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**Textiles, Identity
and Innovation**

**3rd International
Textile Design
Conference 2024**

new codes

ABSTRACT BOOK

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UNIVERSIDADE
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FACULDADE DE ARQUITETURA
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Saint Catherine of Alexandria: A Witness to Courtly Women's Fashion

ROBERTO HERNÁNDEZ

Since the appearance of Saint Catherine of Alexandria in the Golden Legend, a work by Santiago de la Vorágine, she has always been considered a learned saint and has been represented according to the aristocratic level she represents. However, as the aristocracy has always marked the fashion of each era, the clothing with which Saint Catherine has been represented has varied over the centuries. For this reason, the saint involuntarily becomes the best showcase for late medieval aristocratic fashion. By analyzing her various representations, apart from being able to see how the way of representing her has changed (iconography, theme, etc.), it is also possible to study the evolution of courtly clothing between the 12th and 16th centuries: the different ornaments with which her clothes were decorated, the fashion influences between the different cultures of the time, the small modifications that certain garments underwent over time, etc. For this reason, this article tries to give an approximate image of courtly clothing of the Middle Ages through the image of Saint Catherine of Alexandria, since the study of her clothing can provide a good general vision of the evolution of fashion both in the Spanish court and in the European courts.

The personal adornment industry in 17th century Spain. Study on trimmings in Spanish fashion.

MÓNICA BUENO

During the reign of Charles II in Spain, social communication was established through clothing. Fashion was now no longer accessible to the rest of society, which desired to be a part of this conversation. The decoration, through the trimmings, performed a vital position in this. Various agents participated within the improvement of this language, from the manufacturing of the raw material, along with silk, to its personal use. This gave momentum to a society of appearances, in which showing was just as important as being.

The analysis of the documentation allows us to know how society used trimmings, and the effects that their use had on the fashion industry. Such was the case of the rise in clothing made abroad, in contrast to a national industry that was not capable of assuming the needs and tastes of the society. Quality and morality were issues that were intertwined through sumptuary laws to reject imports of trimmings. A panorama was thus configured in which personal adornment became an element of social distinction.

Textile material culture testimonies of the 16th century through the iconography of the fable of the Arachne

HERBERT GONZÁLEZ ZYMLA

Arachne is the character from classical mythology who, proud of her skill in the art of making tapestries, agreed to compete with an old woman without knowing that she was the goddess Athena transfigured. Once both tapestries were finished, Athena punished Arachne's pride by transforming her into a spider. The representation of the fable of Arachne in the figurative arts throughout history allows us to study the tools and machines used in the process of work leading to the manufacture of threads, fabrics, and tapestries. To the extent that such representations are captured with objectivity by representing the shape of the tools and machines, as well as the attitude with which they were used, iconography becomes a useful testimony when it comes to knowing how textile technologies evolved. This article studies the iconographies of the punishment of Arachne from the 16th century, essentially prints, frescoes and oils.

Testimonies of roman fashion: Jewelry at the archaeological site of Bilbilis

DIEGO PRIETO LÓPEZ

The archaeological site of Bilbilis was a Romanized Celtiberian city that had its maximum splendour in the imperial era until its disappearance, which began at the end of the 2nd century AD. until the 14th century. The study focuses both on the jewellery of Hellenistic influence, which was found in the excavations, and reflects the luxury and power of the urban elites of Celtiberian origin, and how they were Romanized through the identity of the clothing and personal accessories used by the Romans.

SESSION #1 — CULTURE AND IDENTITY

Patrones y Toiles en la Era Digital: Proyecto Tecnológico para la Conservación del Patrimonio del Museo del Traje

VICTORIA VASQUEZ PECILE, MERCEDES RODRIGUEZ
SANCHEZ, GUILLERMO GARCÍA-BADELL

Hasta la fecha y durante demasiado tiempo, el estudio de la moda se ha centrado principalmente en su aspecto formal, descuidando la valoración de los procesos técnicos previos a la creación de diseños. Estos métodos son fundamentales para definir el estilo de las casas de Alta Costura y los talleres de modistas. Gracias al avance tecnológico y la colaboración entre profesionales técnicos e historiadores, se ha logrado estudiar estos procesos, mejorando la calidad de los estudios y sirviendo como recurso para diversos campos profesionales relacionados con la difusión y conservación del patrimonio textil. El trabajo presenta un caso práctico de digitalización del patrimonio basado en el estudio de patrones y glasillas del Museo del Traje, abordando su catalogación y documentación. Para enriquecer la investigación y difusión de este patrimonio, se describen dos enfoques metodológicos utilizados en el análisis de patrones y glasillas, culminando en su recreación integral en formato 3D. La digitalización destaca como un recurso esencial para el análisis y conservación de estos elementos, con el objetivo de preservar la fidelidad al original, tanto en patrones como en prendas acabadas. Este enfoque innovador contribuye significativamente al avance del conocimiento en el campo de la moda y su historia, ofreciendo nuevas perspectivas para la investigación y difusión del patrimonio textil.

Textile Identities: Weaving, Narrating, Participating in the Construction of New Mediterranean Identities

ANNA CATANIA, CARMEN TRISCHITTA

This study explores the intersection between textile art and the construction of cultural identities in the Mediterranean context, with a particular focus on the fusion of Italian and African textile traditions. Through an interdisciplinary analysis that combines historical-cultural and social perspectives, it investigates how weaving acts as a catalyst for social innovation, cultural integration, and heritage conservation. The work illuminates the role of weaving as a space for intercultural dialogue, where the encounter between different textile traditions reveals potentials for the creation of new identities and sustainable practices. By examining two case studies, “Talking Hands” and “Kòrai x Kente”, the paper highlights how initiatives focused on participatory design and the valorization of specific textile techniques and symbolisms can promote social and cultural integration, while simultaneously stimulating innovation and intercultural dialogue. This research contributes to the debate on the relevance of traditional and contemporary textile practices in the global context, underscoring their value not only aesthetically but also as tools for social change, collective narration, and cultural redemption.

Functional Wool Fabric Design Optimizing the Comfort of Activewear Clothing

RUI MIGUEL, BENILDE REIS, JOÃO CARVALHO,
GILDA SANTOS, MADALENA PEREIRA

The current trend towards experiencing and practicing outdoor activities requires the use of activewear clothing whose design favors comfort, particularly thermophysiological comfort. One of the solutions to achieve adequate levels of this comfort is the use of functional fabrics in clothing design. One of the relevant aspects of these projects is the research of the interaction between design and technology. The development of fabrics in order to provide clothing with pleasant thermophysiological comfort levels for the user, in harsher climatic environments, cannot detract ergonomic comfort, which guarantees the necessary and natural movements of the human body. With the aim of developing functional fabrics for application in activewear clothing, research work was carried out in the context of the TexBoost R&D Project. In the research work, three trilaminated fabrics were developed, always considering in one of the external layers a wool-based fabric from FITECOM, a partner company of the TexBoost Project and, in the other external layer, fabrics or knits from other origins and compositions, in order to reinforce the functional character or contemporary aesthetics. Two functional membranes with distinct characteristics, previously chosen from a group of four membranes, were used. The results of laboratory tests constitute an excellent tool for designing functional fabrics for activewear clothing, optimizing the balance between thermophysiological comfort, sensorial and body movement comfort and fashionable aesthetic.

SESSION #2 — TEXTILE SUSTAINABILITY

Protecting consumers from greenwashing: Fashion brands associated with sustainable practices prepared for the new ‘Green claims’ directive?

MADALENA PEREIRA, MARTA BICHO, SANDRA FREIRE, ANA SANTIAGO, TERESA BARATA

The European Union is currently discussing the new directive that protects consumers against greenwashing. The concept is associated with “green Markets” and is defined by Delmas M (2011, p.65) as “the intersection of two firm behaviors: poor environmental performance and positive communication about environmental performance”.

Society demands more transparency in the information transmitted about the environmental, social and economic impact of company activities, more education and more communication. However, this communication arises naturally without regulation and transparency of what is real, rather than merely communication strategies. In order to solve this problem, the European Commission created and developed a working group to create the Green claims directive in 2023, which is currently in the hands of legislators. Taking into account the working document, the objective of this investigation was to analyze a set of fashion brands that are associated with the “Green Market” and communicate sustainability practices, identifying in light of the proposed directive which criteria are met. It is concluded that there are brands on the market that communicate their practices in a transparent way through the disclosure of the certifications that their products use, fundamentally of an environmental nature, but there is a long way to go in the transparency of brand practices and the way in which is noticeable to the consumer.

Eco-dyeing with natural dyes for wool-blend fabrics

BÁRBARA SARAIVA, CARLOS FERRÃO, ANNABEL FERNANDES, JOÃO CARVALHO, NUNO BELINO

Nowadays, there is a significant focus on researching ways to minimize the environmental impact of the textile and apparel sectors, aiming to enhance sustainability, promote circularity, and address the harmful effects of synthetic dyes on air, water, and soil. Natural dyes present themselves as a greener alternative, sourced from renewable materials, thereby rendering the effluents of the dyeing process biodegradable. However, the dyeing process with natural dyes has low affinity for many textile fibers and poor colorfastness, requires mordants and does not provide good shade reproducibility. In addition to dyes, an industrial dyeing process requires the use of other auxiliary chemicals to achieve uniform coloration and acceptable colorfastness properties of the final product. Given that dyeing is a wet process that involves significant water and energy consumption, research is constantly focused on developing more efficient and environmentally sustainable processes. In the “GIATEX – Intelligent Water Management in the Textile and Clothing Industry” project, new enhancement technologies with lower water consumption, are being studied. In this work, wool-blend fabrics were dyed with natural dyes by the exhaustion method and impregnation dyeing, through PAD-DRY and PAD-BATCH processes. While the endeavor to create sustainable and circular textiles and clothing presents significant challenges in preserving their technical and aesthetic excellence, the attained results are promising. They pave the way for the integration of ecoengineering solutions into fabric and clothing projects centered on ecodesign.

