATIC SMART meeting room 1	2:30 PM - 4:00 PM SESSION 1B THEMATIC SOCIAL meeting room 2
	2:30 PM - 4:00 PM SESSION 1C THEMATIC GREEN meeting room 3	2:30 PM - 4:00 PM SESSION 1D THEMATIC SPECULATIVE meeting room 4
16:00	COFFEE BREAK Foyer Floor -1	
	4:30 PM - 6:00 PM SESSION 2A THEMATIC SMART meeting room 1	4:30 PM - 6:00 PM SESSION 2B THEMATIC SOCIAL meeting room 2
	4:30 PM - 6:00 PM SESSION 2C THEMATIC GREEN meeting room 3	4:30 PM - 6:00 PM SESSION 2D THEMATIC CONVERT meeting room 4
18:00	WELCOME COCKTAIL Foyer Floor 0	

PROGRAM

TUESDAY, MAY 21ST

08:30	WELCOME DESK REGISTRATION
09:15	TECHNICAL SUPPORT SESSION Small Auditorium
09:30	TERENCE LOVE Keynote Speaker
10:15	DESIGN AND INDUSTRY IN THE NEXT ERA LUÍS ABRANTES Movecho LARUSDESIGN. URBAN FURNITURE ADAPTED TO CULTURE AND PLACES PEDRO MARTINS PEREIRA Larus
11:00	COFFEE BREAK Foyer Floor 1
11:30	THE MATRIX WHERE DREAMS, DESIRES AND DESIGNS CAN MESH TOGETHER, POWERED BY ARTNETIC ANDRÉ FONSECA FERREIRA PERFORMER RUI BARREIRA
12:00	IMPACT OF ROBOTICS AND AI IN THE FUTURE OF DESIGN AND INDUSTRY MODERATION: PAULO CRUZ School of Architecture, Art and Design of the University of Minho and Research & Education in Design and Technology Group (DeTech) from the Laboratory of Landscape, Heritage and Territory (Lab2PT) NUNO VILHENA LOURENÇO CEIIA- Centre of Engineering and Product Development GERMANO VEIGA Senior Researcher at INESC TEC JOSÉ MANUEL MACHADO Director of the Algoritmi Centre

13:00	ADVANCING ADDITIVE MANUFACTURING: FUTURE-READY DESIGN SOLUTIONS POWERED BY CODI MOISÉS DOMINGUES	
13:30	LUNCH BREAK Foyer Floor 1	
	2:30 PM - 4:00 PM SESSION 3A THEMATIC SMART meeting room 1	2:30 PM - 4:00 PM SESSION 3B THEMATIC SOCIAL meeting room 2
	2:30 PM - 4:00 PM SESSION 3C THEMATIC GREEN meeting room 3	2:30 PM - 4:00 PM SESSION 3D THEMATIC SMART meeting room 4
16:00	COFFEE BREAK Foyer Floor -1	
	4:30 PM - 6:00 PM SESSION 4A THEMATIC GREEN meeting room 1	4:30 PM - 6:00 PM SESSION 4B THEMATIC SOCIAL meeting room 2
	4:30 PM - 6:00 PM SESSION 4C THEMATIC SOCIAL meeting room 3	4:30 PM - 6:00 PM SESSION 4D THEMATIC SOCIAL meeting room 4
19:30	DESIGN COMMIT DINNER Pousada Mosteiro de Amares	

PROGRAM

WEDNESDAY, MAY 22ND

08:30	WELCOME DESK REGISTRATION	
09:30	THEMATIC SESSIONS MEETING ROOMS Floor -1	
	9:30 AM - 11:00 AM SESSION 5A THEMATIC SMART meeting room 1	9:30 AM - 11:00 AM SESSION 5B THEMATIC SOCIAL meeting room 2
	9:30 AM - 11:00 AM SESSION 5C THEMATIC GREEN meeting room 3	9:30 AM - 11:00 AM SESSION 5D THEMATIC SOCIAL meeting room 4
11:00	COFFEE BREAK Foyer Floor -1	
	11:30 AM - 1:30 PM SESSION 6A THEMATIC SPECULATIVE meeting room 1	11:30 AM - 1:30 PM SESSION 6B THEMATIC CONVERT meeting room 2
	11:30 AM - 1:30 PM SESSION 6C THEMATIC SOCIAL meeting room 3	11:30 AM - 1:30 AM SESSION 6D THEMATIC GREEN meeting room 4
13:30	LUNCH BREAK Foyer Floor 0	
14:30	ORCHESTRAL WELCOME FOR AUDITORIUM SESSION. MUSIC DEPARTMENT OF THE UNIVERSITY OF MINHO Antonín Dvorák [1841-1904] Serenade para Sopros em Ré menor, Op. 44 (1878) [c. 20']	

15:00	FOUNDATIONS AND FUTURE: A JOURNEY THROUGH DESIGN FERNANDO MOREIRA DA SILVA Emeritus Professor of Design at the Faculty of Architecture of the University of Lisbon.
15:15	GUTO REQUENA Keynote Speaker
16:00	JOSÉ RUI MARCELINO Keynote Speaker
16:45	IN SEARCH OF THE LOST BALANCE POWERED BY LOVING THE PLANET EDUARDO RÉGO
17:30	CONFERENCE CLOSING SESSION DESIGN COMMIT AWARD CEREMONY

DETAILED PROGRAM



**PROVISIONAL DETAILED PROGRAM
20-22 MAY 2024**

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)**

MONDAY, MAY 20TH

		2:30 PM - 4:00 PM SESSION 1A THEMATIC SMART meeting room 1 https://zoom.us/j/93366132899	2:30 PM - 4:00 PM SESSION 1B THEMATIC SOCIAL meeting room 2 https://zoom.us/j/96385995188
		Moderator: Paulo Cruz	Moderator: Kelli Smythe
14:30	PAPER ID [46] Design of braided fibrous structure (scaffold) for treatment of spinal injury using Rhinoceros 3D ® software and Grasshopper plugin. Ivis Aguiar Souza, Lais Kohan, Maurício José da Silva Filho, Raul M. E. S. Fangueiro, Diana S. P. Ferreira.	PAPER ID [48] Qualitative research to improve usability in housing for old adults users: methodologies compared in research in Portugal and the Netherlands. Maristela Silva, Rita Filipe, Masi Mohammadi	
14:45	PAPER ID [61] The Integration of Artificial Intelligence in Jewellery Design Processes Livia Tenuta, Susanna Testa, Francesca Antinarelli Freitas, Beatrice Rossato, Alba Cappellieri.	PAPER ID [5] Brand Design: Project-Based Learning Case Study Raquel Antunes, António Brandão.	
15:00	PAPER ID [96] Drawing and Manual Sketching in the Context of Industrial Design, in the Era of Artificial Intelligence Verónica Duarte, Maria João Félix, Miguel de Aboim Borges	PAPER ID [54] Ecomusealia: the cultural landscape as a museum object. The designer's perspective through communication. Ana Moreno, Nelson Zagalo, Heitor Alvelos	
15:15	PAPER ID [112] Perspectives of Students on AI Use in Interior Architecture and Design Jinoh Park	PAPER ID [14] Synesthetic Design Practice: The Smell of Music Yang Li, Yiyuan Ding, Nankai Cheng, Giuseppe Lotti	
15:30	PAPER ID [158] Sustainable design to support the creation of rural and mountain communities in inland Portugal Daniel Raposo, Teresa Paiva, João Neves, Maria Fátima Veríssimo, Hugo Mendes	PAPER ID [18] Sports bra design for well-being: focus on mobility, fabric moisture management and air permeability Ines Katić Križmančić, Ivana Salopek Čubrić, Vesna Marija Potočić Matković	
15:45	PAPER ID [165] EUROACE Bauhaus Villages Strategic Plan João Neves, Daniel Raposo, Domingos Santos		

**PROVISIONAL DETAILED PROGRAM
20-22 MAY 2024**

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

2:30 PM - 4:00 PM SESSION 1C THEMATIC GREEN meeting room 3 https://zoom.us/j/94140615243		2:30 PM - 4:00 PM SESSION 1D THEMATIC SPECULATIVE meeting room 4 https://zoom.us/j/95436964714	
	Moderator: Francesco Galli		Moderator: Heitor Alvelos
14:30	PAPER ID [72] Visualising Science: Crafting Memes in Design Pedagogy Susana Barreto, Heitor Alvelos, Cláudia Lima, José Carneiro, Pedro Alves da Veiga, Eliana Penedos-Santiago, Marta Fernandes, Nuno Martins, Júlio Dolbeth	14:30	PAPER ID [115] A Participatory Speculation toolkit for co-designing with Rural Communities Hernani Alves, Eduardo Gonçalves, Ana Margarida Ferreira
14:45	PAPER ID [70] EcoDesign futures. A wastewater recycling system for zero-mile vegetable production Giorgio Buratti, Fiammetta Costa, Attilio Nebuloni, Luciana Migliore, Annamaria Alabiso, Matteo Meraviglia	14:45	PAPER ID [123] Making Meaning: Discussing Futures of Measurement, Value and Impact in Design Higher Education Suzanne E. Martin
15:00	PAPER ID [92] The Intersection of Design Methodologies and Circular Economy Principles: A Focus on Waste Reduction, Sustainable Materials Management, and Educational Toys Raquel Salomé	15:00	PAPER ID [34] Enhancing User Experience in the Metaverse: Exploring Abstract User Design Semiotics and its Impact on Communication Culture Anton Storey
15:15	PAPER ID [128] Ceramic waste and opportunities: Design as a mediator in the conservation of biodiversity Joana Pinto, Lúcia Lopes, Jorge Lino	15:15	PAPER ID [116] How do audiences perceive practice cases? Investigating typological differences in Design Futures through perceptual mapping techniques Tiantian Li, Zhiyong Fu
15:30	PAPER ID [126] Sustainable Crafts Design Research-A Scoping Study About Craft Development Problems in the UK Li Zhang, Cees de Bont, Avsar Gurpinar	15:30	PAPER ID [4] The Architectural Present - Hypertopia In Singapore João Rosmaninho, Margarida Lopes
15:45	PAPER ID [160] The importance of technology and design for the success of nations. Gilberto Santos	15:45	PAPER ID [159] A game-based framework to design and analyze games to augment creativity in their players José Raimundo
16:00	COFFEE BREAK foyer floor -1		

**PROVISIONAL DETAILED PROGRAM
20-22 MAY 2024**

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

4:30 PM - 6:00 PM SESSION 2A THEMATIC SMART meeting room 1 https://zoom.us/j/93366132899		4:30 PM - 6:00 PM SESSION 2B THEMATIC SOCIAL meeting room 2 https://zoom.us/j/96385995188	
	Moderator: Chiara Frecia		Moderator: Susana Barreto
16:30	PAPER ID [143] Uncompilable: an interplay between Design and AI in the real world Daniel Risi	16:30	PAPER ID [49] Reflections on Inclusive Clothing: contributions to development Leticia Nardoni Marteli, Luis Carlos Paschoarelli, Fernando Moreira da Silva, Paula Trigueiros
16:45	PAPER ID [55] Virtual Production: A Closer Look at Digital Innovation And Health Guilherme Cruz, José Raimundo, Marta Madureira.	16:45	PAPER ID [39] Empower Creative Education with Awareness and Critical Thinking. Narratives of 'change and power' in fostering future creative leaders. Francesco Galli, Irina Suteu
17:00	PAPER ID [31] Designers for/and/with manufacturing: design-driven solutions for an updated dialogue between young creative talents and the textile-knitwear industry Giovanni Maria Conti, Martina Motta, Mariana Ciancia, Katia Goldoni, Francesca Piredda, Beatrice Zagatto	17:00	PAPER ID [125] Food literacy for Public Health: an Information Design exploratory study Suzana Parreira, Pedro Duarte de Almeida, Duarte Vital Brito
17:15	PAPER ID [117] Inclusive Knowledge System: A Cyber Physical System for Education and Research in the Made in Italy Ph.D. program Arrigo Bertacchini, Salvatore Carleo	17:15	PAPER ID [135] Multicultural Interface Design: Collecting and Designing Information for the access of Migrant and Refugee Women and Children to the Brazilian Healthcare System. Diovana Mazur Damacena, Kelli Cas Smythe
17:30	PAPER ID [93] Emerging approaches in yacht design and manufacturing: State of the art and future perspectives of generative design and additive manufacturing Massimo Piccioni, Arianna Bionda, Andrea Ratti	17:30	PAPER ID [21] Participatory Design in ceramics craft: A case study in the Poty Velho district Rebecca Nunes, Raquel Antunes
17:45	PAPER ID [134] Using the workshop technique as an evaluation tool: the case of the wayfinding information behavior method. Kelli Cas Smythe, Érica Santos Vargas	17:45	PAPER ID [164] Development, implementation and management of visual identities. Definition of a model for SMEs in the agri-food sector. Rogério Ribeiro, Daniel Raposo, Rita Almendra, João Neves

**PROVISIONAL DETAILED PROGRAM
20-22 MAY 2024**

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

	4:30 PM - 6:00 PM SESSION 2C THEMATIC GREEN meeting room 3 https://zoom.us/j/94140615243	4:30 PM - 6:00 PM SESSION 2D THEMATIC CONVERT meeting room 4 https://zoom.us/j/95436964714
	Moderator: Suzanne E. Martin	Moderator: João Neves
16:30	PAPER ID [13] Innovative and Sustainable: Design of a Home-Based Device for Reusing and Recycling Face Masks Nankai Cheng, Yiyuan Ding, Li Yang, Paulo Noriega, Giuseppe Lotti	PAPER ID [131] IKEA hacking: customization and democratization of objects Domenico Di Fuccia
16:45	PAPER ID [150] Design of Water Sustainability: Trees in Arid and Semi-Arid Climates Terence Love	PAPER ID [91] Sustainable Product Development Strategies: an alternative for the Micro and Small Furniture Industry in emerging economies Juliana Cardoso Braga, Juliano Aparecido Pereira, Fernando Moreira da Silva, Luis Carlos Paschoarelli
17:00	PAPER ID [41] Parameters for a Degrowth Architecture: Subverting the Socio-Ecological Spatial Conditions of the Capitalist-Growth Regime Anna Deeg	PAPER ID [38] Pulse Approach workshop: one way of testing the proposal of integral design project management tool Luciana Lopes, Heitor Alvelos, Cristina Parente, Gonçalo Gomes
17:15	PAPER ID [107] Design of Tools in Fire Management Pierpaolo Antonio Fusaro, Arrigo Bertacchini, Giulia Teverini	PAPER ID [32] A new model for STEAM approach guided by DESIGN Wilson Kindlein Júnior, Brendon Willian Guedes Barbosa, Flávia Ribeiro Vieira, Ivan de Lima e Silva Penz
17:30	PAPER ID [113] Bio-based materials in cosmetics: territorial synergies and design-oriented product experimentations. Rosanna Veneziano, Michela Carlomagno, Stefano Salzillo	PAPER ID [27] Capulana: searching for the future in tradition Sofia Vilarinho, Henri Christiaans
17:45	PAPER ID [163] A precious territorial network: Alkimiya mag jewelry design maps Maria Dolores Morelli, Carmela Barbato	PAPER ID [162] Genie of the magic lamp or collaborative genius? Reflection on the use of generative Artificial Intelligence in the teaching-learning process in communication design Vitor Tavares, Suzana Dias, Manuel Granja, Mónica Santos, Estela Vilhena

**PROVISIONAL DETAILED PROGRAM
20-22 MAY 2024**

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

TUESDAY, MAY 21ST		
	2:30 PM - 4:00 PM SESSION 3A THEMATIC SMART meeting room 1 https://zoom.us/j/93366132899	2:30 PM - 4:00 PM SESSION 3B THEMATIC SOCIAL meeting room 2 https://zoom.us/j/96385995188
	Moderator: Carla Cadete	Moderator: Paula Trigueiros
14:30	PAPER ID [74] Postpartum Posture Correction in Baby Carriers: Biomechanical Insights and Structural Determinants Maria Moga	PAPER ID [146] Designing for meaningful Heritage: Affect, Embodiment and Emotional Gaelle Pillault, Tenna Doktor Olsen Tvedebrink, Fátima Pombo
14:45	PAPER ID [106] VAI – A collaborative Project to Immunize People Through Mass Vaccination Ana Brum, Gláucia Ferro, Aguinaldo Santos	PAPER ID [147] Customizing Wearable Prosthetics: A preliminary review of the current State of the Art in upper limb prostheses Andreia Caldas, Demétrio Matos, Adam de Eyto, Nuno Martins
15:00	PAPER ID [111] Industry 5.0 and Sustainable Fashion: future prospects for Designers in the era of Smart Factory and Artificial Intelligence Fernando Moreira da Silva, Roberto Liberti, Silvestro Di Sarno, Valentina Alfieri	PAPER ID [145] The contribution of Interface Design in the fight against COVID-19: analysis of the DGS and SNS24 websites, Portugal Inês Costa, Nuno Martins, Francisco Garcia, Rita Espanha, Daniel Brandão, Ana Barros, Branco Di Fátima
15:15	PAPER ID [10] Mapping a Network Culture: From an empirical study on university-industry collaboration Hugo Palmares, Miguel Terroso, Emília Costa	PAPER ID [120] Action strategies for the definition of a neighbourhood community: the discipline of design meets condominiums for the development of “block” Giuseppe Sorvillo
15:30	PAPER ID [83] Design thinking in the development of sustainable furniture Sofia Soares, Liliana Soares, Ermanno Aparo	PAPER ID [59] Transpedagogy as an activist design practice: other modes of knowledge production and action through a School Ship. Raúl Goñi, Manuela Valtchanova

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20-22 MAY 2024**

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2:30 PM - 4:00 PM SESSION 3C THEMATIC GREEN meeting room 3 https://zoom.us/j/94140615243		2:30 PM - 4:00 PM SESSION 3D THEMATIC SMART meeting room 4 https://zoom.us/j/95436964714	
	Moderator: Graça Guedes		Moderator: José Machado
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15:00	PAPER ID [50] Hybridizing Construction: The Transformative Influence of Ceramic AM João Carvalho, Paulo J. S. Cruz, Bruno Figueiredo	15:00	PAPER ID [51] Innovative design solutions in manufacturing industries by adopting art-driven experimentation Chiara Frenzia, Bettina Maisch, Fatima Pombo
15:15	PAPER ID [104] Appl(e)ause. A Food Design experiment to create new processed foods from apple by-products Raffaele Passaro, Cristian Campagnaro	15:15	PAPER ID [66] A Grasshopper-Based Computational Framework for Geometry Analyses based on the Jollying Process Diogo Carvalho, João Oliveira, Violeta Clemente
15:30	PAPER ID [52] The life and death of growth cities: Investigating the transition to degrowth spatial planning Anna Deeg	15:30	PAPER ID [98] The Role of Design in Fostering Circular Strategies through Digitalization in Waterborne Passenger Urban Mobility Ecosystems. Laura Pirrone, Arianna Bionda, Andrea Ratti
16:00	COFFEE BREAK foyer floor -1		

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20-22 MAY 2024**

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	4:30 PM - 6:00 PM SESSION 4A THEMATIC GREEN meeting room 1 https://zoom.us/j/93366132899	4:30 PM - 6:00 PM SESSION 4B THEMATIC SOCIAL meeting room 2 https://zoom.us/j/96385995188
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16:45	PAPER ID [99] Synergies between biomimicry and design Workshop Biomimicry 101 - "How can nature guide us into a sustainable future." Jeremy Aston, Ana Duque, Luciana Barbosa	PAPER ID [137] Revolutionizing Bell's Palsy Recovery: The Innovations of Reactivate in Design for Health and Well-being Valentina Sorvillo
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17:15	PAPER ID [78] Neo-rural Bioconstruction: A Cultural Analysis. Transformations and Connections Between the Past and the Present Llara Fuente Corripio	PAPER ID [141] Redesigning the learning environment of an online fashion design course: A step towards heutagogy Graça Guedes, Patrícia Gomes
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4:30 PM - 6:00 PM SESSION 4C THEMATIC SOCIAL meeting room 3 https://zoom.us/j/94140615243		4:30 PM - 6:00 PM SESSION 4D THEMATIC SOCIAL meeting room 4 https://zoom.us/j/95436964714	
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16:45	PAPER ID [19] The temporary and sustainable music festival as a proscenium for new cultural acts. Glastonbury Festival: anatomy of a sustainable event Marco Manfra, Alessandro Damiani	16:45	PAPER ID [68] Citizen Participation in Strategic Conversations about Future Uncertainties Jennifer Schubert
17:00	PAPER ID [119] Sustainable Social Innovation Practices Supporting Communities in Place-Based Innovations. The Case of an Intergenerational Community Care Center Silvia Maria Gramegna, Alessandro Biamonti	17:00	PAPER ID [86] Designing for Tomorrow: Inspiring Students to Shape a Better World Carla Cadete
17:15	PAPER ID [71] Inclusive Design: Consumer Diversity in Hotel Service Maristela Silva, Rita Filipe, Paola Rebolgar	17:15	PAPER ID [82] Innovation in Coastal Safety: Designing and Deploying a Mobile Compact Lifeguard Tower for Matosinhos Beaches Jose Luis Ferreira, Rui Pedro Freire, Rafael Coelho
17:30	PAPER ID [73] Designing Sustainable Tourism Experiences for Acquatic Ecosystems The Development of a Regenerative Floating Resort Elena Elgani, Elisa Schembri, Giulia Etori, Rosanna Caldarella, Davide Grasso	17:30	PAPER ID [153] The abstraction effect: how abstract language can combat aversion to imperfection and influence consumer behavior Manuel Sousa Pereira, António Cardoso, Giulia D'Auria, Marianna Aruta, Mattia Adinolfi, José Carlos de Sá

**PROVISIONAL DETAILED PROGRAM
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**ALL THE TIME IS BASED ON LISBON,
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WEDNESDAY, MAY 22ND

		9:30 AM - 11:00 AM SESSION 5A THEMATIC SMART meeting room 1 https://zoom.us/j/93366132899	9:30 AM - 11:00 AM SESSION 5B THEMATIC SOCIAL meeting room 2 https://zoom.us/j/96385995188
		Moderator: Fátima Pombo	Moderator: Rute Gomes
09:30	PAPER ID [9] Design Culture Toolkit: A university–industry co-creation approach to impact companies' corporate culture Hugo Palmares, Miguel Terroso, Emília Costa	PAPER ID [75] "Can I have more ideas?" - Developing soft skills in secondary education children using design thinking Sofia Nunes, João Ferreira	
09:45	PAPER ID [53] Design of smart LED streetlight luminaire for the mitigation of light pollution David Figueiredo, Eduardo Noronha, João Dias-de-Oliveira	PAPER ID [85] Won't this be weird? Approaching the Design Fixation problem caused by social conformity as a new perspective Nikole Melo de Mendonça, Rita Assoreira Almendra	
10:00	PAPER ID [130] Exploring Pseudo-Tactile Sensations: Virtual Reality Integration in the Textile Industry for Sustainable Transformation. Cláudia Legoinha, Silvina Félix	PAPER ID [22] Participatory Design and Food Literacy, Promoting Health and Well-Being as Integral Components of a Post-Growth Economy Verónica Duarte, Maria João Félix, Miguel de Aboim Borges, Cláudia Viegas	
10:15	PAPER ID [79] Frugal innovation in transforming scarcity into opportunities Ismael Gonçalves Taborda, Cláudia Cirineo Ferreira Monteiro	PAPER ID [148] For a Deeper Encounter With Cultural Heritage: Analysis of "Leonardo: Experience a Masterpiece" Exhibition Through the Lens of Experience Design Aleksandra Kosztyła, Pedro Cardoso, Heitor Alvelos	
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**PROVISIONAL DETAILED PROGRAM
20-22 MAY 2024**

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

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	Moderator: Nuno Dias		Moderator: Luís Mota
09:30	PAPER ID [7] The Eco-design of TALLUM, a Multifunctional Kitchen Island for an Innovative Eco-user Carolina Polónio , J. Paulo Davim, Fátima Pombo	PAPER ID [56] Teacher-Generated Drawing Strategy. A Starry Night Scream Rui Costa, Susana Campos, Pedro Bandeira Maia	
09:45	PAPER ID [77] Industrial waste from corn used in the development of tubes for planting eucalyptus seedlings Leticia Perciliano Sakurai, Ghiovani Zanzotti Raniero, Antonio Roberto Giriboni Monteiro, Cláudia Cirineo Ferreira Monteiro	PAPER ID [88] Mapping the Awareness of a Place Jose Silva, Fernando Moreira da Silva	
10:00	PAPER ID [110] An Introductory and Exploratory study into the context of Portuguese Sustainable Fashion Micro-companies. Elsa Lima, Gianni Montagna, António Dinis	PAPER ID [69] Innovation in Design and Engineering: The Refill_H2o Ana Filomena Curralo, Sergio Ivan Lopes, João Mendes, Antonio Curado	
10:15	PAPER ID [44] Innovative Design Strategies for Sustainable Coral Reef Restoration in the Anthropocene. Pedro Dias, André Castro, Maria João Félix	PAPER ID [97] Sustainable Regional Development through Design Ana Moreira da Silva	
10:30	PAPER ID [84] Design of a Yarn Analysis Mechatronic Prototype for Textile Industry Filipe Pereira, José Machado, Filomena Soares, Rosa Vasconcelos, Vitor Carvalho, Luís Motta Barbosa	PAPER ID [90] Design as Leverage - Mapping Solutions José Gago, Tiago Marques	
10:45	PAPER ID [12] Incremental Innovation in Nanobiosensor for Monitoring Microplastic Particles in Fresh Water Marcio Ana, Luís Cesar Ferreira Motta Barbosa		
11:00	COFFEE BREAK FOYER FLOOR -1		

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20-22 MAY 2024**

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**ALL THE TIME IS BASED ON LISBON,
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	11:30 AM - 1:30 PM SESSION 6A THEMATIC SPECULATIVE meeting room 1 https://zoom.us/j/93366132899	11:30 AM - 1:30 PM SESSION 6B THEMATIC CONVERT meeting room 2 https://zoom.us/j/96385995188
	Moderator: Pedro Bandeira Maia	Moderator: Paula Trigueiros
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11:45	PAPER ID [24] Authorship in contemporary tattoo: A design perspective Bruno Cordeiro	PAPER ID [152] Proposing a Sustainability Compendium for the Portuguese Industry Sector Students Rute Gomes, Paulo Dinis, José Silveira Dias, Maria João Félix
12:00	PAPER ID [109] Fashion, Speculative Design and Fashion Films in Contemporary Fashion Brands: A Literature Review Mónica Lopes, Manuel José Damásio, Alexandra Cruchinho	PAPER ID [118] The professional practice of design: a qualitative study of design processes and their suitability for teaching academic design Luís Mota, João Martins, Liliana Soares, Maria João Félix
12:15	PAPER ID [122] Being-Centred Design – Notes on a Speculative Process Philosophy Nuno Dias, Abhishek Chatterjee, Vasco Branco	PAPER ID [63] Businesses in Bamboo and their Considerations for a Sustainable Venture Monikuntala Das, Amarendra Kumar Das
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PORTUGAL TIME (GMT+00:00)**

	11:30 AM - 1:30 PM SESSION 6C THEMATIC SOCIAL meeting room 3 https://zoom.us/j/94140615243	11:30 AM - 1:30 AM SESSION 6D THEMATIC GREEN meeting room 4 https://zoom.us/j/95436964714
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11:45	PAPER ID [65] Analysis of the Academic production using Systematic Literature Review: Brazil - Portugal (2017-2022) Lívia Brasil	PAPER ID [60] Sustainable Conversions for Covo: Co-creation between Design and Craftsmanship Amélia Ribeiro, Maria João Barbosa
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José Rui Marcelino (Lisbon School of Architecture, Universidade de Lisboa, Portugal), **André Castro** (Lisbon School of Architecture, Universidade de Lisboa, Portugal) and **Catarina Ferreira** (Lisbon School of Architecture, Universidade de Lisboa, Portugal).

