

RETHINKING FASHION

SUSTAINABLE FASHION FOR INTEGRATED AND REGENERATIVE PROSPERITY

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Abstract

Well-being has traditionally been measured through economic growth and the accumulation of wealth, often neglecting the limitations imposed by natural resources (Latouche et al., 2011). The current economic model overlooks the principles of the circular economy, which are increasingly undermined by anthropogenic phenomena such as global warming. Additionally, growing geopolitical instability is weakening conventional governance systems (Sachs, 2015). Within this context, the European Commission's "Safe and Sustainable by Design" (SSbD) framework (2022), aligned with the objectives of the European Green Deal, promotes a systemic approach that integrates safety, sustainability, and functionality. It aims to reduce the use of hazardous chemicals and minimize environmental impacts throughout the entire life cycle of products and processes. There is an urgent need to rethink production systems through a "reparative, regenerative, and restorative" economic model (Sbordone et al., 2022), which transcends the limits of the circular economy by prioritizing biological cycles and the bioeconomy (Fava, 2022; Giampietro, 2024). The Quintuple Helix model contributes to redefining relationships among stakeholders, placing natural capital at the center (Carayannis et al., 2012). In this scenario, design intrinsically connected to life plays a critical role in re-establishing sustainable relationships between humans and the environment (Antonelli, 2012), particularly in the fashion and textile sectors, by fostering locally grounded initiatives focused on repair, regeneration, and territorial enhancement.

Keywords: *Circular economy, Local bio-economy, Social Innovation, Regenerative Design, Quintuple Helix Innovation Model*

INTRODUCTION

Traditionally, well-being has been measured through economic growth and the accumulation of wealth, a paradigm that often overlooks the limitations imposed by the planet's natural resources (Latouche et al., 2011). The prevailing economic model fails to recognize the emerging values arising from the adoption of circular economy principles; values that are threatened by anthropogenic phenomena causing irreversible damage to the ecological balances of ecosystems. In particular, global warming has triggered complex dynamics on a global scale, accelerating the processes of degradation and deterioration of ecosystems. On the other hand, increasing geopolitical instability undermines and weakens tradition-

al governance models (Sachs, 2015). The European Commission's Safe and Sustainable by Design (SSbD) framework (2022) represents a significant orientation in industrial processes for the generation of new materials and products. In line with the objectives of the European Green Deal, SSbD adopts a systemic approach aimed at integrating safety, sustainability, and functionality. This approach guides design processes by proposing preventive and proactive interventions that aim to gradually replace the use of harmful chemicals and reduce impacts on health, climate, and the environment throughout the life cycle of materials, products, processes, and services. The goal is to transform the current production model through a systemic logic characterized by a critical, multidis-

ciplinary, and multilevel approach. It is essential to rethink production systems within a “restorative, reparative, and regenerative” economic model (Sbordone et al., 2022) that integrates the environmental, social, and cultural dimensions of sustainability. This model transcends the circular economy by prioritizing biological cycles in value creation and proposing value chains according to the value constellation (Normann & Ramírez, 1993). Daniel Christian Wahl (2016) emphasizes the need for a new paradigm for long-term sustainability, suggesting that strengthening local economies can reduce dependence on global resources and improve the ability to address specific challenges in local contexts. This requires pathways for innovation to build robust and more ecologically sound local economies. The Quintuple Helix model, as an innovation paradigm, values territorial capital by redefining relationships between actors starting from natural capital (Carayannis et al., 2012), stimulating a new vision of ecological and social balance, and generating systems of knowledge and culture that act as catalysts for transformative action. Design plays a crucial role in recovering values related to human existence (Antonelli, 2012). This contribution aims to analyse the relational dynamics between the fashion sector and future production models, identifying strategies for valorisation, starting from design, that fit within a logic of repair, restoration, and regeneration. The new sustainability criteria focus on local-scale impacts. In this perspective, design becomes a practical tool for re-establishing a balance between human needs and the planet's resources, thus contributing to a deeper reflection on the modes of coexistence and shared responsibility.