Influence of a sustainable lanolin-based softener on the touch and drape of wool-blend fabrics

SANDRA FERREIRA, AUGUSTA SILVA, JOÃO CARVALHO,
MADALENA PEREIRA, RUI MIGUEL

We are going through an era of a lot of research to reduce the polluting level of the textile and apparel industry. Making it more sustainable and circular is a big goal. Globalization and digitalization, in turn, provide consumers with extensive information, allowing them to be more aware and demanding when it comes to clothing consumption. One of the greatest challenges is, therefore, to produce sustainable and circular textiles and clothing without reducing the technical and aesthetic quality of these products. In the “BE@T – Bioeconomy for Textile and Clothing” project, research is being carried out on the finishing of wool-blend fabrics with lanolin-based softeners. Lanolin is a natural by-product resulting from the extraction of wool during the initial washing phase, which has good softening properties. Softening emulsions with 3% and 5% of lanolin were developed and applied by exhaustion process to wool-blend fabrics, which were then subjected to the classic finishing for this type of fabric. Fabric samples were tested, before and after treatments, on the Kawabata KES-F System to objectively evaluate the behavior of the fabrics in relation to touch and drape, through the mechanical properties of bending rigidity, shear rigidity, compression and surface friction coefficient and roughness. The results are interesting and promising, allowing eco-engineering solutions to be made available to eco-design in the fabrics and clothing projects.

SESSION #2 — TEXTILE SUSTAINABILITY

Textile standards and certifications and education for sustainability in the textiles and apparel industry

TERESA RAQUEL BARATA, MARTA BICHO FERNANDES, MADALENA M. PEREIRA, NUNO JOSÉ RAMOS BELINO, RUI ALBERTO LOPES MIGUEL

Textile standards and certifications have an essential role to play in the textiles and apparel industry, offering consumers valuable information about the origin, quality and environmental impact of textile products. Growing awareness of environmental and social issues has fuelled demand for textile labels and certifications, as consumers demand products that increasingly reflect the values of sustainability and social responsibility in a transparent way. These certifications can address a range of issues, such as organic raw materials, eco-efficient manufacturing processes, ethical and fair labour conditions and the responsible use of natural resources.

In addition, certifications and the use of labels can be an effective strategy for companies, as a differentiating factor and facilitator for immersing themselves in new markets and attracting more eco-conscious consumers, and above all demonstrating their commitment to the European Union's guidelines in defence of the sustainability and circularity of textiles.

However, and despite the benefits, the process of obtaining textile certifications is still considered a complex and costly process for companies.

In addition, the proliferation of different labels and certifications can also generate some confusion among consumers. How does education in textiles and apparel prepare the future professionals for this reality and the need for transversal knowledge for the work market?

This study will be based on a case study and aims to identify good practices in the area of sustainability, not only to ensure compliance with regulations, but also as an improvement tool for other organisations. Skills in subjects such as sustainability are learnt by sharing and exemplifying good practices and by learning at different levels of education.

Color in Textiles: Perception and Emotion

ANA MOREIRA DA SILVA

In everyday life, color plays a vital role on humans' wellbeing. Colors have a great impact on our moods and behaviors and can influence our perceptions of the world around us. Neuroscience has been dedicated to studying color perception and how the brain processes this information. Discoveries suggest that color perception is influenced by a combination of biological, cultural and linguistic factors. Color fulfils important roles in the textiles design and production. Colors give life to the textile products and can transform their perception according to their inherent hue. Color is a constant presence in fashion design and in interior design, both widely using textile products. The complexity of the color use in textile manufacturing is a fact that results from all the implications of several kind (technological, cultural, psychological, economic, environmental, and social, among others). Based on literature review methodology, this paper focus on the study of the strong effect of color in the human perception and emotions. The main aim of our research is to investigate and to rise discussion about the perceptive and emotional color effect and how this can be relevant in the textiles design and production.

Consumption of Counterfeit Articles: Between Socioeconomic and Cultural Aspects

MIGUEL CIRILLO, MARIA SILVIA BARROS DE HELD

The current era of valuing and sharing experiences results from the assertion of a consumer proudly eager to actively intervene in building his or her sphere of action. This emerging consumer trend is bringing closer and boosting the relationship between consumer and industry, strongly leveraged by new technologies and digital environments, blurring the boundaries between industry and consumer/user. This translates into a profound change in creation, production, and acquisition paradigms. More and more footwear brands recognize the potential of online customization platforms. Thus, it is imperative to develop collaborative creation tools that can reduce the complexity of the process. To obtain critical information on this type of interfaces, a questionnaire was developed and applied to a group of experts. The objective was to obtain specific and exhaustive data on the researched reality and to contribute to the theoretical reflection of the collaborative design applied to online footwear customization.

From Interior design to retail design: Strategies to stimulate consumption

CATARINA CARRETO, RUI CARRETO

This article aims to address a conceptual evolution from interior design to retail design as an essential factor for the success of commercial spaces. Retail design is a specific, technical and creative area that is at the forefront of contemporary interior design. It uses a directed design process to design commercial spaces designed to promote the sale and consumption of objects. Interior design is essential and inseparable from a retail design project. It is indispensable in the organization of commercial spaces, which depend, in many aspects, on this disciplinary intervention, from their internal spatial organization, to the mode of exhibition presentation, through the creation of clothing and the management strategies of the design process.

Commercial spaces aim to achieve maximum profitability, attracting the greatest number of visitors and potential consumers to enter and consume. To achieve this objective, they are based on a series of commercial concepts and practices that allow them to design and organize the space and present the products. Here, Interior Design and Visual Merchandising act as preferential areas.

E-mail Marketing as a Competitive Advantage of Fashion Communication

LEONOR ARAÚJO, ANDRÉ CATARINO, BRUNO SOUSA

The aim of this study is to analyze the application of digital marketing strategies in the fashion industry, with emphasis on e-mail marketing, a fundamental tool for communication with customers and potential customers.

Supported in the national panorama of the textile industry in Portugal and the effectiveness of e-mail marketing for B2B business models, the development is summarized in a case study based on the application of e-mail marketing strategies in a sock production company.

After a presentation of the internal and external analysis of the company, the study falls on e-mail marketing. From lead generation to sales conversion, the research suggests best practices to apply in the various types of e-mails sent from the perspective of the consumer and the marketers.

Supported by reports provided by Mailchimp, the marketing automation platform used, the results analysis proposes the efficiency of e-mail marketing as a communication tool in an omnichannel approach.

Subjected to a critical analysis, the research highlights the need to adapt to consumption trends and consumer behavior in the digital age, and offers insights for companies that intend to strengthen the relationship with current customers and improve communication and sales through the e-mail marketing tool.

Fashion Communication Strategy, Business to Business: Bless International Case Study

ANA LEITE, ANDRÉ CATARINO

The communication of a company, the way itself presents to the respective market, unveil, nowadays, a factor of extreme importance. Therefore, defining an appropriate and correctly drawn plan of communication allows problem solving and the increase of business success. By establishing a guiding path, the company will acknowledge which are the best strategies to implement and also how to easily reply to the necessities of their consumer. It is crucial to achieve the success of this plan to define the target audience, the strategy, the positioning, the identity, just as establish the company goals, the message to transmit and the channels to implement. This work analyzed the communication of a textile company with more than 20 years of activity in business-to-business, a business model where the final consumer is another company and not a physical person. This model, in contrast to business-to-consumer, as a less made quantity of studies, representing, therefore, an opportunity to analyze, increment and verify the theory through the development of a diagnosis and communication plan. The main focus, with this investigation, is to knowledge the best communication strategy to implement in a textile business-to-business company.

Tensile Membranes and Public Spaces Thermal Comfort

NUNO D. CORTICOS, CARLOS C. DUARTE

Tensile membrane structures play a crucial role in shaping thermal comfort within public spaces, particularly in hot and humid regions. This study investigates the thermal dynamics of tensile membranes in semi-outdoor environments with the aim of enhancing comfort levels and optimizing design strategies to address challenges posed by such climates. Through an extensive literature review, factors influencing thermal comfort, including air circulation patterns, temperature differentials, and user perceptions, were identified. The review highlighted the significant impact of innovative strategies such as evaporative cooling, natural ventilation, and shading techniques in improving thermal comfort. Emphasizing the dependency of surface resistances on various environmental parameters beyond air temperature, recent studies have demonstrated substantial reductions in indoor operative temperatures, approaching outdoor levels by approximately 10°C. Comparative analysis revealed common trends and variations in approaches to optimizing thermal comfort, providing insights for designing user-centric and sustainable public spaces. Integration of thermal comfort considerations into the design and planning of public spaces with tensile membrane structures is crucial. Further research is needed to advance understanding of thermal dynamics in semi-outdoor spaces and to develop tailored solutions prioritizing user comfort and energy efficiency, thus contributing to the creation of more comfortable and sustainable public environments.