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 - *Biotechnological Design*
 - *Mechatronics Design*
 - *Metaverse Design*
 - *Transportation Design*
 - *Digitization and Manufacturing Design*
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▼ The Thematic Smart area at Design Commit focuses on integrating advanced technologies with innovative design practices. From medical device development and biotechnology to metaverse and transportation design, this theme covers a diverse range of fields that utilize artificial intelligence, mechatronics, and digitization to drive technological progress. Sessions in this area will explore how smart design can revolutionize industries by improving everything from manufacturing processes to user experience customization, emphasizing the need for solutions that are both innovative and practical.

Specifically, topics like “Robotic Design” and “Aerospace Technology and Astronautics Design” illustrate the crucial role of design in breaking new scientific frontiers and solving complex challenges through advanced engineering. The conference will provide a forum for discussion on how the convergence of different technologies can create unprecedented synergies, showcasing projects that exemplify the practical potential of research in areas like biotechnology and mechatronics.

PAPER ID [1]

OPERATIONS OPTIMIZATION FOR THE INDUSTRIAL FAUCET INDUSTRY: TEST ASSEMBLY AND PACKAGING IN A ONE-PIECE FLOW LINE

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Customization and the variety of products that the needs of today's consumers demand, represent a great challenge for the faucet industry with just in time products. Some of the companies in Portugal that manufacture and sell faucets still use operations management techniques that do not correspond to these demands of modern industry. In this context, and based on a challenge posed by the company Bruma Europa, the following question was asked: how can we improve performance and reduce assembly, testing and packaging time in the faucet manufacturing process? Bruma Europa is a market leader in the faucet and sanitary accessories industry, having provided quantitative and qualitative data from its current assembly line. In response to the question posed, an assembly, quality test and packaging line was developed through the application of the one-piece flow line that is easy to assemble, reduces the number of operators and the size occupied on the factory. To validate the optimization, assembly time tests were carried out with the current line and the times compared with the one-piece flow line, obtaining a decrease in assembly time of approximately 47%, guaranteeing an annual optimization of 327 hours.

Keywords: Industrial Operations Optimization, Faucet Industry, One Piece Flow, Ergonomics; Production and Manufacturing

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PAPER ID [9]

DESIGN CULTURE TOOLKIT: A UNIVERSITY-INDUSTRY CO-CREATION APPROACH TO IMPACT COMPANIES' CORPORATE CULTURE

Hugo Palmares (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), *Miguel Terroso* (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Portugal) and *Emília Costa* (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

The cognitive and thinking paradigms occur during a game-based activity in an industrial context, promoting a relationship between individual thinking and creative exploration in teamwork. In the literature review, we link paradigms that primarily aim at different perspectives and outcomes (e.g. mentality and creativity, creative toolkit, and gameplay); the hypothesis here is that a toolkit can be a stimulating and playful tool that challenges a company's corporate culture. Furthermore, to test this

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hypothesis in a university–industry collaboration in Portugal, this study adopts an empirical study through co-creation methods (e.g. design workshops, focus group, design concept prototyping, validation tests) to facilitate a creative process and outcome. The results of this study show that toolkits and gamification developed in a university–industry co-creation approach increase the feasibility of implementing a tool in an industrial context and, in the process, positively impact the corporate culture of an organisation to enhance creativity and the innovation mindset.

Keywords: University–industry co-creation, Toolkit, Diagnosis, Design, Innovation, Corporate.

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PAPER ID [10]

MAPPING A NETWORK CULTURE: FROM AN EMPIRICAL STUDY ON UNIVERSITY-INDUSTRY COLLABORATION

Hugo Palmares (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), Miguel Terroso (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Portugal) and Emília Costa (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

This paper aims to propose a research process framework that involves an empirical university–industry collaboration (UIC). This research identifies studies and literature reviews focused on UIC and offers a mapping of network culture – according to each phase of this research – to clarify the dynamic(s) of collaboration between the university and Portuguese industry. The research methodology reviewed best practices and implemented iterative meetings for a successful UIC: interviews, surveys, workshops, focus groups, tests, seminars, and trainings. During nearly three years, this empirical research involved 120 participants, from 35 companies from 6 different industries in Portugal, and 7 European universities, demonstrating the feasibility of the methodology. As results, this study uncovers a dynamic network culture and a scope for a holistic framework that positions each collaboration according to different research phases. However, for sustained and successful collaboration, this depends on a list of influential factors linked to UIC efficiency and considering multi-session participation from the industry partners. For future work, this framework can be adapted to other types of co-creation outputs, even in a different industrial context, to be more effective and to encourage other academic researchers involved in and facing challenges with a UIC.

Keywords: University–industry collaboration, Framework, Practices, Network, Mapping.

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PAPER ID [23]

DESIGN OF AN ELECTRONIC MECHANISM TO CONTROL THE REMOVAL OF BAGS IN A PUBLIC DISPENSER: CONTRIBUTIONS OF 3D PRINTING TO THE CREATIVE PROCESS

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This article explores the design of an electronic mechanism for an animal waste bag dispenser for public parks. The mechanism was part of a project carried out at University of Porto in collaboration with Vila Nova de Gaia City Council. The aim was to develop a product that would provide a bag dispenser and a container for (bagged) animal waste for a local park. One of the issues addressed — analysed in this paper — was the excessive removal of bags from public dispensers, requiring the design of a mechanism that would prevent the consecutive removal of several bags.

The methodology was based on an iterative process with multidisciplinary teams (including designers, engineers, 3D printing technicians) at all stages of design and product development. While describing the design process of this mechanism, this study highlights the role of 3D printing as a key element in the prototyping process at different stages of the project. The rapid production of prototypes enables testing them, identifying problems and making immediate corrections. This study illustrates how the combination of innovative technology and interdisciplinary collaboration in design projects facilitates processes of ideation, conception, testing and evaluation, contributing to more effective solutions.

Keywords: Product Design, Electronic mechanism, Bag Dispenser, 3D Printing, Iterative methods, Prototyping

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PAPER ID [31]

DESIGNERS FOR/AND/WITH MANUFACTURING: DESIGN-DRIVEN SOLUTIONS FOR AN UPDATED DIALOGUE BETWEEN YOUNG CREATIVE TALENTS AND THE TEXTILE-KNITWEAR INDUSTRY

Giovanni Maria Conti (Politecnico di Milano, Italy), *Martina Motta* (Politecnico di Milano, Italy), *Mariana Ciancia* (Politecnico di Milano, Italy), *Katia Goldoni* (Politecnico di Milano, Italy), *Francesca Piredda* (Politecnico di Milano, Italy) and *Beatrice Zagatto* (Politecnico di Milano, Italy).

The article presents the research Context, built on the network of relationships with textile and knitwear companies established by the research team KnitDesign Lab and Imagis lab. A first

investigation on the existing relationships showed that they empowered the update of educational practices but also evidenced a great gap between the university and entrepreneurial realities in understanding each other's practices, skills, objectives. Combining the expertise in the textile-knitwear area of KnitDesign Lab with the one in communication of Imagis lab, the research project investigated the present needs and the future visions of young design talents and manufacturers and developed solutions to make them converge towards a common meeting point, with the aim to lay valid foundations for a constructive dialogue between the two opposite poles. The research is here presented with its methodology, structure and detailed results.

Keywords: knitwear design; textile design; student-business connection; textile-knitwear manufacturing.

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PAPER ID [46]

DESIGN OF BRAIDED FIBROUS STRUCTURE (SCAFFOLD) FOR TREATMENT OF SPINAL INJURY USING RHINOCEROS 3D® SOFTWARE AND GRASSHOPPER PLUGIN

Ivis Aguiar Souza (Centre for Textile Science and Technology (2C2T), University of Minho, Guimarães, Portugal), Lais Kohan (College of Animal Science and Food Engineering, University of São Paulo, Pirassununga, Brazil), Maurício José da Silva Filho (Institute of Architecture and Urbanism, University of São Paulo, São Carlos, Brazil), Raul M. E. S. Figueiro (Centre for Textile Science and Technology (2C2T), University of Minho, Guimarães, Portugal) and Diana S. P. Ferreira (Centre for Textile Science and Technology (2C2T), University of Minho, Guimarães, Portugal).

Parametric design operates as an indispensable mechanism for the fabrication of elaborate geometries. In recent years, there has been an increase in the incidence of injuries to the spine and spinal cord. The most common causes of spinal cord injuries are traffic accidents, falls, high-impact sports, and acts of violence. The objective of this work was to graphically develop braided textile structures suitable for assisting in the treatment of spinal cord injuries. They were selected by criteria of number of layer yarns (internal and external), angle, structural diameter, and porosity. Thus, the structures have an internal layer with 8 yarns and an external layer with 8 or 16 yarns. The main requirement to select them is porosity of structure, and two main structures with different morphologies were simulated, followed by their characterization. The internal layer demonstrated a porosity of 84.77%, indicating feasibility for implementation. The external layer, one with 8 yarns, presented 82.14% porosity, similar to the previous sample, while the other with 16 yarns showed 66.03%. Both options exhibited clear distinctions: a conclusive framework comprising 8 strands in each layer manifested increased porosity, potentially compromising mechanical resilience. Conversely, a setup featuring 8 yarns in the internal layer and 16 in the external layer may confer enhanced mechanical attributes without compromising porosity. The utilization of Rhinoceros 3D software in collaboration with the Grasshopper plugin streamlined the morphological assessment process, facilitating the discernment of critical features prior to physical fabrication.

Keywords: Braided; Textile; Spinal Cord Injury; Parametric Design; Scaffold; Porosity

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PAPER ID [51]

INNOVATIVE DESIGN SOLUTIONS IN MANUFACTURING INDUSTRIES BY ADOPTING ART-DRIVEN EXPERIMENTATION

Chiara Frencia (INOVA+, Belgium), Bettina Maisch (Munich University of Applied Sciences, Germany) and Fátima Pombo (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).

The article argues that art-based methods can be introduced as a complementary element in the design process of companies to support creativity and innovation. Art thinking has in this way expanded beyond art practice and is applied as a general method for observing and using patterns in all types of creative activities (Townsend, 2023). It is not yet a highly explored topic in literature, even though it has gained increased attention in education through STEAM (Science, Technology, Engineering, Arts and Math) projects that include art as a major knowledge domain for innovation. It discusses the theme of art-driven experimentation starting from a brief introduction on the topic of art-based methods and moving along with two examples of adopting art-driven innovation in manufacturing Small and Medium Sized Enterprises (SMEs) as part of a wider project of supporting innovation in industries. STARS Initiative was launched by the European Commission in 2015 with the main goal of including artists in innovative projects. This article presents two experiments of the successful collaboration between artists, SMEs and digital technologies, Knowledge Transfer Experiences (KTE) with outcomes of concrete design products or design solutions to be further explored by the companies.

Keywords: Design Process, Innovation, Manufacturing SMEs, STARS Initiative, Art-driven experimentation, Knowledge transfer experiments (KTE)

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PAPER ID [53]

DESIGN OF SMART LED STREETLIGHT LUMINAIRE FOR THE MITIGATION OF LIGHT POLLUTION

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Light pollution can be defined as any impact caused by the excessive or inappropriate use of artificial light, with data pointing to Portugal underperforming in European rankings for artificial light emission in its territories. The pertinence for light pollution prevention at a national level rises with the existence of three certified Starlight Tourism Destinations, creating the demand for the reduction of excessive light by following recommendations that consider light pollution's impacts on human health, biodiversity, economy and night sky observation. In this paper, a smart LED luminaire for public street use is proposed, based on light mitigation guidelines suggested by light pollution researchers, and based on simulations performed for the prevention of light reflected towards the night sky and for the light pole's

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structural safety. Taking advantage of the placement of public lighting infrastructure, other functionalities besides the emission of light are suggested, taking advantage of public lighting infrastructure's placement in urban areas.

Keywords: light pollution, streetlight design, public lighting, luminaire, light pollution

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PAPER ID [55]

VIRTUAL PRODUCTION: A CLOSER LOOK AT DIGITAL INNOVATION AND HEALTH

Guilherme Cruz (Instituto Politécnico do Cávado e do Ave), José Raimundo (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal) and Marta Madureira (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal).

This article focuses on a research project about Virtual Production which was developed during a research scholarship program at Polytechnic University of Cávado e do Ave (IPCA). This project aims to implement Virtual Production (VP) technology in the academy to prepare students for a future generation of creatives capable of responding to industry needs. This project partnered with the University of Minho and the "Descomplica" Project aiming to develop a one-minute video about Post-Traumatic Stress Disorder (PTSD) using VP technology with the objective of raising awareness about this disorder and break the stigma around it. The article also discusses the potential of VP to revolutionize content creation and democratize filmmaking as well as its applications in the healthcare sector, especially in education, medical and patient care training. This article concludes by emphasizing the importance of continuing to explore the possibilities of VP while addressing its challenges and limitations in order to create an accessible, effective health system and more effective for everyone.

Keywords: Virtual Production, CGI, VFX, Mental Health, Post-Traumatic Stress Disorder, Speculative Design

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PAPER ID [61]

THE INTEGRATION OF ARTIFICIAL INTELLIGENCE IN JEWELLERY DESIGN PROCESSES

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In recent years, Artificial Intelligence (AI) has transformed the traditional design process worldwide. This technology enables designers across various sectors to rethink how to collect and analyse data and more sustainably express creativity in the design process. In the design field, Artificial Intelligence offers innovative alternatives to improve efficiency and sustainability, and it plays a crucial role in the jewellery design process. This paper intends to establish directions to help the design process become more efficient by integrating

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artificial intelligence-based programs and tools. Primarily, this paper focuses on using Artificial Intelligence throughout the design process, from the research to the communication phase. Each step involved in the design process is identified and analysed. Secondly, for each identified phase, this paper highlights strengths and weaknesses, opportunities and limitations that Artificial Intelligence offers in jewellery. In conclusion, the paper reflects on the role of designers in the new AI-driven design scenario, and it offers an overview of opportunities and challenges to be overcome for a more sustainable and innovative design process.

Keywords: design, jewellery design, artificial intelligence, sustainability, creativity

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PAPER ID [66]**A GRASSHOPPER-BASED COMPUTATIONAL FRAMEWORK FOR GEOMETRY ANALYSES BASED ON THE JOLLYING PROCESS**

Diogo Carvalho (Department of Communication and Art; Department of Mechanical Engineering, University of Aveiro, Portugal), *João Oliveira* (TEMA–Centre for Mechanical Technology and Automation, University of Aveiro, Portugal) and *Violeta Clemente* (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).

This paper addresses the complexities in the Roller Tool Forming process, specifically the jollying method for small axial ceramic products like vases and cups. The manufacturing intricacies, including material shrinkage and stress due to curvature changes, often lead to iterative prototyping and resource consumption. To address these challenges, the paper showcases how computational design can enhance the design process by introducing a computational tool developed in Grasshopper. The tool was designed in close collaboration with a local company that applies the jollying process and aims to provide a means of analyzing the productive feasibility of design concepts. By doing so, it seeks to reduce the necessity of physical prototypes by assessing manufacturability computationally. Three key analyses are presented: Draft Angle, Extraction Zones, and Curvature Analysis. The Draft Angle analysis evaluates the inner mould surface respecting extraction angles, while the Extraction Zones analysis categorizes points for feasible geometry extraction based on the shrinkage that occurs in the drying process of the green body. The Curvature Analysis employs Grasshopper's 'surface curvature' component, allowing users to visualize and adjust mean curvature values, providing insights into potential areas of high residual tension. The paper discusses the results and considerations for each analysis, demonstrating how computational tools can enhance the design process for ceramic manufacturing. By enabling the assessment of manufacturability in the early stages of concept generation, these tools significantly enhance the design workflow. Moreover, by offering a platform where geometry generation and verification coexist, such tools have the potential to foster communication and collaborative work between design studios and companies during the concept generation phase.

Keywords: Grasshopper, Parametric Design, Algorithmic Design, Geometry Analysis, Jollying

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PAPER ID [74]

POSTPARTUM POSTURE CORRECTION IN BABY CARRIERS: BIOMECHANICAL INSIGHTS AND STRUCTURAL DETERMINANTS

Maria Moga (West University of Timisoara, Faculty of Design and Applied Arts, Romania).

The article aims to investigate the valences and structural attributes (components, subcomponents, and their pericorporeal positioning) of a baby carrier, so that it is tailored for two functions: the containment and support of the child, and the postpartum postural recovery of the mother. The deficit in spino-abdomino-pelvic muscular tonus needs to be addressed in the successive months after childbirth. The study explores the possibility that, through carrying the infant volume, as well as by supplementing certain structural components for the baby carrier, the child's own weight could contribute to improving the mother's postural deficit. The study results suggest potential interventions for the development of a concept and prototype. Specialized literature and documentation are followed by an analysis of biomechanics and statics of postures, using the Free Body Diagram method. Postural considerations of the child, the statics and balance of the mother's body, and the musculature response to the carried load were evaluated. The article concludes on the components necessary for a new baby carrier product that fulfills these dual functions.

Keywords: Baby carrier, posture, biomechanics, components, post-partum posture correction

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PAPER ID [79]

FRUGAL INNOVATION IN TRANSFORMING SCARCITY INTO OPPORTUNITIES

Ismael Gonçalves Taborda (Department of Design, Universidade Estadual de Maringá, Maringá, PR, Brazil) and Cláudia Cirineo Ferreira Monteiro (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa and Department of Design, Universidade Estadual de Maringá, Maringá, PR, Brazil).

Frugal innovation is an effective strategy for overcoming resource scarcity by providing quality solutions. At the same time, creative ingenuity can be a lever for developing innovations that maximise value and minimise cost, transforming the way products and services are designed and delivered. Together, they can become powerful tools for transforming scarcity into market opportunity and providing inclusion. This article used documentary research of an applied nature with a qualitative and exploratory approach to understand and identify examples of innovative products combined with low production costs. Finally, it was possible to see that frugal innovation and creative ingenuity are used by companies to generate products with simple solutions to often complex problems.

Keywords: Frugal Innovation, Creative Ingenuity, Sustainability, Inclusive Economic Development, Low-Cost Solutions

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PAPER ID [83]

DESIGN THINKING IN THE DEVELOPMENT OF SUSTAINABLE FURNITURE

Sofia Soares (Instituto Politécnico de Viana do Castelo, Portugal), *Liliana Soares* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Ermanno Aparo* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

This paper aims to demonstrate the role of design in the development of sustainable furniture that provides an experience of emotion and knowledge as a response to emergent issues that happen in the home furniture sector, during the Covid-19 situation. The social, environmental, and economic changes highlighted solutions carried of culture and sustainability, to correspond to the needs of the furniture sector and people. In this sense, the study focuses on wood culture, relating the areas of cork and carving, focusing on materials with a low environmental impact and conveying national culture. Methodologically, the study is exploratory, generative, and evaluative. With this paper, the authors aim to demonstrate that the concept of design thinking can create links between the product and the individual, through a reference of local culture, preserving its value through new scenarios and, thus, stimulating empathy between the user, the product, and the space. In business terms, this study proves to be strategic, in the sense that it will benefit from a partnership with a company located in the North of Portugal, committing to people's needs.

Keywords: Design Thinking, Furniture, Cork, Carving, Sustainability.

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PAPER ID [89]

FLY-PT PROJECT: COLLABORATIVE APPROACHES IN E-VTOL PASSENGER CABIN DESIGN

José Rui Marcelino (Lisbon School of Architecture, Universidade de Lisboa, Portugal), *André Castro* (Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Catarina Ferreira* (Lisbon School of Architecture, Universidade de Lisboa, Portugal).

The increase in urbanization and road congestion has raised the need to address new solutions for transportation. In this context Urban Air Mobility (UAM) has come up as a possible near future solution, supported by the advance of sustainable propulsion, energy storage systems, connectivity, automation, and lightweight structures. The FLY.PT project, integrating different Portuguese companies in the aviation sector, aimed to push the boundaries of autonomous mobility through a demonstrator of an electric multimodal transport system that combined a drone, a passenger cabin, and an autonomous skateboard, offering both horizontal and vertical mobility simultaneously. The research is focused on the creation of a "collaborative design methodology" to develop concept proposals together with the project partners, focusing on user-centered design, aerodynamic efficiency of the cabin and management and operation models of the service/system. In this paper we will try to describe this methodology, which included the creation of a "Morphological table" to support the generative phase,

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"Sketching" sessions to visualize concepts and "Concept Selection Matrix" to choose and refine concepts collaboratively. The aim of the methodologies was to integrate all partners involved in the project and achieve the most functional and appealing solutions based on the requirements for the operating model and the general architecture of the product concept. The results enabled the development of a "Passenger Cabin Design" that addresses the new challenges of the UAM product / service.

Keywords: Urban Air Mobility; Design Methods; Collaborative Design; Cabin Design

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PAPER ID [93]

EMERGING APPROACHES IN YACHT DESIGN AND MANUFACTURING: STATE OF THE ART AND FUTURE PERSPECTIVES OF GENERATIVE DESIGN AND ADDITIVE MANUFACTURING

Massimo Piccioni (Politecnico di Milano, Design Department, Italy), Arianna Bionda (Politecnico di Milano, Italy) and Andrea Ratti (Politecnico di Milano, Design Department, Italy).

The yacht industry is facing increasing demands for customization and sustainability that challenge traditional composite manufacturing methods. Through a systematic literature review, this paper explores how the emerging technologies of generative design and additive manufacturing (AM) are transforming yacht design and production processes. A systematic search of recent publications uncovered various applications of these novel technologies that demonstrate their potential to address current industry challenges. Generative design enables the creation of innovative, optimised hull forms but have seen limited adoption in yacht design thus far. AM technologies are being applied more widely, from boat prototypes, hull moulds, spare parts, and custom components. Across the case studies examined, AM consistently provides unprecedented geometric flexibility and empower manufacturers to meet customisation demands without waste penalties. While research on integrating generative design and AM remains limited, the findings suggest these technologies could revolutionise yacht composites design and manufacturing. Their application fosters design innovation, flexible customisation, and more sustainable production practices. As the adoption of these emerging technologies progresses, their impact warrants further studies. This research provides insights for navigating their implementation and maximising their potential to shape the future of the yacht industry.

Keywords: Yacht design; maritime industry; additive manufacturing; 3D printing; generative design.

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PAPER ID [96]

DRAWING AND MANUAL SKETCHING IN THE CONTEXT OF INDUSTRIAL DESIGN, IN THE ERA OF ARTIFICIAL INTELLIGENCE

Verónica Duarte (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Maria João Félix* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Miguel de Aboim Borges* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal)

This article examines the relevance of drawing in the industrial designer profession, considering that there is a growing interest in leveraging Artificial Intelligence (AI) to draw quickly and accurately. Two research questions were asked: What is the usefulness of drawing in industrial design? Does it make sense to use manual sketching in the product development process, given the functions of AI? Based on the literature review, supported by the construction of a conceptual model and a project management model that integrates drawing throughout the entire process, the research suggests that the practice of drawing should be continuous to assist in the iterativity of the creative process. Furthermore, manual sketching is supported by the humanistic skills of the designer, who is concerned with knowing how users think, feel and behave in a given context and culture. In this sense, although AI presents many advantages in terms of optimisation and as a complementary part of the process, it does not replace manual sketching. This study requires additional research into the potential of drawing in industrial design and to understand how advances in AI can affect manual sketching.

Keywords: Manual Sketching, Drawing Practice, Industrial Design, Creative Process, Artificial Intelligence.