POLICY, GOVERNANCE MODELS, AND NEW SYNERGIES

The European textile ecosystem is undergoing processes of economic, technological, geopolitical, and social transformation, characterized by increasing complexity and dynamism. These changes create a complex set of challenges and opportunities, highlighting disruptive dynamics in textile production and consumption on a global scale. The evolution of European policies on sustainability and the transition towards circular economic models addresses environmental issues while stimulating innovation, maintaining the principles of safety and sustainability with respect to materials, products, processes, and services. A significant

milestone was the publication of the “EU Strategy for Sustainable and Circular Textiles” (EU, 2022), which marked a turning point in the redefinition of textile sector regulations. The textile and apparel industry was prioritized at the centre of a broad and integrated regulatory framework, designed to substantially influence the production, distribution, and consumption processes of textile products within the European Union. This was a prelude to the subsequent transformation of the sector into a highly regulated industry, with direct implications for global value chains in the textile sector (Textile ETP, 2024). Compliance with the new regulations presents an opportunity to rethink economic models towards greater sustainability and social responsibility. In particular, within the textile sector, these regulations promote eco-design, waste management, supply chain transparency, and the regulation of chemical substance use. Eco-design, which reduces environmental impact, is crucial for the textile industry, which has significant effects on the environment. EU Directive 2008/98/EC introduced the recovery of materials as resources, and the “Eco-Design Directive for Sustainable Products” (ESPR) sets stricter criteria, promoting climate neutrality, resource efficiency, and the circular economy. The regulations focus on energy efficiency, reduction of carbon and water footprints, durability, reparability, recycled materials, and information transparency. The introduction of the Digital Product Passport (DPP) provides consumers with detailed and up-to-date information on sustainability, facilitating more informed choices. This initiative allows for the identification of products designed to last, easily repairable, and recyclable, thereby contributing to a significant reduction in energy consumption. It is combined with the REACH Regulation and the Safe-and-Sustainable-by-Design (SSbD) framework to support design that excludes the use of harmful chemicals, promoting the development of low-impact products.

LOCAL CIRCULAR ECONOMY: FROM SUSTAINABLE CO-BENEFITS TO THE BIOECONOMIC MODEL

Sustainability represents one of the most urgent challenges for businesses across all sectors, including the textile industry. The transition of the European textile and fashion sector towards sustainability requires advancements in scientif-

ic knowledge and practical solutions, alongside technological innovations in the fields of materials science, process engineering, and biotechnology (Ecosystex, 2023). Circular Economy (CE) offers an alternative to traditional linear models (Romani et al., 2021), contributing to the reduction of greenhouse gas emissions, resource consumption, and waste production, with positive impacts on health, the economy, and biodiversity. The circular approach optimizes the use of resources through strategies such as the Narrowing Loop, which promotes the sharing of secondary raw materials; the Slowing Loop, which reduces the speed of cycles; and the concept of End of Waste, which closes material loops (Bocken et al., 2015; Achterberg, 2016; Blomsma, 2017). The Butterfly Scheme (2021) represents the closure of loops within the CE model, distinguishing between technical and biological cycles. In the technical cycle, products are kept in circulation through reuse, repair, and recycling; in the biological cycle, biodegradable materials are returned to the Earth to regenerate nature. However, the focus on the biological cycle presents challenges, as only certain fibers can be composted, and textiles contain harmful chemicals (Niinimäki, 2013). Greenhouse gases generated by the composting of synthetic substances contribute to global warming, raising concerns about the closure of the cycle. Despite these issues, it is crucial to develop alternative circular strategies that integrate interventions in both the technical and biological cycles (Liu et al., 2019). Textile waste can be recovered and transformed to produce new fibers or biologically treated to make waste suitable for production in the technical cycle, such as composting that facilitates the separation of fibers in mixed materials (Yao, 2018). The new value derived from waste is a key concept in the Bioeconomy strategy, which has received increasing political attention over the last decade. "Bioeconomy promotes the use of renewable biological resources to reduce dependence on fossil fuels" (MIPAAF, 2017). The two models are integrated: bioeconomy provides renewable resources for circular cycles, optimized by the principles of circular economy. "Circular Bioeconomy" is a regenerative economic system aimed at maximizing the value of local biological resources and promoting sustainability, contributing to climate change mitigation and economic growth (Giampietro, 2019). The goal is to rethink an economy that serves people, advancing circular

