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EDITED BY VALERIA M. IANNILLI AND ALESSANDRA SPAGNOLI

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Image of *Toile de Joy* from Shajwan Nariman Fatah's paper, reworked by the editorial staff

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CONTENTS

EDITORIAL..... 7

CONSCIOUS FASHION CULTURE
VALERIA M. IANNILLI, ALESSANDRA SPAGNOLI..... 8

CONSUMED FASHION..... 17

FASHIONING INEQUALITY
JACOPO BATTISTI, ALESSANDRO SPENNATO.....18

CONSUMING FASHION
CHIARA COLOMBI, ERMINIA D'ITRIA..... 26

YOU WILL NEVER BE ME
ISABELLA ALEVATO, STEFAN LIE..... 36

A NEW ERA OF ITALIAN KNOW-HOW IN FASHION
GIANNI DENARO, ANDREA PRUITI.....48

UNIFORM DESIGN INNOVATION
LUDOVICA ROSATO, ALBERTO CALLEO, SIMONA COLITTI, GIORGIO DALL'OSSO, VALENTINA DE MATTEO..... 56

HUMAN-COMPUTER INTERACTIONS TO REMATERIALISE FASHION HERITAGE ARTEFACTS
ANGELICA VANDI, PAOLA BERTOLA, EMMA SUH..... 68

CONSUMER COMMUNITIES..... 79

OUR FASHION HABITS
CLAUDIA MOREA, SILVIA GAMBI.....80

TRANSFORMING CIRCULAR FASHION IN VIETNAM
LAM HONG LAN, DONNA CLEVELAND..... 90

ORDINARY FASHION CONSUMPTION
IRIYNA KUCHER..... 102

DESIGN SOLUTIONS FOR CONSCIOUS AND SUSTAINABLE FASHION CONSUMPTION
LAURA GIRALDI, MARTA MAINI, FRANCESCA MORELLI.....112

COMMUNITY-DRIVEN CONSUMPTION DYNAMICS
GABRIELA FABRO CARDOSO.....122

KNITWEAR CONSUMERS, COMMUNITIES AND MAKERS
GIOVANNI MARIA CONTI, MARTINA MOTTA.....132

CONSUMER CULTURE..... 141

ECONOMY OF THE EPHEMERAL
KARMEN SAMSON..... 142

FASHION, CONSUMER CULTURE, AND CLASS STRUGGLE
SHAJWAN NARIMAN FATAH..... 150

APPROACHING FASHION IN THE METAVERSE
ROMANA ANDÒ.....160

CONSUMING DIGITAL FASHION IN ONLINE COMMUNITIES
ADIL BOUGHLALA, SILVIA MAZZUCOTELLI SALICE.....168

A PLATFORM-BASED INQUIRY ON SUSTAINABLE FASHION AND DESIGN IN THE MILANESE METROPOLITAN AREA
TOMMASO ELLI.....178

SUSTAINABILITY LABELLING IN FASHION
ERMANNO PETROCCHI.....192

EDITORIAL

CONSCIOUS FASHION CULTURE

RETHINKING CONSUMPTION IN CONTEMPORARY FASHION

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By its very nature, fashion consumption assumes a diverse and updated relevance in light of social, cultural, and economic transformations. The global fashion industry is undergoing a paradigm shift driven by rapid technological advances (Bertola & Teunissen, 2018; Lee, 2022), increased awareness of environmental sustainability (Heim & Hopper, 2022; Mishra et al., 2020), and the changing values of individuals (Bürklin, 2018; Camacho-Otero et al., 2020; Domingos et al., 2022). These transformations are forcing creative, production, distribution and communication systems and, not least, the "end consumer" to critically reflect on the role and impacts of the fashion system (Luchs et al., 2015). Digital technologies, for example, have revolutionized how fashion is produced, distributed, and consumed. Digital platforms enable unprecedented levels of interaction between brands and consumers, fostering new forms of engagement and co-creation (Gielens & Steenkamp, 2019). These are widespread, ubiquitous platforms that expand and fragment the fashion narrative (Sadler, 2021), creating a more interconnected, immediate ecosystem within which to experiment with new systems of relationship and mediation. In addition, the growing recognition of the fashion industry's environmental and social impact has catalyzed a movement toward more sustainable practice. On the one hand, the fast fashion model, characterized by rapid production cycles and disposable garments, is being challenged by consumers and activists calling for greater accountability and transparency (Mazzarella et al., 2019). Conversely, sustainable fashion emphasizes ethical production, resource efficiency and circularity, seeking to minimize negative impacts and promote long-term well-being (Centobelli et al., 2022). Finally, European legislation has been proactive in promoting sustainability within the textile and fashion industries through several key legislative initiatives and strategies aimed at reducing the environmental and social impacts of textile production and consumption (European Commission, 2022; Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 Establishing a Framework for the Setting of Ecodesign Requirements for Sustainable Products, Amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and Repealing Directive 2009/125/ECText with EEA Relevance., 2024).

The term "consumption" is inherently multivalent and nuanced. Its very etymology encompasses several facets: consumption means "transformation" of natural resources into fungible goods, but also of signs and symbols into systems of meaning and value. This dual nature of consumption underscores its complexity. On the one hand, it involves converting resources into products that satisfy human needs and desires (Boivin, 2008). On the other hand, it involves the symbolic process of attributing meanings to these products that resonate within cultural and social contexts (Davis, 1992). This duality is particularly evident in fashion, where clothing has both functional and self-expression purposes.
Consumption also means "destruction", that is, the reduction to nothingness of tangible or intangible elements, in turn rendering them unusable through the very act of use. This aspect of consumption highlights the inherent tension between use and waste. Every act of consumption carries with it a potential for depletion and degradation, whether physical goods or intangible experiences. In fashion, this is manifested in the life cycle of clothing, from creation and use to eventual disposal (Shirvanimoghaddam et al., 2020). The environmental cost of producing and discarding garments is significant and prompts a critical examination of consumption practices and their sustainability. Obviously, in its most common meaning, consumption stands for "use" or "utilization", which consists of the activity of making use of a tangible or intangible item but also, in a broader sense, in the act of enjoying services, experiences or activities that do not involve transformation or destruction. This broader interpretation of consumption emphasizes the experiential dimension, where value derives from enjoyment and engagement with fashion as a social and cultural phenomenon (Woodward, 2007). Fashion

consumption thus encompasses a wide range of activities, from the purchase and use of clothing to its enjoyment in cultural terms to the experience provided by virtual worlds.

The fashion system has always intertwined its practices and processes with this multivalent universe that constitutes the landscape of the consumption system of both the creative, material and human resources along the entire fashion supply chain and the fashion object itself, its images and projections. The interaction between creation and consumption is a distinctive feature of the fashion industry. Designers and brands create products that are functional and charged with symbolic meanings, anticipating how consumers will interpret and interact with them. This relationship extends throughout the supply chain, influencing decisions about material sourcing, production processes, communication strategies, and retail experiences.
In the current digital and sustainable transformation context, this intertwining opens up broad areas for thinking about consumption practices, processes and impacts with a more critical and responsible approach (Colombi & D'Itria, 2023). Digital technologies have expanded the possibilities for creating, sharing and experiencing fashion. Virtual and augmented reality, for example, offer consumers new ways to interact with fashion products and brands, blurring the boundaries between the physical and digital worlds (Zarantonello & Schmitt, 2022). These innovations enable more personalized and immersive experiences, fostering deeper connections between consumers and fashion.
On the one hand, focusing on more sustainable forms of natural resource use promotes new business models and circular forms of production, which involve reducing, recovering, and reusing finished products and their waste. Circular fashion models aim to extend the life cycle of garments, reducing the need for new resources and minimizing waste. Practices such as upcycling, recycling, and using sustainable materials are integral to this approach (de Aguiar Hugo et al., 2021). By designing long-lasting products and encouraging practices such as repair and resale, the fashion industry can reduce its environmental footprint and promote a more sustainable consumption pattern.
On the other hand, new forms of collaborative consumption are emerging, aimed at extending the life cycle of products through the adoption of curation practices, re-signification and rethinking. These practices promote more active and conscious consumer participation, emphasizing the shift from passive consumption to an engaged and responsible use of fashion (McNeill & Venter, 2019). Collaborative consumption models, such as clothing rental services, fashion exchanges, and peer-to-peer resale platforms, encourage consumers to share and reuse clothing, reducing demand for new products (Arrigo, 2021). These models not only promote sustainability but also create communities of individuals who share values and practices.

The third issue of Fashion Highlight investigates the dynamics, practices, and impacts of fashion consumption in the light of the transformations taking place, questioning the role and potential that fashion industries, creative communities, consumers and education can express. The issue comprehensively covers the different declinations of contemporary fashion consumption, highlighting the trajectories that shape practices, processes and methods within the context of the - long and complex - fashion value chain. The contributions cover three relevant and promising macro-areas to understand the state of the art of fashion design, manufacturing and consumption and to get a preview of the near future: **Consumed fashion**, with a focus on the economic-productive dimension of fashion within a context for which digital and sustainable transformation is crucial, with necessary implications in terms of reconfiguring and updating processes and competences; **Consumer communities**, through the investigation of new and contemporary orientations towards more responsible and sustainable consumption practices; **Consumer culture**, concerning the dynamics, approaches and practices through which fashion is narrated, conveyed, and experienced.

The first section, **Consumed Fashion**, brings together articles that critically explore the trajectories within which fashion manufacturing systems are evolving, highlighting both the criticalities and impacts of a socio-economic system dominated by hyper-production and hyper-consumption, and outlining and experimenting with new and more responsible approaches to design and manufacturing. Likewise, the selected articles highlight

transformational dynamics involving the fashion "know-how", delving into the implications needed to reconfigure and update processes and skills and emphasizing the need for continuous evolution in how fashion is understood and practiced. These dynamics require a shift in the sector's knowledge base, leading to a re-examination of traditional practices and the development of new sustainable approaches that respond to contemporary transformations.

Jacopo Battisti and **Alessandro Spennato** critically examine the profound impact of fast fashion on individuals and societies in the context of globalization and consumer capitalism. The study explores how the industry's rapid replication of trends and profit motivations have transformed clothing consumption, leading to hyper-consumption and disposability, with negative impacts in terms of economic dependency and inequalities to the detriment of low labour-cost countries. The paper underscores the need to address these systemic injustices through collective action, stressing the importance of prioritizing social and environmental responsibility to envision a more ethical and equitable fashion industry.

Erminia d'Itria and **Chiara Colombi** propose an examination of sustainable innovation dynamics within the fashion industry, scrutinizing various merchandising strategies through fashion companies' case studies. The authors build a system model centered on refashioning, formulated from diverse strategies aimed at enhancing product longevity and curbing overconsumption and overmanufacturing. Through their analysis, they identify three thematic frameworks that encapsulate sustainable design approaches, responsible practices, and conscious consumption strategies, thus providing reference for future research to explore the implications, challenges, and benefits of a viable, eco-sustainable future scenario.

Isabella Alevato and **Stefan Lie** explore the integration of next-generation materials into products with psychological significance to improve consumer acceptance and achieve environmental benefits. The study hypothesizes that customizing products with users' genetic material can better represent their environmental concerns and individuality. Focusing on biofabricated bags, the research moves from secondary research to materials testing and prototyping to investigate whether incorporating the user's genetic material into a bag can symbolize self-extension and advances in materials design, thus supporting environmental sustainability.

Gianni Denaro and **Andrea Pruiti**'s article delves into the evolution of production and consumption paradigms in the fashion industry, highlighting the growing emphasis on customising fashion products through local craftsmanship, an approach considered more environmentally, economically, socially and culturally sustainable. Beginning with a renewed interest in local craft traditions, particularly in Italy, where the "Made in Italy" label exemplifies a fusion of creative manual skills and taste rooted in local tradition, the article explores how designers are integrating these craft practices into industrial production, promoting a new dimension of "know-how" that combines local specificity with industrial processes.

Ludovica Rosato, **Alberto Calleo**, **Simona Colitti**, **Giorgio Dall'Osso** e **Valentina De Matteo** present an interesting case study on a multidisciplinary, multistakeholder model designed for a hybrid research-education-business environment. This model shows how involving research and industry professionals in a collaborative learning model can produce results that address contemporary fashion industry challenges. The study emphasizes the importance of collective intelligence in design-led innovation, particularly in the framework of open innovation, and through the adoption of co-design processes, proposes new strategies for industry transformation, especially in the shaded realm of technical apparel and uniforms.

The article by **Angelica Vandi**, **Paola Bertola** and **Emma Suh** explores the evolution of the concept of "materiality" in fashion, influenced by Industry 4.0 technologies, and its implications in human-computer interaction (HCI). The research, resulting from a collaboration between the Gianfranco Ferré Research Center of the Politecnico di Milano and the Department of Mechanical Engineering at MIT, employs a Reverse Engineering approach to study and deconstruct a garment from the Gianfranco Ferré archive. This process aims to rematerialize the garment and integrate HCI principles into educational applications in culture and design. The results underscore the innovative potential of the fusion of traditional craftsmanship and advanced production, highlighting the democratization and dissemination of archival knowledge through technological hybridization and interdisciplinary collaboration.

The second section, **Consumer Communities**, brings together articles that critically reflect on the changing dynamics of fashion consumption and the growing influence of consumer communities, highlighting their intrinsic motivations and imagining future trajectories. This section analyses how consumer behaviour, social movements and community-led initiatives are reshaping the fashion industry towards sustainability and ethical approaches. By examining different case studies and research findings, the selected articles provide insights into how consumer participation, digital platforms and innovative consumption patterns are beginning to contribute to a more sustainable and responsible fashion ecosystem and what - desirable - impacts they may have on the future of fashion.

Claudia Morea and **Silvia Gambi** explore the central role of consumers in the transition to sustainable fashion. Recent consumer purchasing decisions have shaped new trends and business models, with one segment viewing purchasing as a political choice and in line with European legislation promoting sustainability in the fashion industry. The research surveyed Generation Z to investigate their familiarity with eco-design strategies related to the use phase, revealing a gap between policy and design orientations and actual consumer engagement. The study highlights the need to bridge the gap between policy, design and consumer behaviour for true sustainability in fashion.

Lam Hong Lan and **Donna Cleveland**'s article analyzes the shift to sustainable consumption through pre-owned fashion in Vietnam. The research includes observations of local media, analysis of two major pre-owned fashion platforms, and insights from an online survey of Vietnamese consumers. This comprehensive study reveals how online media, particularly celebrity endorsements and social commerce, contribute significantly to this transformation by building e-communities that support circular fashion practices. The findings reveal that these e-communities are crucial in promoting responsible consumption among Vietnamese youth, driven by economic, environmental, and style considerations that make second-hand fashion attractive.

Iryna Kucher's article examines fashion consumption by analyzing clothing purchase, use, and disposal practices in Denmark and Ukraine. Employing the theory of fashion consumption temporalities, the study analyzes how these practices have evolved due to social changes. Through wardrobe studies of different age groups, the research highlights the unique and common aspects of sustainable clothing consumption among Western and post-Soviet consumers. It also introduces an additional temporality of clothing consumption, challenging previous studies and offering new perspectives for understanding the transition to sustainability in fashion.

Laura Giraldi, **Marta Maini**, and **Francesca Morelli** examine the contemporary fashion consumption landscape, focusing on consumers' growing awareness of sustainability in the fashion industry. Analyzing the current state and highlighting exemplary sustainable practices, the article reveals emerging service design solutions that promote more sustainable and conscious fashion consumption. These practices, such as second-hand shopping, collaborative wardrobe sharing, and clothing customization, reshape consumer experiences and push brands to adapt their communication strategies to appeal to the more conscious Gen Z audience.

Remaining in collaborative fashion consumption practices, **Gabriela Fabro Cardoso** analyzes the final stages of retail dynamics as potential pathways to a more sustainable future, focusing on the distribution and use phases through collaborative consumption models such as resale, rental and subscription services. Through case studies, the research explores the relationship between community involvement in retail activities - such as product authentication, promotion, price negotiation, and transaction completion - and corporate commitments to sustainability, including consumer education on circularity, financial support for sustainable practices, and progress monitoring systems.

Finally, **Giovanni Maria Conti** and **Martina Motta** explore the resurgence of knitwear in the contemporary fashion industry, emphasizing its role as a bridge between creation and consumption and challenging traditional fashion norms. Their qualitative research highlights knitwear's response to changing consumer attitudes, technological advances and global events, showing its potential to promote creativity, sustainability and ethical practices. The article investigates the space created by knitwear, questioning the new role of individuals, who are freer to experiment and experiment with interconnected aspects, breaking

away from being mere consumers and becoming conscious makers.

The third and final section, **Consumer Culture**, presents a selection of articles that aim to analyze, adopting different points of view, the dynamics, approaches and practices through which fashion is narrated, transmitted and experienced. This section explores fashion narratives and recent evolutions in terms of languages, content and formats, focusing on the impact of digital technologies. Examining historical perspectives, philosophical readings and the transformative power of digital media, these articles offer a comprehensive understanding of how consumer culture shapes and is shaped by fashion. The studies provide insights into the cyclical nature of fashion, the intersection of fashion and social class, the emerging role of the metaverse, the motivations behind digital fashion consumption, and the implications of technologies in sustainable fashion.

Karmen Samson opens the discussion with a theoretical reflection on fashion as an "economy of the ephemeral", emphasizing its cyclical and transitory nature within consumer culture. Using the concepts of "blooming" and "decay", the author elucidates the temporal dynamics of fashion, integrating these natural processes with the temporal politics of industry. By investigating the interplay between time, consumerism, and fashion's impermanence, the article provides a deeper understanding of cycles that extend beyond traditional notions and presents a detailed and nuanced analysis of fashion's fleeting essence, encouraging to reconsider the significance of decay within the fashion industry.

Shajwan Nariman Fatah's article delves into the social dynamics captured in the narratives of the Toile de Jouy textile through a philosophical perspective. This study aims to reveal the fundamental connection between working-class labor and bourgeois consumption patterns as depicted in Toile de Jouy. Utilizing the theoretical frameworks of Karl Marx and Jean Baudrillard, the research examines the links between fashion, production methods, consumer behavior, and the concept of simulation, highlighting how the capitalist system commodifies/appropriates the product without regard for its aesthetic qualities, labor origins, or intrinsic value.

Finally, diving into the impacts of digital technologies on fashion consumption, **Romana Andò** delves into the emerging and evolving concept of the Metaverse within the fashion industry. Through qualitative research focused on international Millennials and Generation Z consumers, the study explores the meanings associated with the Metaverse, its intersection with the digitization of fashion and digital apparel, and its target audience's media literacy and expectations. The investigation highlights the relationship between fashion and individual self-presentation in the Metaverse and examines how these digital environments are transforming consumption processes in the fashion industry.