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PAPER ID [98]

THE ROLE OF DESIGN IN FOSTERING CIRCULAR STRATEGIES THROUGH DIGITALIZATION IN WATERBORNE PASSENGER URBAN MOBILITY ECOSYSTEMS.

Laura Pirrone (Department of Design, Politecnico di Milano, Milan, Italy), *Arianna Bionda* (Department of Design, Politecnico di Milano, Milan, Italy) and *Andrea Ratti* (Department of Design, Politecnico di Milano, Milan, Italy).

Waterborne mobility can promote more sustainable cities by reducing traffic congestion, energy consumption, noise, and pollution emissions, however, to fully realize its sustainable potential there are still challenges to overcome. Digitalization can play a critical role in enabling circular strategies and fostering a required holistic approach, which expands the circularity towards an ecosystem perspective and encourages long-term and comprehensive sustainable solutions. The article introduces an ongoing PhD research investigating how design strategies can support the stakeholders of the waterborne passenger mobility ecosystem in fostering circular practices through digitalization. The study addresses the issue through a systemic perspective aiming to define the waterborne passenger

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mobility (WPM) ecosystem and to identify criticalities and new opportunities for the sector to trigger circular economy using digital technologies. The research objectives and questions, the methodological framework, preliminary findings, and anticipated contributions are detailed.

Keywords: waterborne mobility, ecosystem, circular economy, digital technologies, systemic design.

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PAPER D [106]

VAI - A COLLABORATIVE PROJECT TO IMMUNIZE PEOPLE THROUGH MASS VACCINATION

Ana Brum (Universidade Federal do Paraná, Brazil), Gláucia Ferro (Centro Brasil Design, Brazil) and Aguinaldo Santos (Universidade Federal do Paraná, Brazil).

This article was prepared with the aim of presenting a project designed to address, in the most agile way possible, the need for vaccination in humans, especially in emergency situations triggered by pandemics. The research objective was defined as: develop an innovative automated vaccination artifact to meet the urgent need for mass immunization. The research is phenomenological and exploratory in nature, using action research and design science methods. Given that the project is still in the development phase, the partial results obtained through pre-testing with 30 users indicate, under the appearance of the automated process, efficacy and safety in the application of vaccines through injection. Other forms of immunization such as nasal aspiration or drip were not tested. However, in the future, other tests with these possibilities could be carried out. However, full validation of the project depends on additional tests, medical legitimization, investment and the establishment of an interdisciplinary collaborative network capable of consolidating and implementing the project anywhere in the world. The project in question, called VAI – Intelligent Automatic Vaccination, was initially designed to face the demand generated by COVID-19. However, it can be applied in several situations that require convenience and urgency in the administration of human vaccines. Furthermore, highlights the potential to quickly guarantee vaccine safety, reduce errors, adapt to new virus variants, reduce costs, reduce dependence on health professionals and, finally, better monitoring of the vaccines administered.

Keywords: Vacinação em massa, colaboração interdisciplinar, automação, robótica, design de serviços

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PAPER ID [111]

INDUSTRY 5.0 AND SUSTAINABLE FASHION: FUTURE PROSPECTS FOR DESIGNERS IN THE ERA OF SMART FACTORY AND ARTIFICIAL INTELLIGENCE

Fernando Moreira da Silva (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal, Roberto Liberti (Dipartimento di Architettura e

*Disegno Industriale, Università della Campania Luigi Vanvitelli, Italy), **Silvestro Di Sarno** (Dipartimento di Architettura e Disegno Industriale, Università della Campania Luigi Vanvitelli, Italy) and **Valentina Alfieri** (Dipartimento di Architettura e Disegno Industriale, Università della Campania Luigi Vanvitelli, Italy).*

In a context where emerging technologies are redefining production dynamics, fashion is facing an unprecedented revolution. Smart factories, integrated with artificial intelligence, are becoming the core of more efficient and personalized production. The adoption of digital technologies and the implementation of sustainable practices has shaped the fashion industry by proposing innovative approaches that can address emerging challenges through the opportunities presented by the convergence of fashion, technology and sustainability in the Industry 5.0 era. In the context of these changes, new educational and methodological approaches for the designer of the future are explored, approaches that consider the skills required in the digital age, including the ability to navigate the complex landscape of digitization, discussing how social and environmental sustainability becomes a key element in this highly technological context. It concludes by emphasizing the importance of an interdisciplinary perspective to address the complexities of the Fifth Industrial Revolution, encouraging education that integrates creativity, technological skills and environmental sensitivity to train transition designers.

Keywords: Twins transitions, Artificial Intelligence, Interdisciplinarity, 5.0 Industry, Transition designer.

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PAPER ID [112]

PERSPECTIVES OF STUDENTS ON AI USE IN INTERIOR ARCHITECTURE AND DESIGN

Jinoh Park (University of Arkansas, United States of America).

This study explores the possibility of utilizing artificial intelligence (AI) technology in the existing interior architecture and design process that students have learned. With a research question, "How do students perceive the use of AI tools in the design process?" this research involved a workshop for students who had completed pre-design, schematic design, design development, and construction documentation. Twenty students participated in the workshop, and they explored other options in their design process and outcomes before writing an essay about their experience. The workshop outcomes, including the students' original designs, AI-generated outcomes, and essays, were published. Content analysis was used to analyze the results for the purpose of determining the sentiments, use, and future plans of respondents regarding the use of AI. As a result, this paper identifies overall sentiments, use cases and applications, concerns and limitations, and future outlook of the research participants. In conclusion, the students' sentiments toward AI exploration in design are positive, with recognition of its current benefits and hope for future advancements. As they acknowledge the importance of human creativity and AI's limitations, they appreciate its role in generating ideas, assisting with material exploration, and streamlining design processes.

Keywords: Interior Architecture and Design, Design Process, AI, Artificial Intelligence, Design Education.

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PAPER ID [117]

INCLUSIVE KNOWLEDGE SYSTEM: A CYBER PHYSICAL SYSTEM FOR EDUCATION AND RESEARCH IN THE MADE IN ITALY PH.D. PROGRAM

Arrigo Bertacchini (Università degli Studi della Campania Luigi Vanvitelli, Italy) and Salvatore Carleo (Università degli Studi della Campania Luigi Vanvitelli, Italy).

The combination of Industry 4.0 and Artificial Intelligence represents a significant change in the educational approach, leading to a complete renovation of Ph.D. programs to incorporate digital technologies into academic pursuits. This research suggests reimagining the Made in Italy Ph.D. Program as a Cyber Physical System (CPS), integrating physical resources of universities and research labs with the knowledge of educators, students and staff, and connecting with the innovation-focused business sector. The paper discusses the complexities of establishing such a CPS, from utilizing Industry 4.0 technologies to implementing AI tools for advanced educational settings, and presents the Made in Italy Ph.D. program as a model CPS framework. Through empirical research using a detailed questionnaire to assess Ph.D. students' satisfaction, the study evaluates how digital integration can enhance educational quality. The methodology, data collection, and analysis demonstrate the CPS's role in improving the Ph.D. experience, suggesting ways to seamlessly integrate technology with academia. The research concludes by highlighting the essential role of a digitally integrated academic network in fostering cutting-edge research and teaching methods.

Keywords: Inclusive Knowledge System, Cyber Physical System, Made in Italy, Interaction Design, Collaborative Research Platform

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PAPER ID [130]

EXPLORING PSEUDO-TACTILE SENSATIONS: VIRTUAL REALITY INTEGRATION IN THE TEXTILE INDUSTRY FOR SUSTAINABLE TRANSFORMATION

Cláudia Legoinha (University of Aveiro, Portugal) and Silvina Félix (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).

The industrial world is stepping into a new era, with Industry 4.0 and digital technologies at the forefront of transforming industries. These technologies are powerful tools to address the environmental challenges emerging in the coming decades. Beyond ecological reasons, the growing interest of consumers in technological experiences has led the fashion industry not to be left out of this transformation, seeking solutions in digitalisation. Among various technologies used to meet future needs, Virtual Reality stands out as a strong catalyst for innovation in the textile sector. Its implementation will allow the creation and development of 100% digital clothing, reducing the industry's environmental impact. Despite numerous advancements in VR technology, the physicality inherent to the fashion industry presents drawbacks, chiefly the inability to tactilely engage with clothing pieces, necessitating the identification of compensatory cues to address this disadvantage.

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This paper describes a study conducted in collaboration with a textile company that explores the creation of immersive scenarios through VR, aiming to evoke sensations by utilizing crossmodal correspondences between various visual elements and tactile sensations. This approach proved to be effective in more than 80% of the respondents and the sensations perceived were aligned with those intended to be conveyed.

Keywords: Industry 4.0, Digital Fashion, Textile Industry, Sustainability, Virtual Reality, Pseudo-tactile Feedback

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PAPER ID [134]

USING THE WORKSHOP TECHNIQUE AS AN EVALUATION TOOL: THE CASE OF THE WAYFINDING INFORMATION BEHAVIOR METHOD.

Kelli Cas Smythe (Universidade Federal do Paraná, Brazil) and Érica Santos Vargas (Universidade Federal do Paraná, Brazil).

There are many methods and techniques for developing and evaluating Design artifacts, which can make it challenging for designers to choose appropriately. In this context, this paper aims to present the design and execution of the workshop technique as an evaluation tool for the Wayfinding Information Behavior (WIB) method. To achieve this, concepts regarding ways to include users in the design process and characteristics of workshops as a participatory tool are described. Following this, the result of a bibliographic survey on plausible techniques and tools for application in workshops is presented. Subsequently, the workshop design for evaluating the WIB method is reported. Finally, the results of the workshop application are discussed from the perspective of users' experience regarding their understanding of the contents and preferences for the tools of the WIB method, as well as the workshop configuration. The main contributions relate to the possibilities of interaction tools that can make the workshop technique more effective.

Keywords: Workshop; techniques, evaluation; wayfinding system design.

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PAPER ID [143]

UNCOMPILABLE: AN INTERPLAY BETWEEN DESIGN AND AI IN THE REAL WORLD

Daniel Risi (IADE- Universidade Europeia, Lisbon, Portugal).

Artificial Intelligence (AI) has increasingly infiltrated design organizations, raising concerns about its potential to replace human designers due to its rapid evolution. This exploratory study examines qualitative evidence from literature and online repositories to identify pragmatic aspects that can safeguard design organizations from being entirely replaceable by AI automation. The findings emphasize the necessity for organizations to cultivate an AI-driven culture to maintain competitiveness. This discussion aims to provide insights for informed decision-making amid the dynamic changes in the technological landscape.

Keywords: Design, Artificial Intelligence, design organization, real world, uncompileable.

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> *Design for Safety Equipment*
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> *Design and Cultural Heritage*
> *Tourism Design*
> *Workplaces Design*
> *Social Design*
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- ▼ Thematic Social focuses on the social impact of design, addressing how it can be a driving force for inclusion and social change. This theme examines how design can positively contribute in diverse contexts, from aging and public health to food security and sustainable agriculture. Sessions will discuss the importance of designs that not only meet immediate needs but also promote resilience and social inclusion.

Emphasis will be given to how design can respond to emergencies and disasters, create innovative safety equipment, and even redefine workspaces to promote greater interaction and satisfaction. The impact of design on preserving cultural heritage and fostering sustainable tourism will also be explored, demonstrating its fundamental role in building bridges between generations and cultures, and promoting a deeper, more respectful understanding of the world around us.

PAPER ID [5]

BRAND DESIGN: PROJECT-BASED LEARNING CASE STUDY

Raquel Antunes (FAA, Universidade Lusíada Porto, Portugal; ESTG, Politécnico de Leiria, Portugal; CITAD.) and *António Brandão* (FAA, Universidade Lusíada Porto, Portugal; CITAD.).

Brand is an essential element of communication today. The case study in this paper is about the development of a new brand for an elderly support activity within an existing association. The brand design was developed by first year students of a higher education institution in 2022. The teaching method used was Project Based Learning (PBL). The aim of the design project was to respond to the characteristics of PBL, namely problem solving and response, student motivation and the role of the teacher in the process. Students were brought closer to the real work context through this pedagogical method of active learning.

Keywords: Project-based learning, Collaborative design, Physical brand identity, Brand design, Elderly support

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PAPER ID [14]

SYNESTHETIC DESIGN PRACTICE: THE SMELL OF MUSIC

Yang Li (Design Department of Lisbon School of Architecture, Portugal), *Yiyuan Ding* (Design Department of Lisbon School of Architecture, Portugal), *Nankai Cheng* (Design Department of Lisbon School of Architecture, Portugal) and *Giuseppe Lotti* (Department of Architecture, University of Florence, Italy).

Amidst escalating stress in fast-paced lifestyles, this study investigates music therapy as a holistic stress alleviation tool for those facing continuous anxiety. Focusing on corporate workers and students, it develops a user profile to apply a multisensory music therapy approach. This research introduces the innovative "synesthetic sound system," designed to be an unobtrusive, therapeutic intervention harmonizing auditory, visual, tactile, and olfactory stimuli, aiming to foster tranquility and emotional balance.

Keywords: Music Therapy, Stress Relief, Sensory Design, Well-Being, Synesthesia, Mental Health

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PAPER ID [15]

PRODUCER TO CONSUMER VEHICLE (P2CV) PRODUCT DESIGN OF A SMART MOBILITY SOLUTIONS FOR MINIMISING LOSS AND WASTE IN MICRO FOOD SUPPLY CHAINS

Guilherme Matos (ESAD College of Art and Design, Portugal) and *Jeremy Aston* (ESAD College of Art and Design, Portugal).

In response to the imminent global population surge projected to reach 9.7 billion by 2050 (UN, 2019), this article confronts the critical issue of food waste within the context of the burgeoning population. The study delves into the intricacies of the food supply chain (FSC), pinpointing inefficiencies in

handling, transportation, and consumption. Identifying key areas contributing to waste, the research informs the development of an innovative product design solution. Focusing on fresh produce and urban vertical farming, the 'Producer To Consumer vehicle' (P2Cv) emerges as a new design concept. Integrating urban vertical farming with efficient transportation, the P2Cv optimises the handling and transportation of fresh food. By establishing a Micro Food Supply Chain and minimising traditional fixed retail formats, the P2Cv significantly reduces food waste during transportation and shelf exposure. This intelligent mobility product connects urban vertical production directly to consumers, ensuring the quality of fresh food at every stage. Offering a compelling solution to a pressing global challenge, the P2Cv redefines the future dynamics of the food supply chain.

Keywords: Product design; Food supply chain; Smart city services; Vertical farming; Food loss.

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PAPER ID [17]**WEAVING A TAPESTRY OF KNOWLEDGE FOR THE PORTUGUESE TEXTILE DESIGN EDUCATION**

Sónia Seixas (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), Gianni Montagna (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and Maria João Félix (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

Immersed in the weaves of design research, this study aims to weave through the threads of knowledge a deep and reflective understanding of Portuguese higher education specialized in textile design. In order to minimize the impact on the environment and protect the planet, the textile industry is undergoing a process of change that is metamorphosing production processes and business structures. To embrace change, textile designers must be able to apply theoretical and practical knowledge in a real environment. This requires the search for new and different forms of teaching that transcend traditional methods. Methodologically, an observational approach was adopted, interwoven through the evaluation of literature and interviews with experts in the universe under study, in order to promote reflection and inspire visionary perspectives on the topic under analysis. With an eloquent conclusion, the lack of higher education in textile design in Portugal is pointed out. To continue to weave a textile economy of the future, a teaching-learning model in textile design in close connection between industry and academia should be considered to prepare future textile designers to work with the ongoing changes.

Keywords: textile design, textile learning, active teaching-learning, educational methods, higher education in design, Portugal.

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PAPER ID [18]

SPORTS BRA DESIGN FOR WELL-BEING: FOCUS ON MOBILITY, FABRIC MOISTURE MANAGEMENT AND AIR PERMEABILITY

Ines Katić Križmančić (2K IDEJA, Zagreb, Croatia), Ivana Salopek Čubrić (Faculty of Textile Technology, University of Zagreb, Croatia) and Vesna Marija Potočić Matković (Faculty of Textile Technology, University of Zagreb, Croatia).

The design of functional clothing requires an interdisciplinary approach of science and art. When designing sportswear, athlete is at the center of all project activities. Designer solution has a significant impact on the athlete's performance. The effectiveness of sportswear is influenced by the thermodynamic, aerodynamic and hydrodynamic properties of the materials used and their combinations. Polyester and polyamide yarns are most often used for the production of knitted fabrics intended for use in sportswear. Seven fabrics were designed and knitted in single jersey pattern, from conventional and functional polyester and polyamide yarn. Properties important for the assessment of the comfort were tested: mass, thickness, density, moisture management ability, and air permeability. These results, together with the mapped human body and sweating patterns in female athletes, provided guidance for making proposals for the design of women's sports bras.

Keywords: design, yarn, knitted fabric, sportswear, comfort.

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PAPER ID [19]

THE TEMPORARY AND SUSTAINABLE MUSIC FESTIVAL AS A PROSCENIUM FOR NEW CULTURAL ACTS. GLASTONBURY FESTIVAL: ANATOMY OF A SUSTAINABLE FESTIVAL

Marco Manfra (University of Camerino, SAAD, Ascoli Piceno, Italy) and Alessandro Damiani (University of Padova, Italy).

Given their nature as centers of artistic expression and cultural propagation, temporary music festivals have always embraced the social activism dimension, inspiring people towards new trends and behaviors. In Europe, numerous temporary festivals are springing as a consequence of spontaneous and bottom-up initiatives, whose main feature is an increased awareness about social and environmental issues. Hence, these festivals position themselves as catalysts of positive environmental, social, and cultural practices. Analyzing the case study of the Glastonbury Festival of Contemporary Performing Arts, and the projects associated with it, this contribution reflects on the role of temporary events as a vessel for new design experiments and as an accelerator of innovation, mostly in the fields of green technologies, educational and alternative approaches to sustainability and local policies.

Keywords: Sustainable Event, Cultural and Creative Industries, Design and Circular Economy, Environmental education, Design and Renewable Energy, Sustainable Design

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PAPER ID [21]***PARTICIPATORY DESIGN IN CERAMICS CRAFT: A CASE STUDY IN THE POTY VELHO DISTRICT***

Rebecca Nunes (Faculty of Architecture and Arts, University Lusíada Porto, Portugal) and *Raquel Antunes* (Faculty of Architecture and Arts, University Lusíada Porto; ESTG, Polytechnic of Leiria; CITAD).

Participatory Design (PD) is a methodology widely used by designers in product design development, bringing together a multidisciplinary team where participants actively collaborate and exchange knowledge. The case study in this article concerns a PD project in a community in the Poty Velho district of Teresina, Piauí, Brazil. The main objective was the practical application of the methodology having carried out research prior to the historical characterisation of the district, the ceramics crafts, and the development of a Design Preliminary Project. The PD process directly involved six ceramists and one designer. This joint effort culminated in the development of a permanent collection of ceramic products denominated “Vila do Poty”. In this context, the importance of close observation, deep immersion and knowledge sharing between all stakeholders is highlighted. In order to improve communication during the PD process and to provide autonomy to the participating partners after its completion, all phases of the case study were essential elements.

Keywords: participatory design, product design, case study, ceramics, crafts.

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PAPER ID [22]***PARTICIPATORY DESIGN AND FOOD LITERACY, PROMOTING HEALTH AND WELL-BEING AS INTEGRAL COMPONENTS OF A POST-GROWTH ECONOMY***

Verónica Duarte (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Maria João Félix* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Miguel de Aboim Borges* (Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Cláudia Viegas* (H&TRC—Health & Technology Research Center, ESTeSL—Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal).

In a post-growth economy, it is important to consider the qualitative characterisation of people's well-being, considering food as a basic need. Inadequate eating habits can have negative health consequences. The presented study aims to demonstrate how participatory design based on gamification, can transfer knowledge about food literacy in children. The methods used are based on the mapping of interdisciplinary knowledge (design and nutrition); in the construction of a physical model with gamified activities; and in the application of methods inherent to the participatory design methodology. Namely, participant observation during testing of the physical model and the application of a questionnaire, with non-probabilistic convenience sampling, which generated qualitative and quantitative data, which were analysed in a descriptive way. The effective contribution of this study lies in demonstrating how participatory design can maximise children's involvement while increasing their interest in food literacy, as well as deepening reflection on the requirements inherent to the

development of educational games. The expected results focus on the need to carry out more applied research that relates to design and nutrition, in order to promote healthy and sustainable eating.

Keywords: Participatory Design, Food Literacy, Gamification, Analogue Game, Children.

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PAPER ID [35]

COLOUR IN THE FOOD, COLOUR ON THE CERAMIC PLATE - SYMBOLIC PERCEPTION OF THE WHOLE

Maria João Mercês (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

This study discusses the influence of colour in the food and the ceramic plate, in the medium/high segment of gastronomy, intending to assess symbolic perceptions when considering the whole. It is recognised that the appreciation of a meal encompasses all the senses, influenced by plating, colour, smell, environment, preferences, emotions, feelings, memories, etc., making this experience a memorable act, especially when made available in haute cuisine. We propose a phenomenological approach, with a discussion of the colour of the food and the plate, assessing how these interfere in the intersubjective evaluation of the symbolisms that are evoked in the visual appreciation of the whole. Using a descriptive qualitative methodology, based on studies by leading authors in the field, applied to analysing images of plating, interspersed with contributions from interviews we conducted with Portuguese chefs. It appears that colour is not valued in favour of material and shape, not because it is not seen as decisive, but because it is inseparable from the whole. The study extracts intersubjective conclusions that revealed seven different symbolisms to better understand and provide reflections for chefs and designers in their future projects.

Keywords: Food Design, Emotional Design, Colour in food and plate, Perception, Feeling, Symbolology.

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PAPER ID [39]

EMPOWER CREATIVE EDUCATION WITH AWARENESS AND CRITICAL THINKING. NARRATIVES OF 'CHANGE AND POWER' IN FOSTERING FUTURE CREATIVE LEADERS

Francesco Galli (IULM University Milan, Italy) and Irina Suteu (NABA - Nuova Accademia di Belle Arti Milan, Italy).

The contribution reports a Creativity and Design training course in a humanistic university, in which non-design students reflected on change through design criticism and into the template leadership. The class involved 68 students with international backgrounds organized in 17 groups. The students had to work with several profit and nonprofit organizations and had to 1st focus on the specific contradictions, 2nd absorb an internal intercultural awareness, 3rd to activate creative strategies that can be adopted

horizontally and transversally. The purpose of this paper is specular, first we argue that future creative leaders should reflect on communication strategies with a critical thinking lens, and second that the application of design methods can strengthen the identity and sense of leadership of the various actors. In conclusion, we argue that change can be reimagined with the help of flexible strategies, and by understanding the different power dynamics that go beyond the design activity, to influence the design decisions.

Keywords: Design thinking; Critical thinking; Empowerment; Leadership



PAPER ID [42]

EMOTIONAL DESIGN AFFECTING CONSUMERS' PREFERENCES FOR CHINA-CHIC STYLE CHARACTER DESIGN

Kaiqing Chen (Queensland College of Art and Design, Griffith University, Brisbane, Australia), *Dominique Falla* (Queensland College of Art and Design, Griffith University, Brisbane, Australia) and *Dale Patterson* (Queensland College of Art and Design, Griffith University, Brisbane, Australia).

The aesthetic demand for China-chin style in animation character design has been evident in recent years. This study uses commercial and college student animation design works as investigation samples to explore the relationship between emotional experience factors and the nationalization of animation design, optimize the teaching methods of animation character modelling design, and guide students to establish cultural confidence and develop a sense of design responsibility. Through literature analysis and questionnaire survey to obtain consumer data, we construct a design model and conduct design practice. The conclusion is that emotional experience can influence consumers' preference for animation character design and increase their willingness to pay for content. A scale built on emotional experience can effectively guide design teaching and stimulate students' innovation ability in national cultural traditions, and constantly improve students' self-interpretation and sublimation of traditional culture in course practice. In the future, these principles can build a new design theory system and provide a reference for practical experience.

Keywords: Character design, Emotional design, Design style, China-chic style.



PAPER ID [48]

QUALITATIVE RESEARCH TO IMPROVE USABILITY IN HOUSING FOR OLD ADULTS USERS: METHODOLOGIES COMPARED IN RESEARCH IN PORTUGAL AND THE NETHERLANDS

Maristela Silva (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Rita Filipe* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Masi Mohammadi* (TU/e University of Technology Eindhoven, Netherlands).

The global reality of population aging makes the search for solutions to extend the autonomous life of human beings as long as possible unavoidable. According to data from the European Commission from 2015, Portugal ranks 4th in the European Union with the highest percentage of older adults. The forecast published by the National Statistics Institute of Portugal INE is that in 2050 the country will have 234 older adults for every group of 100 young people. At the same time, in addition to the limiting physical and sensory occurrences characteristic of the aging process, the gradual loss of intellectual capacity also leads many people to develop dementia. This paper presents two investigations carried out in the European countries Portugal and the Netherlands, in the search for solutions for domestic environments suited to the reality faced by aging. The focus here is how research into problems of different individual manifestations can share good practice approaches to collecting and processing data in qualitative samples of typical user groups.

Keywords: Ageing, Older adults, Home, Solutions, Design



PAPER ID [49]

REFLECTIONS ON INCLUSIVE CLOTHING: CONTRIBUTIONS TO DEVELOPMENT

Leticia Nardoni Marteli (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Luis Carlos Paschoarelli* (School of Architecture, Arts, Communication and Design, Sao Paulo State University, Bauru, Brazil), *Fernando Moreira da Silva* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Paula Trigueiros* (School of Architecture, Art and Design, University of Minho, 4800-058, Guimarães, Portugal).