design strategies to create systems that contribute to the restoration of local ecosystems. Innovations in the textile sector require targeted design interventions to bring about tangible improvements. The shift towards Bioeconomy, starting from the Circular Economic model, involves considering the mutual conditions of sustainability, defining priorities that generate reciprocal benefits among the actors involved, known as sustainable co-benefits (Sbordone et al., 2023). These co-benefits extend environmental sustainability to social, cultural, health, economic, political, technological, territorial, and urban dimensions, guiding current supply and value chains toward more sustainable models. This requires an in-depth analysis of material sourcing phases and the associated extraction and transformation processes (Dahiya et al., 2020), with the aim of promoting regeneration in local contexts (Caldeira et al., 2022).

DESIGN FOR SOCIAL INNOVATION: THE RELATIONAL VALUE OF FASHION

A systemic approach to design, which considers the interconnections between resources, people, and contexts, emerges as an effective response to global challenges, promoting positive and sustainable change. In particular, fashion, as both a cultural expression and a daily practice, can become a powerful tool to overcome individualism, foster cooperation among diverse cultures, and build collective value. In this context, design is not merely a response to aesthetic or functional needs, but a change agent that, through dialogue and the active participation of communities, can become a vehicle for the Common Good. Designing with this perspective means contributing to the creation of a more inclusive, equitable, and sustainable future. By combining a clear understanding of the present with a visionary drive for change, industrial design could find new, more effective ways to fulfil its purpose. As Papanek (1971) introduced: "Design should not focus solely on aesthetic or functional aspects but should aim to improve the living conditions of people, particularly those living in marginalized circumstances." In this way, design becomes a means to address social inequalities, aiming for solutions that not only satisfy market needs but that also tangibly improve the lives of the most vulnerable people.

Systemic design focuses on the interconnections between various system elements, promoting

an integrated vision that goes beyond individual products. This approach allows for the analysis of complex contexts, understanding systemic dynamics, and guiding design towards sustainability by efficiently using local resources and valuing traditions and territorial specifics (Fagnoni, 2018). The goal is to promote “ethical” fashion that transcends individualism and fosters cooperation between different cultures and worldviews. True innovation arises from dialogue and the cross-pollination of diverse experiences. To understand what design for social innovation can do, one must look at the protagonists of innovation. This means observing the people who participate and the social forms they generate, particularly those in which individuals collaborate to achieve results they could not attain alone, thus producing social value (Manzini, 2015). These collaborative organizations require the active participation of all involved parties, proposing radically different ways of being and acting from those that dominate. Therefore, the task of design for social innovation is to make these collaborative organizations possible. One of the dangers of our educational systems is the loss of the sense of community and connection with the world outside academia (Hooks, 2022). Social innovation occurs when people, skills, and resources meet in a new way, creating meanings and opportunities never seen before. Social enterprises, unlike other social organizations, stand out because everyone involved actively participates in achieving the outcome, thereby generating a recognized collective value.

RETHINKING FASHION: FROM CRITIQUE TO SOCIAL PRACTICE

As proposed by Manzini (2015), “Collaborative production enterprises are based on new models of production and distribution. The collaborative attitude of such organizations, applied to productive activities, is creating a new generation of small and micro social enterprises, such as those in Fab Labs and the maker movement.” This implies that social innovation is developing through collaborative production models, promoting cooperation and the creation of collective value. The economic models of these innovations express a social economy that blends characteristics different from traditional economies based on the production and consumption of goods. It includes the intensive use of distributed networks to support and manage relationships, supported by mobile devices and other means of communication. The

boundaries between production and consumption are blurred, with an emphasis on collaboration and repeated interactions, care, and maintenance rather than one-off consumption (Murray, 2009).