Exploring Textile Innovation: The Interplay of Patterns and Laser Technology

ANTÓNIO CANAU, PEDRO GOMES JANUÁRIO

This article endeavors to delve into the intricate interplay between the inherent aesthetic value derived from traditional exploration of designs and pattern manipulation, alongside Laser Technology, within the realms of creativity, design, innovation, and digital integration. It scrutinizes how Laser Technology amplifies the capacity for generating textile patterns, enabling the efficient realization of intricate and personalized designs. Moreover, it investigates Laser Technology's role in developing novel textile materials with unique properties and optimized performance. The study further explores the integration of digital processes into textile production by synergizing traditional patterns with Laser Technology, thereby streamlining mass customization and on-demand production. Additionally, the article acknowledges the enduring aesthetic significance inherent in the traditional exploration of designs and patterns.

Modular kinematic Scissor Structures – Bias fabric double curvature shapes

A. BASTO DIOGO, ANTÓNIO MORAIS, CRISTINA CARVALHO

The production of double curvature surfaces presents constructive and economic challenges, its construction and production require intensive-labor, formwork and falsework. The latest technical innovations such as flexible formwork, adaptative formwork, precast technology and 3D printing are complex and technologically demanding.

The main purpose of this research is the development of a self-support constructive system, which allows a great dimensional flexibility, space diversity, portability and plastic expression, being able to create multiple uses spaces such as temporary architecture, urban infrastructures, environmental moderators against the physical elements, emergency shelters, sound regulators, exhibition pavilions.

The concept of the system is based on the manipulation of material and the understanding of structural phenomenological behavior that informs the shape design.

Bias fabric permits the application of several levels of tension into the textile membranes, allowing the configuration of the designed surface. This geometric orientation also increases the resistance of the shape to de tensions.

The constructive system is defined by four opposite successive non-colinear bars that define a hyperbolic paraboloid. These bars are articulated between them and extendable, which allows different configurations. This kinematic frame is filled with textile membranes that define the surface generated by the generatrix.

The investigation is carried out on two levels. One is the development of the kinematic frame, the other is the experimentation of different textile membranes, capable of strain in elastic regime able to generate the desired shape.

The research process uses action research methodology to develop a kinetic selfsupported construction system, technologically simple, economical and adaptable to different contexts and for various functions.

Structural morphogenesis allows an optimization conception of the Shape and construction processes. This design methodology minimizes the impacts of the construction turn it more sustainable combining statics, aesthetics and ethics.

Design of a Glove with Joule Effect for the prevention and relief of symptoms for Raynaud's phenomenon

ANA BEATRIZ ALENCAR, ANDRÉ CATARINO, ANA ROCHA

Raynaud's phenomenon is a condition in which the organism over responds to cold weather or emotional stimulation, that can trigger a set of clinical manifestations. This pathology is characterized by reversible episodes of extremity vasospasm, associated with finger color changes. These episodes are often accompanied by pain, tingling, burning and numbness. In general, the hands and feet are the most affected areas. The study of this syndrome and its incidence data identified the need of adequate products to this public. Consumer research involved a survey targeted to people diagnosed with Raynaud's Phenomenon, as well as reports from individuals through groups related to the pathology. The subsequent analysis recognized the importance of developing a product that promotes effective protection and relief of some symptoms of this phenomenon, through functional and biofunctional materials, with properties that reach the requirements determined for the product. For that purpose, a special glove was thought in order, capable of generating heat through a physical process, where it can be activated and interrupted by the user. The product aims to provide the necessary comfort according to the limitations caused by this syndrome, in addition to minimizing the frequency of attacks and improving the users' quality of life.

Circular Economy and Textile Sustainable Industry – Facing Challenges

FERNANDO MOREIRA DA SILVA

The circular economy seems to be the right answer to achieve sustainability at the textile level, being a challenge that the textile industry has to face today, creating new business models, new systems, work methodologies, processes, etc. It appears that a large majority of companies, especially large-scale ones, still continue to use a linear economy. The main aim of the circular economy is to promote socio-environmental responsibility actions, in a sustainable attitude and in accordance with its five R's: rethink, refuse, reduce, reuse and recycle materials and energy. In this sense, several sustainable actions involving the circular economy have been taken by the UN, the EU and Portugal, as well as by the regulatory bodies of the textile industry and by the fabric manufacturers themselves. With the worsening of the environmental crisis and the urgent need to implement Sustainable Development, companies have felt greater pressure to integrate sustainability into their businesses, particularly companies in the Textile and Clothing Industry, whose environmental and social impact is notable. The business model and vision of companies in the textile industry are particularly important in terms of sustainability, from the selection of materials to the disposal of products. The value chain has a significant environmental and social impact, particularly related to high energy consumption and working conditions, the use of toxic chemicals, the greenhouse effect due to the emission of gases in transport, in addition to the disposal of clothes in landfills and incineration. In this research, a mixed methodology was used, consisting of a literature review and a survey through interviews and, later, inquiry. Through the theoretical framework, we intended to underline fundamental aspects of the circular economy compared to the linear economy and highlight that only through a Textile Circular Economy will it be possible to achieve the Textile Sustainability. Based on this theoretical support, the survey methodology was used to understand and highlight the importance of sustainability and the circular economy in textile production, perceived by the designers working in this

business. The results of the survey were cross-referenced and show the current situation of the participants in the study with regard to knowledge and applications of the principles of textile sustainability, but also the difficulties and challenges faced by implementing sustainable measures in the practice of recycling textile products, in a business environment.

Textile scraps: handle with creativity and care

ELENA PUCCI, MARIA CLAUDIA COPPOLA, FILIPPO MARIA DISPERATI

In recent decades, the exponential growth of the world's population and rising living standards have led to increased demand for textiles as a natural consequence of basic needs, causing an uncontrolled increase in global textile production. The consequences have been catastrophic, with massive wastage of raw materials and energy incentivizing enormous waste production, turning its management into a global environmental issue. It therefore becomes imperative to reflect and investigate the need to develop recycling technologies in the face of resource scarcity, giving waste a key role through designing interventions and unveiling new perspectives on it. A paradigm shift is needed for the development of new sustainable models aimed at involving the entire production asset of the fashion system.

Based on these premises, the paper aims to provide an overview of the fashion system with particular reference to the role of textile waste, illustrating the case study of the Prato textile district as an example of “applied circularity,” adopting the hub organizational model as a tool for interpreting its strengths and weaknesses and drawing from it best practices.

Sustainability today is no longer an option, but a necessity, and reinventing methodologies to reduce waste and conserve natural resources can be a viable alternative that fuels the role of design aimed at taking responsibility for creating new products from industrial waste.

Social Fabrics Matter. Design and the Third Sector promoting textile waste reuse and recycling practices.

CARMEN DIGIORGIO GIANNITTO, MARIA MANFRONI

In recent years, the Italian scenario has been characterised by the proliferation of Third Sector initiatives aimed at fostering circular economy processes, supporting and promoting the reuse, preparation for reuse, and recycling of textile materials and products, through inclusive processes. This paper aims to understand how the Third Sector can contribute to promote the adoption of circular practices within textile production systems and how the combination of approaches, methods, and design tools could support the development of these enterprises engaged in the recovery of textile materials. Furthermore, the aim is to investigate how these two realities could be effectively integrated and what could be the contribution of design within these organisations. The added value of these realities, described and analysed in the current study, is manifested in their ability to trigger virtuous processes of circular economy of textile waste and scrap through cooperation and co-design between different actors. In this scenario, if the non-profit sector confirms itself as an area called upon to generate innovation - in particular in the research of new solutions both in the social field and in fashion and textiles - design acts as a powerful catalyst in the promotion of sustainability and social innovation.

Textile Hacking Codes. From Waste to New Life

PAOLO FRANZO, MARIA ANTONIA

The paper intends to explore the concept of textile “hacking” as an approach capable of recoding the material surfaces of clothing and putting textile waste generated by the production chain back into circulation. By associating the approach of the hacker with that of the fashion designer, and through the analysis of case studies, the research identifies three different interpretations of the concept of hacking, understood here as a tool for reappropriating the internal codes of the garment: (i) hacking as collaboration, in which two brands develop a joint project by hybridizing their textile prints and identity logos to create a new shared image. The cases investigated are the Hacker Project, presented in 2021 by Gucci and Balenciaga, and Fendace, elaborated in 2022 by Fendi and Versace; (ii) hacking as waste valorization, in which independent emerging designers appropriate the textile scraps of global fashion brands for redesign and sabotage actions, as analyzed in Avavav and Dapper Dan; (iii) hacking as a posthuman phenomenon, in which fabric is colonized by other living things and becomes vibrant matter, as demonstrated in Paula Ulargui Escalona’s projects for Loewe and Biogarmentry. The case studies allow us to highlight, through the figure of the designer and his or her skills, the ability to initiate and develop new reflections on the issue of textile waste and how it can be reintroduced into the supply chain. By initiating decoding work, the designer is shown to be able to develop and experiment with new codes with which to transform clothing and textiles into a political instrument of social action capable of giving voice to alternative thinking.