Clothing designs have been flagged as insufficient in their development, negatively influence wearability, and represent a marker of disability and exclusion of users. This article aimed to present the contexts of use, issues of wearability, and situations experienced by people who had dressing/undressing difficulties. Based on quantitative and qualitative design doctoral research, this article systematizes concepts for clothing design, presenting the contexts and problems of usability and scenarios. The results discussed the considerable levels to benefit the users through pertinent contributions of design studies and interdisciplinary areas. The possibility of applying inclusive concepts is not a complex task and does not necessarily require innovations but requires strategies that do not differ from the usual. It is noticeable that in designer classes, such concepts need to be presented and problematized not only in teaching and extension but also as multidisciplinary ways of carrying out the work developed in the disciplines. Future studies can develop inclusive clothing and analyze the symbolic relationships that bring satisfaction in usability. Thus, improvements can be made to inclusive clothing development, but it is necessary to improve the designer's education to get familiar with that and understand the applicability of the inclusive design principles.

Keywords: Clothing Design, Inclusive Design, Wearability, Usability, Dressing, Difficulties.



PAPER ID [54]**ECOMUSEALIA: THE CULTURAL LANDSCAPE AS A MUSEUM OBJECT. THE DESIGNER'S PERSPECTIVE THROUGH COMMUNICATION**

Ana Moreno (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), *Nelson Zagalo* (DigiMedia – Digital Media and Interaction Research Center. University of Aveiro, Portugal) and *Heitor Alvelos* (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

This research observes the growing closeness of the design and its professionals to the concept of landscape and its communication, and recognises the convergence of the cultural landscape with the museum collection. Based on these assumptions this article aims to understand the designer's perspective on the processes of patrimonialisation and musealisation, and legitimise the cultural landscape concept in museum terminology, proposing the term "Ecomusealia". The procedural perspective and conceptual definition are based on interviews with design and museology professionals, a literature review, and an analysis of heritage applications and nomination dossiers. From this research we conclude that the designer's activity as a communication professional brings them closer to the musealisation process than to patrimonialisation, and that the communication of cultural landscapes as museum objects – "Ecomusealia" – should consider the breadth of the concept, the symbiotic relationships between the different elements, and the impact of the human being.

Keywords: Ecomusealia, Patrimonialisation, Musealisation, Design, Museum Object, Cultural Landscape Cultural Landscape Communication

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PAPER ID [56]**TEACHER-GENERATED DRAWING STRATEGY. A STARRY NIGHT SCREAM**

Rui Costa (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Susana Campos* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Pedro Bandeira Maia* (ID+ Research Institute for Design, Media and Culture, Polytechnic Institute of Coimbra, Portugal).

The aim of this article is to explore the potential of the use of works of art in the context of Teacher-Generated Drawing Strategy. Teacher-Generated Drawing Strategy for theory instruction has not been widely researched. We have been exploring and developing this strategy, documenting it to understand its limits and possibilities, as part of ongoing doctoral research. We present an essay in which we test the use of works of art as an experience in the classroom, evaluating whether they can be a pillar based on communication with the class, and consequently part of the strategy. In this way, communication with a class was conducted through the drawing of two famous paintings: "The Starry Night" by Van Gogh and the "Scream" by Munch to evaluate the knowledge transfer they provide. At the end of the session, we collected the students' anonymous answers on the strategy evaluation questionnaire. The

conclusion of this paper makes it clear that the inclusion of art in Teacher-Generated Drawing Strategy promotes better communication in the classroom, especially in the digital age, and that the use of art in knowledge transfer enhances students' emotions and motivation and further supports classroom interactions and the materialization of abstract concepts.

Keywords: Higher education in design; Teacher-generated drawing; Teaching strategy; Theory through art; Theory through drawing



PAPER ID [57]

**ART THINKING AND THE TRANSFORMATION OF THE ANACHRONISTIC OBJECT
"MAKING THE STRANGE FAMILIAR AND MAKING THE FAMILIAR STRANGE": REHEARSAL
AT RECOLETA AND BAJOS DE MENA, SANTIAGO DE CHILE**

Gaston Uriel Lisak Zobotinsky (REDES – Research & Education in Design, Universidade de Lisboa, Portugal and ELISAVA Research Lab, Spain).

The paper titled "Art Thinking and the Transformation of the Anachronistic Object" explores the application of Art Thinking in transforming everyday objects. The study was conducted in Santiago de Chile, involving a residency with artists and educators. The methodology focused on reinterpreting familiar objects to reveal socio-cultural realities, employing a hands-on, exploratory approach that differed from the more structured Design Thinking. The work was carried out during August 2022 and August 2023 at Galeria 420 and Bajos de Mena. This essay presents reflections on the work process, the application of Art Thinking, and the role of the anachronistic object as a tool to visualize socio-cultural reality.

Keywords: Design thinking, Art thinking, Waste, Transformation, Anachronistic object.



PAPER ID [58]

DEVICES FOR CURB-CLIMBING WHEELCHAIRS

Ana Rita Silva (University Lusíada, Faculty of Architecture and Arts; Center for Research in Territory, Architecture and Design [CITAD], Portugal), Benedita Camacho (University Lusíada, Faculty of Architecture and Arts; Center for Research in Territory, Architecture and Design [CITAD], Portugal) and António Nicolau Costa (University Lusíada, Faculty of Architecture and Arts; Center for Research in Territory, Architecture and Design [CITAD], Portugal).

The lack of accessibility to public spaces and basic essential services for individuals with reduced mobility, whether temporary or permanent, poses challenges for general citizens, particularly those in wheelchairs. Differences in ground levels, architectural obstacles, and land obstructions are just a few examples of the difficulties these individuals encounter daily. This study aims to understand the needs of wheelchair users in the absence of urban accessibilities and to explore how design can

creatively address these challenges. It seeks to integrate this approach into a framework of social responsibility in design to promote inclusive and universal design as an ethical and socially responsible attitude, addressing moral concerns and contributing to social sustainability. The research employs a combination of analytical and case study methodologies, focusing on the Municipality of Amarante. The practical proposal of an industrial product designed for curb-climbing wheelchairs to overcome terrain unevenness in particular curbs. This product two devices aim to enhance citizens' comfort and quality of life by enabling the overcoming of obstacles such as curbs, building entrances, and other uneven pavements.

Keywords: Urban accessibility; Wheelchair; Inclusive design; Product design; Social design

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PAPER ID [59]

TRANSPEDAGOGY AS AN ACTIVIST DESIGN PRACTICE: OTHER MODES OF KNOWLEDGE PRODUCTION AND ACTION THROUGH A SCHOOL SHIP.

Raúl Goñi (REDES – Research & Education in Design, Universidade de Lisboa, Portugal) and Manuela Valtchanova (Elisava Research, Barcelona School of Design and Engineering (UVic-UCC), Spain).

This article posits transpedagogy as an activist practice with the capacity to repair regimes of truth damaged by hegemonic visions and students' and teachers' agency for possible socio-political transformation. It develops the hypothesis that, by questioning hierarchies and disciplinarity in the academy through the co-production of knowledge between students, teachers, and NGOs, transpedagogical environments proliferate everyday practices as a direct claim for social, political and spatial justice through design. In the light of this, the article revisits a curricular academic project based on four design proposals for the transformation of a rescue boat into a school together with the NGO Open Arms with a special focus on emancipatory pedagogical models that seek to repair and broaden the vision committed to non-violent activist practice.

Keywords: Social Design, Transpedagogy, Activist Design, Knowledge co-production

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PAPER ID [65]

ANALYSIS OF THE ACADEMIC PRODUCTION USING SYSTEMATIC LITERATURE REVIEW: BRAZIL - PORTUGAL (2017-2022)

Lívia Brasil (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and Gonçalo Falcão (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal)

This paper presents aspects of an ongoing doctoral research project. The aim of this article is to provide a framework for the research topic and demonstrate how the systematic literature review has been applied as a methodology to investigate academic production at master's and doctoral level at two

universities, in Portugal at ESAD and the University of Lisbon, and in Brazil at UFPE and UERJ. The choice of the period for the survey of academic production between 2017 and 2022 marks a political context that tensions and provokes debate on social issues in society and in academia. According to prior planning and protocols, the theses and dissertations included in the study were located using online search platforms according to pre-established criteria.

Keywords: Systematic literature review; Methodologies; Design; Political contexts.

**PAPER ID [68]****CITIZEN PARTICIPATION IN STRATEGIC CONVERSATIONS ABOUT FUTURE UNCERTAINTIES**

Jennifer Schubert (TH Augsburg, Germany).

Municipalities and ministries are confronted with a growing number of uncertainties in an increasing number of areas: from demographic change to the growing impact of digitalization in all facets of our everyday lives. To manage this complexity, political processes and decision-making need to be informed and questioned from different angles. One way to do this is to improve collaboration and communication structures between citizens and policy makers. This cooperation is challenged by many factors: a different use of language, a rigid system on the part of politicians, diverse everyday needs on the part of citizens, a stack of expectations and a different understanding of the time frame in which change can take place, which contrasts with a rigid bureaucratic system on the policy side.

This paper emphasizes the importance of collaboration between citizens and policy makers at different levels to show how to collaboratively deal with uncertainties in a meaningful and long-term way. Two case studies in small to medium sized cities in Europe highlight a range of experiences, methodological and strategic insights that need to be further explored to understand power dynamics, long-term collaboration and system change so that researchers and policy makers can build on them.

Keywords: Social Design, Design for Government, Policy Design, Citizen Participation, Future Uncertainties.

**PAPER ID [69]****INNOVATION IN DESIGN AND ENGINEERING: THE REFILL_H2O**

Ana Filomena Curralo (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), Sergio Ivan Lopes (Polytechnic Institute of Viana do Castelo, Portugal), João Mendes (Polytechnic Institute of Viana do Castelo, Portugal) and Antonio Curado (Polytechnic Institute of Viana do Castelo, Portugal).

This article explores the design journey behind a water dispensing system composed of a reusable water bottle and a smart refill station interconnected through the Internet of Things (IoT) and Information and Communication Technologies (ICT). The methodology embraced Design Thinking and Participatory

Design, seeking insights and feedback from the intended users throughout the Smartbottle ecosystem's development phases. These insights substantiated the eco-friendly product specifications and design requisites, culminating in a solution tailored to a specific community. The primary aim of this system is to gradually phase out the use of single-use plastic water bottles within the premises of Polytechnic Institute of Viana do Castelo, an institution catering to around 6000 students and staff members. A survey conducted revealed a preference for recycled plastic as the material of choice, while the design of the bottle took on a marine animal shape. This symbolic choice represents the extensive ecological impact of discarding conventional plastic bottles, emphasizing the global urgency to curtail plastic waste, pollution, and accumulation.

Keywords: Sustainability, Smartbottle, Academia, Design Thinking, IoT.

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PAPER ID [71]

INCLUSIVE DESIGN: CONSUMER DIVERSITY IN HOTEL SERVICE

Maristela Silva (Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Rita Filipe* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Paola Rebollar* (Federal University of Santa Catarina, Brazil).

This article deals with the recognition of the use of interior design and its importance in hotel establishments, what are the historical difficulties faced by individuals who have some type of physical, motor or sensory limitation and, after centuries of social and economic exclusion, how hotels are prepared to receive this category of customers who will gradually increase their autonomy and capacity to consume this service. The importance of the role of the interior designer in enabling the architectural and environmental accessibility of the interiors of these establishments, as well as the involvement of companies replicating in their internal policies and organizational culture the appreciation of achieving this market share – namely made up of people with disabilities and elderly people – thus guaranteeing communicational and attitudinal accessibility to customers. This is the result of an exploratory research on the established sample, with quantitative data consolidation, to evaluate the offer of affordable accommodation in hotels in Florianópolis belonging to chains with standardized procedures and ambiance.

Keywords: Interior Design. Deficiency. Elderly. Accommodation.

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PAPER ID [73]

DESIGNING SUSTAINABLE TOURISM EXPERIENCES FOR ACQUATIC ECOSYSTEMS THE DEVELOPMENT OF A REGENERATIVE FLOATING RESORT

Elena Elgani (Politecnico di Milano, Italy), *Elisa Schembri* (Politecnico di Milano, Italy), *Giulia Ettore* (Politecnico di Milano, Italy), *Rosanna Caldarella* (Politecnico di Milano, Italy) and *Davide Grasso* (Politecnico di Milano, Italy).

SOCIAL

The paper offers a reflection on the key role the hospitality industry can play in defining new design-based approaches to the design of tourism experiences to become sustainable and responsible for the future. This study analyzes the relationship between the hospitality sector and aquatic ecosystems, with a particular focus on marine coastal tourism, and highlights the need to explore new approaches that evolve the hospitality industry while re-connecting guests with nature and regenerating nature itself. Defining the importance of a sustainable approach to design for hospitality the paper presents a case study that developed the concept of a floating resort which aims to demonstrate that amazing experiences in natural ecosystems can coexist with sustainable lifestyles and responsive practices, such as collection of microplastics. Taking inspiration from nature, especially from the natural cleaning activity of oysters the concept Hòstraka, developed by a team of students and researcher from School and Department of Design – Politecnico di Milano (Italy), is an innovative solution that, combining already tested technologies, brings guests to contribute to the microplastic collection from the sea trough an innovative guest experience. This solution shows how hospitality with a design-driven approach can shape new bridges through a more sustainable future for the Earth.

Keywords: design for hospitality, sustainable tourism, regenerative spaces, responsible practices, interior design.

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PAPER ID [75]

“CAN I HAVE MORE IDEAS?” - DEVELOPING SOFT SKILLS IN SECONDARY EDUCATION CHILDREN USING DESIGN THINKING

Sofia Nunes (IADE - Faculty of Design, Technology and Communication, Portugal) and João Ferreira (IADE - Faculty of Design, Technology and Communication, Portugal).

This paper investigates the effectiveness of integrating design thinking methodologies into elementary education to foster soft skills among children aged 9 to 10. There is a widening gap in soft skills among younger generations, particularly when first entering the workplace. Therefore, the study explores the impact of design thinking interventions on seven key soft skills: teamwork, empathy, communication, systemic thinking, creativity and problem-solving, leadership, and critical thinking. Using data collected from a public school in Portugal, the study demonstrates that early exposure to design thinking enhances these critical skills among children. The findings suggest that integrating design thinking into general education holds promise for nurturing essential soft skills from a young age, aligning with broader trends advocating for design's inclusion in educational curricula as a foundational discipline for holistic skill development.

Keywords: Soft skills, Design thinking, Elementary Education, Alpha Generation, Project-Based Teaching.

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PAPER ID [82]**INNOVATION IN COASTAL SAFETY: DESIGNING AND DEPLOYING A MOBILE COMPACT LIFEGUARD TOWER FOR MATOSINHOS BEACHES**

Jose Luis Ferreira (ESAD-College of Art and Design, Portugal), *Rui Pedro Freire* (ESAD-College of Art and Design, Portugal) and *Rafael Coelho* (ESAD-College of Art and Design, Portugal).

This article explores the design and implementation of a Mobile Compact Watch Tower, commissioned by the City Council of Matosinhos, designed for sixteen beaches in the Matosinhos coastline. As the beachgoer population rises, there is an escalating demand for effective monitoring, making the creation of a compact and mobile watchtower imperative for ensuring safety. Emphasizing sustainability, integration into the coastline program, and contributions to the blue economy, the project prioritized the use of materials and construction processes aligned with environmental consciousness. Employing treated wood sourced from sustainably managed forests and metal components equipped with corrosion-resistant treatments suited for the marine environment exemplify this commitment. Research methods encompassed on-site observation, interviews, and visual analysis. The prototype underwent testing and evaluation at Matosinhos beach, and subsequent to a positive assessment, the forthcoming phase involves the production of twenty-seven watchtowers for the coastal beaches of Matosinhos.

Keywords: Mobile Compact Watch Tower, Beach Security, Sustainable Design, Blue Economy, Coastal Monitoring

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PAPER ID [85]**WON'T THIS BE WEIRD? APPROACHING THE DESIGN FIXATION PROBLEM CAUSED BY SOCIAL CONFORMITY AS A NEW PERSPECTIVE**

Nikole Melo de Mendonça (Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Rita Assoreira Almendra* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

The subject of Design Fixation, which deals with the difficulty of broadening horizons to new design solutions and fixation on already known and preconceived solutions, has been explored from different points of view. However, taking the approach of other knowledge areas, a gap was noticed where a new research perspective suits, when social conformity, which is the result of the social mold in which people make themselves fit in order to be accepted into a group, causes the fixation. Based on an applied methodology, with qualitative and quantitative approaches, this ongoing research has an exploratory, a generative and an evaluative development stages. Although, as an investigation with new perspective, it faces the challenge of choosing and adapting investigative methodologies in the generative phase considering the different knowledge areas, and without trespass the Design acting field. So, this paper aims to discuss and bring hypothesis of applicable methodologies, pointing dynamic surveys, a Creative Toolkit and experimental field research structured specifically to apply with groups

and individuals who work in creativity field , in order to obtain data on the phenomenon, and uncover the critical points for possible interventions at the level of project methodology in Design and Architecture.

Keywords: Design fixation, creativity, design methodology, social conformity, innovation.

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PAPER ID [86]

DESIGNING FOR TOMORROW: INSPIRING STUDENTS TO SHAPE A BETTER WORLD

Carla Cadete (Universidade Lusófona do Porto, Portugal).

This article focuses on a pedagogical practice implemented in an academic context with undergraduate Communication Design students at (university name to be added), since 2016. In the degree in Communication Design, we encourage students to participate in national and international competitions, allowing them to challenge with new briefs, stimulate their creativity, and compete with peers from other institutions and countries. One notable competition we participate in is the International Poster for Tomorrow, which focuses on social and environmental issues where our student's work is often recognized. The paper is structured into four main parts: Introduction, Literature Review, Work Methodology, and Final Considerations. The creative process was done using the Design Thinking methodology (problem definition, project ideation, prototyping, and implementation). This pedagogical practice has proven to be valuable in several ways: (i) Firstly, it enables the integration of students in social projects and fosters an empathetic mindset beyond commercial considerations, addressing critical issues for a better world; (ii) recognition from previous years motivate new students; (iii) interdisciplinary approach helps students develop a broader range of skills that prepare them for future challenges in their design careers; (iv) it provides an excellent opportunity for the selected poster authors to have their work recognized, published, and disseminated; (v); it helps improve their portfolio.

Keywords: Pedagogical Practice, Design Education, Societal and Environmental Competition, Holistic Approach, Student Empowerment, Communication Design

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PAPER ID [87]

THE NEIGHBORHOOD IS IN(CLUSIVE). THE SYNERGY OF PARTICIPATORY DESIGN, ART PRACTICES, AND SOCIAL DESIGN IN COMMUNITY EMPOWERMENT AND SOCIETAL TRANSFORMATION.

Ana Cardoso (ESAD—IDEA · research in design and art; ESAD-College of Art and Design; Blue Design Alliance, FCT; Portugal), Maria Milano (ESAD—IDEA · research in design and art; ESAD-College of Art and Design; Blue Design Alliance, FCT, Portugal) and Cláudia Pinhão (ESAD-College of Art and Design, FCT, Portugal).

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This article explores the intersectionality of Design for Aging, Design for Health and Well-being, and Social Design within the complex socio-cultural ecosystems of communities and networks. We delve into the dynamic interplay between participatory design and art practices as potent mechanisms for fostering collaborative creativity and addressing collective challenges. Additionally, we emphasize the pivotal role of university-level students in enhancing the impact of interventions with a socio-political dimension, positioning them as vital advocates for social justice and community empowerment. We will present the The Neighborhood is IN(clusive) project, promoted by ESAD — College of Art and Design and funded by the Healthy Neighborhoods Program, a Portuguese governmental initiative to enhance the quality of life in vulnerable territories. This project focuses on Cruz de Pau, Matosinhos — a neighborhood with diverse demographic profiles and varying economic and social needs. Overall, our findings serve as a roadmap for policymakers, practitioners, and community leaders, offering practical guidance and inspiration for designing and implementing initiatives that prioritize inclusivity and equity.

Keywords: Social Design, Participatory Design, Community transformation, Pedagogy for immersive learning, University students



PAPER ID [00]

MAPPING THE AWARENESS OF A PLACE

Jose Silva (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and Fernando Moreira da Silva (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

A place branding project involves different phases, from the background research to reaching the final proposals. This paper presents results of a research developed in the context of learning focused on a project of Place branding concerning a Megalithic heritage. The project presented challenges in clearly communicating what a Megalithic heritage is (a heritage that displays a tenuous interpretation of its concepts) and the pace of a project developed in the scope of digital technology. This research, developed in the context of learning and training, proposes to introduce exploratory phases that promote reflexivity so that students can iteratively explore various codes and patterns of information. This research aims to answer how a visual map strategy can empower students to search for solutions in a place branding project. The study follows the methodology of a descriptive Case Study. The researchers were able to verify that based on the results, the use of a visual mapping strategy allowed students to reflect and develop several concepts based on contrasting relationships and interpretive bridges with a theme and a heritage of a culture that left no decipherable records.

Keywords: Visual Exploratory Strategies, Visual Maps, Learning Strategies, Place Branding



PAPER ID [90]

DESIGN AS LEVERAGE - MAPPING SOLUTIONS

José Gago (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Tiago Marques* (CHAIA, Universidade de Évora, Portugal), *Fernando Moreira da Silva* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Ema Rolo* (CLLC, University of Aveiro, Portugal)

Design students on their learning path need to know the different phases of a design project, from the background research until reaching the final proposals. This research developed in the context of learning, propose to introduce exploratory phases that could promote reflexivity, where students can iteratively explore various codes and patterns of information. This research focuses on identifying design literacy elements that can guide the future development of a design proposal. It aimed to develop the exploratory phase of support for the development of communication of food products of Portuguese origin for the Luxembourg market. The authors carried this research in the curricular unit of Design of Corporative Identity, Degree of Design, School of Arts of the University of Evora in the second semester of 2022/23. The Study Follows the methodologies of descriptive case study, thematic analysis and visual mapping. The present study aims to answer how a strategy combining a sensory analysis of a product and an exploratory mapping contributes to reflexivity on solutions to explore in a project. The results allowed the researchers to verify that using different visual mappings in the exploratory phases allows the students to exercise reasoning on the cultural context of the destination culture, the cultural context of the final user.

Keywords: Visual Strategies, Visual Maps, Learning Strategies, Cultural Code.

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PAPER ID [97]

SUSTAINABLE REGIONAL DEVELOPMENT THROUGH DESIGN

Ana Moreira da Silva (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

Throughout this paper we study the way how Design, as a meta-discipline with transdisciplinary skills, may become a useful instrument in the creation and promotion of new practices based on craftsmen and industrial workers skills, achieving design sustainability, social integration and regional development. We analyze two examples of design practice in Portugal from the seventies to the present, in industrial and handcraft areas. Projects that focus on sustainability promoting fixation of the local population. Perhaps we do not need special technological know-how to achieve sustainable design, we just need to look at ways that have worked in the past and adjust them to current needs and conditions. We can apply successful examples that can socially and economically transform people, adapting them to other regions or realities. Crossing over the new ideas that designers can bring to the skills of workers and craftsmen we can find new forms of sustainable design artifacts. The goal is to

contribute for the construction of a partnership model between Design, Handcraft Skills and Industrial Techniques that may lead to an increase in the value of local identities, achieving sustainability, social integration and regional development.

Keywords: Design, Sustainability, Transdisciplinarity, Social Integration, Regional Development



PAPER ID [101]

PERSONAL IMAGE PERCEPTION: THE IMPORTANCE FOR SUSTAINABLE THINKING

Raquel Francisco de Almeida Gripp (Universidade de São Paulo, Brazil), Carolina Bianque Galito (Universidade de São Paulo, Brazil) and Maria Sílvia Barros de Held (Universidade de São Paulo, Brazil).

A person is capable of forming first impression opinions about another in just a few seconds, as mentioned by Titta Aguiar (2015). This is due to the fact that elements of personal appearance, such as clothing and personal styles, communicate even before the use of words. With knowledge and mastery of these elements, it is possible to convey coherence and/or discordance in visual communication, resulting in more assertive and less excessive consumption habits. This study explores how the use of assertive personal image can break paradigms in the fashion industry in several ways, for example, seek sustainable thoughts in contemporary society. It is observed that the perception that individuals have of themselves and how they project this image, play an important role in the adoption of responsible practices towards sustainable development. Personal image goes beyond aesthetic aspects as it influences consumer choices, lifestyles and attitudes towards the environment.

Keywords: Image; Perception; Communication; Consumption; Sustainability;



PAPER ID [119]

SUSTAINABLE SOCIAL INNOVATION PRACTICES SUPPORTING COMMUNITIES IN PLACE-BASED INNOVATIONS. THE CASE OF AN INTERGENERATIONAL COMMUNITY CARE CENTER

Silvia Maria Gramegna (Department of Design, Politecnico di Milano, Italy) and Alessandro Biamonti (Department of Design, Politecnico di Milano, Italy).

In this paper, social innovation contributes to a bottom-up approach to designing an inclusive and intergenerational community centre. The co-design process involved designers, care professionals, care managers, representatives of local organizations, caregivers, and students from the Design School of name-removed, 1Y Master level Course in Interior Design. This participatory co-design experience allowed participants to confront social issues, cross disciplinary boundaries, and experiment with problem-solving skills by collaborating with an interdisciplinary team of researchers, designers, and medical experts, developing sustainable collaborative practices. This process has generated two outputs: (1) a shared framework to support a more sustainable and practical knowledge development

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to define and design the community centre, (2) a design project co-developed with the community that will attend and live the centre. In particular, the community centre is a model for intergenerational care that incorporates learning and recreational environments for children of different ages, including those with physical or mental disabilities, as well as health consulting spaces and recreational spaces for elderlies, including those with dementia or cognitive impairments. The interiors are designed for intergenerational use so that younger generations and elderlies will be encouraged to interact.