Although social innovation is still far from dominant thought, in various countries, especially those affected by crises, there is growing interest in the new social and economic models it proposes. To reflect on the transformation of fashion, it is useful to consider the critique of the fashion system itself. Fashion studies have evolved into critical fashion studies. Critical fashion theory highlights the ability of the system as a whole (production, representation, consumption) to align with other forces, such as politics, and even surpass them in conveying social messages, going beyond the aesthetics of a garment (Caratozzolo, 2022). This scenario of ethical-aesthetic re-imagining of fashion becomes a ground for radical change in individual and collective lifestyles, with a positive impact on society. Fashion, understood as a free discipline, can find a place in marginal contexts, becoming a spokesperson for tangible acts of resistance. Marginality thus becomes a decisive space of possibilities, a space of resistance that offers the condition for an innovative perspective from which to view, create, and imagine alternatives (Hooks, 2022).

REPAIR, RESTORE, REGENERATE: THE DESIGN IMPERATIVE IN THE FACE OF ECOLOGICAL CHALLENGES

The transformation of socio-economic models and the creation of new values depend on the ability to address the ecological crisis as an urgent change that requires innovative and multidimensional responses. In a global context marked by rapid technological developments and environmental challenges, design emerges as a fundamental tool for solving these issues, adopting approaches of repair, restoration, and regeneration focused on local resources (Sbordone et al., 2022). These approaches aim to restore the balance between resources and their efficient use, extending benefits across multiple dimensions: environmental, social, economic, and political, promoting responsible resource management both individually and collectively (Broken Nature, 2019). Design, with a human-centered and environmental vision, promotes participatory processes involving various actors and translates theories into concrete

actions to address emerging challenges. Bio-design (Antonelli, 2012) integrates biological principles into design processes, adopting an action-research approach that involves continuous data monitoring and adaptation of practices to specific contexts. This approach stimulates the creation of new materials, the design of innovative processes, and the configuration of products and services, all oriented toward a circular economy. The phases of repair, restoration, and regeneration form a progressive process aimed at restoring ecological and social balances, with a focus on local resources (Sbordone et al., 2022). Repair aims to immediately recover compromised balances, intervening reactively to halt degradation. Although fundamental, it is a temporary phase that prepares the ground for more structural actions. Restoration goes beyond recovery, aiming to return an improved balance, enhancing the resilience of damaged systems. In this context, design reorganizes natural resources into creative cycles, valorising local traditions and creating connections between ecological and social systems (Sbordone et al., 2022). Restoration represents an opportunity to strengthen the bond between humans and nature, promoting the integration of technological innovation and natural resources (Antonelli, 2019). Regeneration marks a further evolutionary step, with the goal of creating resilient socio-ecological systems capable of self-regulating and regenerating autonomously in the long term. Design evolves production processes into circular and regenerative models, requiring a holistic vision that integrates economic, social, and environmental needs. The self-sufficiency of territories is promoted, resource rebalancing occurs, and production chains are reconnected, valorising local vocations and contributing to an evolving relationship between living systems and technological innovation. In this process, the environment becomes the heart of the model. Circular economy develops progressively through incremental and radical innovations (Cainelli et al., 2020), aiming to reduce the exploitation of natural resources, lower emissions and waste, and ensure that socio-ecological systems operate within limits favourable to human life. Circular economy and bioeconomy emerge as crucial paradigms for restoring a balance between ecological and socio-economic systems, contributing to the creation of more resilient and sustainable models.