Renewable Sources and Sustainability in the Textile Industry

MARIANA CATARINO

The search for consumers and employees in the textile and fashion market, in general, has prioritized alternative materials with transparency and authenticity, contributing to more sustainable production with symbolic value. This way we think allows us to see an environment whose social creations transform consumer goods into a concept of renewable and less polluting sources. Requests for environmental benefits such as eco-friendly, environmentally responsible, eco-safe, recycling, and green materials. These actions have often been used to describe and promote products that, in principle, have minimally negative environmental impacts. These terms have been used across many types of products and in many different ways. However, because some of these activities have a sometimes vague definition, many products with questionable environmental responsibility often end up carrying these labels undeservedly.

Systemic Design for circular fashion. Holistic approach mediator of creative processes for responsible and conscious fashion.

MARIA ANTONIETTA SBORDONE, SARA DE TORO, ANGELO REGA

The supply chain of the industrial system in general is based on a linear model. In the fashion industry, this has been particularly evident since the 20th century, following the logic of “take, make, and waste.” In the name of the market economy, this has contributed to generating divisions between the actors in the sector and has led the textile and fashion industry to become one of the most polluting in the world (Witty et al., 2021). This has led to the need for a new way of using resources, designing, producing, and distributing in a systemic design perspective. In this approach, the starting point is a holistic assessment, a design tool that helps to determine data-driven decisions. The approach corresponds to an integrated and global vision that goes beyond the product, beyond the project, considering the social, environmental, and economic impact of the decisions taken (Gaiardo et al., 2022). The context of the case study analysed aims to show how, in university education, through the work of students in the course “Fashion Lab 3”, academic year 2023/2024, of the of the bachelor’s degree program in Fashion Design, at the University XXXXXXXX, they have designed according to an approach that involves an in-depth analysis of the context in which the project is inserted, as well as a critical evaluation of the materials used and the processes involved in the execution.

The End as a Start: Roots of the Upcycling Practice in the Portuguese Culture

LUÍS SANTOS, ANA AFONSO, GIANNI MONTAGNA, CARLA PEREIRA

Upcycling as a process in Fashion Design has gained visibility and appeal in recent years. With the increase in environmental awareness among designers and consumers in the late twentieth century, the use of this approach has increasingly reaffirmed itself as a creative process in fashion.

Studying this method opens a door to reflection on the concept of socio-economic necessity, providing clues that allow us to understand the cultural structure of the various historical periods where the application of these techniques is identified.

More than just a passing trend, upcycling is deeply rooted in Portuguese culture as a response to specific socio-cultural needs and contexts of its history. These eco-design practices are seen as a technical and aesthetic heritage that has been gradually revitalized by new generations of designers seeking, on one hand, to reconnect with their cultural roots and, on the other hand, to engage in dialogues with society and consumers.

This article aims to identify the roots of upcycling in clothing creation in Portugal and how this approach still contributes to the Portuguese fashion language and heritage. This study is part of a PhD investigation in fashion and culture.

The brooch: fashion accessories for people with different levels of mobility due to the natural ageing process.

ANA FERNANDES, MAGDA MENDES, CRISTINA CARVALHO

Ageing is defined by physiological changes in growth and development. As the population ages, we encounter a problem of inclusivity in the fashion industry. The solutions presented for this population are often ineffective from a user experience point of view.

This research aims to find a way to solve the problem of lack of usability in fashion accessories, with a focus on the type of product in the jewellery family, in particular the brooch.

The study focuses on two different groups. A first group with low mobility and a second group with medium mobility. The methodologies used are qualitative: Literature Review, to understand what the scientific community says about the problem of the lack of guidelines for developing inclusive fashion design solutions for the elderly population with different levels of mobility due to ageing. There is a huge creative opportunity to develop new products in order to improve the quality of life of their consumers. It is concluded that in order to solve the problem of the lack of inclusive fashion accessory design solutions, new guidelines for the different stakeholders are urgently needed.

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Proposta de desenvolvimento de tênis com cabedal em malha sem costura seguindo a metodologia de Bruno Munari

RAQUEL CORDEIRO FAUSTINO, REGINA APARECIDA SANCHES

Ao desenvolver um novo produto, é fundamental começar o processo já baseado em parâmetros sustentáveis. Dessa forma, aliando moda e tecnologia, a indústria calçadista pode se beneficiar com a utilização de materiais de baixo impacto ambiental na confecção de novos calçados. A presente pesquisa tem como objetivo propor a valorização dos materiais têxteis de baixo impacto ambiental, utilizando-os na confecção de um tênis esportivo com o cabedal em malha sem costura. Para alcançar o objetivo geral, a pesquisa foi desenvolvida seguindo a metodologia projetual de Bruno Munari. Foi realizada uma investigação dos principais materiais têxteis de baixo impacto ambiental e suas aplicações, para que, por fim, um novo fio reciclado fosse produzido e utilizado no desenvolvimento do projeto de tênis esportivo com cabedal de malha, feito em máquina retilínea. O novo fio é resultado da união de fibras de poliéster oriundas da reciclagem de garrafas PET e o material desfibrado reciclado de aparas de tecido, malhas e tecidos não tecidos 100% poliéster. Sabendo que a produção do cabedal em máquina retilínea reduz consideravelmente o tempo de confecção de um tênis, o uso e a valorização de um fio totalmente reciclado é mais uma adição positiva ao produto final, que se mostra totalmente viável e vantajoso, tanto para quem produz, quanto para o consumidor final.

Textiles for Upholstery in Children's Furniture

CRISTINA SALVADOR

Textiles and animal skins have been used in the manufacture of furniture for millennia. In the last 5 centuries, there was a development of cushioned and upholstered furniture, helping in the adaptation of furniture to the human body, mainly in seats, in order to provide greater comfort and aesthetics. For a long time, furniture intended for children was almost non-existent and only during the 20th century, concerns grew about ergonomically adapt furniture to children, taking into account their rapid growth and the needs of each stage of development. Previous studies have pointed paths on the choice of textile fibres suitable for babies, toddlers and children. With a qualitative-based methodology, including review of literature, case study and interview, the aim of this study was to search more about textile structures and other relevant factors for a choice of textiles most suitable for this target, taking into account the adaptability to the child and sustainability; if there were Portuguese suppliers with specific products for this market segment; and which were the most relevant characteristics of these products for this target. It was possible to understand more about all of these issues, also concerning health and sustainability. The interior textiles' company Aldeco Interior Fabrics was case studied and among other conclusions, such as the prevalence of woven fabrics in plain weave, it was observed that there is a lack of products for this segment in the market, not by choice of the producer but by lack of demand.

Product-Service Redesign of the sneakers supply chain production system: design-driven innovation and new value chain

MARTINA ORLACCHIO

This paper concerns the study of the doctoral research project framed in National Interest Ph.D. in Design for Made in Italy: Identity, Innovation and Sustainability in Curriculum 2 - Sustainable Innovation of Product, Service and Process Systems for Made in Italy. The project focuses on design for footwear-accessories in luxury sneakers and aims at innovation in one of Made in Italy's sectors of excellence. The production system of the footwear industry has a strong impact on the environment both due to the use of materials and chemicals in industrial processes and the impossibility of adopting recycling solutions. The global footwear industry is being called upon to respond to digital and sustainable challenges by turning them into opportunities. Leading companies aim to improve the performance of the final product; 3D printing for uppers, soles and midsoles is one of the drivers of innovation to give rise to circular products with a greater degree of customization. Materials and technologies represent resources to reinvent the production chain, spreading more sustainable models (Mhatre, 2021). The doctoral research project is finalized by the analysis of production processes within some companies in the Campania footwear district, in order to monitor production in the luxury sector. The goal is to develop a set of criteria for production and processes that guide choices in order to minimize environmental impacts in the industry. In line with circular economy concepts, the design of sneakers is oriented toward new types, comfort and flexibility in the desired areas of footwear.

SESSION #6 — TEXTILE PRODUCTS

Sustainability, cultural heritage, cultural contamination, global trends such as contemporary fashion pillars

EUGENIA CHIARA, ANA FERNANDES

Fashion, acknowledged as an essential element within the socio-cultural fabric, assumes a position of great significance in the discourse of our contemporary society.

In the contemporary panorama environmental and social sustainability are the fundamental discussion topics of European policies in the sector. They are also reorienting the practices of all small, medium and large companies in order to adapt to ESG standards, redirecting their creative and productive processes.

Parallely the valorization of cultural heritage is one of the main value points of many important brands that are working on archive revisitation and craft valorization.

The spread of fashion across diverse global cultures mirrors the evolving contours of our daily lives and emerges as a remarkable indicator of cross-cultural interchange. Cultural contamination is essential in globalized markets where goods transit rapidly from production countries to sale countries, carrying cultural stylistic features of both places.

Fashion trends became global, big country events such as the fashion weeks that are taking place in Europe (Milan, Paris, Lisbon) but also in emerging countries (Delhi, Beijing) are defining global trends that are also veiculated by social media.

Contemporary meaningful fashion projects should take in consideration all these four pillars in order to promote local cultural heritage in the global markets through sustainable and fashionable products that can have an economic and cultural impact in the globalized markets.

In this paper we will analyze some cases related to Portuguese and Italian craft traditions that are following these points and playing a role in the contemporary fashion field.