Keywords: Sustainable social innovation, intergenerational communities, design, place-based innovation, participatory approaches.

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PAPER ID [120]

ACTION STRATEGIES FOR THE DEFINITION OF A NEIGHBOURHOOD COMMUNITY: THE DISCIPLINE OF DESIGN MEETS CONDOMINIUMS FOR THE DEVELOPMENT OF "BLOCK"

Giuseppe Sorvillo (Università degli Studi della Campania Luigi Vanvitelli, Italy).

This paper aims to investigate non-tangible community design processes and actions in the culture of design for emergencies. The objective is to research and demonstrate the need to understand the word "emergency" not only in reference to unforeseen situations, but also to types of emergencies, which, may not be obvious while being equally significant, such as those related to post-traumatic disorders, such as loneliness. The premise and starting point of this project was the anthropological study of social relations in the contemporary era. The "Block - neighbourhood community" project aims to recreate a network of communication and a sense of proximity to counteract phenomena of loneliness and social isolation in places where ties cannot be perceived. The ideal environment in which the project is imagined to be inserted is represented by both the condominium and the neighbourhood, considering them as places where the first contact of sociality takes place, since these spaces are shared by individuals who cohabit the same residential context. The goal is to promote and realize the idea of a "city that cares"(Manzini, 2015).

Keywords: Mutual help; caring; Belonging; Cooperation; Support network; city of proximity.

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PAPER ID [125]

FOOD LITERACY FOR PUBLIC HEALTH: AN INFORMATION DESIGN EXPLORATORY STUDY

Suzana Parreira (CIEBA — Centro de Investigação e de Estudos em Belas-Artes, Portugal), Pedro Duarte de Almeida (CIEBA — Centro de Investigação e de Estudos em Belas-Artes, Portugal) and Duarte Vital Brito (Cascais Public Health Unit, ARS Lisboa e Vale do Tejo, Portugal).

Eating today is no longer sustainable to our planet, as our diets become more unbalanced, with negative impacts on our health. A complex relationship resulting from identity, convenience and

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responsibility supports most food choices, so critical and functional knowledge is crucial to select what to eat if every person is to act as an 'agent of change.' Increased food literacy offers an opportunity for better choices — healthier for individuals and more sustainable for the global food system. How to communicate complex health issues to a broader audience in order to create food literacy? An Information Design approach is taken to select and transform unstructured data into useful information that can be communicated efficiently and effectively, considering literature review and different case studies in an exploratory study. This paper describes a set of basic guidelines for designers and health professionals designing programmes that increase awareness for healthy and sustainable food choices: infographics should be innovative (complementary new formats), data and fact-based (tangible patterns, relations or processes), visually-centered (clear infographics) and attractive (form and content).

Keywords: Food Literacy; Public Health; Information Design; Food Design; Design for Health

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PAPER ID [133]

DESIGNING FOR IMPACT: ELEVATING EMPLOYEE EXPERIENCE AND SERVICE DELIVERY IN TANDEM

Nidhi Singh Rathore (Civic Design Lead, Montgomery County Government, United States of America) and Sogand Seirafi (Deputy Division Chief, Transit Services, Montgomery County Government, United States of America).

Can diverse government departments drive successful cultural change? In response to the imperative need for cultural change in traditional workforces, this paper explores how a deeper understanding of employee needs can drive improvements in service delivery and operational efficiency. It documents the process and outcomes of a collaborative prototype that brought the staff together to systematically analyze challenges, generate ideas, and build reasoning through design tools to address nebulous challenges on their own. Positioned as the culmination of an iterative prototype, the paper highlights the integration of design practices to enhance collaboration between design practitioners and local government staff. It emphasizes the importance of recognizing staff's inherent problem-solving capabilities, promoting a mindset shift, and creating a space that values diverse perspectives. The authors draw on design thinking principles to instill an ethical standard of deferring judgment, fostering trust, and building a foundation for sustainable change. The paper concludes by documenting the outcomes and opportunities introduced by design practices to a transit department in one of the most diverse counties in the United States.

Keywords: Organizational Change, Human-Centered Design, Employee Experience, Local Government

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PAPER ID [135]

MULTICULTURAL INTERFACE DESIGN: COLLECTING AND DESIGNING INFORMATION FOR THE ACCESS OF MIGRANT AND REFUGEE WOMEN AND CHILDREN TO THE BRAZILIAN HEALTHCARE SYSTEM.

Diovana Mazur Damacena (Universidade Federal do Paraná, Brazil) and Kelli Cas Smythe (Universidade Federal do Paraná, Brazil).

The populations of migrants and refugees face numerous challenges in accessing information in foreign lands, particularly regarding health-related matters. In this context, this article presents the identification of informational needs concerning health services for migrant and refugee women and children, with the aim of generating design requirements for an informational website. To achieve this, interviews were conducted with migrant women, and questionnaires were administered to professionals from institutions providing support to migrants. Through a qualitative analysis of the data, it was possible to identify both the barriers to accessing guidance on health services, and consequently, to healthcare, as well as the rights that migrant women and children possess. Thus, the study identified content (textual and visual) and functional (interactions and usability) requirements for the future development of more culturally accessible interfaces.

Keywords: Information, data collection, interface design, health, migrants, refugees.

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PAPER ID [137]

REVOLUTIONIZING BELL'S PALSY RECOVERY: THE INNOVATIONS OF REACTIVATE IN DESIGN FOR HEALTH AND WELL-BEING

Valentina Sorvillo (Università degli studi della Campania Luigi Vanvitelli, Italy).

The "Reactivate" project addresses Bell's palsy, a condition causing facial muscle paralysis due to cranial nerve VII damage. This initiative focuses on Design for Health and Well-being, aiming to improve the lives of affected individuals. Bell's palsy varies in recovery duration; mild cases have quicker recuperation, while severe cases may lead to prolonged recovery and unintended facial movements, impacting life quality. Existing therapy lacks adequate tools, and widespread misinformation poses challenges. "Reactivate," grounded in a USC study, employs augmented reality in an interactive mirror to guide targeted facial exercises. It operates on Mirror Therapy principles, providing real-time feedback for precise muscle movement improvement. Its design prioritizes comfort, seamlessly fitting into home environments as a wall or desk mirror. The project aims to encourage neural connections and record sessions for tailored rehabilitation programs. By amalgamating functionality and aesthetic appeal, Reactivate seeks to revolutionize Bell's palsy recovery. It offers a comprehensive, engaging approach, aligning with Design for Health and Well-being principles to positively impact patients' overall wellness and improve their quality of life.

Keywords: Bell's Palsy, Facial Paralysis, Rehabilitation Technology, Augmented Reality Therapy, Design for Health, Well-being Enhancement.

PAPER ID [141]

REDESIGNING THE LEARNING ENVIRONMENT OF AN ONLINE FASHION DESIGN COURSE: A STEP TOWARDS HEUTAGOGY

Graça Guedes (University of Minho, School of Engineering, Textile Engineering, Portugal) and *Patrícia Gomes* (University of Minho, School of Engineering, Textile Engineering, Portugal).

This paper aims to observe how changes in the learning environment and in the course materials of online fashion design courses can promote a learning practice that is more centred on the learners' needs and places the learners at the core of all decisions. Furthermore, we investigated how the educational experience can be transformed to prepare students to face the reality of the fashion industry and its conundrums by supporting them and fostering their innovation skills and entrepreneurial spirit. We reviewed the literature on heutagogy to examine a student-centred, self-determined approach to learning, where the learner is in control of their learning and at the core of the process. We used this framework to observe the implementation of a new online learning environment and discuss and interpret the results of a survey with online fashion design students to comprehend their perception of their courses, identify opportunities to improve their learning programme towards a more heutagogical model, more focused on self-determined learning and designed to enable co-creation and innovation, capable of preparing them to thrive in complex work systems in constant change.

Keywords: Online learning; Heutagogy; fashion design education; learning design; instructional design.

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PAPER ID [142]

IMPACT OF INTIMATE APPAREL AESTHETICS ON THE CONSUMER

Graça Guedes (University of Minho, School of Engineering, Textile Engineering, Portugal) and *Mélanie Rodrigues* (University of Minho, School of Engineering, Textile Engineering, Portugal).

Consumer psychology about intimate apparel is a neglected topic in academic literature, even though it is just as important as "outer" clothing. This type of clothing is not only a type of clothing, but also a second skin, as it is the garment that is most in contact with the skin, making it an essential protection, which by its nature is hidden and is expressly designed to be appreciated by the wearer, who can be seen as a symbol and instrument of identity, which gives it an intensely personal character. The methodology of this article is exploratory and descriptive research of a qualitative nature, using case studies. This work aims to understand the extent to which the brand concept and its values project an image of greater or lesser aesthetic quality and seduction, through a case study of fourteen different brands, divided according to Posner's basic fashion hierarchy and analysed according to the following parameters: contextualisation, logotype and functional, individual and collective benefits. It was found that each segment has distinct characteristics that differentiate it, in terms of its visual identity, monetary value, quality, attention to detail, both aesthetic and ergonomic, and stock.

Keywords: Fashion Case Studies; Intimate Apparel; Aesthetics; Intimate Apparel Brands; Consumer Values.

PAPER ID [145]

THE CONTRIBUTION OF INTERFACE DESIGN IN THE FIGHT AGAINST COVID-19: ANALYSIS OF THE DGS AND SNS24 WEBSITES, PORTUGAL

Inês Costa (School of Design, Polytechnic of Cavado and Ave, Portugal), *Nuno Martins* (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Portugal), *Francisco Garcia* (CIES-ISCTE - Centre for Research and Studies in Sociology, Portugal), *Rita Espanha* (CIES-ISCTE - Centre for Research and Studies in Sociology, Portugal), *Daniel Brandão* (CECS, Institute of Social Sciences, University of Minho), *Ana Barros* (Portuguese Society of Pneumology, Portugal) and *Branco Di Fátima* (LabCom - University of Beira Interior, Portugal).

This article presents an analysis of the websites of the two main official health organizations communicating with citizens during the COVID-19 pandemic period: the Directorate-General for Health of the Portuguese State (DGS) and the National Health Service (SNS), SNS24. This study was conducted as part of the research project "Health Risk Communication: Design and digital communication of official public health sources to guide citizens in pandemic situations" (HERIC 2D), funded by the Foundation for Science and Technology (FCT). This project aims to develop guidelines to improve the Health Risk Communication of the official institutions of the Portuguese Government in pandemic scenarios. The methodologies adopted consisted of a literature review on interface design, with the aim of identifying guiding principles and patterns to help identify common interface design problems that potentially affect the user experience, as well as usability tests on the DGS and SNS24 websites. The main results of the analysis indicated significant gaps in both websites, namely the lack of visual consistency on the pages, as well as the absence of adequate spacing between the various information sections.

Keywords: Interface Design, Usability Design, Health Risk Communication, COVID-19 Pandemic, Public Health.

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PAPER ID [146]

DESIGNING FOR MEANINGFUL HERITAGE: AFFECT, EMBODIMENT AND EMOTION

Gaëlle Pillault (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal), *Tenna Doktor Olsen Tvedebrink* (Aalborg University, Denmark) and *Fátima Pombo* (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).

This article explores the role of design in the transformative potential in the redevelopment, interpretation, and bodily engagement with built heritage, particularly within the industrial context of the Fábrica Centro Ciência Viva de Aveiro (FCCVA). We support the idea that heritage sites should not be redefined and reinterpreted as mere static and historical object but should be designed to foster affective and emotional connections between visitors and the built heritage. Our research draws on theoretical concepts of affect and embodied experience to reflect on a design strategy based on emotional and bodily experiences. By examining a Portuguese industrial heritage that has been reuse for cultural purposes, the article highlights the important role of design in creating memorable and meaningful visits, fostering a sense of community

belonging, and in stimulating individual and collective imagination. As former wheat-processing factory converted into a living science center, the FCCVA serves as a case study to reveal how design can enhance interactions between and with visitors, incorporating inclusivity, through the enhancement of narratives and subjective.

Keywords: Affect, Emotion, Embodiment, Built Heritage, Design, Micro-architecture.

**PAPER ID [147]****CUSTOMIZING WEARABLE PROSTHETICS: A PRELIMINARY REVIEW OF THE CURRENT STATE OF THE ART IN UPPER LIMB PROSTHESES**

Andreia Caldas (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal), Demétrio Matos (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal), Adam de Eyto (LSAD Research Institute, Limerick School of Art & Design, Technological University of the Shannon, Ireland) and Nuno Martins (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal).

Building on the exploratory research project "Design and Integration of Wearable Prosthetics", this paper seeks to consolidate knowledge and propose a methodology that combines the device, the prosthesis, with the design and user experience of the amputee. Centered on active myoelectric prosthetics for upper limb amputees, specifically transradial prostheses, the investigation explores the compatibility of prostheses, clothes, and technology. Textile materials and 3D printing show promise for cost reduction and personalizing aesthetics and design. This potential solution aims to encourage the everyday use of prosthetics, promote social inclusion, and enhance the accessibility of the devices.

Keywords: Transradial-prostheses; User-centered Design; Wearable; Personalized; 3D printed.

**PAPER ID [148]****FOR A DEEPER ENCOUNTER WITH CULTURAL HERITAGE: ANALYSIS OF "LEONARDO: EXPERIENCE A MASTERPIECE" EXHIBITION THROUGH THE LENS OF EXPERIENCE DESIGN**

Aleksandra Kosztyła (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), Pedro Cardoso (DigiMedia – Digital Media and Interaction Research Center, University of Aveiro, Portugal) and Heitor Alvelos (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

Within the broader research focused on conveying the meaning and beauty of cultural heritage, immersive art exhibitions stand as the tangible embodiment of experience design principles, but require academic research to elevate them beyond perceived superficiality to provide deeper, meaningful encounters. This article presents a case study of the "Leonardo: Experience a Masterpiece"

exhibition at the National Gallery, London, as an example of a technologically enhanced multi-sensory experience of cultural heritage. After invoking the motivations articulated by curator Campbell—creating experiences that foster more profound and meaningful engagement with art—the article examines the elements and strategies employed across four distinct spaces. They are interpreted through the lens of experience design and other pertinent interdisciplinary frameworks that can influence engagement and meaning transfer. The study reveals that the exhibition design reflects a diverse array of concepts whose implementation, from an experience design perspective, has the potential to foster a more meaningful experience, meeting the exhibition's primary objective. The significance of this research lies in integrating various theoretical concepts with real-life applications, showcasing contemporary experience design practice in cultural heritage.

Keywords: case study, cultural heritage, experience design, immersive art exhibitions, meaning transfer



PAPER ID [153]

THE ABSTRACTION EFFECT: HOW ABSTRACT LANGUAGE CAN COMBAT AVERSION TO IMPERFECTION AND INFLUENCE CONSUMER BEHAVIOR

Manuel Sousa Pereira (School of Business Sciences, Polytechnic Institute of Viana do Castelo, Portugal), *António Cardoso* (Department of Business and Communication Sciences, University Fernando Pessoa, Porto, Portugal), *Giulia D'Auria* (School of Business Sciences, Polytechnic Institute of Viana do Castelo, Portugal), *Marianna Aruta* (School of Business Sciences, Polytechnic Institute of Viana do Castelo, Portugal), *Mattia Adinolfi* (School of Business Sciences, Polytechnic Institute of Viana do Castelo, Portugal) and *José Carlos de Sá* (CIDEM, School of Engineering (ISEP), Polytechnic of Porto, Portugal).

The present research suggests a new perspective to investigate the effect that a particular type of language, in particular abstract language, may have on the consumer's perceived quality of an imperfect product. This relationship has not yet been considered in the literature and this is where we want to intervene, to solve the research gap and offer a further contribution in the study of consumer behaviour. Therefore, the research shows a systematic analysis in which it is shown, by means of a study, how a consumer is more inclined to perceive a higher quality of an imperfect product if it is presented to him using abstract terms. In fact, it was shown that through such communication, the 'ugly-is-risky' cognitive bias is overcome and the consumer is able to focus more on the real intrinsic qualities of the product and not just dwell on its aesthetics. The results provide a new perspective to add to the pre-existing literature. In conclusion, the outcome of our research may have broad relevance to support marketers in designing appropriate advertising for the sale of imperfect food to combat the serious problem of food waste. To collect the information, a questionnaire was created using Google Forms and administered via social media to a convenience sample. 201 questionnaires were collected and evaluated. The scale has good internal consistency ($\alpha=0.913$). The responses provide insights into how respondents consider design, information, and aesthetic perfection in their

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purchasing decisions, highlighting the varied factors that influence their preferences. The data provides a nuanced understanding of how respondents approach the draw effect, extraction effect, evaluate aesthetic perfection, and assign importance to visual appearance in their purchasing decisions. Overall, the survey reflects diverse opinions on the influence of language, product perceptions, and decision-making factors among respondents.

Keywords: Consumer preferences, imperfect foods, abstract language, aesthetic, perceived quality.



GREEN



- GREEN**
- *Waste and Materials Design*
 - *Design and Sustainable Water Management*
 - *Design and Renewable Energy*
 - *Design and Climate Change*
 - *Design for Transition to Carbon Neutrality*
 - *Design for the Seas and Marine Resources*
 - *Design for Fire Prevention and Fire Fighting*
 - *Design and Biodiversity*
 - *Design and Circular Economy*
 - *Sustainable Design*
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- ✓ The Thematic Green area highlights a commitment to sustainable design, addressing everything from waste and materials management to the development of renewable energies and climate change mitigation. Sessions in this thematic area will discuss strategies for incorporating sustainable practices into all aspects of design, encouraging a transition to carbon neutrality and protecting marine resources and biodiversity.

Additionally, special attention will be given to design in the circular economy, exploring how recycling and upcycling principles can be fundamental to creating products and systems that reduce environmental impact. The conference will serve as a forum to present innovations that not only preserve but also regenerate the environment, setting new standards for what it means to design with ecological awareness.

PAPER ID [7]**THE ECO-DESIGN OF TALLUM, A MULTIFUNCTIONAL KITCHEN ISLAND FOR AN INNOVATIVE ECO-USER**

Carolina Polónio (TEMA - Centre for Mechanical Technology and Automation, University of Aveiro, Portugal), *J. Paulo Davim* (TEMA - Centre for Mechanical Technology and Automation, University of Aveiro, Portugal) and *Fátima Pombo* (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).

The development of this paper considers the increasing reality of the kitchen island being incorporated into the living and dining space performing various functions; and the environmentally unsustainable situation that the planet is going through. The aim of this work was to investigate how eco-design can contribute to flexibility in the interactions between the kitchen island and its users. The results of this research are expressed in the design of TALLUM, the eco-design project of a multifunctional kitchen island within the aesthetic approach of sustainability by incorporating an aromatic herbs nook, a water reuse system, a multifunctional sliding surface, and materials with low environmental impact. In this sense, this article begins by contextualizing concepts of sustainable development from the currently alarming environmental perspective. Subsequently, terms such as design for the environment (DfE) and aesthetic sustainability are introduced, presenting strategies and guidelines aimed at developing sustainable products. Finally, with this information collected, the eco-user profile defined, and similar projects researched, it was possible to design a kitchen island that aims to contribute to the urgent transition of a society towards sustainability or at least to promote the subject.

Keywords: Eco-design, Kitchen Island, Sustainable Materials, Multifunctionality, Eco-user

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PAPER ID [8]**DESIGNING AWARENESS: A COLLABORATIVE INITIATIVE FOR CLIMATE CHANGE ENGAGEMENT IN PORTO**

Susana Barreto (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal) and *Juliana Pires* (Faculty of Fine Arts of the University of Porto, Portugal).

This paper addresses an exploratory design initiative that revolves around the imperative to enhance public awareness of climate change and encourage proactive engagement at the individual level. The focal point of this initiative is a poster advertising campaign consisting of ten posters intended for exhibition on digital billboards in Porto. This collaborative project was conducted within the framework of the master's in Graphic Design and Editorial Project at the Faculty of Fine Arts, University of Porto, in partnership with the Porto Climate Pact, an initiative from the Municipality of Porto. Employing a mixed methodology, the project combines qualitative and quantitative approaches through non-participant observation, visual analysis, structured interviews, and focus group meetings. This exercise was mutually beneficial for the student, Porto Climate Pact, and the University of Porto. The culmination of this effort will be the public exhibition of the posters in the city of Porto in 2024.

Keywords: Climate Change Awareness, Communication Design Initiative, Porto Climate Pact, Designers' Responsibility, Collaborative Exercise.

PAPER ID [13]

INNOVATIVE AND SUSTAINABLE: DESIGN OF A HOME-BASED DEVICE FOR REUSING AND RECYCLING FACE MASKS

Nankai Cheng (Design Department of Lisbon School of Architecture, Portugal), *Yiyuan Ding* (Design Department of Lisbon School of Architecture, Portugal), *Li Yang* (Design Department of Lisbon School of Architecture, Portugal), *Paulo Noriega* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Giuseppe Lotti* (Department of Architecture, University of Florence, Italy).

In light of the environmental issues brought about by the extensive use of disposable masks during health crises like the COVID-19 pandemic, this research develops an innovative device aimed at promoting mask reuse through an integrated system of disinfection, dehumidification, and electrostatic polarization. Demonstrating the ability to extend the life of masks for over ten uses, this technology significantly decreases the environmental degradation caused by mask disposal. Through meticulous analysis of various sterilization and recharging techniques, focusing on their efficiency, energy consumption, and user-friendliness, the study isolates three optimal methods that offer a balanced approach to mask sanitation. This expanded investigation contributes to a viable strategy to reduce the environmental footprint of disposable masks, presenting a forward-thinking solution that not only addresses immediate waste concerns but also equips society for more sustainable health practices in the face of ongoing and future pandemics.

Keywords: Mask reuse, Environmental sustainability, Innovative design, Ultraviolet disinfection, Plastic pollution

PAPER ID [20]

THE IMPACT OF TECHNOLOGY IN DESIGN LEARNING: A STUDY WITH DIGITAL NATIVES

Catarina Ferreira (Lisbon School of Architecture, University of Lisbon, Portugal), *Sara Lamúrias* (Lisbon School of Architecture, University of Lisbon, Portugal) and *Rita Martelo* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

In a world with constant technological developments, the learning / teaching experience is trying to quickly adapt to the latest innovations. This study aims to better understand the impact of computer technology in higher design education, analysing if it can enhance or constrain the student's outcome. Although some authors have been studying this effect across multiple disciplines, Arts is still one of the disciplines with less studies. We aim to fill in this gap and understand master students' perspectives from multiple design branches, using an online questionnaire. This method provided empirical evidence of which tools and methods students use in support of their design projects. We structured a questionnaire according to the different phases of the design project: research, concept, development, prototype, and presentation. We expect digital natives, from generation Y to generation Z, to have an extensive and sophisticated use of technologies. Nevertheless, technology can potentially prejudice or boost specific learning skills, depending on its use. Understanding students' perspectives and needs is key for universities and the faculty to adapt and transform higher education in a harmonious way.

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The main results highlight that the time spent using technology and digital tools is favouring innovation, autonomy, and communication.

Keywords: Design education, Design process, Computer Technology, Learning skills, Design tools.

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PAPER ID [28]

OUT-LINE TO A CIRCULAR-LINE. A REFLECTION ON CIRCULAR ECONOMY FOR SMALL HOUSEHOLD APPLIANCES: THE CASE OF FOOD PROCESSORS

Pedro Gonçalves (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *José Vicente* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

The current conception, marketing, and widespread use of electrical and electronic equipment (EEE) are, in many aspects, considerably misaligned with the imperative sustainability needs we are facing. The massive increase in their production and consumption, coupled with their rapid disposal, is creating a problem of potentially catastrophic dimensions, both in resource management and waste handling. While the circular economy is often indicated as one of the most promising ways to mitigate this problem, reconciling economic growth with sustainability, and circular business models and Product-Service Systems are often referenced as privileged vehicles, the truth is that they are not yet being implemented on a large scale. Providing information on how to develop more circular business models and methods to assess the expected impacts, can help stakeholders embrace this transition. In this sense, the aim of this article is to present a reflection on some of the current conceptions and strategies with the greatest potential to rethink and redesign the small household appliances industry towards a circular economy scenario. We do this by pointing out a typology, Food Processors (FPs), commonly referred to as kitchen robots, which we believe can serve as a case study and a privileged example for practical implementation. The goal is to serve as a direct stimulus to a more circular economy in the global context of household appliances in Portugal. There is also the ambition and intention that these reflections have a concrete and applied character but can later be expanded and adapted to other similar typologies. Based on a recently launched research project, the article aims to present the hypothesis for further development that by facilitating access to FPs through Product-Service Systems (P-SS), we can simultaneously extend the lifecycle of these objects and enhance the benefits for their potential users. This could result in a direct and significant increase in sustainability, as well as the potential to encourage improvements in users diets by discouraging the use of industrially processed meals and promoting healthier home cooking. Although still in a preliminary stage of the study, empirical research and validation are undoubtedly necessary, this reflection allows us to reference strategies and associated benefits that are considered paths to be deepened in ongoing research.

Keywords: Design for the Circular Economy; Product-Service System Design; Food Processors; Circular Business Models.

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PAPER ID [30]

THE DESIGN APPLIED TO THE CREATION OF A SUSTAINABLE LUNCH BAG

Marta Correia (Polytechnic Institute of Viana do Castelo, Portugal), *João Martins* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Ana Filomena Curralo* (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

The global environmental crisis emphasises the need to develop new products with sustainable values. This is an article about an academic project that aims to respond to a real need in a sports hotel. The work presented describes a project based on reusing kitesurf sails to produce lunch bags. The aim of this project is to create a lunch bag based on sustainable principles, using the Design Thinking methodology. The benefits of using this methodology in this project are diverse. It helps to clearly define objectives and requirements, reorganise communication and collaboration between stakeholders, including the hotel and potential users. By highlighting a user-centred approach, innovative and sustainable solutions are created through prototyping. The main aim is to introduce a distinctive and adaptable product for outdoor sports. In addition, the product versatility makes it suitable for various sporting activities, contributing to the optimisation of the product, guaranteeing its durability and reduce disposable waste.