ADVANCED SUSTAINABLE TEXTILES: QUINTUPLE HELIX & SYSTEMIC DESIGN

The innovation model that best integrates social, environmental, and economic needs is the Quintuple Helix (Carayannis et al., 2012), which involves five key actors: businesses, research institutions, public administrations, civil society, and the natural environment. This model recognizes that innovation is closely tied to social and environmental contexts and that cooperation between different actors is essential for sustainable solutions. In the context of local development, a relational system emerges based on interconnected interactions. Collaboration between public administrations, businesses, research institutions, and civil society is crucial for developing eco-friendly solutions. Administrations promote environmental policies, while businesses and institutions implement them, developing innovative technologies. Civil society plays a key role in raising awareness and encouraging responsible behaviors, stimulating bottom-up change. Natural capital, such as water, renewable energy, biodiversity, and plant-based materials, is essential to ensure that innovation is sustainable. Design becomes the mediator between these components, creating connections and developing a production and consumption model based on local, open, and interconnected systems. Through networking processes, collaboration among local actors is promoted according to a holistic territorial approach, which integrates systemic thinking with the methodologies of Systemic Design, critical for the transition to sustainable models. As Wahl (2016) emphasized, human impact on Earth needs to be reimagined, requiring transformative actions. Systemic Design emerges as a key discipline for the transformation of local economies into sustainable ones (Luthe et al., 2020). This approach is based on an interconnected logic, where the output of one system becomes the input for another, creating circular flow dynamics (Ceschin, 2010; De Biase, 2016), fostering the construction of self-regenerating and resilient systems. In this context, residual biomasses, such as agricultural and forestry waste, represent a strategic resource that can be requalified, transforming waste into economic, social, environmental, and cultural value. Research conducted by the Textile Design Lab (TexLAB, 2025) at the Department of Architecture and Industrial Design of the University of Campania Luigi Vanvitelli supports and develops

the methodologies and practical and theoretical experimentation necessary to apply systemic design to new practices, proposing innovative solutions for resource enhancement in the textile design sector and beyond.

BEST PRACTICE IN RESEARCH CONSULTANCY: TEXLAB PERSPECTIVES FROM DESIGN FOR REGENERATIVE CONTEXTS

The research conducted at TexLAB (TexLAB Team: Amato, C.I.; Cecere, E.; De Toro, S.; Martucci, S.; Orlacchio, M.) is embedded in the methodologies and experimentation of Design for Regenerative Contexts. This approach translates into the definition of best practices that include tools for guiding circularity (Fig. 01), the use of hybrid materials derived from biomass valorization, and the promotion of open innovation within Design Driven practices. The laboratory fosters collaboration with industrial partners, universities, public administrations, and local communities, focusing on both scientific and applied research. TexLAB's goal is to enhance local resources to design new systems, products, and services, contributing to the creation of a network of relationships and co-creative processes. This process reorganizes the territory, allowing TexLAB to establish itself as a hub for scientific consultancy with positive and proactive impacts in the various fields in which it operates.

FROM FARM TO CLOTHES: CONTRIBUTIONS TO THE HEREWEAR PROJECT FOR CIRCULAR TEXTILE ECONOMIES

TexLAB, as part of the Textile & Clothing Business Labs (TCBL) network, participates in the European project Herewear (Horizon 2020-2024), focusing on stakeholder community management and the dissemination of research findings on sustainable and circular practices in the textile sector. In 2020, the lab contributed to organizing the "From Farm to Clothes" event at the Officina Vanvitelli of Unicompania, promoting at regional, national, and European levels the creation of a market for biobased, circular textiles sourced from local production (Fig. 02). The research led to the formation of a network focused on the recovery and management of plant biomass, developing a model aimed at local self-sufficiency with large-scale applicability. TexLAB's research activities include creating sustainable yarns from

residual biomasses, valorising local traditional crops, and adopting advanced technologies for innovative hybrid applications. The laboratory has developed prototypes using equipment such as semi-digital looms (Kniterate) and 3D printers (Stratasys J750, Wasp) to test yarns, create experimental patches, and hybridize polymer structures, expanding applications in the textile, apparel, footwear, and leather industries. Another key area is the adoption of ecological dyeing and printing processes, using residual plant components to produce natural dyes through the Natural Colour Code System (NCCS), which defines new color codes for biobased solutions in the textile sector. Another significant contribution of TexLAB to the Herewear project was providing scientific support during the final phase, offering consultation on the management of residual biomass in Campania. The lab cataloged and collected data on plant biomasses, structuring them into datasets and representing them in infographics and shapefiles for geo-referenced visualization via GIS software. This phase included updating the state of the art and creating a database useful for implementing a local circular model, promoting sustainable management of natural resources.