Step by Step: Barriers and Drivers of Sustainability in the Fashion and Footwear Industry

ISABEL ALMEIDA, SILVA, AGOSTINHO, MARIA JOÃO DELGADO

The fashion and footwear industry (FWi) has long been associated with environmental pollution, yet there is a growing emphasis on sustainability within the sector. Companies actively seek innovative solutions, sustainable materials, and novel business models to address these challenges. Despite this commitment, the journey towards creating sustainable value remains complex due to the wide array of natural and synthetic materials. This is due to the demand for advanced technology, waste reduction targets, and the imperative to preserve natural resources. This qualitative research study, conducted across 14 FW companies, aims to construct novel theoretical frameworks. The study underscores the significance of sustainable value for these companies, with many already integrating sustainable practices through a circular economy (CE) approach. Additionally, the research sheds light on the obstacles and enablers influencing adopting sustainable practices in the FWi sector.

Meeting Circular Economy by producing leather from (sarda sarda) fish

ISABELLA CARVALHO, FÁBIO PEDROSO DE LIMA, ANA ISABEL RIBEIRO, MARTA FERNANDES, ANDREA ZILLE

Following the principles of circular economy and waste reduction, recycling fish skin is an interesting and sustainable practice. However, traditional tanning procedures give rise to many sustainability concerns throughout the process. The most serious of these is chemical pollution as traditional tanning frequently uses harmful materials like chromium salts, which can contaminate soil and water supplies and endanger human health as well as the environment. This work presents a novel approach for the development of leather from sarda sarda fish skin, which is chrome-free, based on vegetable tannins for the tanning process and uses fewer chemicals. The procedure applied was able to produce high-quality leather using sustainable products.

Fashion Entrepreneurship (and) Education: a Case Study on Social Innovation

GRAZIELA SOUSA

This paper reports the outcomes and insights of a project that was carried out with fashion design students and elderly citizens for three months, between 2015 and 2016. It was built with a social innovation approach with the purpose of making the students aware of the possibilities of working as social designers, the importance of collaborating with different audiences and to use their skills in settings and demands that are not traditionally presented to them.

The project was also included and a research-action experience in a phd thesis that was being developed by the author at the time (and is already concluded) in the field of fashion design and entrepreneurship education,

The results and conclusions withdrawn showed that there are several steps yet to be taken on fashion design education in the field of social design and social innovation: there is a need to show the impact that a designer can have in a social setting (with case studies and concrete/real projects), but also to provide tools and methods that make them able to work collaboratively and as mediators/facilitators, perhaps letting go of the traditional (or expected) role as the sole creator of a product/line of products and enlarging the spectrum of their reach giving them alternative and real-life challenges.

Threads of Knowledge. Weaving Paths for Higher Education in Textile Design in Portugal.

SÓNIA SEIXAS, GIANNI MONTAGNA, MARIA JOÃO FÉLIX

Embedded in design research, this study aims to understand educational methods and reflect on the relevance of the existence of a higher education specialized in textile design for the Portuguese territory. The transformation of production processes and business structures to protect the planet and minimize environmental impacts is already underway in the textile industry. To support these changes, different forms of teaching are sought that go beyond traditional methods and enable textile designers to apply theoretical knowledge to solve real-world challenges. Methodologically, a non-interventional study was adopted, supported by a literature review and a focus group, with the aim of stimulating reflection and providing innovative perspectives on the topic under study. As a meaningful conclusion, it can be pointed out the lack of higher education in textile design in Portugal, although it is an engine of the national economy. A specialized offer in this field, in close connection between academia and industry, should be considered to support the textile industry in the mentioned changes and thus continue to weave paths for a textile economy of the future.

Creativity and Innovation in a Classroom Context – Printing and Stamping

ALEXANDRA CRUCHINHO, JOÃO BARATA, ANA DUARTE

Creativity is one of the themes that serves as a starting point for the development of new teaching and learning methodologies for printing and textile printing content for higher education students.

Over the years, the concept of creativity has been discussed as it is influenced by several factors. Creativity does not come out of nowhere and one of the strongest factors in its influence is the environment in which the individual lives. With this factor, others such as cultural, context and historical factors emerge as important elements to trigger and consolidate creativity in the individual.

Creativity for teachers who will have to adopt an innovative and effective methodology to implement in their teaching practice. Creativity to be fostered and developed in students who, through the methodology to be adopted, will develop their acquisition of new knowledge and skills in the area of textile surface design for clothing collections.

Under the theme of sustainability, the students developed several exercises to experiment with techniques and materials for dyeing fabrics, which they later applied to the construction of garments.

The research methodology developed for this investigation is based on a mixed, non-interventionist and interventionist methodology. In a first approach, the exploration and definition of themes and concepts resulting from the bibliographic review lead to the development of an interventionist methodology where a group of students, group/class, participates through the development of proposals based on the teachers' expository approaches. The practice of methodologies such as learning by doing and student-centered teaching guides the entire teaching-learning process adopted. The results are very interesting and the expected development of creativity is notable for the proposals resulting from the experimentation of the group of students.

The Brave New World of Creativity in Design Education

RUI CARRETO, CATARINA CARRETO

This article provides a brief literature review on the evolution of pedagogical practices and their classics, alongside the pedagogical experience developed in the Creativity and Multimedia Communication curricular unit of the degree in Multimedia Technologies and Design.

The constant transformations in society and education in the 21st century require the renewal and updating of pedagogical practices, which are often reflected in curricular units and various courses. Charles Darwin is right when he says that it is not the strongest who survive, nor the most intelligent, but the one who survives is the one who is willing to change. In harmony with this reasoning, we designed a strategy and a pedagogical experience that is decisive for validating student learning, based on their involvement in carrying out tasks and the results of stimuli, resulting from the interdisciplinarity between knowledge.

This teaching method, based on project-based instruction/training, results in creative learning and communicational attractiveness, with student participation as the predominant factor. In this sense, this article aims to expose a particular pedagogical method for teaching design projects that can be used as a methodology and ideation instrument. This method is based on the exploration of creativity and innovation.

Design, Music and Emotion: the creative environment in the classroom

ELISÂNGELA FÁVARO ZOTTESSO

Este artigo objetiva apresentar um estudo desenvolvido em ambiente acadêmico (nível superior) onde se verificou se a música (ouvida) poderia estimular na alteração de humor e criatividade dos participantes, sendo eles alunos de design de moda. A partir das emoções sentidas pelas músicas ouvidas, poderiam esboçar ideias e desenhos que posteriormente se tornariam projetos de coleção de moda. A importância de exercícios criativos para o desenvolvimento em ambientes de ensino, estímulos para a criação e busca da originalidade do designer. Verifica-se pouca matéria nos meios científicos no objetivo de estudo, o que levou a motivação do desenvolvimento do mesmo e da escrita e publicação de artigos.

SESSION #8 — TEXTILES AND WELL-BEING

Bio Textile Design. The proposal for the development of a circular and sustainable model of the Product-Service System for applications in the textile industry

ILENIA CARMELA AMATO

This paper discusses the contents of the analysis of the first year of research of the “Bio-based Textile Design” project, which proposes the development of a sustainable model for the product-service system for textile applications. The research is in line with the goals of the UN SDGs and the European Green Deal, as well as in the context of the Italian National Research Plan, the PNRR and the Action Plan on the Bioeconomy Strategy. It focuses on the importance of innovative and resilient strategies for the development of circular production and consumption systems in the textile and apparel sector in Europe. These strategies require radical innovations, with a focus on supply chains, as well as material sourcing and production, design, and processing and manufacturing processes that directly affect the durability, recyclability, and thus the quality of finished products. The research aims to investigate the feasibility of an alternative operating model for the production of new sustainable textile materials, enhancing local resources and economies. It advocates a shift from circular economy to circular bioeconomy for a replicable model that tends toward territorial self-sufficiency of the textile sector and integrated supply chains. Research follows constant policy updates on key issues including monitoring the local bioeconomy, the effects of climate change on territories and resources; and extending the circularity of applications from new sustainable textile materials while ensuring quality productions. Territory is an enabler of innovation through design-driven strategies and multi-criteria approaches in which knowledge, institutions, businesses, stakeholders and policymakers collaborate to create strategic interconnections. The product-service system is developed within a network of actions that depend on the availability, recovery and enhancement of crops and plant biomass, plant based, promoting synergistic and mutualistic exchanges between the resources of the territory. New possibilities for territorial bio-economic development are thus defined in the design of integrated and regenerative systems.

Advanced Textile Design and Therapeutic Landscape for Health and Well-being.

MARIA ANTONIETTA SBORDONE, CARMELA ILENIA AMATO, MARTINA ORLACCHIO

The paper presents a line of research on Textile for Health which refers to the new concept of health which, as the World Health Organization (WHO, 2016) recalls, is determined by “a state of complete physical, mental and social well-being” which takes shape definitively in a model that anticipates the idea of general well-being desired in the “absence of diseases and infirmities”, extending it to the complexity of environmental, physical and psychological elements.

The “Smart&Safe2” project introduces a topic of vital importance today which has matured over the years, through a real position taken by the WHO (WHO, 2016), more relevant than ever and given significant environmental challenges, has established a close relationship between Environment and Human Health by developing the “Eco-Health” approach (World Health Organization (WHO), Regional Office for Europe, 2016).

This is the scenario in which the “Smart&Safe2” research project is reflected (winner of a competitive tender issued by the Campania Covid-19 Region), having to respond to the Covid-19 pandemic emergency and at the same time spread prevention, protection, and care at the social level, addressed the effects of prolonged use of Personal Protective Equipment (PPE-PPE) masks on the dermis.