Adil Boughlala and **Silvia Mazzucotelli Salice**'s article explores the intricate relationship between contemporary fashion consumption and digital tools, from pre-purchase browsing to post-purchase sharing on social media. The study delves into the growing field of digital fashion, particularly the motivations behind consumer adoption of digital fashion end products such as NFT fashion, video game skins, and AR filters. The research, adopting a mixed-media approach, examines the profiles and cultures surrounding digital fashion consumption, suggesting that digital fashion contributes significantly to identity formation and self-expression, creating a new "phygital" hybrid identity paradigm in which the physical and digital realms merge, reinforcing socio-cultural dynamics within brand communities.

By means of data from web platforms and social media recommendation systems, **Tommaso Elli** proposes research to identify and analyze significant local projects in sustainable fashion and design initiatives in the Milanese context. The research aims to investigate the relationships between urban actors, highlight key sustainability advocates, and evaluate the effectiveness of digital methods in studying local phenomena. The results demonstrate the potential of these methodologies to improve the understanding and promotion of sustainable practices in fashion and design.

To conclude, **Ermanno Petrocchi** investigates the influence of persuasive technologies on consumer behavior in sustainable fashion. The study addresses the ethical concerns surrounding sustainability labels and their implementation within digital platforms, highlighting potential consumer risks in the digital age. By analyzing consumption patterns and consumer preferences, the paper reveals how persuasive technologies can manipulate individuals with weak preferences for

sustainable fashion, thereby affecting the formation and expression of their identity.

Together, these sections offer a comprehensive exploration of the multifaceted nature of fashion consumption in the contemporary world. By examining the economic, social and cultural dimensions of consumption, the issue provides a nuanced understanding of the complex dynamics shaping the fashion industry today. Contributors highlight the critical need for a more responsible and reflective approach to fashion consumption that recognizes the interconnectedness of production, distribution and use and the potential for more sustainable and ethical practices. Through this critical lens, this issue thus advances the discourse on sustainable fashion and deepens understanding of the changing landscape of fashion consumption.

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CONSUMED FASHION

FASHIONING INEQUALITY

THE SOCIOECONOMIC IMPLICATIONS OF FAST FASHION'S GLOBAL REACH

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Abstract

Fast fashion, a phenomenon born in globalisation and consumer capitalism, represents a meeting point of commerce, culture and exploitation. Characterised by the rapid replication of catwalk trends and the relentless pursuit of profit, it has revolutionised our approach to clothing consumption. However, behind the lure of fast fashion lies a darker reality of economic imperialism and exploitation. Outsourced production in developing countries, driven by the search for cheap labour and resources, perpetuates a cycle of dependency and inequality. Furthermore, the cultural appropriation and commodification of indigenous designs further underline the colonial mentality inherent in the fast fashion industry. Navigating the complexities of globalisation and consumerism, it becomes imperative to critically examine the impacts of fast fashion on individuals and societies. By understanding the underlying forces that drive consumer behaviour and the systemic inequalities perpetuated by the industry, we can begin to challenge the status quo and imagine a more equitable and sustainable future.

Keywords: *Fast fashion; Inequality; Globalisation; Hyperconsumption*

INTRODUCTION

In an era of rapid globalisation and consumer capitalism, fast fashion is a testament to the intersection of commerce, culture, and exploitation. Fast fashion, characterised by its swift replication of runway trends and its relentless pursuit of profit, has revolutionised how we approach clothing consumption. Originating as a response to the demands of an increasingly fashion-conscious market, fast fashion has transcended mere industry trends to become a pervasive force shaping consumer behaviour and global economic dynamics.

At its core, fast fashion represents a paradigm shift in the fashion industry, marked by accelerated production cycles and the democratisation of style. Enabled by technological advancements and outsourcing manufacturing to low-wage countries, fast fashion has blurred the lines between fashion seasons, offering consumers a constant stream of new designs at affordable prices. This model of hyperconsumption has fostered a culture of disposability, where clothing is treated as transient commodities rather than enduring expressions of personal style.

However, behind the allure of fast fashion lies a darker reality of economic imperialism and exploitation. Outsourcing production to developing countries, driven by the pursuit of cheap labour and resources, perpetuates a cycle of dependence and inequality. Workers in garment factories, predominantly women, endure exploitative working conditions and meagre wages while Western corporations reap the benefits of their labour.

Moreover, the cultural appropriation and commodification of indigenous designs further underscore the colonial mindset embedded within the fast fashion industry. By capitalising on exoticism without acknowledgement or compensation, fashion brands perpetuate power differentials and erode cultural heritage, all in the name of profit.

As we navigate the complexities of globalisation and consumerism, it becomes imperative to examine fast fashion's impacts on individuals and societies critically. By understanding the underlying forces driving consumer behaviour and the systemic inequalities perpetuated by the industry, we can begin to challenge the status quo and envision a more equitable and sustainable future.

DEFINITION OF FAST FASHION AND OVERVIEW OF ECONOMIC IMPERIALISM

Fast fashion, as defined, is a contemporary term used by fashion retailers to acknowledge the process of imitating trends and styles from the runway to the fashion-conscious consumer (Caro & Martínez-de-Albéniz, 2015). According to a New York Times article titled Fast Fashion, fast fashion can be described as an industry defined by many groups whose purpose is to provide the latest fashion trends into the market as quickly and inexpensively as possible (Schlossberg, 2019). This is done so consumers can wear current clothing styles at a reduced cost. This has led to an increased rate of consumers purchasing new clothing to augment their current wardrobe. A higher rate of disposal of old clothing also contributes to an increase in purchasing more fashion-conscious items - all brought forth by fast fashion (Morgan & Birtwistle, 2009).

Offshore manufacturing has led to a new industry trend, fast fashion, in which the time taken to design, produce and distribute products to consumers is significantly reduced. Many modern retailers have used fast fashion to capitalise on the latest fashion trends. It enables mainstream consumers to purchase trendy clothing at an affordable price. The inability of traditional retailers to move rapid products to the market in response to changing consumer demands has given rise to a market of diverse, easy-to-access stores with simple and easy purchases.

To achieve fast production, the central concept that was pushed onto firms was production outsourcing. The low cost of manufacturing in third countries and the greater availability of workers led to an influx of work being moved out of Europe and America. This concept was driven by the fashion industry's global nature and inter and intra-firm comparative advantage (Caniato et al., 2015). A firm would compare its relative costs of doing business across countries, giving an incentive to have some company activities done in other countries. This would then impact other similar firms to change locations to stay competitive. Fast fashion relies on IT technological advances such as electronic transfer of production information and management, enabling dispersed supply chains to function effectively and leading to production fragmentation and an increase in outsourcing tasks to contractors in distant countries (Gereffi et al., 2005).

Economic imperialism in the modern world is the conjunction of different relations of dependence into one, all-embracing system, in which the economic control of the developed countries is extended through various mechanisms on less developed countries. It is identified by the allocation of resources from the development of one country to another in a manner that benefits the developed countries and is detrimental to the development of the underdeveloped countries. Imperialism has been persistent throughout many different periods. The feudal societies, which encompassed the 14th and 15th centuries, experienced a form of imperialism where the more developed countries at the time, such as the mighty Roman Empire, took control of the less developed countries to colonise the countries to increase their resources and power. This form of imperialism was also exhibited by the British Empire, which played a massive role in the underdevelopment of India. This historical context is important because India is now known as one of the largest exporters of textiles in the world. In understanding the role of fast fashion in reshaping economic imperialism, it is essential to fully understand what it is and what it entails, as well as consider how the many different countries affected by imperialism are still feeling the effects today (Battisti, 2022).

Globalisation and the modern technological era have brought a new wave of ideas in the fashion industry. Many old cultural survival practices undergo a very complex amalgamation with modern life. It has liberated societies from many of the old rural traditions and facilitated the rise

in living standards worldwide. It has also enabled the spread of Western consumer culture, which highly emphasises individualism and material wealth. It is a culture that is said to be wrapped up in the ideal of 'freedom', most notably the freedom of expression. Therefore, the fashion industry, a constituent of consumer culture, has significantly benefited from globalisation's spread of 'free' trade and ideas through various cultures and societies across the globe.

Fashion was previously created in four seasons: spring, summer, autumn, and winter. The market would have to wait six months until the new design of clothing was deemed necessary. Fast fashion eradicated the waiting time. It made the fashion industry global and moved the direction of fashion towards low-cost, high-volume global clothing. Economic imperialism is the state of mind that is passionate about improving other peoples' financial conditions, specifically in the West. This is still taking place in today's business world. A clear example is how fast fashion has affected the countries in which it is produced. Fast fashion is "the quick response of European and American fashion producers to the new designs coming out of Paris, Milan, London and New York" (Tokatli, 2007, p. 68).

One perspective of globalisation in the fashion industry has to do with the idea of dissonance. 'Dissonance' can be defined as the forcing of independent solutions to common global structural problems, which were previously resolved through common institutions. The dissonance perspective stresses that the increased interactions between societies have resulted in an ability to produce and reproduce more social life across national and local boundaries, social life in all its complexity (Oxoby, 2004). This complexity of social life is due to modernisation, which has facilitated the rise of fashion. Modernisation is often linked with Westernization, a process of Westernization being a global diffusion of modern ways of life that originated in the West (Heath, 2004). The dissonance perspective is a multi-layered point of view, but the essential notion it puts forth on fashion is that style previously restricted to a particular local or global elite can now be culled from societies at various social levels worldwide.

CONSUMER NEEDS FOR HYPERCONSUMPTION

The fast fashion textile supply chain is widely acknowledged for its reliance on labour-intensive processes and substandard working conditions. This approach is often adopted to minimise costs and maintain competitiveness in the dynamic fashion market. Unfortunately, many consumers are unaware of the social implications tied to their purchases, driven solely by external factors. This rampant consumerism often overlooks the origins and ethical considerations behind the remarkably low prices, mirroring those flaunted by affluent figures. Despite widespread documentation of abuses within fast-fashion production hubs, Western consumers tend to exhibit apathy towards the plight of foreign workers and show reluctance to alter their buying habits (Araujo et al., 2020). This poses an ethical dilemma, as consumers are indirectly supporting these exploitative practices through their purchasing decisions.

An understanding of the driving forces behind consumer behaviour in fast fashion is essential for the industry's participants if they are to make an informed response to the impacts of this phenomenon. These participants include consumers and stakeholders, such as retailers, marketers, policymakers, and international agencies. Understanding these forces will assist stakeholders in identifying the key areas where interventions can be made to lessen the negative impacts of fast fashion consumer behaviour effectively. Lipovetsky describes hyperconsumption as a new stage of consumer capitalism, the hyperconsumption society (Lipovetsky, 2010). Fast fashion has enabled this clothing consumption through the quick turnover of low-cost, trendy items. Hyperconsumption of fashion is fueled by several complex factors, primarily through retailers' manipulation of consumer psychology and the shift in consumer behaviour. High-volume purchasing of fast fashion results from consumers needing clarification about their actual needs for apparel and their wants for the latest trends (Stanev, 2017). This confusion has been identified due to the deconstruction of the traditional fashion seasons, as labels now produce monthly or fortnightly' micro-seasons'. This has led the consumer to feel that their current wardrobe needs to be completed, as the previous concept of purchasing a seasonal wardrobe is now redundant (Van de Peer, 2014). This has created a consumer mindset that to be adequately dressed for any given moment one must constantly purchase new items. A study demonstrated how culture would profoundly

impact a person's buying behaviour (Lee & Kacen, 2008). Step one in impulsive shopping is to make an unplanned purchase, which is often more accessible online, where one can quickly browse and compare items, effectively leading to higher levels of online impulsive buying than in-store (Kacen & Lee, 2002). This ties in with another study showing that solid cultural values that promote impulsive and compulsive buying behaviour will lead to higher levels of compulsive buying (Lee & Park, 2008). An observation from these studies is that an increase in fast fashion consumer behaviour can be expected in cultures with pre-existing impulsive buying tendencies, this is an important consideration given the increasing global reach of Western-based fashion trends. These stakeholders' collective responsibility is to address these issues and work towards a more sustainable fashion industry.

In today's culture, consumers are exposed to more information about the fashion industry than in previous generations. The fashion industry and clothing have exploded as a topic of interest in the modern era. An increasing number of consumers are following and observing fashion blogs and message boards for information, believing this to be a source of information closer to reality than a glossy magazine (Yaacob et al., 2021). As previously stated, consumers regularly encounter fashion advertising, whether intentional or subliminal, through music videos, film, and the media; this has altered the perception of' realistic' clothing for consumers who may seek to emulate their style icon. Major fashion events and catwalks across the globe, occurring multiple times a year, are no longer the interest of an elite minority. These have become global events reported in close to real-time and disseminated to an enormous viewing public. Fast fashion companies are quick to emulate designs from these events and produce near-identical pieces at a fraction of the cost to the consumer. This will leave people with the desire to have the most recent catwalk looks at an affordable price and will quickly dispose of an item made to look outdated.

The marketer and capitalist functions in modern Western society have led to an increased need to create consumer 'wants' and the more traditional 'needs' for products. This is because it is generally accepted that consumers will make impulse purchases based on want; the fast fashion industry profits highly from this. If the average consumer is bombarded with numerous tempting offers to purchase regularly, their expenditure on fast fashion will increase. With improvements to the ways, we can access the internet from mobiles, laptops, tablets, and modernised applications from retail businesses, consumers can be reached 24/7. These marketing methods manipulate impulsive shoppers to purchase at any time and place (Varghese & Agrawal, 2021). An individual may see someone else's new purchase up close through social media, leading to envy, status, and a need to compete regarding their social appearance with others. This will call for regular spontaneous purchases to maintain or enhance their image. Fast fashion can be associated with a high turnover of clothing, in which consumers are disposing of vast amounts of textiles. Stores need to clear out stock and make room for new lines regularly; this is done through heavy discounting near the end of a season, potential loss of revenue and donations of excess clothing to other countries.

Consumers nowadays are looking for quick, regular updates of new trend designs through increased competition from retailers and the globalisation of innovative information and trade. Fashion has been an important and noticeable part of popular culture and how our attitudes, desires, and needs are expressed. It is argued that it is the nature of fashion to change; more recently, the speed at which it changes has increased. In societies dominated by consumerism, it is essential for companies to keep their products fresh, and consumers involved at cutting-edge costs.

RESHAPING ECONOMIC IMPERIALISM

The fast fashion industry's relentless pursuit of profit undermines social sustainability, defined as the ability of a society to meet the needs of current and future generations while fostering equitable opportunities for all (Barron et al., 2023). By prioritising short-term gains over long-term social welfare, fast fashion perpetuates poverty, inequality, and social instability in producer countries.

The race to the bottom in terms of labour costs drives down wages and labour standards, trapping workers in cycles of poverty and exploitation. This violates their fundamental human rights and impedes their access to education, healthcare, and other essential services (Junya Yimprasert & Hveem, 2005). Furthermore, the environmental degradation associated with fast fashion production exacerbates vulnerabilities in marginalised communities, contributing to social unrest and displacement.

Undeniably, fast fashion has a significant relationship with economic imperialism. The globalisation of the fashion industry and the oft-lamented race to the bottom that global production networks allow are not independent of longer-term, historical processes associated with imperialism (Junya Yimprasert & Hveem, 2005). Sometimes, the terms globalisation and imperialism are used interchangeably. The latter is a contentious term that, since the 1970s, has been the subject of much debate. Although generally employed by critics of global economic structures, the term 'globalisation' assumes an arguably neutral process in its impact. It is helpful to distinguish between globalisation as a meta-historical context of growing global interconnectedness and interdependence and the global economic structures that have emerged since the 1970s and represent the current phase of that broader process. This essay contends that recent changes in the global economy have increased the disposability of the labouring poor and the debt-driven consumption by the working classes in the developed world – leading to social and economic fragmentation between and within countries. This is not to say that these recent changes result from a conspiracy by some group of capitalists to the detriment of the rest. This study attempts to discern the unintended consequences of the agency of various groups in a rapidly changing global economy, with a particular focus on the fast fashion industry.

At the heart of the fast fashion industry lies a colonial mindset deeply rooted in historical power imbalances. Former colonial powers established global trade networks that continue to shape today's fashion supply chain. These networks exploit countries in the Global South, often former colonies, by extracting cheap labour and resources to fuel the insatiable demand for inexpensive clothing in the Global North. This dynamic perpetuates a cycle of dependence and exploitation, where wealth flows from the periphery to the core, echoing patterns of colonial economic exploitation (Infante-Amate & Krausmann, 2019).

Moreover, the colonial mindset manifests in the cultural appropriation and commodification of indigenous designs and traditions (Battisti, 2022). Fashion brands often capitalise on exoticism, appropriating cultural symbols and aesthetics without acknowledging or compensating the communities from which they originate (Park & Chun, 2023). This further entrenches power differentials and reinforces stereotypes, eroding cultural heritage while enriching Western corporations.

Outsourcing production to low-wage countries is a cornerstone of the fast fashion business model. While this practice promises cost savings for brands and affordable clothing for consumers, its human cost is immense. Workers in garment factories, predominantly women, endure abysmal working conditions, including long hours, low wages, and exposure to hazardous chemicals. Many are denied fundamental labour rights such as collective bargaining and safe working environments (Chang, 2020).

Moreover, the industry's subcontracting and informal labour arrangements obscure accountability and perpetuate exploitation. Brands often distance themselves from direct responsibility for labour abuses by subcontracting to third-party suppliers, allowing them to evade scrutiny and accountability for the conditions in which their garments are produced (Caro et al., 2021). This opacity in the supply chain enables brands to prioritise profit margins over the well-being of workers, perpetuating a system of modern-day slavery.

CONCLUSIONS

In the era of globalisation and consumer capitalism, the rise of fast fashion has become a stark symbol of the intricate interplay between commerce, culture, and exploitation. This industry, with its rapid replication of runway trends and relentless pursuit of profit, has transformed clothing consumption, leading us into an era of hyperconsumption and disposability. However, beneath its surface allure, a harsh reality of economic imperialism and exploitation is hidden, demanding our immediate attention.

Outsourcing production to low-wage countries has perpetuated cycles of dependence and inequality, echoing historical colonial economic exploitation patterns. Workers, predominantly women, endure exploitative working conditions and meagre wages while Western corporations reap the benefits. Furthermore, the cultural appropriation and commodification of indigenous designs underscore the colonial mindset embedded within the industry, eroding cultural heritage for the sake of profit.

As we grapple with the complexities of globalisation and consumerism, it is crucial to critically assess the effects of fast fashion on individuals and societies. The industry's relentless pursuit of profit undermines social sustainability, perpetu-

ating poverty, inequality, and social instability in producer countries. This cycle of exploitation can only be broken through collective action, with consumers playing a pivotal role in demanding change from retailers, policymakers, and international agencies.

By understanding the systemic injustices embedded within the industry, meaningful change can be achieved towards a more just and sustainable fashion ecosystem. We can envision a future where fashion is stylish, ethical, and equitable only by challenging the status quo and prioritising social and environmental responsibility over profit maximisation.