TEXLAB FOR EDUCATION: SUSTAINABLE FASHION LANDSCAPES, DEFINING NEW FASHION VALUES THROUGH CO-CREATIVE RECYCLING

The project "Sustainable Fashion Landscapes" promotes a co-creative ecosystem focused on social and design innovation, raising awareness about the impact of human activities on the ecosystem. It explores new models of consumption and production by valorising textile excesses (deadstock) and creating a capsule collection (Fig. 03). Cataloging pre-consumption and post-production resources is crucial for selecting fabrics to transform into innovative products. This project involves volunteer organizations, national stakeholders, and the Master's Degree Program in Design for Innovation, with a focus on Fashion and Textile Design, enriching the skills of students and women, such as those from the Centro REMIDA Napoli, which is dedicated to environmental responsibility and social inclusion. In collaboration with Tessuti di Sondrio, the project "S'ARTE" offers training opportunities for women in difficulty.

Master's students in Fashion Eco-Design collaborate with expert designers and seamstresses from social tailoring to create a capsule

From farm
to Clothes / Herewear
→ Bio-based textile
from circular economy

TexLAB Lifecycle Map

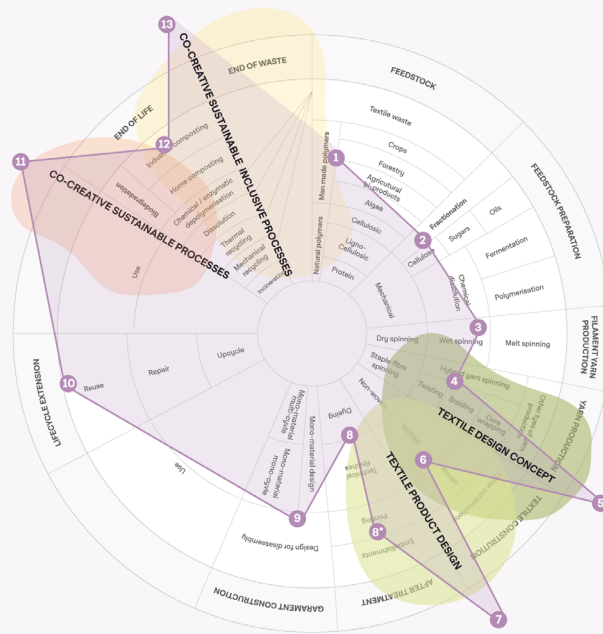


Fig. 01



Fig. 02



Fig. 03

collection using reclaimed fabrics. The designers work on creating gender-fluid garments, using recycled materials and hybrid manual and digital techniques, with colours inspired by nature. The project promotes inclusivity and Body Positivity, designing garments that challenge traditional notions of masculinity and femininity. Training and collaboration are central to the project, offering continuous learning pathways that engage women, designers, and students. Recovered textile resources are processed through creative recycling techniques, and the integration of various experiences helps to form an aware and proactive community. The creative process includes prototyping, blending traditional tailoring techniques with modern practices. The resulting garments meet aesthetic needs while reflecting expressive values, with styling and communication promoted through exhibitions, such as Milano Unica 2022, and digital content shared on social media. The product packaging uses textile materials from the collection, enriching the consumer experience with informative labels, making the entire process more transparent and engaging for end consumers.

TEXLAB FOR EDUCATION: TEXTILE MATERIALS AND 3D INTEGRATION EXPERIENCE

The course “Laboratorio di Industrial Design 2” at the University of Campania focuses on design oriented toward circularity, promoting the use of local primary and secondary raw materials, with particular emphasis on pre-consumption waste as valuable resources. The students were guided in defining new co-creative nodes within the value chain, emphasizing the importance of synergy between production sectors, waste recovery, and the integration of advanced technologies to develop sustainable products.