Casentino-cloth: a new sustainable curl.

ELISABETTA BENELLI, JURJI FILIERI, FRANCESCA FILIPPI, DAVIDE TURRINI

The progressive and continuous adaptation of national legislation to European Community directives on environmental impact assessment and the increasing spread of eco-certification systems, which involve new approaches, have imposed a review of the impacts generated by the individual stages of production processes even in the wool textile sector, still subject to often conflicting assessments.

Despite its undeniable qualities and the long artisan tradition, the Italian wool industries are now facing a series of difficulties: on the one hand, indigenous wool is struggling to position itself on national and international markets because of the strong competitiveness of Australian yarns and the spread of artificial and synthetic fibres; on the other hand manufacturers find an obstacle within the same national system because the fleece sheared, to be used and transformed into yarn, must undergo preliminary steps of processing (washing, carding, combing) that have high costs and criticalities, not yet resolved, in terms of environmental sustainability.

There is also the problem of farming methods that often do not meet the established parameters due both to pastureland that is intensively exploited (the so-called overgrazing that can lead to the desertification of large areas) and to the animal welfare that is not always guaranteed.

The present research intends to evaluate the possible applications of traditional processes and treatments, which have been developed in the local typical production field of well-known Italian cloth (such as that one of Casentino region in Tuscany) to natural fibres that could be qualified as a viable environmentally sustainable alternative to wool. The use of a vegetable fibre with valuable characteristics is not yet too widespread, this would make it possible to update a historical fabric, answering the questions and meeting the needs of contemporary times, and it would also allow manufacturers and retailers to attract the interest of those who direct their purchasing choices towards sustainable products.

The basalt fiber: research and application in product and textile design

MARCO MANCINI

From the earth's bowels, basalt is naturally generated. We all know basalt for its widespread use in roads, buildings, sculptures, and objects. From basaltic rocks, through industrial processes, a continuous fibrous filament is obtained. Basalt fiber is a natural mineral fiber characterized by excellent chemical, physical, and mechanical properties, increasingly used in high-performance, technological industrial fields. Due to its inherent sustainability, in the current scenario characterized by increasingly stringent environmental regulations, it appears advantageous to use this fiber compared to other fibers such as glass fiber and carbon fiber. In this paper, an approach to material research on basalt fiber straddling art and design is proposed, with the aim of exploring the aesthetic value of the material, proposing an extension of its use in areas where, in addition to performance, perceptual values such as color, texture, and the skin of the textile material are also important. The results obtained encourage the prediction that this material can become to all intents and purposes one of the materials of the future, to be used in even very different textile design contexts, characterized by high performance but also high attention to the aesthetic aspect.

Cork in architecture, fashion and design, tradition and innovation

VANDA MATOS, CARLOS ALHO

The cork bark is an 100% vegetal fiber which comes from the cork oak tree, characteristic from the Western Mediterranean Region. It is 100% carbon neutral, recyclable and resistant to fire. In the context of a possible mass extinction of the living species on Earth, due to the climate changes caused by the action of Man, it is urgent to invert this cycle, and to use carbon neutral materials to meet the Paris Agreement (2015), to attain carbon neutrality in 2050, nationally and internationally. The attitude is to be glocal.

The cork is a traditional and local material, and has innovative role in Portuguese construction and industry sectors. The cork plays an important part in architecture, namely with the cork green roof. The versatility of the cork permits to use the cork yarn in the textile and garment industry. From the use of agglomerate and leather cork in the fashion collections of the designers, to Penedo Textiles' beddings produced with cork yarn, the cork passed from the elite circles to the common and intimate life. There are no limitations in their weaving, dyeing, and printing. Nowadays the leather string is available at natural color and the cork string in blue, brown, green, orange, yellow, and black. Although cork is architectural material its versatility permitted its use in fashion and design.

Redefining Textile Digitalization: Insights from the Prato Phygital Project

MARGHERITA TUFARELLI, ELISABETTA CIANFANELLI, LEONARDO GILIBERTI

Utilising the Prato Phygital project as a compelling case study, this contribution delves into the realm of textile digitalization, elucidating the novel creative and communicative dynamics that emerge from the fusion of textile design and audiovisual expertise. This work posits hypotheses about new production, business, and consumption paradigms by examining the obtained results and envisioning widespread adoption within Small and Medium-sized Enterprises (SMEs) operating under the esteemed “Made in Italy” banner. It also explores the potential creative synergies for the textile project and delves into the emerging competencies resulting from the convergence of the fashion industry with the creative realms.

The virtual life of textiles: a provisional haptic library model

RUXANDRA LUPU, MARGHERITA TUFARELLI

Although rapidly evolving technologies manufacture the actual and virtual surfaces of today, altering our perception thereof, they are currently not able to offer the user the level of understanding of textile properties that physical manipulation and viewing provide. Haptics remains thus one of the most challenging areas for virtual textile experience design.

This paper aims to address this challenge by tapping into the underexplored haptic potential of material libraries and proposing a provisional haptic library model, based on experiments involving haptic visuality. The article addresses the untapped haptic potential of digital textile collections by outlining a theoretical model relying on visual haptics rather than the use of haptic devices, which is the more common approach.

This is part of an ongoing research project funded by the Worth Partnership Project, an EU initiative where designers, SMEs, manufacturers, and tech providers work together to develop innovative, design-oriented business ideas. Specifically, this is a group composed of a creative company operating at the intersection of design/arts and new technologies, which mainly uses an artistic research lens to combine traditional knowledge in crafts (print) and visual arts (film, drawing) with the potential of new tech, and an University Research laboratory with a focus on the investigation of the effects of digital transformation in fashion and textile products and processes. The project “E-Text: The Haptic Library” aims to develop a model of an online material library that exploits the visual haptic potential of new technologies to enable a deep, dense and intense experience of the material tactility of sustainable textiles.

This paper unfolds the outcome of the first of the three steps of the design process for a new haptic library model - the pilot phase - that aims to gather textile samples for testing, define the framework for measuring the textile hand and incorporate micro-cameras to further experiment with haptic visuality. It also briefly touches upon the implications for the

following two steps of the project: 2. Prototype phase aimed at building the first functional prototype of the haptic library project; 3. Scaling up the model testing and using the framework within institutions and private companies.

Materiality in Motion: Sensing the Tactility of Virtual Textiles through Movement

ALEXANDRA SOISETH, CATHERINE ANDREOZZI, ELIZABETH MEIKLEJOHN, CAROLINE SILVERMAN, JOY KO

The material qualities of fabrics, and the ways in which we decipher them, engage all of the senses. The raw materials and structure comprising a textile can generate sensorially rich and layered expressions. Exposure to these multisensory traits –the visual and the haptic being the primary ways of engagement for most–is key to understanding textile behavior and possibilities. Static images are often limited in their ability to convey the essence of textiles in adequate depth; touching and manipulating fabric is an ideal way to reveal its complexity. The proliferation of pandemic-era digital interactions can make it challenging to connect with, or within, the material world. Screen-based, primarily visual experiences are increasingly common, yet fabrics often lose much of their affective potential when rendered in digital interfaces. We chose to work within this paradigm toward more exploratory material experiences in virtual space, using movement to heighten the sensory qualities of digital materials. With an eye toward techniques in this field that alternately prioritize faithful capture and re-creation, or embrace glitch in the process of digitizing the physical, we present three case studies in which highly tactile fabrics are represented as virtual artifacts, immersive landscapes, and parameterized materials alive with motion.

Tecnologie indossabili nell'industria del fashion: sfide e opportunità per l'innovazione sostenibile

ELISABETTA BENELLI, FRANCESCA FILIPPI, DAVIDE TURRINI, DILETTA PUCCI, MATTEO ASCENTE

L'articolo esplora l'intersezione tra moda e tecnologia, concentrandosi sui 'wearable devices' e sugli 'smart textiles'. Attraverso l'analisi dell'evoluzione dei dispositivi indossabili e dei tessuti intelligenti, emergono significative innovazioni nel settore dell'abbigliamento tecnologico. La fusione di inedite configurazioni formali e funzionali ha trasformato gli indumenti in piattaforme interattive, introducendo il concetto di 'Fashion Tech'. Con questo studio si sottolinea la necessità di standardizzare criteri di valutazione ambientale per le componenti elettroniche integrate negli indumenti, promuovendo l'elettronica sostenibile, l'adozione di pratiche di economia circolare. Tali strategie sono fondamentali per garantire che lo sviluppo futuro degli 'smart textiles' sia allineato ad obiettivi ambientali e sociali più ampi. Progetti come 'AirSuit' evidenziano l'applicazione potenziale delle tecnologie indossabili in settori come la medicina, l'industria, lo sport e il metaverso, offrendo nuove modalità di applicazione con notevoli miglioramenti nelle performance e inedite esperienze immersive.

New codes of fashion design: a comparative study on texts and images for generative AI

ELISABETTA CIANFANELLI, PAOLO FRANZO, LEONARDO GILIBERTI

The rapid spread of artificial intelligence software for text, image and video processing has recently involved the fashion system as well, generating curiosity, doubt, euphoria, and fear. The easiness with which it appears possible to create fashion images and transform textual content into images raises questions about the evolution of design processes in fashion and the current and future skills of the fashion designer.