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CONSUMING FASHION

PLANNING LONG LIFE CYCLE OF CONTINUING PRODUCTS

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Abstract

Today, the fashion industry faces sociocultural pressures from stakeholders to reduce ecological impacts and adopt sustainable innovation. This shift responds to the traditional consumption model, emphasizing the need for environmentally friendly practices and open ecosystems. It challenges the constant turnover of brand collections fueled by fleeting social media trends such as those seen on platforms such as TikTok or Instagram. By delving into these patterns where clothing swiftly circulates among consumer wardrobes, it scrutinizes and challenges the deeply ingrained culture of overconsumption. This article investigates the potential of design-driven initiatives to catalyze innovations capable of disrupting prevailing consumption patterns. Building upon a previous study conducted by the authors (D'Itria & Colombi, 2023), it further examines the dynamics of innovation within the fashion industry and the evolving roles of designers in addressing the issue of consumed fashion. Consumed fashion uses strategies to prevent disposal through intentional design across creation, production, and distribution. It emphasizes long product lifecycles and the design-for-longevity approach, focusing on improving rather than replacing items. This scenario shift promotes sustainability and reduces waste by extending the lifespan of fashion items. With this perspective, the article encourages reflection on consumption practices and the interrelation between design and consumption, fostering a more responsible and sustainable fashion industry.

Keywords: *Consumed Fashion; Design for Longevity; Design-driven Innovation; Fashion Industry Transformation*

INTRODUCTION

Sustainability is now the paradigm of reference in the fashion industry, extending beyond socially responsible brands or eco-friendly products (Thorisdottir & Johannsdottir, 2020; Khandual & Pradhan, 2019). This shift addresses the growing demand from consumers for sustainable fashion choices. As consumers become more knowledgeable about materials and manufacturing processes, they increasingly seek ecologically and socially responsible options for their wardrobes (Marschlich & Dhanesh, 2024; Ray & Nayak, 2023; Harris et al., 2016; Bhardwaj & Fairhurst, 2010). This trend reflects a desire to align personal values with purchasing decisions, indicating a broader movement toward sustainability in fashion. As ethical and environmentally conscious brands gain priority, the fashion industry must adapt, making sustainability a core aspect of its practices (Tandon et al., 2023).

Over the past three decades, such practices have grappled with many challenges, ranging from labor rights violations to ecological catastrophes stemming from manufacturing practices (Gabriel, 2021). At the core of many of these problems lies overconsumption, the linchpin perpetuating the myriad issues confronting the fashion sector today (Wizinsky, 2022). The expansive scale and reach of the fashion industry significantly contribute to problems like excessive water usage, heightened carbon emissions, and rampant waste generation. Overconsumption sustains and fuels growth within an already saturated fashion market, perpetuating a cycle of demand and supply that exacerbates

environmental and social challenges (Demirdjian & Orzada, 2023).

The magnitude and speed of clothing consumption are immense, with over 100 billion new garments bought annually, of which ninety-nine percent cannot be repurposed (Ellen MacArthur Foundation, 2017). Despite the substantial volume of clothing produced, global production and consumption are projected to increase by 63% by 2030, from 62 million tons to 102 million tons in 2030 (European Commission, 2022).

In Europe, about 5.8 million tons of textiles are discarded annually, approximately 11 kg per person (European Commission, 2022), and every second somewhere in the world, a truckload of textiles is landfilled or incinerated (Ellen McArthur Foundation, 2017).

These numbers highlight the intrinsic unsustainability of how clothing is produced, consumed, and disposed of, presenting a significant hurdle in tackling the larger sustainability concerns within the fashion industry (Matthes et al., 2021). Relying solely on improving eco-efficiency is unlikely to accomplish environmental sustainability objectives sufficiently (Huppes & Ishikawa, 2007). While enhancing eco-efficiency can yield short-term environmental benefits, it may not address the root causes of sustainability challenges within complex systems. This approach often fails to consider broader socio-economic and systemic factors contributing to environmental degradation. A more comprehensive strategy is necessary to achieve sustainability goals, integrating diverse perspectives, considering long-term impacts, and addressing underlying structural issues.

According to those above, addressing overconsumption is imperative for any meaningful progress toward sustainability within the fashion industry. It necessitates a fundamental shift in consumption patterns, production practices, and business models (Pal, 2017). Such a shift can be obtained by encouraging conscious purchasing decisions, promoting longevity in clothing, and advocating for a culture of reuse and repair (Maguire & Fahy, 2023). These are essential steps toward combating the detrimental effects of overconsumption, which intrinsically ask for design interventions to reduce excessive buying and discarding of clothing, thereby lessening the fashion industry's impacts.

The authors have investigated such design interventions in a previous study (D'Itria & Colombi, 2023). Here, they discussed a conceptual framework for understanding the micro- and macro-dynamics of open innovation in a sustainable fashion using a quadruple helix model. These dynamics operate along four primary directions: innovative sourcing methods, different consumption patterns, new technical expertise, and alternative end-of-life strategies. Within the proposed framework, these avenues exist together, creating an innovation ecosystem where individual actions can occur independently, generating positive cycles and working together systematically to maximize the desired circular impacts. This was accomplished by identifying and systematizing four design-driven interventions: reusing, repairing, refashioning, and recycling (Fig. 01).

This article thoroughly examines the model, emphasizing the pivotal role of designers in fostering innovation within the fashion sector and combating overconsumption. The authors stress the importance of conducting a comprehensive review of consumption patterns, highlighting the intrinsic connection between design processes and consumer behaviors. They point out the importance of exploring the concept of refashioning, which offers designers valuable insights into mitigating the negative impacts of unsustainable consumption by examining designers' practices and resource management approaches. Specifically, this entails devising merchandising strategies to prolong product through durability to revolutionize the planning-and-production processes. Adopting a design-for-longevity approach emerges as a pivotal tactic for designers, shifting their focus to enhancing existing products rather than introducing new ones (Benkirane et al., 2022; Gwilt & Pal, 2017; Hasling & Ræbild, 2017). This signifies a fundamental shift in perspective, where the emphasis is placed on extending the lifespan of fashion items through thoughtful design and production strategies. Such an approach seeks to cultivate emotional and material resilience, advocating for shared usage, inheritance, and versatility, thereby mitigating excessive consumption. However, this focus on enduring design may pose challenges in aligning with transient trends, such as the current fads promoted by platforms such as TikTok, but refashioning works on disrupting the processes that lead to final clothing consumption. Designers can significantly preserve resources, reduce waste, and decrease emissions, essential steps towards achieving a more sustainable future. Section 2 details the methodology, materials, and process of mapping fashion companies' refashioning efforts. This study

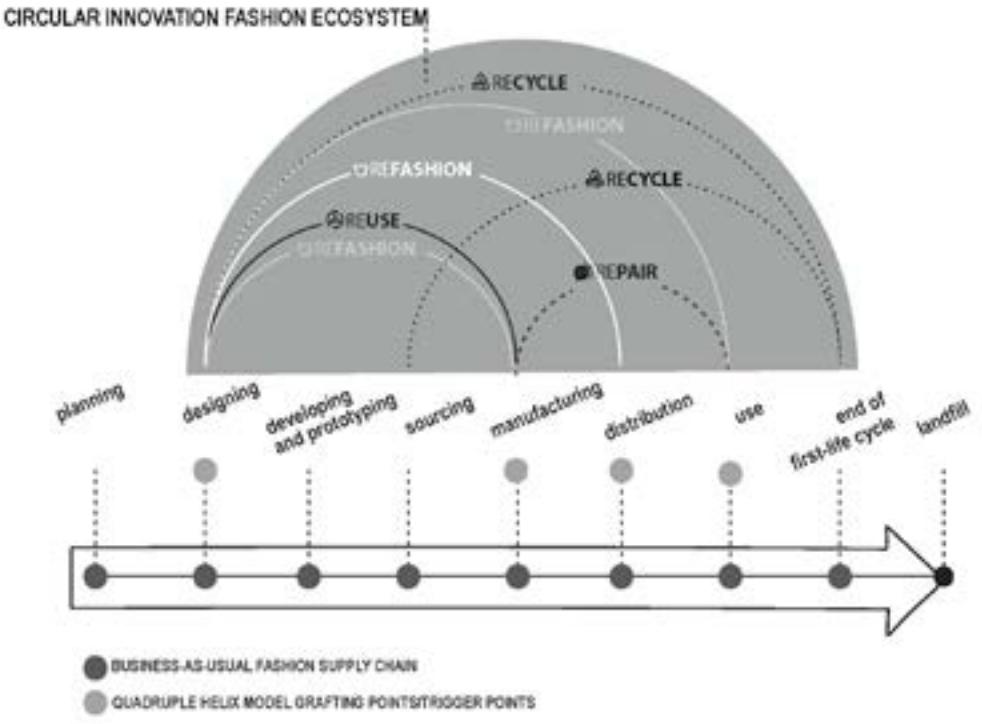

Fig. 01

phase was carried out iteratively to shape the data, which informed the subsequent refinement of the research model. Section 3 presents and discusses the results by showing how the current refashioning ecosystem acts through rethinking or hacking fashion merchandising, reporting case studies emblematic of the dimension. Section 4 concludes the article by elaborating on how the presented model offers research opportunities to explore how design can develop new strategies for promoting sustainable innovation in the fashion industry by extending the lifespan of products by strategizing the merchandising plan.

METHODOLOGY

The study began with a desk research phase, followed by a case study approach to narrow down the extensive scope of the investigation. According to Yin (2003), this method is particularly effective for analyzing existing knowledge on a specific topic, as it addresses research complexities by converting the individual case into a manageable component that can be explored within its original context, thus encompassing various elements and attributes (Priya, 2021). Data were gathered from the Fashion in Process Research Lab at Politecnico di Milano, from the authors' participation in two international field studies (Fashion SEEDS: Fashion Societal, Economic & Environmental Design-led Sustainability, 2018-2022; Support report mapping sustainable fashion opportunities for SMEs, 2019) with a consortium of European academic and research institutions, and from the outcomes of one author's doctoral research (D'Itria, 2022). The first step entailed mapping 12 fashion companies' practices in the refashioning dimension, which helped to create strategic measures to increase awareness about virgin materials and encourage reconsideration of longevity (Tab. 01).

These initiatives adopt a multidisciplinary approach to develop and test solutions that align with current legislation while facilitating the adoption of financially sustainable innovations. After evaluating all 12 identified companies, three initiatives were chosen as case studies for further examination (Tab. 02).

The final case study database comprised various sources, including research papers, documentaries, corporate reports, scientific articles, trade press publications, and government documents. Following the identification of case studies, an additional qualitative phase was conducted using secondary data collected through supplementary document research. This enabled a more comprehensive profiling of the companies and an assessment of their integration of the refashioning dimension. Specifically, the focus was on how companies actively pursued sustainable design to

Country	Sector	Name
Korea	Apparel	Edit+
Ireland	Apparel	NuWardrobe
Italy	Apparel	Artknit Studio
Italy	Apparel	Flavia La Rocca
Italy	Apparel	Simon Cracker
Denmark	Apparel	GANNI
Denmark	Apparel	Son of a Tailor
Japan	Apparel	Zozotown
Korea	Apparel	Edit+
UK	Apparel	Benjamin Fox
UK	Apparel	Raeburn
USA	Apparel	Norma Kamali

Tab. 01

minimize the life cycle impacts of their products and preserve resources by preventing waste through merchandising strategies and responsible planning. This study establishes a systematic approach to utilize higher-level codes in constructing an innovative model for developing a refashioning system to enhance product longevity and mitigate overconsumption. Higher-level codes involve identifying critical themes from the research and organizing them following the methodology proposed by Corbin and Strauss (1990). This concept envisions an ecosystem where designers promote advancements by planning a fashion collection based on sustainable design approaches nurtured by dynamically upgrading the fashion products, responsible manufacturing practices that produce only when needed and in quantities required, and conscious consumption strategies that promote new or different responsible purchase paths. By seamlessly integrating these dimensions, it is possible to maximize the longlife cycle of designed products. These three macro-categories were formulated based on strategies to promote longevity and prevent overconsumption (Haase & Laursen, 2022). They illustrate how innovation unfolds through systemic processes encompassing all product generation and supply stages, tailored to their respective functions, characteristics, and potentials. By employing such approaches, ecosystems are cultivated to preserve materials and minimize waste through refashioning, thus ensuring resources circulate at their maximum value through rethinking the merchandising framework. The subsequent section outlines the proposed model and examines the investigated cases, presenting them as derivatives of the original ecosystem model, focusing on the design, manufacturing, and distribution phases. While the scenarios discussed may not cover all possibilities, they represent typical operations showcasing the roles of designers and their strategic efforts in establishing longevity solutions for preventing consumed fashion (Simon & Goes, 2013).

RESULTS AND DISCUSSION

Based on what has been discussed, this paper aims to analyze how fashion enterprises formulate merchandising tactics centered around product durability to transform planning and production processes within the industry. This section presents the results from the methodology on how these qualitative implementations take three main paths: sustainable design approaches, responsible manufacturing practices, and conscious consumption strategies.

Sustainable design approaches refer to the way in which products are designed. This means adapting methods that prioritize long-term environmental, social, and economic viable process steps and priorities before proceeding with the development of the products (Rathinamoorthy, 2020).

Responsible manufacturing practices refer to minimizing the industry's negative impact on the environment and society. This means employing eco-friendly materials, production techniques, and supply chain management. (Roy et al., 2024)

Country	Sector	Name	
Denmark	Apparel	GANNI (Repeat)	Ganni is a contemporary ready-to-wear fashion brand for women. Introduced in 2019, GANNI Repeat initially emerged as a rental service to prolong the lifespan of GANNI garments and inspire our community to adopt a more circular fashion ethos.
Italy	Apparel	Artknit Studio	The Italian brand produces made-to-order knitted garments. By producing only what is ordered, they reduce inventory waste. By collecting a few information (age, weight, and height), they create a perfect-fitting knit within about 14 days.
Korea	Apparel	Edit+	This brand designs genderless modular clothing that serves a technical purpose beyond fashion and aesthetics.

Table 02

Conscious consumption strategies refer to offering/using different consumption modes that emerged as a response to established consumption patterns. In a prevailing market framework, these alternatives present viable and responsible options for consumers. (Radhakrishnan, 2020).
Considering the above, this paper presents the identified trajectories of the current industry contexts to determine design directions that could inspire and promote new meaningful perspectives in sustainable fashion design.
From the operational point of view, the research identified three macro themes in approaching consumed goods longevity practices from a design perspective that emerged at the intersection of the investigated paths (Fig. 2):

- Dynamic Upgrade;
- On-demand Manufacturing;
- Alternative Purchasing.

Dynamic upgrade in fashion refers to enhancing existing garments through design interventions rather than replacing them with new ones. This approach involves exploring possibilities beyond traditional garment trends by leveraging dynamic components and advanced technology. Instead of following conventional practices of discarding old garments for new ones, dynamic upgrade emphasizes the continuous improvement and transformation of existing pieces. By incorporating new design elements, materials, and technologies, garments can be upgraded to meet evolving consumer preferences while minimizing waste and environmental impact. This approach reflects a shift towards sustainable and resource-efficient practices within the fashion industry, where creativity and innovation play key roles in driving positive change.
On-demand manufacturing involves companies aiming to reduce consumption and resource wastage by establishing longer-lasting connections between products and consumers. The objective is to optimize processes through a systematic approach to planning, purchasing, and selling goods, focusing on maximizing profits akin to a long-term investment. This approach prioritizes the durability of products, ensuring that they meet consumer needs over an extended period. By producing items only when there is demand, companies can minimize excess inventory and associated waste while tailoring products to specific customer preferences. Overall, on-demand manufacturing represents a shift towards more sustainable and efficient business practices within

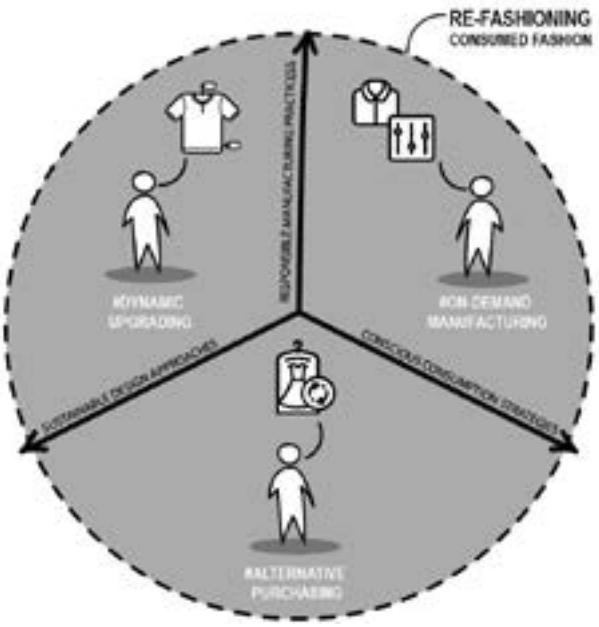

Fig. 02

the retail industry, aligning economic goals with environmental responsibility.
Alternative purchasing practices contribute to sustainability by extending the lifespan of garments by rethinking product distribution. These practices offer access to various items without ownership, thereby minimizing waste and conserving resources. Consumers can make more conscious choices through alternative purchasing models such as rental services, second-hand markets, and clothing swaps. Additionally, these practices encourage a shift from the traditional linear consumption model towards a more circular and sustainable approach, where products are valued for longevity and shared among multiple users. Alternative purchasing promotes a more responsible and environmentally friendly way of consuming fashion.
According to the directions above, three case studies are introduced, each exemplifying one of the suggested categories. These cases epitomize the themes associated with hacking merchandising plans for longevity by design. The companies have garnered recognition for their efforts in sustainable fashion, promoting durability against overconsumption, and reshaping the needs of consumers in the industry.
Edit+ is a Korean brand operating in the dynamic upgrading category. Created by a former North Face executive, Edit+ is a sustainability-oriented athleisure brand that employs modular design and prioritizes digital-first production methods. The brand aims to popularize the concept of

editing one's wardrobe through modular-based design. Centered around sportswear, Edit+ allows wearers to customize their garments to suit their surroundings. For instance, the Take the Winter+ Padding Coat offers eight distinct designs, such as a waist-length jacket, a vest, or a knee-length coat. This brand embodies a reimagining of merchandising as a project brief through the hacking of collection architecture. Starting with basic garments, it alters them using modules or other design-driven solutions, aiming to curtail overconsumption. The brand addresses the need to purchase new items by enhancing existing pieces. This approach fosters sustainability by extending the lifespan of garments and minimizing waste associated with constant turnover in fashion trends. Furthermore, it encourages consumers to engage in a more thoughtful and deliberate approach to their wardrobe choices, emphasizing the value of versatility and longevity in clothing.

Artknit Studio, an Italian brand specializing in on-demand manufacturing, prioritizes sustainability through its zero-waste policy. Unlike conventional fashion brands, Artknit Studio forgoes seasonal collections in favor of a single permanent line. They create made-to-order items tailored to each customer's preferences, crafted upon request, and directly shipped from artisans. This ensures top-notch quality and minimizes the environmental impact of mass production and excess inventory. Artknit Studio further supports sustainability with its repair program, aimed at refurbishing garments to extend their lifespan and minimize waste. These initiatives promote lasting connections between products and consumers, optimizing processes and enhancing customer satisfaction through personalized, environmentally conscious practices.