Keywords: Product Design; Lunch bag; Sustainability; Design Thinking, Outdoor sports

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PAPER ID [41]

PARAMETERS FOR A DEGROWTH ARCHITECTURE: SUBVERTING THE SOCIO-ECOLOGICAL SPATIAL CONDITIONS OF THE CAPITALIST-GROWTH REGIME

Anna Deeg (Aalborg University, Denmark).

Starting from the understanding of the degrowth movement as a broad ideological coalition against economic growth and inequity, this paper critically analyzes the pitfalls of sustainable development and the potentials of an architecture of degrowth. The paper subsequently articulates the necessity of a radical reform of current capitalist practices to attain ecological and social sustainability. The paper culminates with the author's proposed degrowth architectural framework which highlights spatial strategies, regulations, and best practices for engendering a degrowth political economy. This degrowth urbanism ultimately strives to achieve tangible climate mitigation and adaptation as well as inspire a cultural paradigm shift towards decreased consumption and increased equality.

Keywords: Degrowth; Degrowth architecture; Degrowth urbanism; Post-growth

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PAPER ID [44]

INNOVATIVE DESIGN STRATEGIES FOR SUSTAINABLE CORAL REEF RESTORATION IN THE ANTHROPOCENE

Pedro Dias (Lisbon School of Architecture, Universidade de Lisboa, Portugal), *André Castro* (Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Maria João Félix* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

Climate change poses a threat to coral ecosystems, demanding urgent restoration efforts. Artificial reefs (AR) are a fundamental tool to manipulate and stabilize the seabed substrate, although their effectiveness can be improved through design considerations. This review aims to provide an overview of the coral restoration methods and challenges, providing design strategies for coral reef restoration. AR consists of any type of structure built or placed by humans, on the ocean to increase biodiversity and maximize the restoration project's chances of success. Utilizing a comprehensive literature review, the paper examines various design methods and materials used in artificial reef construction. Product design and development may increase the success of these structures by collecting all the problems and relevant data in one product, such as concerns about species diversity, restoration methods specifications, or even coral response to substrates. It should be categorized to develop a suitable and long-lasting restoration solution. The study identifies key design parameters that significantly impact the effectiveness of AR, providing guidelines for ecologically sensitive and sustainable reef restoration. Parametric software could help develop customized solutions for different coral species, and new materials could lead the way for eco-friendly AR solutions with no impact on the environment.

Keywords: Artificial Coral Reefs; Design for sustainability; Product design; Ecosystem Restoration Structures.

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PAPER ID [50]

HYBRIDIZING CONSTRUCTION: THE TRANSFORMATIVE INFLUENCE OF CERAMIC AM

João Carvalho (Lab2PT – School of architecture, University of Minho, Portugal), *Paulo J. S. Cruz* (Lab2PT – School of architecture, University of Minho, Portugal) and *Bruno Figueiredo* (Lab2PT – School of architecture, University of Minho, Portugal).

In recent years, there has been a notable increase in research exploring the application of additive manufacturing (AM) technologies to produce architectural components, opening a realm of new possibilities. This heightened interest has spurred the emergence of novel fields of research, the introduction of new materials, and the exploration of innovative applications for existing ones. The utilization of digital design tools and AM in the creation of architectural components has facilitated the development of highly sophisticated constructive systems, seamlessly integrated into specific contexts to address unique challenges. The outcome is the realization of distinctive solutions that boast both high geometric freedom and exceptional material performance.

Expanding on these concepts, this study is dedicated to harnessing the potential of digital design and AM to construct advanced systems centred on ceramic materials. While ceramics exhibit

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remarkable resistance to compressive stresses, they may exhibit relative weakness in other mechanical stress types. To address this, the developed constructive system advocates for the incorporation of complementary materials, strategically employed to mitigate the inherent weaknesses of the primary ceramic material. Through the strategic distribution of materials based on a structural scheme achieved through topological optimization, a hybrid system is created, allowing each material to function optimally under specific conditions.

Furthermore, the integration of principles of design for assembly and disassembly (DFAD) ensures that this system is fully reversible and highly repairable. All components can be easily replaced in the event of damage, minimizing constraints. Consequently, the combined use of these materials and processes — from design to production — culminates in a constructive system that optimizes the type and quantity of materials employed, thereby contributing to a more sustainable built environment.

Keywords: Ceramic, Additive Manufacturing, Hybrid Construction Systems, Topological Optimization.



PAPER ID [52]

THE LIFE AND DEATH OF GROWTH CITIES: INVESTIGATING THE TRANSITION TO DEGROWTH SPATIAL PLANNING

Anna Deeg (Aalborg University, Denmark).

While sustainability has started to permeate the spatial planning practices of a number of municipalities, this somewhat superficial and ambiguous approach is grounded in an inherently unsustainable growth mindset. As cities attempt to transition towards climate neutrality and circularity, greenwashing and techno-optimist fixes threaten to supplant and undermine initially altruistic climate ambitions. Paradigmatic spatial planning is therefore in need of a new, non-growth based spatial planning model to earnestly, expeditiously and actually reimagine and realize a built environment configured around social and environmental well-being rather than economic profit. This report therefore positions the degrowth movement in relation both to transition theory and spatial planning practice to hypothesize what a transition to degrowth spatial planning would entail. Note: This paper is abridged from a longer thesis paper.

Keywords: degrowth; degrowth spatial planning; transition theory; spatial planning



PAPER ID [60]

SUSTAINABLE CONVERSIONS FOR COVO: CO-CREATION BETWEEN DESIGN AND CRAFTSMANSHIP

Amélia Ribeiro (Universidade Lusíada do Porto, Portugal) and Maria João Barbosa (Universidade Lusíada do Porto, Portugal and Center for Research in Territory, Architecture, and Design [CITAD]).

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This research aims to create innovation, exclusivity, and excellence through the study, research, revitalization, recovery, and promotion of Portuguese artisanal manufacturing techniques and local materials. The case study of the covo (a kind of cage for fishing) shows how important it is to preserve and revitalize Portuguese identity, local cultures, and crafts so that these artisanal manufacturing processes do not become obsolete and consequently extinct. Through the co-creation of design and craftsmanship, two new approaches to product design are explored. On the one hand, these artisanal techniques and products are revisited with a contemporary sensibility. On the other, new functionalities are explored that correspond to a growing market niche capable of buying products with recognized added value because they are unique, durable, and handmade. This case study aims to demonstrate the importance of co-creation between design and craftsmanship, not only through the exchange of knowledge but also by transforming these artisanal techniques into more sustainable practices and promoting new areas of study to attract new generations to perpetuate the heritage of Portuguese craft techniques.

Keywords: Sustainable Design; Craftsmanship; Co-creation; Covo; Tradition; Innovation.



PAPER ID [671]

REIMAGINING FABRICS: THE ROLE OF ADDITIVE MANUFACTURING IN EVOLVING TEXTILE DESIGN AND PRODUCTION

Susana Marques (University of Beira Interior and Lab2PT, School of Architecture, Art and Design, University of Minho, Portugal), *Carina Lopes* (IPC - University of Minho and DONE Lab - Advanced Manufacturing of Polymers and Tools, Portugal), *Rui Miguel* (University of Beira Interior, Portugal) and *Álvaro M. Sampaio* (Lab2PT, School of Architecture, University of Minho and DONE Lab - Advanced Manufacturing of Polymers and Tools, Portugal).

Additive Manufacturing (AM) has transformed the fashion industry over the years by allowing the production of more complex patterns, textures and geometries, enabling unprecedented levels of customization. Owing to such promising capabilities, this research focuses on evaluating the challenges and opportunities in producing different textile structures, categorised into non-wovens, wovens, and knits, through AM. To this aim, intricate 3D models representing textile structures were first created employing Design for Additive Manufacturing (DfAM) principles and then produced with different AM technologies, namely Material Extrusion, Powder Bed Fusion, Material Jetting and VAT Photopolymerization. Through the implemented research methodology, the feasibility and adaptability of AM in the production of textile structures were evaluated, exposing considerations regarding materials, structural stability, and overall manufacturability. The results of the research contribute to the growing corpus of knowledge at the intersection of textile design and AM, providing valuable insights into potential applications and advancements in this emerging field. In conclusion, this study offers a detailed exploration of 3D-printed textile fabrication, categorizing different textiles, and adapting these for key AM technologies, thereby aiding innovative thinking in 3D-printed fashion.

Keywords: Textiles; Additive Manufacturing (AM); Design for Additive Manufacturing (DfAM); Fashion.

PAPER ID [70]**ECODESIGN FUTURES. A WASTEWATER RECYCLING SYSTEM FOR ZERO-MILE VEGETABLE PRODUCTION**

Giorgio Buratti (Politecnico di Milano, Italy), Fiammetta Costa (Politecnico di Milano; Italy), Attilio Nebuloni (Politecnico di Milano, Italy), Luciana Migliore (Università Tor Vergata, Rome, Italy), Annamaria Alabiso (Università di Roma Tor Vergata, Italy) and Matteo Meraviglia (Politecnico di Milano, Italy).

The integration of edible vegetable production in the household environment, combined with the use of kitchen wastewater for irrigation purposes, is a promising strategy to achieve quality food products, reduce water consumption and the amount of wastewater, improve environmental awareness and cut transportation costs. Domestic wastewater is often rich in nutrients. Thus, employing “urban agriculture” practices could enable the uptake of nutrients treated through bio-filtration, taking advantage of algal-bacterial consortia. The paper shows the main results of an interdisciplinary research project that aims to reuse dishwater wastewater to grow vegetables and/or ornamental plants for domestic use by an engineered biological filter integrated into a prototype developed in the definition of EcoDesign future application scenarios. In this way, reducing water and fertiliser consumption is possible while producing healthy and safe food on a zero-mile basis, in line with the Agenda 2030 targets of Sustainable Development Goals 2 and 6 (Zero Hunger and Clean Water and Sanitation).

Keywords: Waste and Materials Design, Design and Sustainable Water Management, Interior Design, Zero miles food production, Social Innovation.

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PAPER ID [72]**VISUALISING SCIENCE: CRAFTING MEMES IN DESIGN PEDAGOGY**

Susana Barreto (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), Heitor Alvelos (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), Cláudia Lima (Lusófona University, Portugal), José Carneiro (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), Pedro Alves da Veiga (University Aberta, Portugal), Eliana Penedos-Santiago (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), Marta Fernandes (Porto Polytechnic, Portugal), Nuno Martins (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal) and Júlio Dolbeth (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

This paper details and analyses the methods and outcomes of nine pedagogical workshops in design courses at Portuguese universities, centered on the unlikely mix of online memes and scientific knowledge. The workshops took place between March and July 2023, were conducted within the exploratory project ‘Sci-Bi: An Infodemic of Disorientation: Communication Design as a Mediator Between Scientific Knowledge and Cognitive Bias.’ The project posits that communication design may play a role in translating and visualizing scientific information in clear, accessible, and engaging manners. An example of

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this is evident in the creative outputs produced by students, showcasing innovative ways to communicate scientific information. The output of these workshops consisted of infographics, reels, and memes, to be presented to the public for external validation in two forthcoming exhibitions in 2024.

Keywords: Scientific Memes, Communication Design, Pedagogical Workshops, Sci-Bi Project, Design Mediation.

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PAPER ID [76]

THE TEACHER'S ROLE IN THE IMPLEMENTATION OF THE METAVERSE

Yannara Negre (Universidade Europeia, IADE, UNIDCOM/IADE, Unidade de Investigação em Design e Comunicação, Portugal), Rui Patrício (Universidade Europeia, IADE, UNIDCOM/IADE, Unidade de Investigação em Design e Comunicação, Portugal) and Élmano Ricarte (Universidade Europeia, IADE, UNIDCOM/IADE, Unidade de Investigação em Design e Comunicação, ICNOVA, Portugal).

The integration of the metaverse in education marks a transformative paradigm shift, offering immersive and interactive learning experiences. This qualitative research explores teachers and instructors' perspectives on the future trends and challenges associated with the educational implementation of the metaverse. Through netnography and focus group methodologies, a sample engaged in a simulated virtual classroom experience, providing valuable insights into the potential applications and limitations of this technology. Participants highlighted the ability of the metaverse to create a sense of closeness and involvement, overcoming traditional distance learning limitations. The study reveals the teachers' optimism regarding the metaverse's ability to create engagement and proximity, addressing distance learning constraints. Challenges, including optimization issues and the need for technical support, underscore the importance of careful evaluation and strategic implementation. The teachers foresee a transformative role in shaping the metaverse's future, advocating for active collaboration in platform development and comprehensive pedagogical training programs. The study concludes with theoretical and practical contributions, offering insights to need for teachers and instructors to acquire specific skills for effective integration, clear rules and ethical guidelines in educational metaverse use. Despite limitations, this research contributes to understanding the evolving landscape of metaverse-enhanced education, providing a foundation for further exploration and application.

Keywords: Metaverse in Education, Immersive Learning, Virtual Classroom, Immersive Learning, Virtual Reality in Education, Teachers Perspectives

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PAPER ID [77]

INDUSTRIAL WASTE FROM CORN USED IN THE DEVELOPMENT OF TUBES FOR PLANTING EUCALYPTUS SEEDLINGS

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Leticia Perciliano Sakurai (State University of Maringá, Brazil), **Ghiovani Zanzotti Raniero** (State University of Maringá, Brazil), **Antonio Roberto Giriboni Monteiro** (State University of Maringá, Brazil) and **Cláudia Cirineo Ferreira Monteiro** (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa and Department of Design, Universidade Estadual de Maringá, Maringá, PR, Brazil).

Growing awareness about environmental issues is gaining prominence, leading consumers and companies to change their consumption habits and look for environmentally friendly products in various sectors. The plant market is increasingly focused on sustainable solutions, aiming to mitigate the environmental impacts associated with the industry and promote a greener and more conscious future. This approach reveals numerous investment opportunities in the market, given the use of new sustainable materials from industrial ecology. Thus, this article presents the development and characterisation of material derived from corn-based industrial waste and its use in producing tubes for planting eucalyptus seedlings. Initially, the biodegradable material based on waste from the corn industry was developed and physically-chemically characterised, followed by quantitative and qualitative research through questionnaires and interviews and, finally, field research was used with seedling producers and methods of design for generating alternatives. The results demonstrate that applying this material to produce tubes for planting seedlings is viable and environmentally correct.

Keywords: Sustainability, industrial waste, plants, containers, corn

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PAPER ID [78]**NEO-RURAL BIOCONSTRUCTION: A CULTURAL ANALYSIS. TRANSFORMATIONS AND CONNECTIONS BETWEEN THE PAST AND THE PRESENT**

Llara Fuente Corripio (Universidad de Oviedo, Spain).

In recent decades, the rural area has been the stage for various processes with associated challenges. Depopulation, the reorientation of its economic functions, new social realities, permeability with the city, or new forms of inhabiting the rural space are some of these dynamics that affect an increasingly complex territory. All these issues directly or indirectly condition the territory and the configuration of the landscape, modifying it. In this article, we investigate the relevance of bioconstruction in this new rural context, aiming to address its interconnections and repercussions from a cultural perspective.

Keywords: Rural Landscape, Bioconstruction, Architectural Design, Cultural Heritage, Craftsmanship

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PAPER ID [84]

DESIGN OF A YARN ANALYSIS MECHATRONIC PROTOTYPE FOR TEXTILE INDUSTRY

Filipe Pereira (Algoritmi Research Centre, School of Engineering, University of Minho, Portugal and MEtRICs Research Centre, School of Engineering, University of Minho, Portugal and 2C2T Research Centre, School of Engineering, University of Minho, Portugal and 2Ai, School of Technology, IPCA, Portugal), **José Machado** (MEtRICs Research Centre, School of Engineering, University of Minho, Portugal), **Filomena Soares** (Algoritmi Research Centre, School of Engineering, University of Minho, Portugal), **Rosa Vasconcelos** (2C2T Research Centre, School of Engineering, University of Minho, Portugal) and **Vitor Carvalho** (Algoritmi Research Centre, School of Engineering, University of Minho, Portugal and 2Ai, School of Technology, IPCA, Portugal).

Portuguese textile industry faces challenges in a globalized market, needing enhanced competitiveness and superior product quality. The quality of textile products heavily relies on yarn excellence, demanding precise evaluation against predefined parameters. Despite advancements, existing yarn evaluation devices struggle with limitations like high costs, bulkiness and imprecise assessments. To overcome these challenges, this study adopted a design-centric approach, creating a mechatronic prototype for analysis of yarn quality parameters. This innovative system enables real-time analysis and classification of yarn hairiness, alongside assessing crucial quality parameters such as linear mass, diameter, twist direction, and more. Central to this prototype's functionality is the integration of cutting-edge artificial intelligence algorithms. These algorithms are meticulously developed and optimized to accurately identify and characterize yarn hairiness, significantly enhancing assessment precision. The primary focus of this work lies in the innovative design that merges mechanical and electronic components. The incorporation of artificial intelligence elevates this prototype, empowering it to surpass the limitations of traditional yarn evaluation methods. This research represents a significant leap in advancing precise and efficient yarn quality assessment through a design-focused mechatronic solution with integrated artificial intelligence.

Keywords: Yarn, Textile industry, Winding, Unwinding, Mechatronic prototype, machine learning; system design.



PAPER ID [92]

THE INTERSECTION OF DESIGN METHODOLOGIES AND CIRCULAR ECONOMY PRINCIPLES: A FOCUS ON WASTE REDUCTION, SUSTAINABLE MATERIALS MANAGEMENT, AND EDUCATIONAL TOYS

Raquel Salomé (ESAD—IDEA · research in design and art | ESAD-College of Art and Design, Blue Design Alliance, FCT, Portugal).

This study delves into the intersection of design methodologies and circular economy principles, emphasizing waste reduction and sustainable materials management. It stresses the urgency of transitioning from linear consumption to circular practices. Drawing from design theory, materials science, and sustainability frameworks, the research critically reviews literature to establish theoretical foundations.

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The significance of materials in product life cycles and end-of-life scenarios is highlighted, with a specific focus on educational toys. The study proposes a comprehensive framework for embedding circular economy principles in waste and materials design, providing practical insights for practitioners.

Keywords: Design, Sustainability, Circularity, Precious Plastic and Materials



PAPER ID [94]

ECODESIGN: SHAPING A SUSTAINABLE FUTURE WITH PLASTIC PRODUCTS

Ana Barroso (PIEP - Pólo de Inovação em Engenharia de Polímeros, University of Minho, Portugal) and André Gomes (PIEP - Pólo de Inovação em Engenharia de Polímeros, University of Minho, Portugal).

In a context where plastic is often negatively perceived for its environmental impact, there's a noticeable trend towards replacing it with alternatives like paper or composites. However, these transitions often occur without thorough assessment, potentially leading to the development of new products that may not be environmentally beneficial. Ecodesign emerges as a key solution for sustainability. This research highlights innovations and best practices for designers working on plastic-centric projects. It explores how ecodesign utilizes technological advances to reduce the environmental impact of plastic products. Emphasizing early-stage research and planning, the research advocates principles like life cycle assessment, biomimicry, and circular economy, demonstrating their integration for projects with environmental, social, and economic responsibility. To demonstrate the practical application of this approach, the PRR "NIRVANA" project will serve as a reference and result to analyse the development of sustainable modular systems for more sustainable hydroponics.

Keywords: Ecodesign, Plastic, Sustainability, Education, Biomimicry



PAPER ID [95]

NATURAL MATERIAL INNOVATIONS IN SUSTAINABLE BUILDING SYSTEMS

Tatiana Campos (University of Minho, Architecture School, Lab2PT – Landscapes, Heritage and Territory Laboratory, Portugal), Paulo Cruz (University of Minho, Architecture School, Lab2PT – Landscapes, Heritage and Territory Laboratory, Portugal) and Bruno Figueiredo (University of Minho, Architecture School, Lab2PT – Landscapes, Heritage and Territory Laboratory, Portugal).

The quest for building materials that are both sustainable and cost-effective is a pressing issue in our society. Conventional construction practices are notorious for their heavy reliance on inorganic materials, leading to excessive waste production. Hence, there is an urgent need to embrace the concept of sustainable construction. This approach advocates for a new paradigm wherein raw materials and processes are more efficient, resources are optimized, and environmental, community, and global impacts are thoroughly analysed. [1] The goal is to encourage the adoption of

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biodegradable, recyclable, and affordable materials. The aim of this research is to promote the use of natural materials to produce sustainable, reusable and recyclable architectural systems. In particular, taking advantage of additive manufacturing techniques and the incorporation of natural fibres to improve the behaviour and durability of the proposed materials and applications.

Keywords: Sustainable architecture, natural materials, architectural systems, additive manufacturing.



PAPER ID [99]

SYNERGIES BETWEEN BIOMIMICRY AND DESIGN WORKSHOP BIOMIMICRY 101 - "HOW CAN NATURE GUIDE US INTO A SUSTAINABLE FUTURE?"

Jeremy Aston (ESAD College of Art and Design / ESAD—IDEA, Portugal), Ana Duque (ESAD College of Art and Design / ESAD—IDEA, Portugal) and Luciana Barbosa (ESAD College of Art and Design / ESAD—IDEA, Portugal).

This paper reflects upon the author's participation in the Workshop Biomimicry 101 - 'How can nature guide us into a sustainable future', conducted at ESADA Granada, financed by the Erasmus program. Divided into three sections, this article contextualises the essence of nature, explores the dichotomy between the natural and built worlds, and delves into the philosophical and practical dimensions of biomimicry. It emphasises the importance of biomimetic practices in fostering a renewed awareness of nature and sustainability, aligning with Freya Mathews' concept of inclusivity—a holistic view that integrates human and non-human elements within a larger life system. Furthermore, it discusses the integration of biomimicry into the design process, emphasising the need for multidisciplinary collaboration among young designers. By imitating nature's patterns and processes, biomimicry offers innovative, resilient, and efficient design solutions, as proposed by Benyus' comprehensive approach. It raises pertinent questions about the strategic placement of biomimicry within established design methodologies and highlights the significance of early education in biomimicry principles and practices for aspiring young designers. Lastly, it underscores the transformative impact of integrating biomimetic principles into industrial design, foreseeing a paradigm shift towards nature-centric design that not only enhances aesthetics, but also significantly improves product functionality.

Keywords: design, biomimicry, synergy, nature, sustainability, adaptability, innovation.



PAPER ID [102]

AESTHETICS AND MEANING WITHIN THE CIRCULAR DESIGN DISCOURSE: AN ANALYSIS BASED ON DESIGN PROJECTS

Nina Costa (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal), Adriano Pinho (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal) and Francisco Providência (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).

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Design is recognised as a crucial driver of innovation and a facilitator of the transition to a circular economy. While there are numerous strategies to support circular design practices, many tend to prioritise management and engineering processes, overlooking design's aesthetic dimension and its role as a cultural mediator. This research paper aims to revisit the role of design in the circular economy, emphasising its aesthetic and meaning dimensions, and exploring the potential of circular design to trigger socio-cultural change. It develops a framework based on existing literature and examines 14 master design projects developed within a higher education institution in Portugal, using tenets of multiple case study analysis and interpretative approach. The paper proposes a conceptual matrix that connects material function, meaning, and sustainability aesthetics, forming a continuum of design approaches for circular projects. The findings indicate that material exploration and transformation often shape the ethos of the project, while design intention and aesthetics assumes a secondary role. Moreover, the potential to reach a significant human impact is still quite limited. These results highlight the importance of expanding beyond functionalism and rebalancing ontological borders of the field within circular discourse.

Keywords: circular economy; circular design; sustainable aesthetics; sustainable products; design projects

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PAPER ID [104]**APPL(E)AUSE. A FOOD DESIGN EXPERIMENT TO CREATE NEW PROCESSED FOODS FROM APPLE BY-PRODUCTS**

Raffaele Passaro (Politecnico di Torino - Dipartimento di Architettura e Design (DAD), Italy) and Cristian Campagnaro (Politecnico di Torino - Dipartimento di Architettura e Design (DAD), Italy).

The work addresses the challenges associated with the sustainable management of food resources through the application of knowledge from the discipline of Design. The aim of the research is to identify new scenarios to increase the competitiveness of the Piedmontese agro-industry sector by identifying new uses for the by-products of fruit processing. The work focuses on using apple pomace in the development of new edible products, enhancing local food resources, and proposing new uses for a by-product that is currently destined for disposal. By adopting a transdisciplinary and design-led approach, it was possible co-design new edible processed foods, involving different territorial actors. The first collected results showed the possibility of valorising apple pomace and reintroducing it into the food cycle, adopting a circular economy for food approach.

Keywords: Food Design, Design With Food, Transdisciplinary Approach, Apple Pomace, Circular Economy.

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PAPER ID [107]

DESIGN OF TOOLS IN FIRE MANAGEMENT

Pierpaolo Antonio Fusaro (Department of Physics, University of Calabria, Rende, Italy), *Arrigo Bertacchini* (Department of Physics, University of Calabria, Italy and Department of Architecture and Industrial Design, University of Campania "Luigi Vanvitelli", Italy) and *Giulia Teverini* (Department of Architecture and Industrial Design, University of Campania "Luigi Vanvitelli", Italy and Department of Social, Political and Cognitive Sciences, University of Siena, Italy).

The contribution of the paper is twofold. We introduce the concept of fire as a chaotic and complex system through the Overworld FIRE project as a case study by demonstrating how a Decision Support System (DSS) could contribute in organising firefighting teams and operations. We reflect on the lack of data and information accessibility for the decision makers involved in the system and address this issue through an interdisciplinary design-oriented process. By discussing the results of the visualisation of the data and information flow during firefighting operations, DSS primary users and their data needs are identified and two user task-oriented interfaces have been designed and prototyped.