The paper questions the degree of control over the image generation process and whether the creation of this content is fashion design or just the construction of a two-dimensional image. Through a comparative analysis, aimed at checking the adherence between pre-existing images of fashion products and images generated by AI to reproduce pre-existing images, we aim to identify which AI software is currently most suitable for generating images for fashion, handling the various elements that characterize a garment in the right way, and how the language of fashion can contribute to writing prompts.

Imagine being able to follow the same set of characters, each with their own clear and coherent identity throughout multiple existences that happen in infinite and parallel universes. And that those universes all exist simultaneously and contain the diverging paths that emerge from every single decision made, no matter its scale.

It is the richness and diversity of such fiction that the recently produced film *Everything, Everywhere, All at Once* (2022) addresses, aiming to represent those worlds as deviating yet concurrently occurring realities. This created the opportunity to look across multiple universes and worlds at how these characters express themselves and their interpersonal relations through their clothing.

This study seeks to follow this family at this film's core, with all their intrinsic values and conflicts as they are shown in incredibly rich shots, living in a multiverse of branching lines with their corresponding moods, fates, and ways of living in each respective reality, time and space. The family dynamics serve to enrich the already complex narrative being shown by adding familial tensions while operating as a well-constructed, clear core to the intricate storyline.

This will be achieved by:

- Exploring the many variations each character assumes as they exist and interact with the same set of characters in the multiverse, creating different lives with its particular set of principles, notions of self, and interpersonal relations.
- Analyzing the characters and their clothing as it is informed and impacted by the existential despair that the characters go through, as they struggle with conflict, hopelessness, disintegration, and destruction, but also live through moments of harmony, stability, and reconciliation, in their attempts to find meanings to their lives.

Journey through the selves: clothing and meaning in Everything, Everywhere, All At Once

CARLOS MANUEL FIGUEIREDO, NICOLE ALVES

- Investigating how the inner world of the characters, and the relationships established between them as well as that with their environment and reality, inform the variations of their sense of self and their respective view of life and the world.

The main characters' ability to move through and search through all worlds of the multiverse makes them feel untethered and question their own existence in their search for meaning, on a cosmic level. With answers seeming to point towards a random, meaningless universe, some characters are seen going through responses that will result in bleak and destructive actions. While others strive instead to change their perception of meaning and purpose in all their existences. This metaphysical quest brings deep issues and conflicts, allowing for depictions of intricate, symbolic spaces and scenes, as well as rich and telling costumes.

Indeed, in every frame, no matter how seemingly casual, the costumes serve an unquestionable purpose of not only identifying the reality the characters are currently inhabiting but also of showcasing each character's current view of the world and their meaning in it, as it evolves.

Nonverbal communication: personal appearance impressions

RAQUEL FRANCISCO DE ALMEIDA GRIPP, MARIA SILVIA BARROS DE HELD

It takes a few seconds, according to Titta Aguiar (2015), to a person form opinions about the other (opinions regarding social class, personality, level of success and self-confidence, etc.), it is known as first impressions. This happens because personal appearance elements are communicated even before verbal words. Personal appearance, according to Knapp (1999), is one among many ways of nonverbal communication, and with the help of its elements, such as clothing, posture, color, hair, height, beauty, and even odor, it is possible to convey coherence and/or disagreement in communication. This article aims, by use of bibliographic reviews of studies and scientific articles, to reflect on the meaning of personal appearance in nonverbal communication and how some of its elements influence impressions caused. It starts from the assumption that the image of personal appearance can influence others. It extends from a theoretical investigation about personal appearance elements communication and their influence on impressions caused.

The Fashion Show and Cultural Heritage: The case of the Lérias Lace

ALEXANDRA CRUCHINHO

All societies have cultural, social and historical elements in common and they all need to create their own identity to differentiate themselves from others. This fact is not new but has existed since our existence as a community. Identity, which becomes a differentiating element, is created by the abundance of creative processes that are repeated and maintained between generations. Portugal is a country very rich in cultural elements that characterize the different regions and that, at the same time, tell their stories. Traditional, artisanal techniques may be common in different regions, however, they become unique due to the attribution of unique characteristics and make them unique and easily associated with the region that holds them.

Renda das Lérias is an important traditional element that marks the culture and history of a small village in the District of Fundão. Its history dates back to the last century and stories are told that mark the identity of this community.

The creation and production of a fashion show where the lérias are present requires an exercise of creativity and great respect for the cultural heritage of this region. Creating a parade that values the identity of these people becomes the biggest challenge for a producer.

The focus is no longer clothing, fashion, new proposals, but rather the way in which tradition or history can be told quickly, visually and that touches an audience looking for something different but as contemporary as the presentation of new fashion show trends.

The research methodology developed for this investigation is based on a mixed, non-interventionist and interventionist methodology. In a first approach, the exploration and definition of themes and concepts resulting from the bibliographic review lead to the development of an interventionist methodology where the researcher goes into the field and seeks to create

a new parade model where the concepts explored throughout the research are respected and valued. .

The results are very interesting and respect for identity is ensured. The dissemination of this culture and this traditional technique is guaranteed by the numerous situations created throughout the parade that arouse curiosity in learning about this ancestral technique.

The textile as a form of artistic expression

ISABEL BIEGER

This article talks about the use of textiles as a mode of expression. Art and textile have a long and multifaceted relationship, dating back to several centuries manifested by various cultures around the world. In art, communication is intentional, especially when it comes to persuasion. We use as a case study the International Biennial of Textile Art of Guimarães, a Contextile. The Biennial aims to put the textile in the contemporary event. It has a diversity of programs and not just the exhibition itself, becoming a reference of a cult event. Textile has become the center of attention. It is considered a material of extreme versatility. It adapts to the various techniques and different types of expressions. Used as a mode of artistic manifestation, the textile is considered a versatile material. It allows many people, connoisseurs of manual work, to expand their potential by becoming active in the development of heritage considered immaterial. The pieces vary from small to medium dimensions and the artists explore their various potentials of them using the textile as the raw material of their expressions.

Storytelling in the social interpretation of fishermen's sweaters.

MARIA JOÃO DELGADO, BEATRIZ PINTO, GIANNI MONTAGNA

This paper reports on the development of a strategic proposal for the sustainability, promotion and dissemination of traditional knitted sweaters used for centuries by European fishermen, as part of doctoral research.

Based on the potential of using storytelling in the context of design and the role it plays in the social interpretation of the design of fishermen's sweaters, trajectories of intersection are established between the various fishing communities spread across European coastal areas, contributing to the construction of the state of art, of the traditional knitting of fishermen in Europe.

The ability of storytelling to communicate stories and memories about this craft, as well as reporting the sensorial and emotional experiences of its users, in a more human-centered and reflective approach to design and manufacturing, supports the study of social and cultural aspects, including its history and iconographic symbolism, characteristic of these communities.

In this context, the economic, technical and technological context of these communities was also considered, highlighting the patterns, colors, materials and techniques used, associated with the intangible culture of these groups.

This study, based on a literature review, contributes to the enlargement of strategies for a better understanding and dissemination of this craft, much of which is still undocumented, enhancing the cultural and identity recognition of these communities, simultaneously driving the development and preservation of these activities.

Learning Sustainable Creative Practices in Fashion and Textile Design: Academia, Cultural Legacy of Mértola and Local Resilience

ALEXANDRA CABRAL, HUGO QUEIRÓS

The research highlights creative practices inspired by the cultural legacy of the Museum Town of Mértola, in textile and fashion design and how they can impact both secondary-level art students in a low populated rural area and degree fashion design students in their approach to sustainability. From academic design projects to a participatory design project or a fashion artist-in-school project, urban-rural knowledge transfer plays an important role in the process. An interventionist and non-interventionist qualitative-based methodology is carried out. The works, publicly showcased, comprise mixed-media techniques in surface design, design upon references of ancestral findings and upcycling practices in a hands-on approach. By placing fashion and textile design closer to art and the museum, and by bringing ancient art closer to fashion design, the process shows that design can have an impact on the locals and the resilience of a territory, while highlighting its hidden economic potentiality. By doing so, it also illustrates how designers can bring true innovation into sustainable textile and fashion design solutions.

Architectural space: Fabrics, meshes, tectonics, place.

AMÍLCAR GIL PIRES

Architectural space: Fabrics, meshes, tectonics, place.

Designing with coloured Kombucha

CARLA COSTA PEREIRA, ISABELLA CARVALHO

Considering the objectives of sustainable development rooted in the circular economic model, we view the development of biomaterials as the most feasible solution for the textile and clothing industries. This approach aims to address the negative impacts of traditional oil-based manufacturing processes and waste generation on society.

Hence, our research underscores the significance of harmonizing visual, practical, and ecological aspects in a more sustainable design by investigating various forms of bacterial cellulose as the primary material source. The primary objective is to produce Kombucha biofilms utilizing naturally occurring pigments commonly employed in food production that undergo biological decomposition and do not generate any waste.