Ganni, a Danish brand, operates within the realm of conscious consumerism. Introduced in 2019, GANNI Repeat began as a rental platform, aiming to extend the life of GANNI pieces and promote a more circular fashion model. Recognizing the clash between the fashion industry's focus on novelty and consumption and the urgency of sustainability, GANNI emphasizes accountability and responsibility. By transforming garments from previous collections into new remade items, GANNI reduces the use of new materials and mitigates production's adverse effects. GANNI Repeat's rental service allows customers to enjoy redesigned clothing, prolonging garment lifespans and reducing the need for new purchases. These alternative purchasing methods enhance sustainability by extending garment lifespans and decreasing the demand for new production, revolutionizing product distribution by providing access to diverse items without ownership, thereby reducing waste and preserving resources.

The enhancements in the qualitative knowledge system extend beyond individual companies, impacting the broader fashion industry. These improvements shape new design and production schemes, emphasizing sustainability. Moreover, they foster shifts in consumer behavior, encouraging more environmentally conscious choices. This holistic approach drives innovation and progress towards a more sustainable future for the fashion industry.

CONCLUSIONS

This article introduces an interpretative model aimed at codifying the design solutions that affect the development of merchandising strategies to extend product lifespan, thereby hacking planning and production processes within the fashion industry. Adopting a design-for-longevity approach emerges as a pivotal tactic, shifting designers' focus towards enhancing existing products rather than continually introducing new ones. This model prompts reflection on consumption practices, processes, and impacts, advocating for a more critical and responsible approach toward sustainable transformation. Specifically, the proposed model integrates product design with existing consumption patterns, recognizing their direct influence on a product's lifecycle from conception to disposal. By prioritizing sustainable design and creating products that promote mindful consumption, we have the potential to reshape individuals' engagement with clothing, reducing environmental impact and the need for frequent replacement. The proposed synergy between design and consumption addresses overconsumption and rapid obsolescence, fostering more sustainable and conscious choices within the fashion industry.

In conclusion, the authors acknowledge certain limitations, mainly focusing on the fashion industry within developed economies. While not presenting novel theories, the study provides valuable insights into a system model rooted in refashioning the consumed fashion goods. This model is crafted from various strategies aimed at enhancing product longevity while simultaneously addressing issues of overconsumption and overproduction. Such an analysis serves as a foundational reference for future research endeavors. It invites

us to delve deeper into the implications, challenges, and advantages of fostering a sustainable fashion system. Thus, the study contributes to the ongoing discourse surrounding sustainability in the fashion industry, urging stakeholders to prioritize eco-conscious practices for long-term prosperity.
Future research in this area should explore various factors influencing fashion companies' design choices, investigating further strategies to prolong the lifespan of fashion products, such as using innovative materials or offering services instead of new goods. Understanding the barriers to adopting longevity-focused models is vital for devising effective solutions. Furthermore, future studies should analyze the broader impacts of implementing such models on supply chains, consumer behavior, and environmental sustainability. This proposed research agenda encourages contemplation of consumption practices and their repercussions, emphasizing the interconnectedness between design processes and consumption trends. Through an integrated approach, designers can play a pivotal role in cultivating a more critical and responsible ethos within the fashion industry, thereby facilitating sustainable transformation.

CAPTIONS

[Fig. 01] Study model grafting points (D'Itria & Colombi, 2023)

[Fig. 02] Representation of the Refashioning Consumed Fashion System. Original work by the authors (D'itria & Colombi, 2024)

[Tab. 01] Mapped Companies

[Tab. 02] Case Studies

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YOU WILL NEVER BE ME

PERSONALIZING BIOFABRICATED HANDBAGS WITH USER GENETIC MATERIAL

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Abstract

Handbags symbolize women's emancipation and can evoke powerful memories of people and events. However, they are primarily made of leather, which is not aligned with consumers' growing environmental concerns. As the next generation of women's handbags should reflect women's values and advancements in material science (The Women's Museum of California, 2017), exploring ways to personalize next-gen materials could lead to greater consumer acceptance. Guided by the hypothesis that a biofabricated handbag can be personalized with genetic material to symbolize its user's environmental concerns and display advancements in material design, this study started with secondary research and then progressed to material testing and prototyping as the main method of inquiry for investigation. The result is a handbag composed of bacterial cellulose and human hair that represents a potential use of user genetic material to personalize biofabricated products that carry psychological significance.

Keywords: *Material Meaning; Next-Gen Textiles; Fashion Symbolism; Bacterial Cellulose; Biofabrication*

INTRODUCTION

DEFINITIONS

Biofabrication: producing complex biological products from raw materials such as living cells, biomaterials, and molecules (Mironov et al., 2009).
Conspicuous consumption: buying goods and services to signal wealth and incite respect or envy rather than for their practical value (Farnam Street, 2019).
Genetic material: can be a gene, a part of a gene, a group of genes, or the entire genome of an organism.
Leather: animal skin with the hair removed that typically goes through cutting and tanning treatment; faux/synthetic/current-gen leather: fabric made of synthetic materials as an alternative to animal skin.
Product attachment: the emotional bond that a consumer experiences with a significant object.
Projected image: the image a person wishes to project – often through the use of products (Klein as cited in Laronche, 2011); brands also project consumers' character and status via brand image (Shukla, 2008).
Signaling: a method of communicating personal information to others in a costly way, ensuring credibility (Farnam Street, 2019). Animals and humans use signals to communicate positive attributes and accomplishments without using language. For instance, a peacock's tail demonstrates to potential mates that the bird is likely strong, healthy, and intelligent, having survived with such extravagant plumage. Similarly, individuals use costly signals to express their

accomplishments.
Social status: a measure of respect and esteem linked to one's societal position (Encyclopaedia Britannica, n.d.); it can be achieved through accomplishments or ascribed from factors like birth. It influences relationships, organizations, and marketplaces (Anderson et al., 2015) and is often signaled through the conspicuous consumption of luxury items (Veblen, 1994). As the absence of status is undesirable (Kraus et al., 2009), status pursuit through consumption becomes a goal.
Status consumption: the process of gaining status from purchasing and using high-status goods (O'Cass & Frost, 2002).
Symbolic function: the ability to use symbols to represent or stand for perceived objects and events.
Symbols: tools for abstraction (Gordon, 2024) that can be as powerful to unite as they are to divide (Green, 2019). As Wally Olins (as cited in Green, 2019) stated, people want to belong and then display symbols of belonging, which creates in-groups and out-groups. However, symbols are subjective and depend on one's background and worldview (Gordon, 2024).
Utilitarian feature: an object's feature that is useful or functional; however, users might have different intentions when acquiring the same product.

BACKGROUND: POSSESSIONS AND THEIR INTRINSIC MEANINGS

Signaling high status brings social benefits. As a result, individuals are likely to invest significant resources to achieve and signal high status to others (Desmichel et al., 2020); and regardless of the source, consumers express 'iconic meanings in their lives' through quotidian spending (Holt et al., 2003). Possessions, then, can not only literally be an extension of one's self - as when one has a tool that allows them to do things they would otherwise not be capable of - but also symbolically. The latter can be exemplified by trophies and uniforms that show others how one can be a different person than one would be without these artifacts (Belk, 1988). The same happens with clothing and accessories, as they indicate to society who someone is and how they should be treated (Buse & Twigg, 2014), and even though individuals seek distinction, there is still an ambition to be similar to other members of a group (Grotts & Johnson, 2013). Therefore, fashion can be considered an artifact of the extended self since fashion products can express and confirm individuals' identities socially (Belk, 1988).
The problem is that "within the feminine sphere, objects became, first and foremost, symbols, sacrificing their utilitarian features to their symbolic functions" (Sparke, 1995). Handbags, for instance, have been used for millennia, but they took on a new significance, especially after World War I, symbolizing women's emancipation (Rosenberg et al., 2020). As women's roles and responsibilities change throughout their lives, handbags must adapt in size and style to suit their needs (Buse & Twigg, 2014). Nevertheless, they are more than just practical objects that are visually consumed daily (Grotts & Johnson, 2013). They also serve as fashion symbols that reflect their owner's societal image (Rosenberg et al., 2020), as 'memory objects' (Ash, 1996) that carry memories from a specific time in their owner's life, and even as self-extensions (Belk, 1988) that enables users to accomplish tasks they otherwise could not. Rosenberg et al. (2020) also describe the handbag as an ever-present product that is 'taken for granted in women's lives' and point out that the absence of a handbag reveals as much as the presence of one. Its potential to comprehend numerous and creative adjustments is what 'speaks to its iconicity' (Rosenberg et al., 2020). So, as Smith and Ekerdt (2011) suggest, they are meaningful artifacts because of their identity and biographical connections.
However, leather, the primary material used in handbag production, is related to ethical and environmental questions (Kim, 2010; Queensland University of Technology, n.d.) that contradict consumers' growing environmental concerns (Statista, 2022). Consequently, according to the Women's Museum of California (2017), the future of women's handbags will reflect 'the values of the women of the future' and 'the next great breakthrough in material science', which aligns with the increasing environmental awareness among women regarding the implications of using materials like leather for accessory production (Lee, 2011).
Biofabrication is at the intersection of biology, engineering, and design (The Business of Fashion, 2018) and allows for the creation of premium materials like leather while promoting less environmental damage. It also does not involve animal slaughter and avoids material waste, as items can be easily produced (and personalized) on demand (The Business of Fashion, 2018). Thus, exploring ways to introduce biofabricated materials to products that carry psychological significance, such as handbags, could lead to greater consumer

acceptance of this material shift and result in positive environmental impacts.

RESEARCH METHODOLOGY

This investigation is underpinned by one research question:

Could a biofabricated handbag be personalized with user genetic material to symbolize its user's environmental concerns and display advancements in material design?

This study, defined by Koskinen et al. (2011) as Constructive Design Research, uses the development of a product or system for knowledge creation. This research methodology integrates the actual research and design process through prototyping, as explained by Wensveen & Matthews (2015), to generate insights and, subsequently, artifacts because prototyping allows for immediate feedback on success or failure. The prototypes used in this research serve several roles as defined by Wensveen & Matthews (2015): as a vehicle for inquiry, where the process of making the prototype contributes more to the research than the artifact itself; as an experimental component, to test specific hypotheses embedded in the artifact; and as a research archetype, used to demonstrate the research. Both generalized knowledge and relevant implementations will be acknowledged (Stappers, 2007). This research approach can be characterized as qualitative (Bloomberg & Volpe, 2016) as it focuses on uncovering and understanding the significance of experience while also being open to change, allowing findings to guide future investigations, but also includes quantitative elements, which were used to seek evidence to support hypotheses primarily concerning material properties and can be described as experimental research that follows strict guidelines to test or validate a theory. Traditional secondary research was also conducted to build an understanding of the relevancy of the study and identify the most substantial opportunities to address that. This involved examining both pertinent academic papers and grey literature, including industry reports.

RESEARCH RATIONALE

UTILITARIAN FEATURES VS. SYMBOLIC FUNCTIONS

Throughout history, bags have evolved and adapted their form to fit societal needs, transitioning from waist pouches in medieval times – 'the smaller the pouch, the higher the social status' - to shoulder bags in the Middle Ages (Rosenberg et al., 2020). In the eighteenth century, they became feminine objects when a handle was added (Rosenberg et al., 2020). By the late nineteenth century, they refocused on functionality as women entered the workforce (Fogg, 2009). After 1940, the shoulder bag re-emerged to serve the new urban commuter (Fogg, 2009), and from the 1950s, handbags became a fashion staple, reflecting social trends like conspicuous consumption.

To John Steinbeck (as cited in Farnam Street, 2019), "the most beautiful things in the world are the most useless; peacocks and lilies, for instance", but that does not need to be true in the material world as users might have different intentions when acquiring the same product. For instance, one can see a designer bag and think it is impractical and overpriced, while another might see it as a strategy to express their social identity (Buse & Twigg, 2014). Just as symbolic functions are relative (Farnam Street, 2019), utilitarian functions can also be. Thus, one does not depend on the other, contradicting the idea that handbags sacrifice their utilitarian features for symbolic functions (O'Cass & Frost, 2002). A good example is Hermés' *Birkin* bags, a line of the most luxurious designer handbag models that was designed according to Jane Birkin's brief for her perfect bag (Boyd, 2013). At the same time that it is a symbol, it is also respected for its utilitarian features – which could be one of the reasons for its tremendous success.

However, leather, which is the product of removing hair from animal skin (Fashionary, 2020), is still the primary material in handbag production and presents ethical and environmental issues (Kim, 2010; Queensland University of Technology, n.d.), which do not reflect consumers' growing environmental concerns (Statista., 2022). As an example, PETA (People for the Ethical Treatment of Animals) reports that over a billion animals are killed annually for their skins and hides (PETA Australia, n.d.) and that two to three crocodiles are needed to make one *Birkin* bag (The Guardian, 2015). So, the fact that a handbag, which should be used to reflect its user's personality, is currently both generic – as signature bags are purchased by millions of women who likely do not share the same characteristics – and an easily counterfeited symbol that negatively impacts the environment is a matter of controversy.

ADVANCEMENTS FOR BAG DESIGN: BIOFABRICATION

Materials tell the story of civilization, as seen in the stone, iron, and bronze ages because when materials evolve, they enable new products and solve old problems (Miodownik, 2014). However, while handbags appear to have been made from the same material for thousands of years (Rosenberg et al., 2020), car manufacturers, considered an equivalent symbolic artifact for males (Klein as cited in Laronche, 2011), continually evolve towards more sustainable practices. As per Kim (2010), the stages of raw material extraction, manufacturing, distribution, use, and disposal/ recycling of products are potential threats to the ecosystem in design, implying that to reduce environmental impacts, either people's relationship with products or the product itself needs to change. Consequently, due to the enforcement of stricter laws worldwide, there has been an increase in demand for alternatives to leather, including current- (synthetic) and next-gen replacements (Material Innovation Initiative, 2024).

Next-generation materials are substitutes for traditional materials like leather, fur, and exotic skins and are defined by the absence of petrochemicals and animal products. Ideally, such materials should be durable, recyclable, and biodegradable (Material Innovation Initiative & The Mills Fabrica, 2021). However, due to natural properties and investment differences, their development cannot be directly compared to fossil-based ones. Thus, it is essential to understand that setting rigid expectations for next-gen materials is unrealistic (Lee et al., 2021).

Biofabrication, at the intersection of biology, engineering, and design, allows for the creation of materials like leather without environmental harm or animal death (The Business of Fashion, 2018). By merging synthetic and natural advantages (The Business of Fashion, 2018), biofabrication reimagines leather by shifting its production from a subtractive to an additive process. This technology is expected to shape the future of women's handbags, mirroring the values of environmentally conscious women since the next generation of women's handbags should reflect 'the values of the women of the future' combined with 'the next great breakthrough in material science' (Women's Museum of California, 2017). Thus, if women are becoming more environmentally aware of the consequences of using materials such as leather to produce accessories (Lee, 2011), this should be reflected in the future of handbags. By investigating ways to personalize biofabricated materials used to produce psychologically significant products like handbags, this material transition could be more easily accepted by consumers.

GENETIC MATERIAL ADDITION

Belk (1988) explains two hypotheses regarding 'the extended self' that are worth considering. The first is that body parts 'are among the most central parts of the extended self', and the second is Sartre's idea that giving goods to others is a means of extending oneself - because since gifts remain associated with their givers, the latter can be extended into the recipient's life. Additionally, solid emotional connections concerning physical items are developed when they are used to indicate identity (Belk, 1988), which can explain the importance of fashion goods in the lives of many consumers. In theory, as leather is animal skin with the hair removed (Fashionary, 2020), a leather product is also eternally connected to an original genetic material. Consequently, if possessions are viewed as a part of one's self, personalizing the primary matter of a personal product with genetic material, a process enabled by biofabrication, could be a way of explicitly (and eternally) symbolizing one's extended self or of their loved ones. Especially with gifts that involve leather goods, since leather is already a material that can 'evoke almost ancestral memories' (Fairs, 2012).

So, personalizing biofabricated products with genetic material could open new possibilities and possibly boost sales. Examples include Marvel and Kiss' comic book, produced in 1977, which sold 500,000 copies and contained band members' blood mixed with red ink (Kaye, 2021), and Lil Nas X's 2021 '*Satan Shoes*', which sold out in less than a minute and contained a drop of human blood in each shoe's air bubble sole (Holland & Palumbo, 2021). Other examples include made-to-order products that also use genetic material to enhance product attachment (Chow, 2015) and fulfill the industry's growing interest in exotic and undiscovered domains (Tucker, 2016).

Self-grown fabrics from renewable resources are revolutionizing the textile and fashion sectors. The innovative idea of cultivating fabrics from renewable natural resources has spurred joint ventures between designers and scientists to investigate the application of these new materials in the textile industry. A notable example is bacterial cellulose, which was identified as an appropriate

material for this investigation. It is a highly refined biopolymer generated through bacterial fermentation (Fernandes et al., 2021) that can be designed to present specific characteristics suitable for the manufacturing of clothing (Chan et al., 2018) and by biofabricating bacterial cellulose with genetic material, realistic results can be achieved. According to Lee et al. (2021), the main challenges associated with working with bacterial cellulose include viability on a large scale, the complexity of the Research & Development and the performance, aesthetic and manufacturability requirements of materials for the fashion and textile sectors, especially regarding appearance and odour. Additionally, the timeline for material innovation is measured in years, so it is unlikely that a material will generate a global impact in less than a decade of development, and partnerships between material innovators and brands should be established to ensure products will be developed meeting industry standards.

EXPERIMENTS: TESTING AND PROTOTYPE

ADDING GENETIC MATERIAL WHILE THE MATERIAL GROWS

The first experiment aimed to test the addition of genetic material during the growth of the material (in situ). To do that, human hair (provided by the researcher) was added to a liquid mixture that would later form the bacterial cellulose pellicle (fig. 01). This mixture consisted of water, black tea, sugar, and SCOBY (Symbiotic Culture Of Bacteria and Yeast). A second experiment included saliva. After a few days, the bacterial cellulose became visible on both containers and after two weeks of fermentation, the solid materials were extracted from the liquid. The results, however, looked like plain samples, even though one presented with hair on its surface. Since the saliva sample could not be differentiated from a plain one as the genetic material was not visible, the idea was discarded. The problem with the other one (hair) was that since the genetic material was not embedded within

Fig. 01

Fig. 02

it, the material could not be washed, resulting in a strong vinegar-like odor later. Finally, the material was laid on a patterned surface and set to air dry for about four days, yielding a sturdy, leather-like matter. However, the addition of genetic material needs further exploration.