Keywords: DSS, Firefighting, Fire dynamics, Human Computer Interaction, User Interface Design, UX design.

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PAPER ID [110]

AN INTRODUCTORY AND EXPLORATORY STUDY INTO THE CONTEXT OF PORTUGUESE SUSTAINABLE FASHION MICRO-COMPANIES

Elsa Lima (Universidade de Lisboa - Faculdade de Arquitetura de Lisboa, Portugal), *Gianni Montagna* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *António Dinis* (University of Minho, Portugal).

In recent years, sustainable-minded clothing micro companies have managed to capture interest, and achieve relevance to some point through their practices. Yet, reports from the EU Commission refer inconsistencies between countries in the support for the sector, which frequently dictate and restrict the design work and opportunities of transition to Circular Economy. In the Portuguese context, the number of micro-companies has been increasing and yet there is still little knowledge about. This doctoral investigation studies the design methods and practices of this sector. Taking as a starting point the carrying out of an online survey compiled and sent to a sample of Portuguese sustainable-minded fashion micro companies, the article highlights some content analysis to the responses and so far identified practical findings and contributions to knowledge about design practices, as well as some of the biggest challenges in transitioning to Circular Economy. Finally, we discuss a concept and vision of Sustainable Innovation as a way of exploring opportunities adapted to micro companies, and how the Design discipline can best contribute to the resilience of this sector of activity.

Keywords: Sustainable-minded micro companies, Circular Fashion, Fashion Design Project, Design Methods, Sustainable Innovation.

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PAPER ID [113]

BIO-BASED MATERIALS IN COSMETICS: TERRITORIAL SYNERGIES AND DESIGN-ORIENTED PRODUCT EXPERIMENTATIONS.

Rosanna Veneziano (Università degli Studi della Campania Luigi Vanvitelli, Italy), *Michela Carlomagno* (Università degli Studi della Campania Luigi Vanvitelli, Italy) and *Stefano Salzillo* (Università degli Studi della Campania Luigi Vanvitelli, Italy).

The contribution exposes the research activity carried out at the Department of Architecture and Industrial Design of the University of Campania Luigi Vanvitelli in collaboration with the start-up Knowledge for Business related to the definition of pre-design parameters for the development of bio-based cosmetic lines, design-oriented experimentations and entry-market strategies of brand promotion. Bio-material manufacturing from organic by-products or waste is among the industrial symbiosis processes that, through the construction of collaborative systems, the consolidation of territorial production chains, and the development of systemic production models, are moving toward the circular economy and sustainability in different production sectors. Scoby bacterial nanocellulose (Symbiotic Colony of Bacteria and Yeast) has been the subject of eco-oriented product design experiments that confirm the excellent environmental performance of the entire production cycle and the substrate's technical and functional potential. In recent years, uses of the biomaterial have included its features and finishing for manufacturing clothing, furniture products, and packaging for the cosmetics and food sectors. The perspectives related to the diffusion of Scoby to more common sectors and the scalability of a sustainable production model are related to new areas and modes of use, the optimization of food waste, and the definition of new products.

Keywords: biomaterial, bacterial nanocellulose, symbiotic processes, systemic sustainable models, bio-based cosmetics.

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PAPER ID [126]

SUSTAINABLE CRAFTS DESIGN RESEARCH - A SCOPING STUDY ABOUT CRAFT DEVELOPMENT PROBLEMS IN THE UK

Li Zhang (Loughborough University, United Kingdom), *Cees de Bont* (Loughborough University, United Kingdom) and *Avsar Gurpinar* (Loughborough University, United Kingdom).

Crafts and sustainable development have an intrinsic relationship; therefore, this study aims to investigate sustainable crafts design. The research finds that the craft faces some development difficulties in the preliminary desk and secondary research. On this basis, the researcher conducted a scoping study on craft development difficulties in the UK, conducting field research in different craft practice centres, combining semi-structured interviews with collected data, and then analysing the data thematically; this research identified specific challenges faced by craft practitioners in the UK. The follow-up research will propose applicable, feasible, and effective methods in the form of case studies to help crafts address the current challenges and the development in the direction of sustainability. This study expects to contribute to the knowledge of sustainable development in craft.

Keywords: Craft, Sustainable development, Semi-structured interview, Problems, Scoping study

PAPER ID [128]

CERAMIC WASTE AND OPPORTUNITIES: DESIGN AS A MEDIATOR IN THE CONSERVATION OF BIODIVERSITY

Joana Pinto (Faculty of Fine Arts of University of Porto, Portugal), Lígia Lopes (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal) and Jorge Lino (Faculty of Engineering of University of Porto, Portugal).

Despite their long life, ceramics become unusable for their original purpose as soon as they are damaged, and the durability of the material poses a problem when it comes to disposal. Although there are authorized landfills for the disposal of waste in Portugal, these are insufficient, resulting in the waste being dumped in forest areas and posing a threat to biodiversity. The aim of this article is to contribute to the development of opportunities arising from the recycling of ceramic material deposited in forests, while preserving biodiversity, whether during the extraction of the material or at the end of the life of the ceramic products. By analyzing a practical case in which ceramic waste was used to produce modular panels, the relevance of its use and the possibility of its use in future work is reflected. The use of ceramic waste in the design of products therefore represents an opportunity as it helps to reduce landfill, forests and other natural sites. It also contributes to reduce the amount of raw materials extracted, reducing the environmental impact while emphasizing the need to preserve biodiversity.

Keywords: Design, Ceramic Waste, Forest, Biodiversity, Modular panels

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PAPER ID [150]

DESIGN OF WATER SUSTAINABILITY: TREES IN ARID AND SEMI-ARID CLIMATES

Terence Love (Love Services Pty Ltd, Australia).

This paper outlines some reasons why design guidelines for using trees of arid climates need to be different to accepted norms for non-arid climates. The paper draws on experience and research in multiple arid environments (China, India, Iran, Portugal, Spain and Western Australia). It points to the dominant roles of evapotranspiration and aquifer management in water sustainability for arid and semi-arid climates, and the specific need to manage tree cover. It outlines the key roles of aquifers in design for water sustainability in such climates and provides examples of cases of arid and semi-arid locations in which trees have been problematic in terms of water depletion, particularly of aquifers. The paper points in a general manner to traditional practical ways in which physical elements of the environment and buildings can be used to replace those climate management functions provided by trees in environmental design guidelines for high water availability environments. The paper extends previous research supporting SRDS of India as Energy Globe Award winner in the Water Sustainability category for its work on bore-well recharge.

Keywords: design guidelines, water sustainability, trees, arid, semi-arid

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SUSTAINABILITY IN BUSINESS PLANS: A PORTUGUESE LINEN TEXTILE COMPANY CASE

Isabel Duarte de Almeida (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal and IBS, Iscte-Instituto Universitário de Lisboa, Lisbon, Portugal) and *Maria João Delgado* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

This article examines sustainability in the Textile Industry (TI) using Elkington's Triple Bottom Line (TBL) framework, emphasising People, Planet and Profit. The literature review examines the TBL pillars and emerging solutions to minimise environmental impacts in textile production. While circular economy (CE) practices alone are not enough to combat pollution and the effects of climate change, a second solution mentioned in the Literature Review is using natural fibres in the textile industry. These natural fibres offer a double advantage in TI: (i) sustainability benefits and (ii) a cleaner and greener industry. The EU Strategy for Sustainable and Circular Textiles underlines the importance of such initiatives and positions natural fibres as environmentally superior. This paper outlines a dual approach focusing on the linen sector as a case study. It concludes with a call for sustainable practices in the linen TI and presents an innovative business plan guided by the CE principles

Keywords: Business Planning; Linen Fashion; Circular Economy; Sustainability; Textile Industry.

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SPECULATIVE



- SPECULATIVE** > *Speculative Design*
> *Explore Complex Problems*
> *Explore New Perspectives*
> *Imagine and Shape Possible Futures*
> *Design Impact the Entire World*
> *Design for a Healthier Ecosystem*
> *Influence Future Cultures*
> *Future Technologies Impact*
> *Thinking about the Future in Times of Uncertainty*
> *Global Foresight Anticipatory Scenarios*
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▼ Thematic Speculative offers a platform for creative questioning and exploring potential futures through design. This area invites participants to imagine and shape potential futures, tackling complex problems with speculative solutions that challenge expectations and expand horizons. The focus is on how design can impact the entire world, influence future cultures, and interact with emerging technologies.

Discussions will include global foresight and anticipatory scenarios, allowing designers and participants to explore how current uncertainties, such as pandemics and environmental disasters, can be addressed in innovative and transformative ways. This theme is a call to creative action and critical thinking, highlighting the essential role of designers in not only responding to, but also in shaping the course of the future.

PAPER ID [4]**THE ARCHITECTURAL PRESENT - HYPERTOPIA IN SINGAPORE**

João Rosmaninho (University of Minho, EAAD-LAB2PT, Portugal) and *Margarida Lopes* (University of Minho, EAAD, Portugal).

Singapore has seen architecture emerge as a potent force driving economic, visual, social, and political gains. Despite its limited land area, Singapore has transformed from a swampy island into a first-class metropolis since 1965, symbolizing urban progress and spatial innovation. The city-state is considered a successful model due to a combination of shedding its past and embracing a future-oriented approach, aligned with short-term global aspirations.

This article outlines a framework consisting of four topics, each introduced and concluded with specific texts. The narrative trajectory commences with the portrayal of the city as an artistic creation and progresses towards its untamed depiction, akin to a jungle. This evolution represents the transition from art to authenticity, from civilization to savagery, thereby unveiling Singapore's inherent duality. Additionally, the article incorporates four images, each corresponding to a specific theme under discussion, reinforcing the correlation between visual representation and textual content. Through these four topics, the city of Singapore is analysed from the viewpoint of a "thematic speculative," unveiling its characteristics stemming from the "exploration of new perspectives." Moreover, it is worth mentioning that this article draws from a master's dissertation. While it does not cover every aspect of the research, it does touch upon significant points explored in the dissertation.

Keywords: Hypertopia, Singapore, Architecture, Urbanism, Simulacra

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PAPER ID [24]**AUTHORSHIP IN CONTEMPORARY TATTOO: A DESIGN PERSPECTIVE**

Bruno Cordeiro (CIEBA - Center for Research and Study in Fine Arts, universidade de Lisboa, Portugal).

Historically, tattoos are an esoteric theme, due to their association with underground culture. However, contemporary tattooing has a different status: it is more open and professional. To this extent, it is necessary to understand the phenomena that transformed its perception and the way it is currently consumed. An investigation was carried out with the purpose of describing and explaining the creative and authorial process of contemporary tattooing, which used design as a reference, recognizing the similarities with its creative and authorial processes. The case study was chosen as a method and five tattoo artists, on whose work a relevant role of authorship can be recognized, were chosen. The analysis was carried out based on a triangular design model, composed of the vertices of authorship, program and technology and the axes of self-expression, co-authorship and material, which intersect them. It was found that the creative process of tattoo artists emerges from interaction and dialogue with the client, who seeks to meet both their expectations. Since clients are not the same, tattoo artists must adapt to the circumstances of each job, even though they are sought after due to their personal style, placing special emphasis on the relationship between self-expression and co-authorship.

Keywords: contemporary tattoo, design, creativity, creative process, tattoo artist.

PAPER ID [34]

ENHANCING USER EXPERIENCE IN THE METAVERSE: EXPLORING ABSTRACT USER DESIGN SEMIOTICS AND ITS IMPACT ON COMMUNICATION CULTURE

Anton Storey (Heriot Watt University, School of Design, Dubai, United Arab Emirates).

The metaverse represents an emerging frontier for user experience (UX) design. This paper investigates the potential of applying abstract semiotics to metaverse interfaces. A literature review covers core concepts and methodologies proposed, including the analysis of comparative user tests, surveys, interviews, usability studies, and experiments. Literature review results suggest gaps for further research on abstract semiotics to improve navigation, comprehension, appeal, and accessibility versus literal icons. However, findings indicate that semiotics must be tailored to metaverse contexts, balancing simplicity with user expectations and interaction feedback to understand the implications of personalised experiences to establish its impact on the future of communication. Concrete guidelines are needed to help designers utilise semiotics effectively in virtual environments. Further research with expanded participant samples and UX technology is warranted to progress this research area further.

Keywords: User experience, abstract semiotics, virtual reality, augmented reality, Metaverse, HCI.

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PAPER ID [37]

SPECULATIVE PROPOSALS: A DESIGN RESOURCE FOR CRAFTING SPECULATIVE SCENARIOS

David Palma (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and Marco Neves (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

Speculative design is an approach where designers express a set of concerns with sensitive or complex subjects and where they demonstrate ability to develop proposals that detach themselves from the norm, trends or commercial need. However, its stimulation in a professional or teaching context is hampered by its lack of definition or operability. This paper aims to study and examine different speculative design resources for designers, design students, and researchers in understanding, anticipating, and exploring alternative futures. In the end, the results of exploring and prototyping a set of cards and dice are presented, enabling the interpretation and application of more accessible speculative processes for students in the field of Design.

Keywords: Future Scenarios, Speculative Design, Speculative Design Methods, Speculative Design Process, Speculative Proposals

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PAPER ID [45]**THE LIVES OF METAL: A SPECULATIVE INQUIRY BETWEEN ART AND INDUSTRY THROUGH THE MOLDING OF ALUMINUM**

Antônio Frederico Lasalvia (M. Arch. and independent researcher), Hugo Reis (M. Arch and PhD candidate at ISCTE - IUL, Lisboa, Portugal) and Filipa Frois Almeida (Arch. and M. Photographer).

This paper explores the speculative use of aluminum in a recent work by the Portuguese studio FAHR 021.3, which exists on the verge between art and industry. This is done through a contextualization of two contemporary movements in critical thought: Speculative Design and New Materialisms. In relation to the first term, by contrasting its aims and approach to traditional design practices, Speculative Design is characterized by the movement from function to fiction. In our view, this methodology is complementary to the second term, New Materialisms, which consists of the reemergence of a philosophical understanding centered around matter. Based on reading of Jane Bennet's Vibrant Matter, the latter concept is exemplified by observations on metallic materiality. Regarding the use of this element, and assisted by the theoretical lenses of Speculative Design and New Materialisms, as well as by the technical reflections of Gilbert Simondon and Martin Heidegger, a case study, Matriz 45, is considered with attention to the critique it establishes to standard modes of operation of contemporary industry. With this exercise, the question brought forward is this: how can speculative design help us renew the way we interpret reality and, consequently, assist in reforming the way we inhabit the world?

Keywords: Speculative Design, New Materialisms, Contemporary Art, Ontological Design, Philosophy, Techniques

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PAPER ID [109]**FASHION, SPECULATIVE DESIGN AND FASHION FILMS IN CONTEMPORARY FASHION BRANDS: A LITERATURE REVIEW**

Mónica Lopes (Lusofona University – CICANT, Portugal), Manuel José Damásio (Lusofona University - CICANT, Portugal) and Alexandra Cruchinho (Lusofona University - CICANT, Portugal).

Fashion is seen as a complex social phenomenon and in this context, there is a need to study this topic in-depth and integrate several areas of knowledge, for a more comprehensive understanding of this industry in contemporary times. An investigation that encompasses fashion, speculative design, and fashion films, particularly in contemporary fashion, allows a re-evaluation of the communication strategies of the sector, through visual narratives brought by fashion films. It also contributes to an understanding of fashion as a cultural event, in that it not only reflects it, but also influences it, as well as an aesthetic and identity, both in clothing and in the behavior of society and places. The intersection of fashion with speculative design and fashion films adds to brands an insight into alternative possibilities of future scenarios, with more impact on the industry, through more conscious strategies and focused on developing stronger emotional relationships with consumers. This paper, through a literature review of references already published makes a historical contextualization of fashion as a

form of cultural and social expression over time, highlighting the evolution of Speculative Design and its influence on visual narrative in contemporary fashion, through fashion films.

Keywords: Fashion; Social role of fashion; Speculative Design; Fashion Films; Contemporary Fashion Brands

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PAPER ID [115]**A PARTICIPATORY SPECULATION TOOLKIT FOR CO-DESIGNING WITH RURAL COMMUNITIES**

Hernani Alves (IADE Universidade Europeia, Lisbon, Portugal), Eduardo Gonçalves (IADE Universidade Europeia, Lisbon, Portugal) and Ana Margarida Ferreira (LABCOM Universidade da Beira Interior, Portugal).

This paper is on the intersection of participatory and speculative design. It proposes using speculation, futures, and co-design methods to present the dreams and fears of underrepresented communities and generate alternatives to the status quo. This text follows the developments of speculative design practices towards speculative participatory design, directly involving community participants throughout the process (participatory mindset) instead of informing the beginning and exposure in the end (expert mindset). Exploration of a speculative participatory design practice indicates fewer complex methods (not just expert-oriented) and a greater focus on analysing values and biases. Toolkits need to promote making to enable multiple and diverse embodiments of speculation. Complex and descriptive generative methods such as generative artificial intelligence, role-play, simpler collages, or physical models will ensure diversity and understanding of how different aesthetics interfere in the debate and perception of underlying values and beliefs. This paper concludes by preparing the field research methods for co-design with communities in low demographic density regions in the interior of Portugal.

Keywords: design, participatory design, speculative design, shared futures, social innovation, social sustainability

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PAPER ID [116]**HOW DO AUDIENCES PERCEIVE PRACTICE CASES? INVESTIGATING TYPOLOGICAL DIFFERENCES IN DESIGN FUTURES THROUGH PERCEPTUAL MAPPING TECHNIQUES**

Tiantian Li (Academy of Arts & Design, Tsinghua University, Beijing, China) and Zhiyong Fu (Academy of Arts & Design, Tsinghua University, Beijing, China).

Design Futures, as an emerging interdisciplinary field that has arisen in recent years, possesses a vigorous vitality and promising prospects for development. However, Design Futures combines a large number of paradigms and approaches from different fields, the overlapping concepts and its ambiguity in both extension and intension make it difficult to establish a typology of Design Futures practice cases. This paper examines audience perceptions to provide reference and insights into the typology of design futures subtypes. We propose five subtypes of design futures practice cases (DF Subtypes) as a foundation and subject for revision. literature review and expert questionnaire (involving 20 experts) were

used to extract 21 semantic perception dimensions. A perception evaluation experiment was conducted, and principal component analysis was performed. The Perception map, derived from the two principal components, visually depicts the relationships between 15 typical cases and the obtained semantic terms, reflecting the cognitive structure of the audience to the subtypes. The study deepens the understanding of subcategory differences from the perspective of audience perception, and the results help to establish a more scientific typology of practice cases, thus contributing to solving the “fatal” problem of the development of this discipline.

Keywords: Design Futures; Practice Case; Typology; Principal Component Analysis; Perceptual Mapping.

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PAPER ID [122]

BEING-CENTRED DESIGN - NOTES ON A SPECULATIVE PROCESS PHILOSOPHY

*Nuno Dias (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal),
Abhishek Chatterjee (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal)
and Vasco Branco (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).*

This paper introduces Being-Centred Design (BCD) as a speculative approach that moves beyond prevalent user- and human-centred models towards a focus on human existence and profound experiences. Rooted in Providência's triangular framework of authorship, programme, and technology, BCD advocates for an approach that balances practicality and existential meaning in creative production. At the core of BCD's underlying theory lies the Spinozian concept of desire seen not as a deficiency but a generative force for shaping creation. It advocates a tripartite foundation of drawing, poetics/poiesis, and desire as drivers of design involving human, non-human and more-than-human dimensions. BCD is also informed by the existentialist notion of “Dasein” (being-there), which it articulates with desire and design as cornerstones, seeking to broaden design ontology, epistemology, practice, and pedagogy. Its existential outlook aids in interpreting and enacting theoretical principles in practical initiatives within a space of ‘poiesis’ which can be cognitive and/or physical, and where the poetics of making holds precedence. Design, within such framework, becomes a collaborative journey of self-exploration for practitioners, that is driven by affect, effect and continuum in sustainable creative cycles. The paper also outlines BCD's positioning within transdisciplinary action research to test the real-world applicability of the emergent concepts.

Keywords: Being-Centred Design, Existentialist approach, Providência's Triangular Model, Design-centric methodologies, speculative design.

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PAPER ID [123]

MAKING MEANING: DISCUSSING FUTURES OF MEASUREMENT, VALUE AND IMPACT IN DESIGN HIGHER EDUCATION*Suzanne E. Martin (Ireland).*

This paper explores the complex problem of how Design Higher Education organisations might transform to meet the Future. The Design Case introduces a dialogic, people centred infrastructure for a systemic programme evaluation approach. The staff-facing Design, a Discursive Evaluation exercise, performs as a new perspective on what quality, value and impact could look like in an institutional Quality Assurance process whilst enhancing teaching practices. The Design uses conversation as a speculative tool to shape, capture and translate knowledge, as part of a new Participatory Evaluation System within a pilot Creative Futures Pedagogical Framework. Setting out the collaborative act of future storytelling that takes place between staff at the end of the Trimester, the paper introduces novel pathways for conceptualising knowledge creation in support of organisational transformation. Systems Thinking tells us that information does not generate understanding, rather, that meaning is co-constructed within human communication. Learning how to build valuable knowledge transfer through dialogues is vital if Design Higher Education is to shape how the Design sector addresses the needs of the planet, people, and policies. Reimagining organisational monitoring and measuring processes, by design, this paper underscores the potential of collective vision-building by presenting meaningful, speculative pathways for Design Education Futures.

Keywords: Design Education Futures, Curriculum Design, Teaching Enhancement and Quality Assurance, Pedagogical Innovation, Critical Dialogues

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CONVERT 

- CONVERT** > *Production and Manufacturing*
Material and Immaterial
> *Rescue and Reuse*
Recycling and Upcycling
> *Booming Products*
Coproduction
> *Local and Regional from Products to Ecosystems*
Emerging Materials
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- ▼ Thematic Convert focuses on adapting and transforming existing resources and processes to meet contemporary needs. This area covers everything from production and manufacturing to recycling and co-production, highlighting how design can facilitate the transition of products and systems from local and regional frameworks to broader, integrated ecosystems.

Sessions on emerging materials and the recovery and reuse of existing resources will discuss how design innovation can lead to the creation of expanding products and production systems that not only meet the demands of the present but also pave the way for future generations. This theme promotes reflection on how design can be instrumental in reconfiguring the material world for a more sustainable and responsible future.

PAPER ID [16]

LAMP "SABOR A LUZ"[®], 20 YEARS OF ECODESIGN

Fernando Miguel Marques (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

Over the last 20 years, eco-design has fortunately been gaining popularity and, today, the general public already has some notion of concepts such as recycling and environmental concerns. The contribution of some designers at design events has facilitated this knowledge. Here we look at the case of "SaboR a LuZ"[®], launched twenty years ago at a time when there was little public knowledge in Portugal about eco-design. Twenty years on, is the public more aware of these concepts? Over the past 20 years, a series of events have emerged to promote sustainability concepts that have gradually entered the global knowledge of citizens, awakening them to the concepts of reuse, recycling and environmental cleaning. The new "SaboR a LuZ 2.0" proposal brings concepts linked to broader environmental concerns.

Keywords: Ecodesign; lighting design; design exhibitions; re-use; re-manufacturing.

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PAPER ID [27]

CAPULANA: SEARCHING FOR THE FUTURE IN TRADITION

Sofia Lucas (Lisbon School of Architecture, Universidade de Lisboa, Portugal) and Henri Christiaans (School of Design & Human Engineering, Ulsan National Institute of Science and Technology_ UNIST, South Korea).

The present article focuses on the importance of capulana's "moving tradition" to reinforce identity processes, promote cultural sustainability and re-draw the future. The traditional foundation of wearing and draping rectangle of textile is getting lost or diluting by younger generations and their newly sense of modernity. By opposite, capulana is cut in various forms of clothing. The main question of our research is: can the traditional way of wearing capulana – as a rectangle of fabric – be updated in a way that it encompasses the future based on tradition? This article describes a workshop based on a co-creative approach developed with a group of young African designers in Lisbon and proposes new perspectives on identity building through innovative ways of draping a cloth. We used creative collaboration as a methodological strategy and cultural knowledge as a tool to co-design products that embody affectivity and, for that matter, drives towards a slower - fashion's future. Contributing to a space for inquiry on identity, tradition and fashion-ability, this study concludes that if we use cultural knowledge from the main agents in capulana's innovation, we may expect positive results.

Keywords: capulana, tradition, identity, cultural knowledge, fashion-ability, draping

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PAPER ID [29]

URBAN DESIGN SOLUTIONS FOR DOG WASTE: DESIGN OF A MECHANICAL DEVICE FOR A DOG WASTE STATION BAG DISPENSER

Maria João Megre (Faculty of Fine Arts of the University of Porto, Portugal), Francisco Pereira (Faculty of Fine Arts of the University of Porto, Portugal), Vasco Lameira (Faculty of Fine Arts of the University of Porto, Portugal), Cláudia Lima (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal) and Rui Mendonça (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

This project aims to design a mechanical device for a bag dispenser for public spaces of the city Vila Nova de Gaia, Portugal. Based on the shape of a previously developed dog waste station to be placed at Parque de S. Paio, a mechanism without electronic components was studied. The aim was to create a bag delivery system that prevents excessive consumption of this product, particularly for purposes other than animal waste disposal. The methodology included observation of the public space where the product under development was to be used, benchmarking research, idealization, conceptualisation and prototyping of the device carried out by a multidisciplinary team of designers and mechanical engineers. The result was a device with a mechanism that works through a system that limits the consecutive removal of bags, and which is low cost and easy to maintain. The final prototype, which has already been tested in a controlled environment, is currently being tested on site.