Motivated by a desire to investigate the natural dyeing process in this particular biofilm and understand its potential application in the fashion design process, this study begins with a comprehensive review of existing literature on the use of Kombucha in clothing. Subsequently, the study delves into the experimental procedures carried out at the BioLab Lisboa laboratory. The recorded findings can provide useful insights for future research and design endeavors, showcasing the considerable potential of Kombucha biofilms in the field of fashion design, despite the existence of certain challenges that need to be addressed

SESSION #11 — TEXTILE ART AND IDENTITY

FIAR - Collaborating for the Future of Fashion and Textile Design Education. Innovation, Creativity and Sustainability in Reinterpreting Handcraft Technology and Cultural Tradition

SANDRA GOMES RODRIGUES, ANA FERNANDES

The FIAR event proposes an innovative approach to fashion and textiles design higher education, highlighting the significance of academia-industry partnerships in promoting creativity, sustainable innovation and knowledge. The aim of this event is to investigate how this collaboration can bring a new eye to the pertinence of reinterpretation resources, processes and cultural traditions, using innovative methods and approaches to product development while preparing students with new skills and competences for future challenges. Using a methodology combining literature review with a Project-Based Learning approach with students to address real-world issues and create new products. Initial literature review established a theoretical framework, followed by artifacts analysis as a result of the collaboration between companies, artisans embroidery workers and students from the Master's in Fashion Design course. Findings underscore the critical role of academia-industry cooperation in developing innovative, sustainable solutions in higher education bringing awareness to the need of future synergies between handcrafts and technology, tradition and innovation. Additionally, there's a recognized need for educational programs besides extracurricular initiatives and events like FIAR that values local cultural traditions and provides students relevant learning experiences and skills for the evolving job market. This study contributes to academic discussions concerning the future of higher education in fashion and textiles design, and its impact on issues on sustainability and innovation within the field.

Wool Greenwashing

MAGDALENA PŁONKA

Although being one of the most popular world fibers, the wool industry is addressed with severe environmental allegations. While the majority of scientific texts does not leave too much doubt about its production negative impact on the ecosystem, wool business does not stop to promote itself via green claims. The internet popular links present a divergent, positive picture of that material, where one might recognize parties being financially involved in such communication. As wool producers or organizations linked to wool business are top positioned in the web as providers of wool green image, the below article brings an interpretation of the industry greenwashing techniques. This comparative analysis of wool umbrella institutions' webpages exposes myths endorsed about wool's sustainability. The investigation follows case study of Woolmark brand, where associations to similar, highly ranked websites were conducted likewise. The results have been additionally matched with available scientific data from LCA relative statistics and The Higg Index to provide contra argumentation from academic sources. The results of this paper could be used both by researchers or fashion lecturers, likewise by fashion marketers to recognize greenwashing techniques and to support them in creating an honest content about wool's environmental impacts.

Transforming Textile Design: How the New European Directive Against Greenwashing Redefines Product Sustainability and Durability

MARIA JOÃO FÉLIX

This study addresses the critical role of promotion and education in transforming the textile design industry towards a sustainable future. It focuses on innovative strategies to promote sustainability, conscious consumption, and awareness of environmental legislation among designers and consumers.

The research methodology is twofold. Firstly, it involves the development and analysis of awareness campaigns that highlight the environmental impact of fashion and textile design. Secondly, it includes the creation and assessment of workshops and courses dedicated to the principles of sustainable design and responsible consumption practices.

The investigation conducted indicated increased awareness and a shift in perspective on sustainability within the textile sector. The findings suggest that educational initiatives and awareness campaigns can be effective tools in promoting a deepened understanding of sustainability issues. The research also implies that such approaches can inspire the integration of more robust sustainable practices into the design process, as well as into everyday consumption behavior.

Promotion and education emerge as powerful tools to exceed mere compliance with the European directive against greenwashing. By empowering consumers and designers with knowledge and practical skills in sustainability, the industry can make significant strides towards true environmental responsibility. This approach not only meets the directive's requirements but also paves the way for a more sustainable future in industrial and textile design, emphasizing the vital role of informed decision-making in achieving enduring environmental impact.

Weaving Design. Due esperienze didattiche orientate all'artigianato

ELEONORA TRIVELLIN, MASSIMO BRIGNONI

L'esperienza di ricerca didattica svolta parallelamente all'interno dei corsi di laurea in Product design dell'Università di Ferrara in Italia e dell'Università della Repubblica di San Marino, si interroga sul se e il come l'insegnamento del design, in relazione al prodotto artigianale, possa differenziarsi rispetto all'ambito "classico" del prodotto industriale riferendosi in particolare al mondo del tessile e dell'intreccio.

Il contributo, dopo alcuni cenni di analisi storica, analizza le differenze e le somiglianze teoriche sull'argomento, evidenziando che le peculiarità non sono da ricercarsi tanto nell'organizzazione dei processi, quanto nei significati che essi esprimono. Si riporta poi, due recenti esperienze impostate su modelli didattici codificati che fanno riferimento all'insegnamento esperienziale applicate alla lavorazione della treccia di paglia tipica di Signa in un corso, e agli intrecci con le erbe palustri della Bassa Romagna e del Delta del Po nell'altro.

Quello che gli autori ci tengono a sottolineare è che il loro interesse non è indirizzato all'analisi delle esperienze di insegnamento dell'artigianato, quanto piuttosto all'insegnamento del design orientato al prodotto artigiano ed in particolare al prodotto tessile e intrecciato realizzato artigianalmente.

Printing geometries: the case of the House of Pucci

ALEXANDRA AI QUINTAS

From millennial existence of geometric patterns used on diverse techniques of the production of azulejo tiles, to the 20th century experiments on modular arrangements in the Bauhaus School, there has been a relevant tendency to study modular organizational models, thus producing different geometric effects, Some more crystal-regular, others inscribed in an organic modulation, and others based on fractal geometries even.

Since it was created by a Naples born aristocrat from Florence, the House of Pucci has always kept its recognizable brand on each, and every decade of existence, throughout the mandates of several creative directors. The House has kept its DNA in the printed patterns of scarfs, dresses, fashion products, decorative materials, linen and even ceramic industrial products. We try to show a sort of formal genealogy in the design of its production.

The features of printing designs can easily adapt to new codes.

A connection between Critical and Practice-Based Design Research in the Era of Surveillance

RACHELE DIDERO, GIOVANNI MARIA CONTI, MARTINA MOTTA

The pervasiveness of surveillance is an increasingly important topic and is already a part of everyone's life.

This paper thoroughly examines design and surveillance in the Big Data era, identifying its social, economic, and technological components.

Based on this foundation, the paper investigates the possibility of designing in the anti-surveillance field, combining the critical part with the pragmatic-functional dimension. The goal is to understand the role that design and research can have regarding this problem of our present that will shape our future.

It follows an analysis focusing on the approaches and executions adopted by Critical design and Critical art to address contentious issues.

Both the example of Critical art and that of Critical design want the viewer/end-user to become an aware voice of the transformation of the world.

Among these models, a more careful study was conducted considering the methods related to the textile and fashion domain.

Finally, the example of the Cap_able Manifesto Collection is given. A model in which we start from the structure of the knit textile and the manufacturing technique, which become fundamental elements linked to the product's functionality.

The Manifesto Collection is not only considered a design research output and a means to communicate an advocate over surveillance. It also contains a practical solution thought and designed for citizens. This answer comes from both scientific research and experimentation and critical design.

Handcrafting the Digital

VERONIKA PERSCHÉ

Hand crafts have never been a contradiction to digital production methods; in fact, textile-digital processes are coming closer to craft than ever before. However, in an era where the digital is most commonly defined in direct opposition to the hand, taking advantage of their interrelation requires designers, artisans and craft teachers to actively seek out creative strategies that approach digital processes in flexible, embodied and co-operative ways.

I will talk about the origins of textile-digital patterning mechanisms, the connection and the relationship between textiles and the digital.

In the most important constructive textile techniques, weaving and knitting, the mechanisation of the patterning systems are crucial.

Joseph-Marie Jacquard invented punch cards for weaving looms on which pattern data could be stored. This data carrier works according to the digital principle of 0 and 1 - hole or no hole. Calculating machines and computers are based on this principle.

Fortunately, since the middle of the 20th century, small, but fully functional and versatile CNC knitting machine machines have been produced for cottage industries and for domestic work.

A CNC knitting machine is ideal for realising digital designs and teaching digital-analogue design skills.

I have been working as a textile designer specialised in knitting for more than 20 years. My work combines digital art with textile craftsmanship. In the many collaborations I've had with artists and designers, I have experienced how beneficial the understanding of textile-digital mechanism is for the creative process. In this way, artists and designers can approach digital software as an artisanal tool for elaborating surface design and form, and reflect on its value in a collective creative processes.

From purovisibilist theories to computational thinking. Interpreting, representing, designing and producing sensoriality on textile surfaces

ROSSANA CARULLO, ROSA PAGLIARULO, TANIA LEONE

Following the theoretical and critical lines of 20th century purovisibilism, the relationships between sensitive processes and mental processes are highlighted to develop digital devices that can promote a new way of interpreting, representing, enhancing and producing sensorial perceptions on textile surfaces in the digital era. In a process from the definition of the concept of materiality to its infographic representation, finds evidence the idea defined by Andrea Pinotti as transmediality, which investigates “the processes that enact different forms of transposition or migration, from a medium to another, of images, figures, motifs, compositional procedures or forms of vision”. (Pinotti, 2016, p. 160)

Using silk as a case study, we designed an application in which algorithms virtually represent sensorial perceptions obtained from the interaction of various material fields. Subsequently, combining silk artisan practices and 4.0 technologies through the use of the Arduino microcontroller, we made a device for the production and customization of silk yarn, able to prefigure the sensorial gradients of the fabrics.