ADDING GENETIC MATERIAL AS A LAYER

The result from the previous experiment was unsatisfactory because the genetic material was on the bacterial cellulose's surface, so the main goal of this experiment is to guarantee that the hair is integrated within the material. To do this, a layer of human genetic material (hair) was placed between two layers of bacterial cellulose (fig. 02) before setting it to air dry. The advantages of this method include simplified production as the bacterial cellulose can be produced 'plain' and at larger scales, with the genetic material added later. The fact that bacterial cellulose grows in accordance to the area size of the container (due to the exposition of its surface to oxygen), facilitates such overlapping because materials that have been brewed in similar-sized containers should present similar dimensions. Moreover, since the thickness of the wet material is considerably reduced after drying, overlapping two layers of bacterial cellulose generates a stronger material, especially because they were completely bonded when dried. Other benefits include being able to place the genetic material in specific areas, possibly creating details or patterns. In addition, plain samples can be washed, reducing the vinegary odour traditionally associated with bacterial cellulose, which was done before the genetic material layer was added. A disadvantage is the demand for this extra processing time. After drying, the material can be cut using scissors or a craft knife. The result is a (satisfactory) strong material that presents human genetic material fully embedded within it in a visually subtle way.

PROTOTYPE CONSTRUCTION

For the final prototype construction, the dried bacterial cellulose, personalized with hair, was reinforced with paper. To make it, the bacterial cellulose was sewn using a '*Brother JA1400 Home Sewing Machine*' (needle size: 90/14; straight

stitch, length: 1.8mm). The two sheets of bacterial cellulose (external and internal) were set to dry over different patterns to benefit from material properties and simulate multiple textures. However, only the external side was personalized with hair. The external side was sewn to thick paper (600 gsm), while the lining was sewn to kraft paper at 120 gsm. A challenge at this stage was that a little bit of material was accumulating on the needle every time it would pierce the bacterial cellulose, so the thread could not spin for long (the accumulated material was blocking the needle's eye). To solve this problem, coconut oil was applied to the sewing machine needle (and reapplied as needed) to enable the material to be sewn as a traditional fabric. In addition, in sections where the material could not be moved by the sewing machine because it did not present a dry feel (especially where there was no paper), a layer of baking paper was added between the sewing machine and the bacterial cellulose (and removed after sewing was finished). This was done to mimic traditional construction methods and demonstrate the material's potential as a direct substitute for incumbents.

Before constructing the final prototype, an appearance model made of paper was crafted as a guide, and Photoshop edits were utilized to ideate possible product designs. The bag dimensions (227 x 107 x 177 mm) follow common bag measurements found in the book *Bag Design* (Fashionary, 2017), as well as the strap length (max. 1260 mm) and an internal pocket to fit a passport (140 x 110 mm). The bag also features a flap and the hardware of the final product was crafted from laser-cut timber. The turn-lock, which reads 'you will never be me', is an association of the symbolic representation of one's self (and their genetic material) (fig. 03), and the idea is to substitute a brand's logo for a personal statement that can also be customized. Moreover, the bag can be worn around the waist or as a crossbody bag to enhance functionality by being suitable for multiple uses. The addition of genetic material (hair) is subtly visible (fig. 04) and establishes a perpetual link between the product

Fig. 3

Fig.4

and its provider.

CONCLUSION

In summary, this research aimed to explore the personalisation of biofabricated handbags with users' genetic material to symbolize consumers' growing environmental concerns and advancements in material design. To address this question, interdisciplinary prototypes were created and tested, leading to the design of a biofabricated leather handbag made of bacterial cellulose embedded with human hair. The study primarily relied on material and appearance prototypes to test construction methods and material properties, considering small-scale production viable. Even though the material's mechanical properties, such as durability, strength, and water resistance, were not compared to traditional ones, the findings demonstrate that adding a user's genetic material to the biofabrication process of a handbag is feasible and can symbolize its user by physically connecting them to the product's primary matter in a hard-to-fraud way.

That is significant because, despite the environmental damage promoted by the fashion industry, the Bags & Accessories segment (Statista, n.d.) and the global synthetic leather market (Grand View Research, 2024) continue to grow. However, so does the concern for more sustainable materials and practices (Material Innovation Initiative, 2024). Consequently, it makes sense to produce personal products that symbolize users better. Biofabrication merges the advantages of both synthetic and natural materials (The Business of Fashion, 2018), and by exploring ways to incorporate biofabricated materials into products that trigger psychological signals (e.g., handbags), this material replacement can gain wider acceptance among consumers by remaining eternally maintain a physical connection to its genetic material provider and contribute to positive environmental impacts. Furthermore, traditional construction methods have proven effective and could facilitate this transition. The final design is a robust bag made of bacterial cellulose embedded with user genetic material, representing a potential use of user genetic material to personalize biofabricated products that carry psychological significance.

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CAPTIONS

[Fig. 01] Testing the addition of human genetic material (hair) while bacterial cellulose grows (during fermentation) (Author/designer: Isabella Alevato).

[Fig. 02] Introducing human genetic material (hair) as a layer in-between two of bacterial cellulose; (Author/designer: Isabella Alevato).

[Fig. 03] This biofabricated material is an almost literal self-extension eternally connected to its genetic material provider (Author/designer: Isabella Alevato).

[Fig. 04] The final product was constructed using traditional bag construction methods to elicit the material's capacity to work as a direct leather replacement (Author/designer: Isabella Alevato).

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A NEW ERA OF ITALIAN KNOW-HOW IN FASHION

EXPLORING THE (IM)POSSIBLE DIALOGUE OF CRAFTSMANSHIP AND INDUSTRY

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Abstract

The growing availability of information about garments and their production processes has helped today's consumers to develop a deeper understanding and heightened sensitivity towards environmental, economic, cultural and social sustainability, as well as towards reputational factors such as product and brand recognizability. This has led to a renewed interest by consumers for local artisanal practices to better respond to sustainability issues, product authenticity and personalization-customization practices.
Framed within this scenario, this contribution illustrates the evolution of the concept of "know-how" within the Italian fashion system, and it explores the evolving relationship between fashion craftsmanship and industrial production in Italy. Furthermore, starting from the methods and strategies that merge local craftsmanship and industrial efficiency, the work proposes how education could build contemporary fashion design professionals, specifically describing what are the fundamental skills they need to get to incorporate traditional artisanal practices into industrial production. The paper made use of a desk research approach, combining texts about design, fashion cultures and Italian craftsmanship with more contemporary academic papers and industry reports, to align with the evolving fashion panorama and consumer issues.

Keywords: *Made in Italy; Craftsmanship; Customization; Sustainability; Artisan Designer*

INTRODUCTION

A significant number of European consumers – particularly those belonging to Gen-Z – are increasingly appreciating sustainable practices and are demanding fashion brands to be more responsible regarding social and environmental impacts, despite the challenges posed by price. (Granskog et al., 2020; European Commission, 2023; Euromonitor International, 2023). Furthermore, to allow consumers to enhance their awareness when purchasing, the European Commission is proposing a "Digital Product Passport" that calls for transparency within the entire value chain of a product (European Commission, 2022). Taking such actions would enhance the relationship between brands and the supply chain, which in turn could facilitate the development of data platforms (Hindarto et al, 2024; Damvakeraki et al, 2024; Rinaldi et al., 2022). For all these reasons, fashion consumers are regaining an interest in local craftsmanship – and so in the artisanal tradition –, seen as a model that adheres more faithfully to those needs of sustainability and authenticity previously mentioned. Particularly in Italy, which had developed a highly identity-oriented fashion craftsmanship model, this renowned interest can be the occasion to build a new productive model that can take the best from both craftsmanship and industry. On one hand, craftsmanship practices, rooted in local traditions, allow to produce distinct items that reflect the artisan's skill and creativity. In contrast, industrial production can constantly implement new technology to become more sustainable and it can

efficiently distribute products on a global scale. Fashion designers should exploit and valorize these elements to create products that retain cultural and local authenticity while distributing globally.

ON THE CONCEPT OF "KNOW-HOW": BETWEEN TERRITORY AND CRAFTSMANSHIP

The term "know-how" implies "knowing how to do things" and includes the arts of making, the ability to produce, the knowledge of materials, and the transformation processes linked to the territory (Goretti, 2017). To put it in De Fusco's terms, it is based on specializations, processes, and components specifically linked to the original territory, which are founded on values and production techniques typical of historicized craftsmanship (2009).

This craftsmanship is also characterized by the artisan's ability to autonomously intervene in the product, using hands and skills as tools for managing materials and producing artifacts (Sennett, 2009). What is called a "master craftsmen" are in fact capable of autonomously managing every production phase and they can develop a deep understanding of the world and territory through the constant fusion of abstract knowledge and experience (Buono, 2018). In this sense, the environment is an object of observation and study, from which they have developed techniques and skills to build products containing strong material and immaterial quality (Micelli, 2016; Cristallo, 2014). The territory therefore represents, as highlighted by Fry et al. (2016), an entire cultural world, rich in authenticity and values transmitted through artifacts.

By applying these considerations to the specific case of fashion, product quality becomes not simply related to the concept of "handmade", but it also depends on craftsmen's ability to transfer the connection with the territory in the final fashion item (Micelli, 2016).

THE REDISCOVERY OF LOCAL CRAFTSMANSHIP AMONG CONSUMERS AND THE RISE OF SLOW FASHION

At the end of the '60s, craftsmanship and its production models entered crisis (Merlotti, 2013), giving a way to what became a new paradigm in Italy: ready-to-wear. In fact, the industrialization process – started after the second World War – gained a new shape thanks to Walter Albini. On the 27th of April 1971, He presented a collection that was't artisanal produced: the clothing items were designed by him and industrially produced, similarly to what Cardin and Saint-Laurent previously did in France (Scarpellini, 2017). This was the first time in Italy a collection was produced, presented and distributed that way.

Although ready-to-wear was later recognized – as it still is today – as a distinctive feature of "Made in Italy", during '80s and '90s, it faced increasing competition from emerging markets. The factors that determined this crisis were different and can be traced in a limited impact of technological factors and economies of scale, in the changes in the market and consumer tastes, in the growing competition from less developed countries operating with lower production costs and less protected labor, in the consequent widespread diffusion of fast fashion productions and brands. To remain competitive, brands like Benetton shifted towards mass production and outsourcing as well, leading to a decline in artisanal craftsmanship (Merlo, 2020). In addition to these, traditional techniques were often replaced by automated processes, negotiating the quality and tailoring of Italian garment tradition.

Another crucial point in the history of "Made in Italy" was the trend of a conspicuous delocalization of the production chain – or parts of it – towards foreign countries, at first in the East-European countries and then moving outside the EU (Nord Africa, Middle East or China). As a result, some portions of the Italian production line were scaled down or even lost (Prota and Viesti, 2010; Kapferer, 2012; Pickles, and Smith, 2011).

All these changes, occurring over a few decades, ended up favoring a massified system of clothing, challenging both artisanal production – and all the cultural and technical heritage it carried – and the virtuous model of Italian ready-to-wear.

In recent years, particularly from the 2008 financial crisis to the COVID-19 pandemic, there has been a notable resurgence in the appreciation of authenticity and uniqueness, coupled with a heightened emphasis on sustainability (Demichelis, 2015). This last issue has been evident after the tragic collapse of the Rana Plaza factory in Dhaka on April 24th, 2013, pushing consumers to care more about the garment, both in the sense of material quality and of ethical production (Dicuonzo et al., 2020).

These crises have brought consumers to change their mind about fashion production and consumption, facilitating the reconsideration of short supply chains, small-scale production, and craftsmanship as more addressed to authenticity, sustainability, and production transparency (Testa, 2015; Amed and Berg, 2020).
Luckly, this can also be observed in Italy, as supporters of the productive system are trying to refund these artisans of the debt that Made in Italy – and more generally fashion as an economic but also cultural phenomenon – has contracted towards them (Muzzarelli, 2011).
As advised by Micelli (2011), this renowned attention to the artisanal dimension of "Made in Italy" it is not being desired as an idyllic return to the pre-industrial past, but it is meant instead the wish to retain the artisanal effort alive in the future, shaping it through the changes of a new economic and cultural environment. In a globalized world where mass production often leads to homogenization of customers and standardization of products, the celebration of artisanal craftsmanship stands as a reminder of the unique cultural heritage embodied in the Italian tradition.
The great leap forward is related to the fact that sustainability in fashion is no longer just seen on an environmental level but is also recognized at the economic, social, and cultural ones. Hence, for enterprises, it is essential to start to consider all these aspects of sustainability. This includes the development of new products, mitigation of environmental impact, and supply chain control, including respect for employees' rights. Additionally, incorporating cultural sustainability involves developing the local expertise and preserving both material and immaterial craftsmanship heritage (Vacca et al., 2022).
All these considerations are the reasons why local companies and slow fashion brands are reevaluating sartorial and artisanal techniques but blending them with contemporary elements and innovative approaches to produce more emotional products. In particular, slow fashion – born as a reaction to the consequences of globalization – is the sign of a significant change in the market demands, referred mostly. Its way of thinking and producing is truly based on direct interaction between customers and the brand, by operating through a local activity based in a physical store. This allows customers to immediately assess each of their requests. Consumers are thus finding in slow fashion brands a complete response to their needs. Thanks to productions realized in tandem with local artisans, these brands can respect the environment and local realities involved in production processes, while considering customer experience and offer them products that combine aesthetics, quality, and customization. This is a fundamental aspect in fashion, Silvia Venturini Fendi points out that the strong desire of customization and exclusivity has brought the attention back to some ancient jobs and techniques as the only response to this unicity and individuality desire (Venturini Fendi, 2011).
On the other hand, following the market opening towards men's clothing, artisanal activities are re-proposing what were the two historic production models of artisanal "know-how": made-to-measure and bespoke. Although these terms are often used interchangeably, they present some significant differences, especially because the first one is about personalization, the other one is customization oriented.
Made-to-measure focuses on adapting existing options to suit the customer's requirements, tastes and preferences. So, it is necessary to start with a pre-existing suit model, to personalize it in terms of measurements, fit, color, or other details to better align with the client's preferences – such as fabric, buttons, pockets, etc (Nobile and Cantoni, 2023). It is indeed a semi-tailored model, which may involve mechanization of certain parts of the suit – such as sleeves – while assembly is done by hand. The result is a personalized suit that meets the customer's requirements by a certain extent, but it allows for a lower investment of skills, resources, and time compared to bespoke (Bettiol, 2015).
It is instead possible to more closely meet consumer demands through bespoke production. In this process, customization practices are implemented to offer a freedom in design choices, allowing customers to choose fabric, style, cut, and embellishments to build a one-of-a-kind garment tailored to the customer's specifications (Nobile and Cantoni, 2023). The ultimate expression of this production model is observable in formal men's clothing. Indeed, unlike any other production model, the realization of men's suits does not require the creation of a pattern: the tailor draws the traces of the suit parts directly on the fabric, which is then cut and tailored (Attanasio, 2015). As one can imagine, this practice is applied only by some businesses as it requires longer times and higher costs, resulting in less competitiveness compared to the made-to-measure model. Fundamentally, made-to-measure is about

personalization because it involves adapting existing options to meet individual preferences, while bespoke apply customization practices to design and produce an unique fashion product. These two practices are experiencing renewed success because, as previously mentioned, they can satisfy the premium personalization requests from customers, taking advantage of their craftsmanship approaches to ensure a "one of a kind" item. In fact, customers have become aware of what psychologist and engineer Donald Norman already foresaw in 2004 with this phrase:

Things do not become personal because we have selected some alternatives from a catalog of choices. To make something personal means expressing some sense of ownership, of pride. It means to have some individualistic touch. (p. 217)

People opt for customization practices since they have the possibility to obtain a different object from others, and this makes it possible to establish an emotional relationship between users and objects. In a more democratic and globalized world, in which everyone potentially can own the same object, the desire for customization is always appealing to the user.

All these approaches and references demonstrate why, after the celebration of fast fashion and the possibility it offered to own a large quantity of low-cost products, fashion consumers are focusing more on the quality and authenticity of products, and why brands are more respectful and interested in the conditions of workers. (Yidan, 2023; Apetrei et al., 2024).

THE (IM)POSSIBLE DIALOGUE: ENTERPRISE NETWORKS BETWEEN CRAFTSMANSHIP AND INDUSTRY

In Italy, as highlighted in the previous paragraph, fashion craftsmanship and the ready-to-wear industry had followed for decades different paths, living parallel lives. However, with the democratization, and moreover with the digitalization, the rigid boundaries between local-global and artisanal-industrial are gradually vanishing, enabling a dialogue that before could be seen as impossible (Bertola and Linfante, 2015). This dialogue is seen as the foundation of a new way of thinking, designing and producing, as demonstrated by the interest it gained from representatives of culture, economics and politics. In fact, as highlighted by Marco Belisario – Vice President of Confindustria Chieti Pescara, it is necessary to revalue artisanal enterprises, which have assumed a fundamental importance in the high fashion landscape, by reintroducing their innovative production approaches (Belisario, 2013).

This interest is also demonstrated by the development of specific contractual, managerial, and production models that regulate the relationship between artisanal and industrial entities. The most virtuous example of this is represented by *reti d'impresa* (Enterprise Networks), which Di Diego and Micozzi describe as a stable and intermediate form of coordination between two or more companies. The main characteristic of this model lies in the willingness of these companies to jointly carry out one or more economic activities, with the common goal of enhancing each other's innovative capacity and increasing competitiveness in the market (Di Diego and Micozzi, 2013). This can be possible through the definition of common rules between companies, that can establish structured and joint projects, while remaining independent. It is therefore a matter of defining a real contract that can be used in the production, distribution, or coordination between production and distribution fields.

Today, this model appears to be a winning choice because the Italian entrepreneurial-industrial system, composed mainly of 95% micro and small enterprises, seems to no longer keep up with a constantly changing market.

Indeed, enterprise networks prove to be the only phenomenon in continuous growth, matching the success of industrial districts of the 1970s, yet ensuring the individuality and autonomy of the individual companies that join (Ibidem, 2013). This latter aspect is crucial for companies which operate in fashion sectors, as it allows them to be part of an industrial system through third-party production while maintaining their own production.

The characteristic that allows all this to happen is territorial proximity, as it enables direct interaction between the actors involved in the process. Despite the complexities, the results of this dialogue are excellent, especially when considering how the qualitative and cultural aspects of the territory are transferred into the product. This results in artifacts with strong symbolic aesthetic value that the final consumer will be able to perceive and appreciate (Morace and Lanzone, 2010).

This is the demonstration of how the balance between craftsmanship and industry is possible, also considering how many luxury brands are

relying on a spectacular application of craft technique within industrial production as a new tool for brand positioning (Tarquini et al., 2022). Among these, Bottega Veneta – renowned for its exquisite leather goods with the "intrecciato" technique – is one of the best. During the Fall 2022 ready-to-wear collection, the creative director Matthieu Blazy introduced a *trompe-l'oeil* denim that has been dyed and sewn to resemble faded denim. To reproduce the texture of jeans on nubuck leather, the process involves twelve color printing steps, and a series of brushing and sanding operations carried out using special machinery (Feroldi, 2023). This process perfectly represents the balance between craftsmanship and industry that this paper is dealing with, as it is based on industrial production whose management requires specific artisanal skills. In fact, professional craftsmen use their know-how to carry out and control all the production steps, unlike fashion factory workers who execute repetitive operations through machinery.