The projects developed highlight how waste recovery can be integrated with Additive Manufacturing (AM), particularly through the use of 3D printers, to transform materials destined for disposal into valuable components for Design and Fashion Design: Project 1: Wool Waste Recovery The first project focuses on recovering waste from the wool supply chain, particularly discarded spools due to issues like inconsistent fibers and impurities. To valorise these materials, a two-step process was adopted: the wool threads were treated with fish glue and spread on a flat surface to form thin sheets. A 3D structure was then designed to support the treated sheets and threads. The integra-

tion of textile surfaces and printed structures led to the creation of custom-designed components, such as lamps, leveraging the complex geometries enabled by AM technology. Project 2: Dairy Waste Recovery The second project focuses on recovering local dairy waste, combined with agar to create a soft, flexible material. This material was then used to produce a dynamic lamp, highlighting the interaction between natural materials and advanced technologies to generate sustainable solutions. Project 3: Cotton Waste Valorisation The third project addresses the valorisation of cotton waste unsuitable for industrial production, combined with sound-absorbing materials to create modular panels for Interior Design. The inclusion of denim scraps enriches the product, adding aesthetic value and soundproofing performance (Fig. 04). Project 4: Chronophotography and Parametric Modelling The fourth project explores the integration of chronophotograph and parametric modelling, focusing on discretion and temporal continuity in Fashion Design. The captured movements were translated into graphic sequences that connect aesthetics, painting, and dance, demonstrating how the integration of tools and technologies can redefine the visual codes of contemporary design. These projects emphasize the potential of circular design and the synergy between materials and technologies, while addressing sustainability in both environmental and social contexts. Through hands-on experimentation and research, students are actively contributing to the development of innovative solutions that challenge traditional production models and contribute to a more circular, sustainable design ecosystem.

OPEN DISCUSSION

The paper emphasizes the crucial role of collaboration across different sectors, enhanced by the adoption of advanced technologies, to develop innovative and sustainable solutions in fashion and industrial design. The integration of recovery materials and waste with emerging technologies optimizes production processes and opens up new design opportunities to address environmental challenges. The synergy between design, material science, and technological innovation is vital for the future of industrial design and sustainable fashion. A key example highlighted is the combination of repair design with a regenerative approach, supported by research-action pathways. This synergy employs software and tools for



Fig. 04

analysing both qualitative and quantitative scientific data to configure context-specific solutions. Regenerative design approaches promote local self-sufficiency models, valuing both material and immaterial resources (Sbordone et al., 2022). The research conducted at TexLAB explores integrated solutions to develop products from locally available resources. Through collaboration with industrial partners, the project utilizes residues from agricultural, forestry, and algal biomass, contributing to the redefinition of supply chains in sectors such as textiles, bio-composites, nutraceuticals, and wellness. This approach applies and encourages bioeconomy at the local level, responding to sustainability needs. Design, as an engine of transformation, is based on durable strategies derived from practical experiences and integrated theories. This approach fosters a circular, regenerative, and interconnected economy, capable of promoting prosperity that is not limited to material wealth but extends to the creation of a satisfying and balanced life in harmony with the social and environmental context. Therefore, prosperity goes beyond economic growth and embraces collective well-being and environmental sustainability. In conclusion, a shift towards systems-thinking and

circular economies in design, supported by technology and collaborative networks, is fundamental for a sustainable future. By leveraging local resources and fostering cross-disciplinary cooperation, the design field can actively contribute to both ecological restoration and social equity. This vision not only advances environmental goals but also creates new pathways for social innovation, ensuring that the future of fashion and industrial design is both responsible and regenerative.

CAPTIONS

[Fig. 01] TexLAB Lifecycle Map. Life cycle assessment of laboratory experiences on biobased textiles. (Infographic reworked by Amato, 2022; TexLAB, 2022).

[Fig. 02] Hemp-Nettle Blending. Innovative configuration for apparel applications. (TexLAB, 2024).

[Fig. 03] Rethinking deadstock. Advanced pattern prototyping from co-creative recycling process (REMIDA Napoli, and TexLAB, 2022).

[Fig. 04] Cotton waste valorization. Sound-absorbing modular panels for indoor solutions. (TexLAB, 2024).

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