Keywords: Product design, Sustainability, Bag dispenser, Urban design, Gog waste station

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PAPER ID [32]

A NEW MODEL FOR STEAM APPROACH GUIDED BY DESIGN

Wilson Kindlein Júnior (Universidade Federal do Rio Grande do Sul – UFRGS, Brazil), Brendon Willian Guedes Barbosa (Universidade Federal do Rio Grande do Sul – UFRGS, Brazil), Flávia Ribeiro Vieira (Universidade Federal do Rio Grande do Sul – UFRGS, Brazil) and Ivan de Lima E Silva Penz (Universidade Federal do Rio Grande do Sul – UFRGS, Brazil).

This study discusses the application of STEAM (Science, Technology, Engineering, Arts, and Mathematics) in interdisciplinary projects guided by DESIGN, which involves materials and manufacturing processes. The article describes three studies that explore the integration of STEAM fields in creative, contemplative and informational projects, focusing on the relation between the material and immaterial. The methods of the three case studies include the use of 3D printing technology (filaments and resins) and fabric sublimation. The research emphasizes the importance of using STEAM as a tool that promotes collaboration between different knowledge areas, stimulating creativity, innovation and the mutual influence between the material and immaterial. This leads to a project's concept that takes into consideration not only the contemporary technological challenges, material selection, and manufacturing processes but also the immaterial attributes that come from a

world undergoing significant transformations in social, cultural, and industrial matters. In conclusion, it becomes possible to specify the need for a multidisciplinary approach guided by DESIGN in a project developing process.

Keywords: STEAM, Material Selection, Manufacturing Process, Product Design, Creativity.



PAPER ID [38]

PULSE APPROACH WORKSHOP: ONE WAY OF TESTING THE PROPOSAL OF INTEGRAL DESIGN PROJECT MANAGEMENT TOOL

Luciana Lopes (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), *Heitor Alvelos* (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal), *Cristina Parente* (Faculty of Arts and Humanities of University of Porto - Institute of Sociology, Portugal) and *Gonçalo Gomes* (ID+ Research Institute for Design, Media and Culture, University of Aveiro, Portugal).

The workshop presented in this article was carried out through the testing of the integral design project management tool understood as a proposal that integrates spirituality in a systemic and contemporary vision which is grounded in 13 spirituality components of Souths communities from Portugal and Brazil, named Pulse Approach. The article details the studies regarding the tool implementation: 1) group definition for testing the Pulse Approach, 2) the workshop and the Pulse Approach methodological route, 3) the tool application, and 4) the results evaluation. As a conclusion, we present the adjustment of the Pulse Approach methodological path for subsequent validation studies.

Keywords: Integral design project management, Souths communities spiritualities, Transformative social design, Testing, Transformative processes and approaches, Design for transitions.



PAPER ID [63]

BUSINESSES IN BAMBOO AND THEIR CONSIDERATIONS FOR A SUSTAINABLE VENTURE

Monikuntala Das (PhD Research Scholar, Department of Design, Indian Institute of Technology Guwahati, India) and *Amarendra Kumar Das* (Professor, Department of Design, Indian Institute of Technology Guwahati, India).

Bamboo as a material has played a versatile role in the lifestyles of many Indian communities, majorly in the North Eastern Region of the country. The easy availability of the material as a backyard grass facilitated its use in various utilitarian products in the past, which are being used in domestic households even today. Many Indian researchers and entrepreneurs recognized the value of the material and the social construct built around it to collate information as well as to execute new designs and iterations to satiate the customers purchase and aesthetic needs. Even though bamboo falls under

the domicile of craft, the perception towards the material has slowly changed to utilitarian products through means of design. Successful ventures with bamboo as furniture, luminaire, lifestyle accessories, storage units, cutlery, jewellery, fabric etc have been able to bring the material into the market forefront. This paper brings in a holistic understanding of current bamboo design in India. It looks into the entrepreneurial ventures within the last three decades, conducts multiple interviews with people involved in this domain to deliver insights on the considerations and applications that must be taken care of to maintain the aspect of sustainability in the bamboo business sector.

Keywords: sustainable business, bamboo, market research, entrepreneurship, business in bamboo

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PAPER ID [91]

SUSTAINABLE PRODUCT DEVELOPMENT STRATEGIES: AN ALTERNATIVE FOR THE MICRO AND SMALL FURNITURE INDUSTRY IN EMERGING ECONOMIES

Juliana Cardoso Braga (Federal University of Uberlândia, Brazil), Juliano Aparecido Pereira (Federal University of Uberlândia, Brazil), Fernando Moreira da Silva ((CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal)) and Luis Carlos Paschoarelli (São Paulo State University, Brazil).

Humanity experiences industrial evolution marked by new technologies and socioeconomic progress. But in recent years, an ecological liability has begun to be recognized that deserves immediate attention given the resulting forecasts. The implementation of sustainable design strategies can be a significant alternative to increase sustainability and minimize the industrial impact on the ecosystem. The objective of the present study is to study and discuss sustainable design strategies based on general guidelines for Micro and Small Business (MSBs), especially those in the furniture sector, whose economic participation and environmental impact are significant in countries with emerging economies. Seven guidelines are explored and analyzed, pointing out that their implementation can minimize the ecological impact of this sector.

Keywords: Sustainable development; Product design; Micro and small Business; Furniture

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PAPER ID [118]

THE PROFESSIONAL PRACTICE OF DESIGN: A QUALITATIVE STUDY OF DESIGN PROCESSES AND THEIR SUITABILITY FOR TEACHING ACADEMIC DESIGN

Luís Mota (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), João Martins (Instituto Politécnico de Viana do Castelo, Portugal), Liliana Soares (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and Maria João Félix (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

Product design education often needs to update its pedagogical practice to include new strategies that facilitate the acquisition of scientific and technical skills valued by the job market. Polytechnic higher education, which is oriented towards practice and guided by the application and development of knowledge, is constantly challenged to create or optimize learning contexts that allow students to experience the demands of professional practice in a guided way. In order to verify the current state of academic practice in product design education, compared to professional practice, the authors aim to gather evidence that will help guide the optimization or implementation of new methodologies. In a first phase, a survey was conducted with product/equipment/industrial designers working in the Portuguese job market. The data obtained through this instrument is complemented with interviews and non-participant observations of their professional practices. In the last phase, the results of this research will be academically tested, converted into one or more academic design project. In this article, the first results of the research will be presented. These results point to the multiplicity of approaches. The conclusion justifies that a review of the teaching and learning process in product design and the experimentation with new pedagogical strategies.

Keywords: Design Education; Pedagogy, Teaching, Design Process, Methodologies, professional competence

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PAPER ID [131]

IKEA HACKING: CUSTOMIZATION AND DEMOCRATIZATION OF OBJECTS

Domenico Di Fuccia (Università degli Studi della Campania Luigi Vanvitelli, Italy).

This paper aims to analyze the IKEA hacking phenomenon and its possibilities of evolution that additive manufacturing and web 2.0 technologies have allowed. The trend to modify and mix products of the well-known Swedish company to improve, adapt and personalize them has resulted in a real movement, creating a community who collaborate by exchanging ideas and projects. We analyzed the phenomenon of the democratization of the design process, from the openness in the IT field up to the ever-increasing participation of the end-user in the product definition, with the rise of 'prosumer' and 'maker'. The combination of digital fabrication and web 2.0 technologies, that allow mass customization, were also explored. The result of this research is the design of a mobile work/study station, created from four of the company's products linked by 3D printed parts, which allow their components to be aggregated in different ways to change their original function. These parts, created with a parametric process, allow for user customization, thus participation from the design to the realization. The project is not meant to be an end in itself but as an example of the endless explorations possible through the combination of democratic design products and digital manufacturing technologies.

Keywords: Prosumers; Hacking; Mass Customization; Democratic Design; Parametric Design; 3D Printing.

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PAPER ID [152]

PROPOSING A SUSTAINABILITY COMPENDIUM FOR THE PORTUGUESE INDUSTRY SECTOR STUDENTS

Rute Gomes (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *Paulo Dinis* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal), *José Silveira Dias* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *Maria João Félix* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal).

Portuguese furniture industry sector has a constant demand for specialized human resources. Lately the Institution in charge of the Nacional Professional Qualifications, on the wood and furniture industries sector, has made a consultation near Industry to simplify and update their offer. Leading them to propose new qualifications and update all syllabus in general. Having this, the authors identified the opportunity to propose the inclusion of more sustainability contents into professional education levels, and in a more transversal way. The goal of this study is, meeting this Industry demands, to propose design for sustainability strategies, as subjects within a sustainability compendium, that will serve professionalizing undergraduate, graduate, and post-graduate students, for this industry sector. To achieve this, a literature review on the main design for sustainability strategies was carried and crossed with the existent educational levels for the Sector. The results lead to the identification of twelve subjects, that are systematized into operational or systemic, accordingly to necessary competences of the students. Further, the development of a Sustainability Compendium, will be a great contribution to all students and professionals, that will work in the Furniture Industry.

Keywords: Design for Sustainability, Educational tool, Furniture industry, Professional education, Design Education.

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FLASH
RESEARCH DEMO



FLASH RESEARCH DEMO >

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The **Flash Research DEMO Sessions** are an innovative exposure opportunity within Design Commit 2024. These sessions allow participants to present ongoing projects and emerging findings on a platform that highlights progress and innovation. With brief presentations, lasting only 5 minutes and limited to 10 slides, these sessions aim to provide a quick yet comprehensive glimpse of the latest advances in research.

This format is particularly relevant for aligning with funding policies that emphasize the rapid and effective dissemination of research results. By showcasing projects in preliminary or developmental stages, the **Flash Research DEMO Sessions** encourage the sharing of innovative ideas and facilitate interaction among researchers, thus broadening the potential impact of their findings.

Accepted abstracts are incorporated into the Conference's Book of Abstracts, offering participants broad and enduring visibility for their work. This session is a perfect opportunity for researchers seeking an efficient and impactful way to share their projects with an engaged and specialized community.

PAPER ID [158]**SUSTAINABLE DESIGN TO SUPPORT THE CREATION OF RURAL AND MOUNTAIN COMMUNITIES IN INLAND PORTUGAL.**

Daniel Raposo (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa & ReThink – Centro de Investigação em Design para o Território, Portugal), *Teresa Paiva* (BRIDGES - Biotechnology Research, Innovation and Design for Health Products, Polytechnic of Guarda, Portugal & Research Centre in Business Sciences, University of Beira Interior, Portugal), *João Neves* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa & ReThink – Centro de Investigação em Design para o Território, Portugal), *Maria Fátima Veríssimo* (Polytechnic Institute of Castelo Branco & ReThink – Centro de Investigação em Design para o Território, Portugal) and *Hugo Mendes* (BRIDGES - Biotechnology Research, Innovation and Design for Health Products, Polytechnic of Guarda & Research Centre in Business Sciences, University of Beira Interior, Portugal).

Interior+ is a development and transfer project positioned as an opportunity to rethink and define a sustainable development model for rural and mountain regions in the interior of Portugal, specifically in Beiras and Serra da Estrela, Beira Baixa and Alto Minho. Human organization and occupation in Portugal is the result of development policies and agricultural and industrial activities developed over the last few centuries. These territories are characterized as Low Density, which means that they suffer from typical social and economic characteristics. The vicious circle that is difficult to break in this type of territory means that there needs to be a greater effort to create rural and mountain communities that bring together economic and social agents so that they can jointly build a more cohesive, innovative, and sustainable community around the same goal, as is desired in the medium and long term. This project is based on an interventionist methodology of collaborative design, namely through a platform to catalyze cross-sectorial innovation and cooperation, communicate and generate awareness local food products, actively contributing to the competitiveness and sustainability of economic agents in the agricultural sector, from a Farm to Fork perspective. The Interior+ project encompasses a human dimension, the digitalization and implementation of new technology in products and businesses, communication and promotion, co-operation and the enhancement of endogenous products, natural resources, and local culture.

Keywords: Interior+, technology mapping, valuing endogenous resources and products, design in sustainable territorial development

Acknowledgments and Funding: We acknowledge the financial support of CIAUD, Lisbon School of Architecture, Universidade de Lisboa, Portugal and FCT – Foundation for Science and Technology.

This study is the result of the research project Interior+ Comunidades Rurais do Interior e de Montanha, Financed by Plano de Recuperação e Resiliência, Investimento RE-C05-i03 – Agenda de investigação e inovação para a sustentabilidade da agricultura, alimentação e agroindústria. N.º 17/C05-i03/2022 – Projetos I&D+I – Revitalização das zonas rurais, approved by Estrutura de Missão Recuperar Portugal (EMRP)- PRR-C05-i03-I-000233.

PAPER ID [159]

A GAME-BASED FRAMEWORK TO DESIGN AND ANALYZE GAMES TO AUGMENT CREATIVITY IN THEIR PLAYERS

José Raimundo (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal).

Creativity is essential for individuals to achieve personal, academic, and professional success in life. In response to the growing demand for creativity, I propose cultivating Creative Literacy, augmenting individuals' creative abilities to deal with life challenges in need to be addressed, using the game's medium.

The methodological strategy employed combines a literature review and case study close readings with practical experimentation. The strategy followed the adoption of roles like researcher, developer, and player to explore the relationship between games and creativity and develop games to respond to creative needs.

So far, this research returned a theoretical framework operating at the intersection of two sets of components, Game Categories for Creative Literacy, and Game Aspects for Creativity, that help inform the analysis and design of games for augmenting creativity.

The framework helps develop flows to visualize the influence of game components across gameplay to analyse how games can augment creativity. These components can be used to design games that augment creativity in specific contexts, something illustrated with a tabletop game prototype that challenges typographical conventions.

This framework's potential and limitations are not yet fully explored, however, it is a promising approach to enhance creativity through the act of playing games.

Keywords: Creativity, Creative Literacy, Design, Framework, Games

Acknowledgments and Funding: I wish to acknowledge the supervision that preceded this research by Pedro Cardoso, Miguel Carvalhais and António Coelho. This work is funded by national funds through the FCT – Fundação para a Ciência e a Tecnologia, I.P., under the project UIDB/04057/2020.

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PAPER ID [160]

THE IMPORTANCE OF TECHNOLOGY AND DESIGN FOR THE SUCCESS OF NATIONS.

Gilberto Santos (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal).

Abstract: Developing countries are characterized by only producing what developed countries design and conceive. With China's entry into the World Trade Organization in 2001, the value of production fell and developing countries became impoverished. To be successful, developing countries must invest in their own technology and their own design of new own products in order to enrich their economies. Any new product under development must be patented, as it evolves. This was the path that the

developed countries, namely the G7 countries, followed.

If we consult the statistics regarding patents registered at the EPO (European Patent Office), we see that developing countries have a very large deficit in patent registration, while developed countries have a high rate of registered patents. This is the big difference. Developing countries must learn to value the knowledge they create in their universities. This knowledge should help developing countries to design new products for the rising industry and to create services with high added value, sold on the world market through their own brands. Therefore, the economic valorisation of knowledge must become an imperative for any developing country. These must create an Industrial and Technological Policy that promotes technology and design. Without this, it is difficult to design new products and carry out technological development. Innovation is difficult to happen no matter how much science is done. Regarding this topic, I studied how developed countries became rich. In February 2024 I published a book entitled "Contributions to the Portuguese economic miracle" with 386 pages.

Keywords: Technology, Design, Economic growth, Product Development, Rising industry.

Acknowledgement This work is funded by national funds through FCT - Fundação para a Ciência e a Tecnologia, I.P., under the project UIDB/04057/2020».

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PAPER ID [161]**BEYOND-VERBAL COMMUNICATION: CHALLENGES OF CODESIGNING WITH PERSONS WITH MODERATE TO LATE-STAGE DEMENTIA**

Cláudia Lima (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal; Lusofona University, Portugal) and Susana Barreto (ID+ Research Institute for Design, Media and Culture, Faculty of Fine Arts of the University of Porto, Portugal).

This study explores a participatory design project involving design researchers specialising in dementia, design students, persons with moderate to late-stage dementia from a Day Centre of Alzheimer Portugal association, and health professionals. Spanning four months, this project, held within REMIND research, is grounded on the concept of personhood, stressing the significance of acknowledging biographical characteristics and cultural backgrounds of persons with and for whom projects are created. A combination of qualitative methods was used and systematically adjusted according to each person's unique profiles and abilities. Methodologies encompassed sensory ethnography, participant observation, interviews, and focus groups. The participatory design strategies were outlined based on users' aspirations and preferences, with a focus on playfulness and well-being in the moment. Drawing on traditional and cultural elements as well as biographical features, ludic activities for sensory and cognitive stimulation were co-created with persons with dementia including a Tangram, a Memory game on the seasons, a wooden labyrinth with popular sayings and typical local dishes to match among others. While this study highlighted the benefits of working with persons with dementia, it has also evidenced challenges in establishing communication and interaction processes with them given their compromised abilities, requiring beyond-verbal communication strategies to be defined.

Keywords: participatory design; dementia and design; sensory ethnography; cognitive stimulation games; personhood in design; wellbeing in the moment

Acknowledgments and Funding: This work was supported by the FCT - Fundação para a Ciência e a Tecnologia, I.P., under Grant UIDB/04057/2020. Acknowledgements to health professionals from Centro de Dia Memória de Mim and students from the BA in Communication Design of Lusofona University who participated in this project.



PAPER ID [162]

GENIE OF THE MAGIC LAMP OR COLLABORATIVE GENIUS? REFLECTION ON THE USE OF GENERATIVE ARTIFICIAL INTELLIGENCE IN THE TEACHING-LEARNING PROCESS IN COMMUNICATION DESIGN

Vitor Tavares (N2i, Polytechnic Institute of Maia, Portugal), Suzana Dias (ID+ Research Institute for Design, Media and Culture, School of Design, IPCA, Barcelos, Portugal), Manuel Granja, Mónica Santos (ID+/ Research Institute for Design, Media and Culture/Polo FBAUP, Portugal) and Estela Vilhena (2Ai – School of Technology, IPCA, Barcelos, Portugal; LASI – Associate Laboratory of Intelligent Systems, Guimarães, Portugal).

Although Artificial Intelligence (AI) has inherent limitations, it unleashes unparalleled transformations in various creative fields. With the proliferation of AI devices, obtaining sophisticated, fascinating, and immediate results has become accessible to any individual, regardless of effort, commitment, or involvement. There is a latent concern about the discrepancy between the investment of effort applied and the resulting quality, a disparity that is incomparable to other technological situations in history. These questions form the basis of this study, where we are guided by the conviction that, as design teachers, we face a real 'Pandora's box' in the context of creative teaching. The students were asked to carry out a project using digital AI tools, complemented by a questionnaire on AI in the creative process of Communication Design. A total of 180 North Portuguese students were assessed, between January and February 2024: mean age of 22.6 years ([17, 53]); 55% male, from design courses, 1st, 2nd, and 3rd year (53.3%, 33.89%, 12.78%). The results show that only 14.4% use AI to create images with any frequency, with 2nd and 3rd-year students using it the most. The 'research phase' is the most researched (33.8%), but it is in the sketch phase that 3rd graders look for it the most. 'Text' and 'concrete images' are the most researched development phases (32% vs 19.9%). Third-year students tend to use AI more than first-year students, except for 'texts', where there are no significant differences. Students agree that AI is changing their relationship with images (75.6%) and that it will change 'our' relationship with them (66.1%). In this context, it is urgent to integrate AI into education and curricula so that they are used critically and creatively.

Keywords: Generative Artificial Intelligence; AI; digital image tool; communication design; design teaching; creative process.

Acknowledgments and Funding: This work is funded by N2i, Polytechnic Institute of Maia, Portugal; This work is funded by national funds through FCT - Fundação para a Ciência e a Tecnologia, I.P., under the project UIDB/04057/2020.



PAPER ID [163]

A PRECIOUS TERRITORIAL NETWORK: ALKIMIYA MAG JEWELRY DESIGN MAPS

Morelli Maria Dolores (Università degli Studi della Campania "Luigi Vanvitelli", Caserta, Italy) and *Barbato Carmela* (Università degli Studi della Campania "Luigi Vanvitelli", Caserta, Italy).

Since 2014, the Department of Architecture and Industrial Design of the University of Campania "Luigi Vanvitelli" has been implementing application projects developed in an academic and commercial context of national and international interest by the research group of the writing professors and doctoral students. on jewelry design in relation to cultural heritage.

The results obtained have made it possible to sign an agreement with the OROMARE Goldsmith Center of Marcianise and the establishment of ALKIMIYA MAG, a popular scientific magazine on the topic of precious published by Gem-tech (Gemological Institute), whose scientific contributions are carried out in synergy also with Officina Vanvitelli Fashion and creative hub.

ALKIMIYA MAG describes precious jewels for their economic value and the value linked to a careful design process and collective work aimed at integrating training, research and cultural heritage. Through an interdisciplinary networking methodology between institutions, schools, companies, districts, associations and museums in the sector, ALKIMIYA MAG maps a network to support the territory and cultural development for an international dissemination of the jewelry industry. The project, developed through a digital platform and a dual format magazine, also aims to enhance the skills of the young graduates involved and the product placement of companies.

Keywords: Design, Cultural Heritage, Interdisciplinarity, Tradition, Innovation, Internationalization.

Acknowledgments and Funding: Thanks to the Oromare, Goldsmith Center of Marcianise, (Ce) Italy, and Gem-tech Gemological Institute in Naples, Italy for the financial support.



PAPER ID [164]

**DEVELOPMENT, IMPLEMENTATION AND MANAGEMENT OF VISUAL IDENTITIES
DEFINITION OF A MODEL FOR SMES IN THE AGRI-FOOD SECTOR**

Rogério Ribeiro (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa & ReThink – Centro de Investigação em Design para o Território, Portugal), *Daniel Raposo* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, & ReThink – Centro de Investigação em Design para o Território, Portugal), *Rita Assoreira Almendra* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal) and *João Neves* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, Portugal & ReThink – Centro de Investigação em Design para o Território, Portugal).

Contemporary brands function as living organisms that provide various types of stimuli and are influenced by the reactions of audiences, which result from experience with various interdependent and correlated subsystems.

In the Visual subsystem, all the elements created must be coordinated in a cohesive and coherent way in the semantic and syntactic dimensions, so that the message is perceived with the correct meaning by the public. At the pragmatic level, the understanding or message results from an interpretation based on the experience that the public has with the brand, in a given context and by comparison with others. The brand's Visual Identity consists of defining the components and the language system, which are the basis of the programmed communication, requiring coherence, graphic-semantic flexibility, as well as adequate articulation with all the dimensions of the business and the brand's personality.

Branding or Brand Management therefore includes interdepartmental articulation, and specifically the dissemination and awareness of design principles and processes (namely through Design Management), which are manifested in a specific brand culture that conveys and expresses the brand's positioning.

Having detected a gap between the design of the brand's visual identity and its implementation, it is important to understand how to contribute to the effectiveness of brand management, in particular to ensure identification and graphic-semantic coherence of the visual with the brand concept.

This article is the result of ongoing doctoral research, which aims to demonstrate how to define a model for managing and creating a Visual Identity design project, particularly focussed on implementation processes, but also on monitoring, guaranteeing semantic and syntactic coherence in accordance with the intended brand image.

Keywords: Brand Visual Identity; Design Process Management; Brand management; Visual Identity management and creation methodologies; Schematic and process visualization

Acknowledgments and Funding: The authors would like to acknowledge CIAUD, Lisbon School of Architecture, Universidade de Lisboa, Portugal and FCT – Foundation for Science and Technology, for their financial support. This paper is part of the research for doctorate in design carried out by Rogério Ribeiro.

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PAPER ID [165]

EUROACE BAUHAUS VILLAGES STRATEGIC PLAN

João Neves (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa, 1349-063 Lisboa, Portugal & ReThink – Centro de Investigação em Design para o Território, Portugal), *Daniel Raposo* (CIAUD, Research Centre for Architecture, Urbanism and Design, Lisbon School of Architecture, Universidade de Lisboa & ReThink – Centro de Investigação em Design para o Território, Portugal) and *Domingos Santos* (Polytechnic Institute of Castelo Branco & ReThink – Centro de Investigação em Design para o Território, Portugal).

The EUROACE Bauhaus Villages Strategic Plan aims to achieve the specific objectives identified for the EUROACE Euroregion, intending to contribute to the definition of a model of strategic and

operational intervention that will serve as the basis for the Calls to be held within the scope of the political objective OP5 (A Europe closer to its citizens), aimed at agents and entities in the EUROACE territory, based on the initiative New European Bauhaus. Based on a conceptual approach that involved different topics, the process allowed villages to identify the most and least developed aspects in their respective communities. This information gave rise to a Conceptual Framework that served as a guiding document. Essentially, the work methodology was based on three phases: 1) Data collection, analysis and diagnosis; 2) Scenarioization; 3) Strategic and operational intervention model. As a result, five strategic axes were defined for the Strategic Plan, broken down into objectives, and in turn into lines of action from which indicative project typologies are defined. The Plan focused on the three axes of the NEB, namely aesthetics, sustainability and inclusion, promoting territorial cohesion and a sense of belonging, transforming accessibility and creating networks and synergies between people and local, regional and cross-border communities.

Keywords: New European Bauhaus; EUROACE Euroregion; Bauhaus Villages; Strategic Plan;

Acknowledgments and Funding: EUROACE_NEB - Strategic Plan for Bauhaus Villages EUROACE, Project financed by Regional Coordination and Development Commission - Centre of Portugal, within the scope of the EUROACE Cross-Border Working Community: Centro Regional Coordination and Development Commission, I.P.; Alentejo Regional Coordination and Development Commission, I.P. (Portugal); Autonomous Community of Extremadura (Spain).

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