Approach as such not only challenges conventional thinking but shows the will to encourage consumers to reconsider their perception of everyday materials, showcasing at the same time the avant-garde expertise of (Italian) artisans and tailors.

CONCLUSIONS: DEVELOPING NEW FASHION DESIGN COMPETENCES

The context and experiences highlighted in the previous paragraphs have emphasized the necessity to redefine a new "Made in Italy" aimed to all the levels of sustainability and technological innovation, as well as individual customization, rather than global standardization (Calefato, 2015) – fashion indeed fulfill people's desire to differentiate themselves and avoid conformity (Marchetti, 2011).

This renewed system must be built on the dialogue between a new generation of "artisans of making" and "artisan designers" (Testa and Rinaldi, 2017), who share their skills to revive the qualitative excellence of Made in Italy, and to tackle the challenges posed by the market and international competition.

Within this scenario, integrating management and business innovation is as crucial as creativity, since it ensures designers both to propose appealing products and to manage business operations to sustainable success, and it allows the balance between novel ideas and practical solutions (Boyles, 2022; Hall, 2023).

Hence, the traditional idea of the fashion designer as a d*eus ex machina o*r solitary artist no longer aligns with this contemporary context. In this context, the intervention of fashion design education needs to be conducted in tandem with industries and local artisans, synergizing their efforts. Certainly, the classic fashion design skills – related to fundamentals of design, composition, and fabric manipulation – will still be important, but these must be accompanied with the expertises on technological innovation and the craftsmanship knowledge about materials and methods. The first one will be useful at industrial level to optimize production processes by improving efficiency and reducing waste, leading to better control over time and costs (McKinsey & Company, 2022); while the latter will prioritize the adoption of more sustainable practices driven by consumer desires, since artisans can establish a direct relationship with their clients (Sennett, 2009).

For these reasons, fashion design education must provide a comprehensive set of competencies necessary for translating intangible local heritage, cultural assets, and customer preferences into desirable products (Merlo, 2020). Additionally, it should facilitate the acquisition of logical reasoning skills, adaptability to industrial settings, teamwork, and emotional control (Ernawati et al., 2022).

These diverse hard and soft skills – which encompass the entire management of cultural, design, and production activities at both artisanal and industrial levels – can be categorized within the framework proposed by Perez (2016): types of thinking, knowledge (know what to do and why), skills (know-how), and attitudes (willingness to act). However, this categorization must also consider the invaluable craftsmanship skills required to preserve the quality and authenticity of products and meet customers' demands. Therefore, this new set of skills and competencies must be closely linked to:

- Types of thinking: encouraging critical and strategic thinking to develop design approaches which can take into consideration consumers' needs and emotions, by collaborating across disciplines, and communicating efficiently (Park and Lee, 2021; Knight et al., 2020).
- Knowledge: acquiring knowledge of the

historical and cultural aspects of the territory by studying traditions and learning how local production techniques are applied to fashion design; constantly updating the knowledge on new digital-industrial technologies, focusing on how they can help create value, not just speed up low-value-added activities such as pattern making and cutting.

- Know-how: applying the knowledge mentioned above to build distinctive, sustainable, and customizable products. This also should include the ability to integrate tailoring approaches and techniques within the industrial system, as exemplified by the case of Bottega Veneta.
- Attitudes: developing an attitude for working in interdisciplinary teams to integrate and share different approaches related to tailoring, fashion design, industrial production, management, and business innovation.
- Distribution and logistics management: understand the distribution and logistics management systems in the fashion industry. The goal is to improve product traceability, highlighting also the information related to the product's environmental impact and the area where it is produced.

By embracing these multifaceted skills, new professionals will develop the necessary tools to manage the Fashion system, rather than according to individual compartments. Hence, they can collaborate to propose items that resonate deeply with contemporary consumers, while giving value and preserving the cultural heritage of the territories.

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UNIFORM DESIGN INNOVATION

BRIDGING ACADEMIA AND INDUSTRY THROUGH MULTIDISCIPLINARY COLLABORATION

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Abstract

The article presents a proposal for a multidisciplinary and multistakeholder learning and collaborative model that connects the worlds of business and academia through the presentation of an experimentation. The model is presented through an experimentation of uniform design, led by University of Bologna, commissioned by the railway company Trenitalia Tper, and in collaboration with the Polytechnic University of Milan. The project aimed to dress the staff of the company by involving students and faculty from the two schools of fashion, product, and service courses with local businesses. The experimentation presented here aims to highlight the ways in which a learning model involving professionals from the world of research and industrial production can enable the elaboration of outputs in line with the current challenges of the contemporary fashion system. The experimentation, along with the proposed method and model, aims at testing and verifying the relevance of the so-called collective intelligence in design-driven innovation processes, particularly those of 'open innovation'. The proposed experiment confirms the relationship between collective intelligence, as a result of the combined knowledge and expertise of a diverse group, and innovation readiness in enterprises. In this light, a model is presented that, through co-design processes, can propose new strategies for an industry transformation, in a challenging application theme such as technical clothing and uniforms, where what is worn is loaded with values and symbols in society.

Keywords: *Co-design; Multidisciplinary Collaboration; Open innovation; Uniform design; Learning model*

INTRODUCTION

The article presents a proposal for a multidisciplinary and multistakeholder learning and collaborative model that connects the worlds of business and academia through the presentation of an experimentation. 'Pluriform: Pluriverse Uniform Design' is a project led by the Advanced Design unit, a research group heading the courses in Design at the University of Bologna, commissioned by Trenitalia Tper, the regional rail transport company in Emilia-Romagna, and in collaboration with the Polytechnic University of Milan, School of Design. The project aimed to dress the staff of the commissioning company by involving students and faculty from the two schools of fashion, product and service courses with local companies. The experimentation presented here aims to highlight the ways in which a learning model involving professionals from the world of research and industrial production can enable the elaboration of outputs in line with the current challenges of the contemporary fashion system. The experimentation, along with the proposed method and model, aims at testing and verifying the relevance of the so-called collective intelligence in design-driven innovation processes, particularly those of "open innovation". The latter is defined as "as a distributed innovation process based on purposively managed knowledge flows across organisational boundaries" (Chesbrough & Bogers, 2014). The topic of collective intelligence has become increasingly popular in literature since the advent of the Internet and has been addressed in various scientific fields. Analysis of the most significant contributions

shows how the application of the concept is independent of the size of the reference group, ranging from detecting cooperation dynamics in small offline groups to those in large groups in distributed online contexts (Salminen, 2012). The proposed experiment confirms the relationship between collective intelligence, as a result of the combined knowledge and expertise of a diverse group, and innovation readiness in enterprises (Lee, 2019). In this light, a model is presented that, through co-design processes, is able to propose new strategies for an industry transformation, in a challenging application theme such as technical clothing and uniforms, where what is worn is loaded with values and symbols in society.

METHODOLOGY

This article presents the case study of a multidisciplinary and multistakeholder model that has been designed and applied into a hybrid research-education-business context. The article structure follows the steps that from the meta-design and preparatory analysis led to the implementation of the model. The model design started with the analysis of the practices that the Advanced Design Unit has adopted in similar hybrid contexts. A brief overview is presented in the state-of-the-art paragraph. The specificity of 'Pluriform' is addressed to define a flexible model capable to mediate the expected outcomes, needs, and schedules of the different stakeholders. The phases of the collaborative model structure are introduced describing the three macro-phases, the involved actors, the means and methods of collaboration, and the expected outcomes. For the scope of this article, an in-depth analysis of the first meta-design phase is presented highlighting the sub-activities and the range of modalities that have been adopted. The implemented participatory, co-design, and training models are presented from the perspectives of the involved actors. In the discussion paragraph, the identified strength, and limits of the meta-design phase of the model are investigated, also in relation to the subsequent development and implementation phases that will be presented in future works. The last paragraph presents the conclusion and the possible future development of the experimented model.

MULTIDISCIPLINARY AND MULTI-STAKEHOLDER LEARNING AND COLLABORATIVE MODELS: PROCESSES AND PRACTICES

In the contemporary landscape, organisational boundaries have evolved into permeable constructs, facilitating the shift of innovation from internal realms to dynamic relational systems inclusive of external partners (Bogers & West, 2012; Chesbrough, 2006). Open Innovation processes serves as a conduit, enabling organisations to assimilate and exploit resources and capabilities beyond their internal perimeter, thereby augmenting value and optimising the outcomes of innovative endeavours. This process fosters the convergence of knowledge flows between external and internal domains, involving a diverse array of stakeholders such as suppliers, collaborative firms, competitors, technology hubs, customers, governmental bodies, and universities. Particularly, the cooperation between university and enterprise is crucial for innovation (de las Heras-Rosas & Herrera, 2021) and models of collaboration range from formal knowledge development alliances (Hagedoorn, Link & Vonorotas, 2000) to informal networks (Oliver, 1998). Universities play a pivotal role as trusted intermediary within academic commitment (Perkman, 2008), referring to collaborations involving academic researchers and non-academic organisations which encompass both formal activities such as collaborative research, contract research, and consultancy, as well as informal activities like personalised advice, networking with other professionals and knowledge production, regeneration, and distribution among actors. Knowledge production can be considered as a cause and an effect of collective intelligence. Lévy (1997) coined the modern version of collective intelligence, which he defines as a "new universally distributed intelligence that constantly improves and coordinates in real-time". For the first time in history, argues the author, the Internet has made it possible for members of a decentralised system to interact with each other within the same virtual knowledge universe. This has enabled a new knowledge-producing culture based on rapid and open exchange of data and ideas. Lévy foresaw that this would lead to a fundamental change in how we think of ourselves. Knowledge is no longer about established facts, but rather the essential part of an ongoing knowledge construction project that includes all human beings.

In project-based learning, which inherently characterises the approach embedded in design education, various forms of collective intelligence behaviour can be amalgamated (Hogan et al., 2023), encompassing *swarm behaviour* (direct forms of coordinated aggregate behaviour), *stigmergy* (indirect coordination through the environment among agents or actions), and *collaborative behaviour*. It is observed that collaborative behaviour facilitates the expansion of group coordination dynamics by leveraging diverse skills and technologies in tandem. If, on one hand, collective intelligence thrives and simultaneously leverages collaborative dynamics, on the other the experimentation examined in this paper, along with others conducted in various organisational contexts involving collaborations between universities and industry, has highlighted how it is able to foster agency. Emirbayer and Mische (1998) define agency as a process of temporally embedded social engagement, informed by the past, oriented towards the future, and contextualised within the contingencies of the present. Barandiaran (2009) identifies three conditions that a system must meet to be considered a true agent: defining its own individuality, being the active source of action in its environment, and regulating its activity in relation to specific norms. Agency of individuals engaged in the co-production processes of innovation, both students and enterprise members had a positive effect on motivation, engagement, and outputs of the overall design-driven innovation process.
The Advanced Design Unit research group has a history of integrating knowledge across disciplines in multi-actor contexts to train young designers. Through initiatives like the 'Frontier' international workshop, they foster dialogue among students, teachers, researchers, and businesses from Italy, Brazil, and Colombia, focusing on digital technologies to innovate traditions like textile-related crafts. This interdisciplinary approach cultivates collaborative and transversal knowledge transmission, enhancing skills in diverse cultural processes (Celaschi, 2008; Mattioli et al., 2020). Hybridising disciplines adds complexity to projects, incorporating methodologies and tools while embracing cultural diversity (Migliore et al., 2020; Augsburg, 2014; Celaschi et al., 2013).
'Data Challenge' project explores the transformation of Bologna's libraries into vibrant cultural hubs, aligning with trends towards increased cultural access and community engagement (Golten, 2019). Collaborating with the Bologna Municipal Library Sector, the Advanced Design Unit conducts experiments using a systemic and multimodal approach to data collection, involving big data, qualitative student-generated data, and project data. This collaboration engages Design students in space redesign, enriching their educational journey and fostering discussions on education renewal through design (Colitti, Formia, Gianfrate, & Succini, 2023). Embracing Responsible Innovation principles, the project activates inclusive cross-sectoral connections, expanding traditional education horizons and fostering collaboration between universities, cities, territories, and public administrations, leading to innovative approaches to education and culture (Bailey et al., 2016).

AN EXPERIMENTATION IN UNIFORM DESIGN

'Pluriform' is intended to design uniforms for three categories of regional rail transportation staff: the driving staff (those who are responsible for driving the train), on-board staff (trainmaster, on-board assistance, and anti-evasion), and commercial staff (sales and station ground staff). The employees of a transportation company are the frontline of a complex system of technologies, investments, and organisation that give evidence of the company's efficiency and quality of performance to the travellers who entrust their safety and comfort to it. Trenitalia Tper's on-board, conducting, and commercial staff numbers 1441 people of at least three different demographic generations, education levels, geographic origins, personal aspirations and expectations. These are in direct contact with customers every day in every weather season of the year, in any eventuality of operation of the machines, often in contact with critical relational and human situations, playing a role as a public official to transfer order, regularity of service, assistance, continuous indication and observation, reporting to the Company and presiding over every occurrence. Against this problematic backdrop is the 'Pluriform' project, an activity that involved 9 faculty and 19 students, both bachelor's and master's degrees, from the two universities involved, and 3 companies.
The activities were divided into three macro-phases (fig. 01):

1. *Metaproject*: A core group of researchers from the University of Bologna activated a Trenitalia Tper focus group (a group

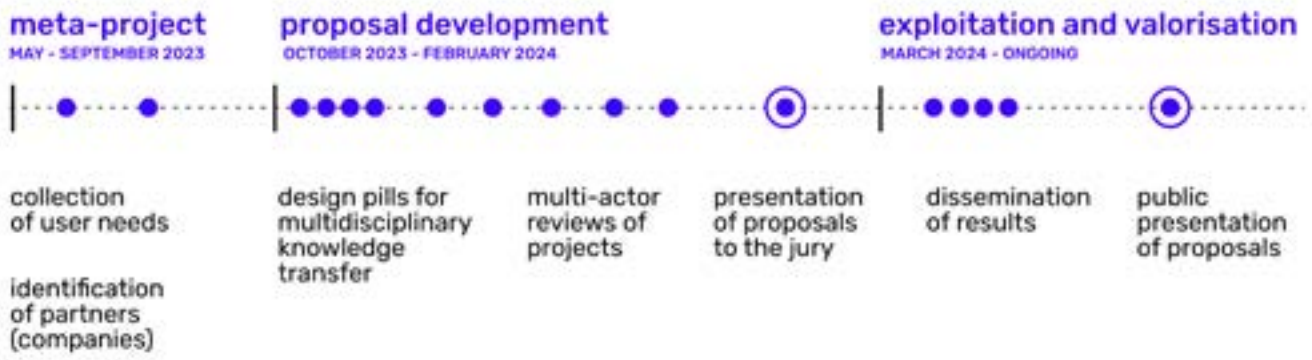

Fig. 1

of employees mixed by age, gender and professional profile, consisting of 8 individuals selected by the company) in order to generate in an organised and collective way the project theme by defining the characteristics and performance, discussing equivalent case studies, responding to collaborative design processes. The purpose of this phase was to arrive at the drafting of a briefing document capable of summarising the need in a technical and cultural way. Outcome of the project was the 'Metaproject document' that served to build a shared and clear design brief to be entrusted to the designers of phase 2 and build in the company a climate of adherence to change and cohesion to the values of uniformity.

2. *Proposal Development*: Four project groups made up of recent graduates and students from the Bachelor's Degree Course in Industrial Product Design, the Master's Degree Course in Advanced Design of Products and Services at the University of Bologna, and the Bachelor's Degree Course in Fashion Design at the Polytechnic University of Milan were administered and organised by the research and teaching staff of the two universities in order to interpret the brief developed in the first phase on the basis of the elements that stimulate innovation and tradition from the outside. Each group had four months to prepare a project line and formalise the design of a collection and a digital prototype understandable by Trenitalia Tper employees and referents. This phase took place in constant comparison with the focus group involved in phase 1, which, at three separate times, was called upon to evaluate the students' progress. In addition, 2 companies from the district of Carpi, one of the main districts in the Fashion Valley of Emilia-Romagna that stands out for the production of Knitwear and Clothing, consisting of more than 1,000 companies with about 7,000 employees (www.carpifashionsystem.it), which supported the students from a technical and industrial point of view. Finally, a company provided and supported the use of 3D representation modelling software with which students could visualise and present garments from their collection.
3. *Exploitation and valorisation*: The outcome of the groups' work was assessed by a panel of judges made up of the focus group members, and additional staff members called upon to participate in this last phase, and the collection that will become the future uniform of Trenitalia Tper staff was identified. This internal event will be followed by a public event at which the selected uniform will be presented, also by means of physical prototypes, and the best design based on the brief adopted will be recognised and publicised.

METAPROJECT

The project began with defining the brief collaboratively with company members. Three phases

ensued: systemic mapping, employing systemic questioning techniques (Radatz, 2006) to elicit internal perspectives and challenge beliefs. The "4A" approach - Analysis, Ambitions, Actions, (Self) Assessment - guided experimentation, revealing employee nuances like innovation, collaboration, and autonomy. Qualitative findings formed a systemic map, guiding participant selection for the co-design phase while maintaining diversity. Ten out of fifteen participants were chosen, with the remaining five invited as validators in the final phase. This process fostered innovation, addressing operational insights and improvement challenges, while reflecting on collaboration styles in decision-making. Following the first macro-step's results, approximately fifteen days later, the second phase involved a co-design day with the selected employees. The aim was to define an initial high-level brief while simultaneously engaging the group's meta-dimension to prepare members for active participation and contribution throughout the process. Given the diversity among attendees in terms of company vision, roles, expectations, and desires for uniformity, creating and facilitating a participatory yet protected space for group expression proved crucial for the project's overall success. The 8-hour co-design session was divided into four phases: 1. *icebreaking*, 2. *setting*, 3. *inspiring*, and 4. *building*.

After an ice breaking phase focused on emphasising acceptance of others' viewpoints and fostering an empathetic relationship rather than focusing on output perfection, the focus group had a second session based on LEGO Serious Play. Here, participants alternated between individual and collective moments to explore the uniform's identity, delineate its main identity traits, and construct a shared aspirational and inspirational map. According to Heikkinen and Nemilentsev (2014), this methodology encompasses the four fundamental principles: ensuring everyone can express their viewpoint; allowing inquiries about the specifics of others' creations without challenging them; recognizing that there is no singular correct solution to the given challenge; and deriving all answers from the constructed artefacts. Through individually constructed models made by bricks, multiple distinct viewpoints and interpretations of solutions regarding the same challenge can be easily obtained. To initiate collective construction efforts, each participant first creates their own model. Subsequently, these individual contributions are amalgamated through negotiations among group members to form a comprehensive collective construction. This approach facilitates the reconciliation of differing perspectives and requirements in addressing the challenge.

The third part of the day was dedicated to sharing a variety of innovative uniform case studies from the transportation industry and beyond, followed by the fourth and final building phase. This segment featured a collage technique where participants were divided into two subgroups, with one focusing on developing an aspirational idea for the future train conductor's uniform and the other on the engineer's uniform. Each group was provided with superhero cards and tasked with creating an hero consisting of three components: head (identity), heart (emotions), and legs (functionality), composing three parts from different superheroes. The co-design day concluded with a pitch presentation of the two heroes to the company's CEO and management team, signalling strong commitment from the company's leadership to the project.

The outputs of this phase integrated into the *Metaproject d*ocument were 1) the *Project Purpose & Brief*, a document that reported the results of the focus group, 2) the *Photocatalog* of current Trenitalia Tper uniforms, a document with a description of the individual garments currently used, their combinations, the regulations and the feedback obtained on the individual garments during the focus group, 3) a portfolio of stimuli for the project with an initial search for case studies and design trends identified from the results that emerged in the focus group that went into supplementing the research and competence domains for students.

PROPOSAL DEVELOPMENT

After the activation and call to action directed at the DZC, the Design Community of the University of Bologna that brings together students, alumni, and young designers interested in the field of design and fashion, the co-design process was initiated with common grounding sessions. These sessions aimed to establish a common ground of knowledge, objectives, and languages, thus facilitating the collaborative process. They were used to ensure that all participants shared the same vision of the project and understood the needs and expectations of Trenitalia Tper related to the new uniform design. The collaboration methods were mixed, utilising remote work

platforms such as Microsoft Teams to allow students who could not be physically present to contribute significantly. In-person meetings and workshops were organised to promote greater interaction and idea exchange among participants. The participants were divided into small mixed groups, composed of students from different disciplines and levels of study, to promote diversity of thought and an interdisciplinary approach. Each group was tasked with developing design proposals based on feedback from the focus group, taking into account the functional, aesthetic, and ethical constraints identified in the project.

The co-design process unfolded in several phases, each with specific goals and deliverables. The students were accompanied by expert tutors who guided them through the creative process, from idea generation to prototyping, up to the presentation of the final proposals to the clients. The journey was enriched by moments of evaluation and feedback, where industry professionals and representatives of Trenitalia Tper provided the student groups with feedback on ongoing proposals, thus ensuring that the final result best met the company's needs and the input from the workers.

Phase 2 consisted of two main stages: 1) the transfer of knowledge and skills to students on key and current issues related to fashion and textiles, managed by the team of researchers and lecturers of the two university, also involving selected companies, and 2) sharing and reviewing on the project's progress with all stakeholders (professors, researchers, client, and textile and apparel businesses). In defining the interventions for the skills transfer phase, the coordinating team gave attention to the key issues in the field: attention to biological and gender distinction, the size and anatomical shapes of types, the ability to create products that can respond to the different climatic conditions to which the workforce is subjected-whose criticality is now increased by climate change-the need to create products that are attentive to environmental sustainability and circularity, and attention to employee safety and well-being. These themes were declined and deepened in six short lectures called Design Pills on the following topics: service design for fashion, circular practices for textile product, fashion design, applied anthropometry and visual perception, the role of designer-mediated technology for the well-being of users, and tools and technologies for virtual garment representation. In addition, students were lectured on materials and technologies for technical apparel design by companies in the Carpi district, which they were also able to visit for field research.

The Design Pills on Circular Practices for Textiles aimed to provide students with useful tools to think about the sustainability and circularity of garments and products from the uses of materials. The textile sector is now the second largest sector in terms of pollution due to its method of production, consumption, and purchase (Ellen MacArthur Foundation, 2021). Students received guidance on how the introduction of processes proper to the circular economy can enable them to reflect on a systemic vision of design to respond effectively to the complexity that describes the contemporary industrial context (Bompan, 2021) and, in particular, that of fashion. Reasoning about the different levels on which the designer can act for a circular and sustainable transition (Author, 2023), students were provided with examples of circular materials to be used (Pellizzari & Genovesi, 2021), material libraries from which to select them, paying attention to origin, disposal but also to the processes applied; in addition, strategies to lengthen the life of fashion and textile products such as disassembly of parts, customization, and repair were addressed (Circular Fashion, 2019).

The Design Pills on Service Design practices for Fashion aimed to promote systematic innovation that considers not only the product but also the related service ecosystem. This approach can be defined as the process of designing, planning, and organising the relationships among people, infrastructure, communications, and material components of a service, to enhance its quality and the interaction between service providers and customers (Stickdorn et al., 2018). Addressing projects through the lens of Service Design entails recognizing and managing unpredictability (Kimbell, 2011), considering the influence of constraints, entrenched cultures, and the goals of various stakeholders. This process leads to the discovery of new insights, revealing how even well-designed systems may overlook the less obvious aspects of users' everyday lives.

Co-creation, a fundamental part of Service Design, calls for a serious engagement with end-users (Mager, 2006); this process can unleash energy and motivation for change. A change that often pertains not to machines or production processes, but rather to structures, cultures, and behaviours of people. There were two 'Design Pills' that focused on the

human body and its relationship to well-being. The first pills circumscribed, from an ergonomics perspective, some elements of primary importance with respect to the project at hand. After an initial orientation on the fundamentals of anthropometry within a work context, designers were guided to the critical observation of uniforms using historical models from the field of transportation. In a second step, the concept of well-being was explored as a balanced condition of the human when in relation to specific machines and environments. The condition of well-being was then investigated with respect to the multiple users, direct and indirect, who come into play (Sicklinger, 2020). The uniform then becomes an instrument of the wearer but also of those who relate to the wearer. Further insight into well-being has been the relationship between the human body and digital technologies resulting from the intensive use of computing devices. This is a situation, for example, very present in train staff where tablets, pos, cameras and other devices demand continuous actions and attention. These dynamics result in often uncomfortable movements and postures that, if repeated over time, lead to excessive fatigue or even pain. In relation to technologies, the issue of well-being has been studied as a measurable condition that can be verified with quantitative data to identify critical issues on which to intervene. The designers therefore considered the appropriateness of detecting data pertaining to different areas by placing sensors on the body of personnel.
The 'Design Pill' dedicated to the 3d garment design and visualisation had the goal to give the participants basic knowledge on modelling and visualisation technologies. This section had the scope to evaluate the opportunities offered by the adoption of digital tools both for productive and communicative purposes. Participants engaged both in guided and autonomous software training. Each group identified an iconic outfit representative of the whole collection. The modelled 3D garment was collected and presented on a digital runway.
The 4 working groups, each consisting of 2 fashion design students, 1 product design student and 1 service design student, were then constantly followed by the coordination team (teachers, customer and companies) in the production of 4 collections. Professors acted as discipline references, guiding students through project themes related to service, product, or fashion. Discussions alternated between whole team reviews and discipline-specific reviews. This ensured horizontal involvement in decisions across different backgrounds while maintaining vertical focus on specific disciplines. The resulting collections integrated creative skills from diverse disciplines, with each design step collaboratively shared. This approach highlighted the systemic and comprehensive nature of uniform design, showcasing how varied sensibilities contributed to a unified outcome. The coordination team facilitated client reviews by managing staff comments and providing constructive feedback to students using evaluation tools.
The four collections produced tangibly represent the outcome of this multidisciplinary and multi-stakeholder relationship (Fig. 02): the fashion product, designed in detail and visualizable not only through sketches but also through a digital representation of it in the form of an animated fashion show, was associated with new luggage accessories and equipment products to facilitate and make staff activities more pleasant, and each of the projects proposed services both to improve the process of supply or use of uniforms and to implement processes useful for the well-being of workers. The complexity of the projects implemented makes it clear that a company's request was not given an unambiguous answer but an opening to further avenues that can be further elements of deepening, development, and design.

DISCUSSION

The four uniform collections for Trenitalia Tper staff, demonstrate the efficacy of multidisciplinary and multi-actor learning and collaboration models (Fig.03). This approach integrates industrial practices into education, fostering a community of future designers adept at navigating the supply chain and attuned to transformation and sustainability. The model serves as a blueprint for university-business collaboration and multilevel learning. Faculty and businesses bring real-world design, research, and production issues to students. Students, from diverse backgrounds, exchange skills and tools in a peer-to-peer manner. The commissioning company gains awareness of contemporary issues like sustainability and digital transition. Scalability hinges on thematic research and selection by the coordination group. Themes such as gender issues, circular and sustainable materials, and worker well-being were added to address the complexity of the product. The aim was to showcase the multidimensional nature of the uniform, incorporating fashion, accessories, and

Fig. 2

services across disciplines. Continuous collaboration fosters staff understanding and cohesion, aiding in the development of shared outputs. However, limitations exist, such as the blended working mode due to distance between universities. While main advancement moments occurred in person, more face-to-face interactions could enhance activities like material selection and staff interviews, improving the scalability of the process.

CONCLUSIONS

In conclusion, this paper has successfully illustrated the implementation of a multidisciplinary and multistakeholder learning and collaborative model that effectively bridges the gap between academia and the business world. The case study of the collaboration between the Advanced Design Unit research group, Polytechnic University of Milan and Trenitalia Tper, in conjunction with local fashion and design entities, has not only showcased the potential of collective intelligence in design-driven innovation processes but has also demonstrated its practical application in a real-world setting. This model has proven that involving a diverse group of stakeholders in the co-design process can lead to innovative solutions that address complex challenges in the contemporary fashion system, particularly in the technical clothing and uniforms sector. The successful integration of academic knowledge with industrial production capabilities emphasises the relevance of open innovation as a strategy for enterprise innovation readiness and systemic industry transformation. The implications of this research extend beyond the immediate project outcomes. They suggest a scalable and replicable framework that other sectors can adapt to foster similar collaborative innovations. The involvement of students and faculty in these real-world projects not only enriches their learning experience but also prepares them to enter the workforce with a practical understanding of industry challenges and the dynamics of collaborative innovation. Future research could explore the longitudinal impacts

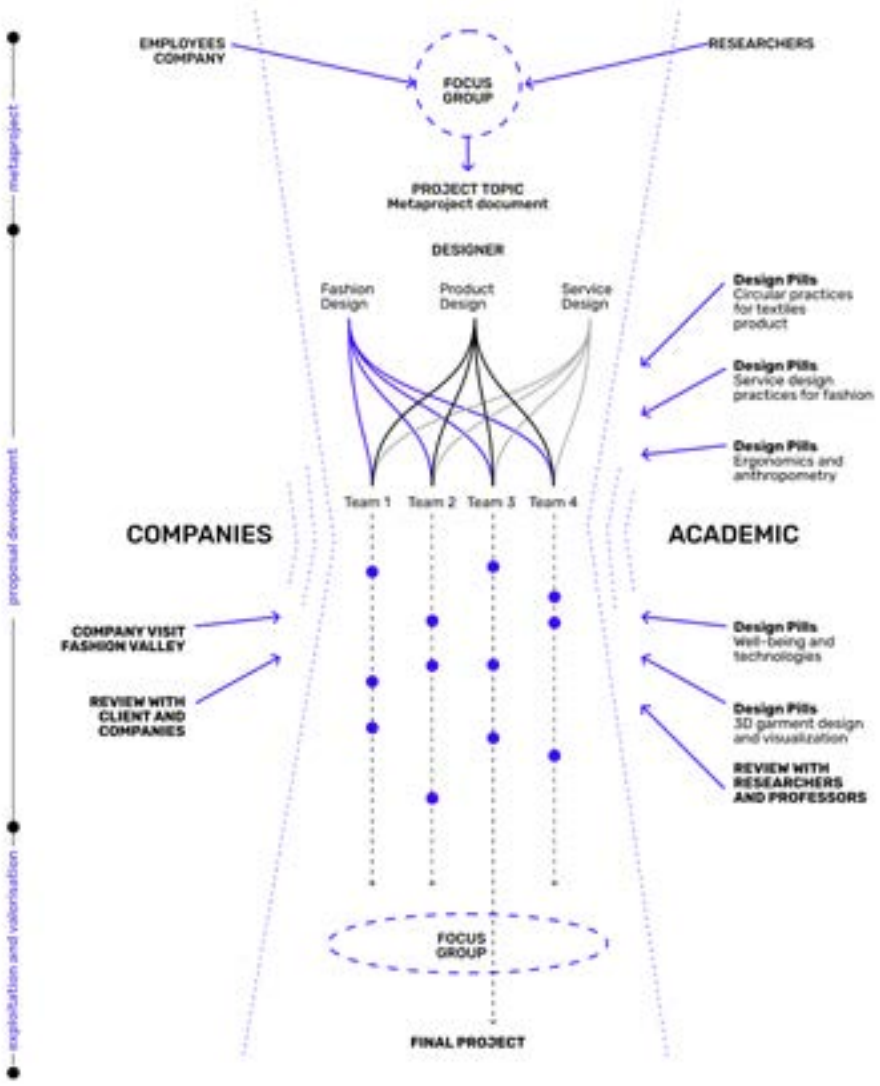

Fig. 3

of such collaborations on the participants and the industries they engage with, potentially leading to further refinements of the model. Additionally, expanding the scope of these collaborative efforts to include more diverse industries and comparing the outcomes could provide deeper insights into the universal applicability and effectiveness of this model. By fostering a culture of continuous learning and adaptation, the model outlined in this paper promises to contribute significantly to the ongoing discourse on the convergence of education, research, and business, ultimately driving forward the frontiers of innovation in design education and beyond.

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CAPTIONS

[Fig. 01] Project timeline. Credits: Ludovica Rosato.

[Fig. 02] Selection of images from one of the collections developed. Project credits: Federico Primosa, Michelle iezzi, Marco Fiore, Stefania Morandi, Graphic layout: Ludovica Rosato.

[Fig. 03] Summary diagram of the disciplines and actors involved in the learning and collaborative model tested. Credits: Giorgio Dall'Osso.

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HUMAN-COMPUTER INTERACTIONS TO REMATERIALISE FASHION HERITAGE ARTEFACTS

A COLLABORATIVE PROJECT BETWEEN THE GIANFRANCO FERRÉ RESEARCH CENTER AT POLITECNICO DI MILANO AND THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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Competing Interests: The Author(s) declare(s) no conflict of interest
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Abstract

In fashion, the concept of 'materiality' is evolving under the influence of Industry 4.0 technologies, gaining significant academic interest in Human-Computer Interaction (HCI) fields. Understanding how to deal with materiality in light of digital technology impacts facilitates the revitalisation of culture-intensive artefacts by unravelling knowledge about their manufacturing processes, thus moving towards the design of sustainable production and consumption paths aimed at re-materialising the artefact in innovative ways consistent with their heritage.
The article presents the results of a partnership project between the Gianfranco Ferré Research Center (GFRC) at Politecnico di Milano and the Mechanical Engineering Department at the Massachusetts Institute of Technology (MIT). Through a Reverse Engineering approach, the goal was to study and deconstruct an archival garment from the Gianfranco Ferré archive to rematerialise it and to converge HCI principles into educational applications in cultural and design-oriented fields.

Keywords: *Materiality; Fashion Heritage; Additive Technologies; Reverse Engineering Human-Computer Interaction*

FROM REPRESENTATION TO REMATERIALISATION: ADDITIVE TECHNOLOGIES TO REACTIVATE CULTURE-INTENSIVE ARTEFACTS

Within fashion, the tactile experience linked to the materiality of a garment or an accessory plays a pivotal role in truly understanding and communicating artefacts. Materiality has always been part of a research process aimed at materialising the intangible meanings that connect the garment with specific socio-cultural characteristics. Indeed, the tangible aspects of a fashion artefact are mainly the result of material and manufacturing processes that express the identity-building elements of a given territory or traditions (Maddaluno, 2018). These characteristics reflect the material experimentation that characterises the fashion development process, and have always been applied in seasonal fashion collections as witnesses of the encounter between a constant spirit of innovation in design, and a creative and curious exploration which characterises the essence of fashion.
Materiality thus yields the formation of brands' heritage through recognisable product characteristics that form a cultural milieu and an innovation ecosystem where design acts as a sense-making process (Bertola et al., 2018). These design-driven processes have not only contributed to the global recognition of local landscapes as fertile lands for specific craftsmanship, but they also exemplify the fusion of regional traditions and innovation in contemporary manufacturing practices. Indeed,

looking at the Italian context over the years, material innovation has always been favoured by the close relationships between fashion houses and small and medium-sized companies responsible for manufacturing ready-to-wear collections. These textile/accessories manufacturers have consistently supported and elevated designers' demands by introducing intricate processing techniques and crafting meticulous, even seemingly ' impossible' fabrics. Their expertise has been deeply rooted in the local landscape, a heritage that has made 'Made in Italy' renowned worldwide (Maddaluno, 2018, p. 102) and that has nurtured Intangible Cultural Heritage (ICH), a knowledge carrier in terms of technical know-how and tacit practices (UNESCO, 2003) that resulted in the design of fashion culture-intensive artefacts.

While these artefacts are usually preserved in corporate and museums' archives as tangible witnesses of ICH, their knowledge related to materiality is difficult to acquire on the one hand because of lacks in process documentation attached to the garment, and, on the other end, because it is challenging to extract this heritage from the individuals who possess the know-how translated into materiality (Cameron & Kenderdine, 2007). "ICH craft-related practices and creative acts are embodied knowledge often handed down through personal exchanges and oral mentoring between craftspeople and apprentices through a process of human knowledge transmission"(Casciani & Vandi, 2022, p. 239) with the consequent high risk of disappearance because of the small number of remaining experts passing on their knowledge mainly in the familiar entourage or within brands walls and the limited number of educated young professionals interested in artisanal jobs. Mass production and outsourcing are other factors contributing to the risk of loss of cultural transmission of ICH in the craftsmanship sectors.

In this context, technologies have affected know-how preservation and transformation in fashion. In the transition from reality to virtuality, we are witnessing a loss of materiality in objects (Franceschini, 2019), prioritising the informational aspect of data over the sensory experience. Several scholars (Drucker, 2014; Hayles, 2004; Manoff, 2006) have explored the materiality of electronic objects in various contexts. Building on the idea that information and materiality are separate entities, it is evident that in the digital realm, materiality often takes a back seat to informational function. This is primarily due to the dominance of vision-based interfaces in digital interactions, perpetuating the notion that the body's materiality is subordinate to its logical or semiotic structures. In light of this, the distinction between tangible and virtual versions underscores the need to reconsider the concept of materiality in the virtual domain (Healy, 2013). Extended Reality (XR) is trying to blend the emancipatory possibilities of the virtual with the sensual involvement of the physical, by researching haptic technologies and related applications (Silvestri, 2020). However, so far these technologies still fail to replicate the complicated tactile qualities that define our interaction with fashion artefacts (Ornati, 2019). However, it has been demonstrated that additive manufacturing technologies can be applied to reintegrate materiality and other non-visual senses into cultural experiences. "Cultural heritage researchers have worked with virtual models and augmented reality for many years. To print out the results to understand them better is the next logical step because multisensory experiences lead to a better comprehension of the object" (Neumüller et al., 2014, p. 121). Although most 3D printers are still limited in material variety and colour palette, rapid prototyping offers a better 3D model experience. Future innovation frontiers in additive manufacturing need to be focused on rematerialising physical attributes like weight, texture, as well as mechanical features, which would allow for a more comprehensive appreciation of the objects produced (Neumüller et al., 2014).

Considering the scaling applicability opportunities in fashion, the interest in multi-sensory experiences coincides with the promise of additive manufacturing and advanced robotic systems to revolutionise how research and the industry approach manufacturing processes and techniques. This because recent innovations could also play an essential role in extracting and codifying knowledge from small-scale craft manufacturing processes yet progressing towards cultural sustainability and ICH preservation and valorisation (Casciani & Vandi, 2022, p. 254).

In light of this scenario, the project described in this paper highlights how additive manufacturing technologies are not merely utilised to replicate the original artefact as it was but rather to reassess the craftsmanship inherent in these fashion objects. This involves updating the process based on a new form of craftsmanship, namely Craftsmanship 4.0 or Design 4.0 (Bortolotti, 2023), which consists of studying, dematerialising, and rematerialising

the process that imbues these artefacts with high cultural significance. Consequently, a fresh audience will gain insight into the manufacturing process as it was initially conceived while gaining access to new technologies to modernise and revitalise it.
In this context, the archive becomes a living platform to practically experiment with integrating ICH knowledge within contemporary design languages towards manufacturing process innovation.

THE PROJECT "REMATERIALIZING FASHION CULTURAL CAPITAL THROUGH ADDITIVE MANUFACTURING TECHNIQUES"

The following paragraphs regard the first in a series of summer school projects organised by the Gianfranco Ferré Research Center (GFRC) at Politecnico di Milano (POLIMI) and the MIT-Italy Programme, involving selected students from the Mechanical Engineering Department of Massachusetts Institute of Technology (MIT). The project phases were executed within the framework of the "Rematerializing Fashion Cultural Capital Through Additive Manufacturing Techniques" programme, which is part of a GFRC research initiative focused on disseminating technical and scientific knowledge from the Gianfranco Ferré archive, donated by the Ferré family in 2021 to POLIMI. Under the guidance of two POLIMI PhD students, one specialising in Fashion Design and the other in Mechanical Engineering, visiting MIT students studied and attempted to recreate an archival artefact, exploring the potential of innovative manufacturing processes, reflecting Gianfranco Ferré's pioneering approach to materials and answering the question: How can culture-intensive garments become catalysts for innovation in HCI fields regarding manufacturing processes through technological hybridisation?
This aim converges into one of the objectives of the GFRC: as part of POLIMI, the GFRC is rooted in a design-driven, research-oriented nature, aiming to bring together the technical-scientific know-how and design culture with the tangible and intangible heritage related to the history, culture and techniques of fashion preserved and valorised in the Gianfranco Ferré archive.
In this configuration, researchers faced the task of preserving the inherent heritage values associated with a selected historical fashion artefact (Calanca, 2020; Pistilli, 2018) while using the same values as foundational principles for codifying an augmented process aimed at rematerialising and recontextualising the artefact.

ARCHIVAL LITERACY

Gianfranco Ferré is considered one of the major fashion designers contributing to make italian fashion and the 'Made in Italy' concept renowned worldwide. According to him, reflecting on *the matter* means setting the ground to explore "expressive horizons balanced between innovation and experience, technology, and craftsmanship" (Airaghi et al., 2023, p. 21), meeting a desire for innovation and technological experimentation with fabrics, textiles, and other materials that extended beyond traditional fashion. In his lesson *Designing the Material* held at Central Saint Martin in 1998, Ferré systematised his approaches to the matter, describing how and why an essential part of his creative process was always characterised by "*an innovative and curious approach to material*" (Frisa, 2009, p. 88), a successful blend of reason and emotion that always had characterised his approach towards the tangible existence of fashion –the material– where fashion gets its foundation from. Indeed, over the years, Ferré has always employed cutting-edge processes, increasingly sophisticated treatments, and technological experimentation to create unprecedented possibilities for using materials in his collections.
This aspect brought him to codify three different approaches:

- The pure material, where precious fabrics are selected without altering their noble characteristics but rather emphasising their value and high quality through his designs and style.
- The reinterpreted material regards the "proper and improper uses of materials" (Frisa, 2009, p.90) that are part of the clothing tradition, challenging established norms such as breaking down or redefining the distinctions between menswear and womenswear, day and nightwear, and formal and informal clothing.
- The invented material –the most cutting-edge– born from the desire to gain a deeper understanding of the characteristics and manufacturing methods of what already exists. It emerges from a learning-by-doing approach and the continuous efforts

invested season after season. Rather than causing disruptions, it represents a constant desire for evolution. For instance, it involves strengthening the most precious natural fibres through technological enhancements, applying high-definition industrial treatments to traditional materials, and skillfully combining different materials to harness their respective qualities.

In light of this introduction, the selected garment for the project experimentation was The Golden Jacket, belonging to the Ready-To-Wear (RTW) Fall-Winter 1993 collection, a signature jacket witnessing the experimental approach Ferré wanted to keep towards reinterpreting pure materials offered by nature. Indeed, the jacket is made with a cotton cord, only reworked and elaborated by hand to meet his idea about RTW, closer to Haute Couture values rather than the ideas of reproducibility and universality carried on by the nature of RTW. Indeed, one of Ferré's firmest beliefs was in the perseverance of luxury as a never ending pursuit of quality, uniqueness, and originality beyond fashions and seasons (Frisa, 2009). It is therefore not surprising that the central aesthetic appeal of the jacket is the royalty derived from the historical concept of the gilded "mittel Europe" of the 19th century. (fig. 01)

Given this scenario, accessing the related ephemeral documents was essential to acquire a holistic overview of how the artefact was initially designed, produced and communicated. This allowed reflections on (i) the eventual gap and shortcomings in the documentation at an archival level and (ii) the opportunities to expand and update the archived knowledge in light of the technological tools available nowadays.

In tandem, to continue unfolding the knowledge preserved inside this unique piece, the team interviewed a collaborator of Gianfranco Ferré, who witnessed the jacket fabrication in 1993, thus representing an unparalleled resource of historical oral knowledge. Besides prompting further design steps, this phase also provided the opportunity to document and represent this knowledge, enriching the archive with textual and audio recordings, and understanding how to start conversations with other testimonies from a manufacturing point of view.

Concerning the jacket, the team rearranged interview results focused on the manufacturing process and reported them below in steps.

1. The jacket resulted from a fruitful collaboration Ferré relied on with the embroidery factory Ricami Laura in Reggio Emilia, where he could carry out the most daring and original experiments regarding embroideries applied to materials in this place.
2. The manufacturing process started with a naturally coloured cotton cord laid out on an adhesive sheet so that the patterns could be constructed in a manner that would be maintained. This was the step in which the jacket cut-out patterns were created manually. The intended design was traced out on the sheet beforehand, and the cord was placed to fulfil this design with slight improvisations. From analysing the jacket, it was assumed that this was done for two layers.
3. The motifs of each cut-out piece of the jacket were then hand-sewn to preserve the shapes created in the first step.
4. After stabilising the design, each cut-out piece was plated with a golden foil by an artisan specialising in creating antique book covers. The same approach was afterwards applied with a silver foil on the outer surface of the layers.
5. After the painting steps were completed, the pieces were heat-treated to maintain the metallic material.
6. Following the final heat treatment, the Mattioli factory assembled the cut-out pieces to make the jacket look like a continuous cord.

Fig.01

REVERSE ENGINEERING

Reverse Engineering (RE) has been appropriated by fashion in the context of fashion cultural heritage as a new approach to unfolding and disseminating archival knowledge (Vacca & Vandi, 2023). Through *acquisition, simulation, and restitution phases*, it aims to codify the in-depth study of archival artefacts through educational, research-driven activities. In the project's context, learning how the jacket was historically crafted allowed a deep understanding of materials, crafts techniques and technologies employed originally. Hence, RE was then employed to activate these archival discoveries and to produce new knowledge to share with different actors.

After evaluating the options at hand to reverse engineer the jacket, researchers started by outlining two main paths for acquiring the jacket digitally:

- 3D scanning
- Manual digital design

The first attempt at scanning was achieved by employing the photogrammetry RealityScan APP (https://www.capturingreality.com/realitycapture). With only pictures shot on an iPhone, it was possible to convert 200 photos of the jacket on a black mannequin into a coloured mesh. The process took less than an hour, and it seemed the perfect solution for acquiring a copy of the digital jacket. However, although the mesh was visually precise, the geometry of it was very rough and inaccurate; thus, the model could not be prepared to be printed. (fig. 02)

The second scanning attempt involved two rounds, the first with the AI-driven Artec Leo 3D scanner (https://www.artec3d.com/portable-3d-scanners/artec-leo) and the second with the EvixScan 3D Quadro+ (https://evixscan3d.com/3d-scanners/quadro/). Although these scanners are among the most advanced and are used in the automotive industry and for mixed-reality applications, the experiment with the jacket did not yield positive results. Nonetheless, this did provide some insights into the underlying issue. Despite the high pattern intricacy, the main problem was related to the golden effect of the jacket, which bounced the laser beams. The only potential solution would have been to change the jacket's surface to a matte finish, but this presented a dilemma as it would jeopardise the integrity of an archival garment.

Despite contradicting the objective of formalising a smooth, technologically-supported RE process, the team started by digitally documenting the jacket's characteristics. This initial step allowed us

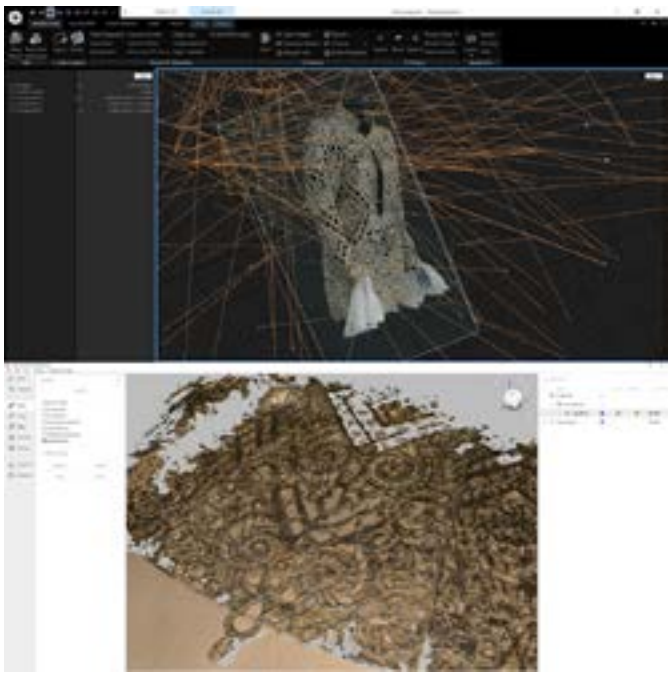

Fig.02

to acquire and simulate its shape and subsequently translate the original manufacturing process into a technological one.

Given the intricacy of the piece and the complexity of its manufacturing process, the archive lacked the paper pattern. Consequently, the team set out on a meticulous reconstruction phase involving deep observation and precise measurements to lift the pattern digitally, which comprised two pieces in the front, one central piece in the back, two side panels, and the sleeves.

The subsequent step involved establishing a method for capturing the motifs from images, particularly after identifying systematically repeated modules. Initially, the team successfully extracted the pitch and diameter of the intertwined three yarns to form the cord. These specifications were used to model the cords as meshes in Blender, allowing the cords to intersect. Once the cord was created, the images of the jacket pieces were imported into Blender to serve as references, using the 2D pattern as a guide. By aligning the base spline to direct the cord over the image, the team could trace the pattern using a single cord for all the pieces and finally simulate and return the jacket digitally. (fig. 03)

REMATERIALISATION

Additive and subtractive technologies have been considered the new frontiers in product manufacturing due to their ability to offer greater design flexibility, sustainability, and efficiency. Specifically, 3D printing was chosen as the preferred fabrication method since it aligns with Ferré's emphasis on

Fig. 03

material research and novelty, providing a means to experiment with various materials and gain valuable insights. Additionally, additive manufacturing is at the forefront of fashion innovation as the industry seeks sustainable methods for producing recyclable garments without waste. Moreover, Ferré's jacket exemplifies what he referred to as 'the invented material', as the cotton cord was patterned and coated to mimic a lace-like golden structure. Similarly, the single 3D printing extruder excels in replicating the complex outlined configuration, which is challenging to achieve with other additive or subtractive manufacturing techniques.

A small pattern selection was chosen to start the trials, and its mesh was exported as an STL. To turn the STL into a printable file, Meshmixer allowed the mesh to be easily made solid and removed any open surfaces that would be problematic for the printing software. The STL was then uploaded to Prusa Slicer, and a GCode was extracted for printing. The first trials were done with Sharebot printers, which are ideal for experimenting with polymers, especially PLA (polylactic acid). Approaching TPU seemed logical for the project, being a flexible filament that can add an aspect of adaptability to a potential fabric. This flexible material enables the printing of the piece in an orientation that can later be unfolded, allowing for simultaneous printing of larger sections. Due to the incompatibility with the ShareBot printers, TPU was printed using the Ultimaker U3 printer, whose results provide flexibility in its bending properties. Moreover, initial experimentations regarded the use of the Desktop Metal printer, which allowed the printing of a small section of the pattern using steel. Although more time-consuming, the outcome yielded an accurate definition of cord details and facilitated additional speculation regarding the reinterpretation and potential reuse of the printed object. (fig. 04)

RESULTS AND DISCUSSION

Considering the rematerialisation affordances to redesign a fashion garment, as discussed throughout the process, several technological limitations still emerge regarding acquiring and printing the actual jacket materiality and shape. Firstly, the most advanced laser scanner could not acquire the jacket because of its complicated pattern and reflectivity, forcing researchers to opt for a manual digitisation process aided by virtual prototyping technologies. Secondly, research on flexible and wearable materials is ongoing and still immature, while printer beds need to be wider to print out garments. To this end, future project developments will involve understanding how to combine the jacket pieces seamlessly. One solution could be integrating the chainmail technique as an excellent method of deriving mobility and adaptability from rigid structural links, even though incorporating it into the design will compromise the original jacket pattern.

However, these findings hold significant research value and provide insights about how culture-intensive garments and the related manufacturing processes become catalysts for innovation in HCI fields through technological hybridisation. Indeed, what truly stands out is a new encoding of the process that aims to extract and represent the implicit and tacit knowledge enclosed in artefacts of high cultural value through advanced digital-aided techniques. At a systemic impact level, reflections regard:

- the role of Craftsmanship 4.0 or Design 4.0 that brings about innovation potential to artisanship that is not just a repetitive technique but a creative exploration of a method, "a creative act" that confers real quality and authenticity as values for final consumers (Sennett, 2012, p. 77). Indeed, the capacity to integrate reframed craft techniques with advanced manufacturing processes can lead not only to the in-depth study of the materiality of the garment through RE but also to the codification of new, unreplicable business models that

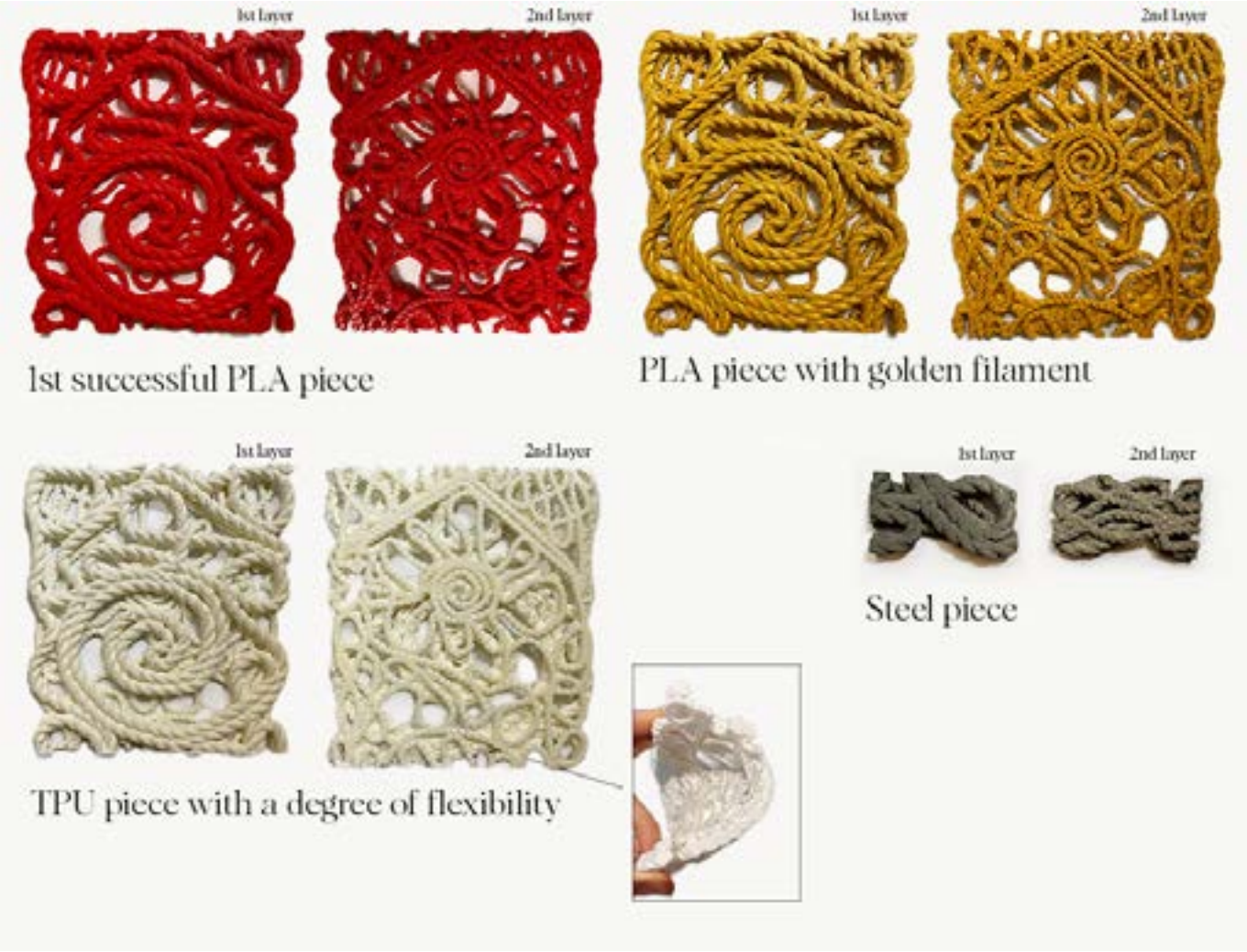

Fig. 04

resonate with modern consumers' demands for sustainable development.

- interdisciplinarity as an asset when considering technologies as media that allow an in-depth study of the artefact to unlock different production and consumption perspectives that grow from the archive (Schnapp, 2013). Contextually, professionals in Human-Computer Interaction, Engineering, and techno-scientific disciplines, in general, are new stakeholders that enable the application of advanced technical solutions to extract knowledge from artefacts to inform further production and consumption paths, impacting academia, fashion companies and cultural institutions. This context subverts the idea of 'authorized heritage discourse' (Petrelli et al., 2023), where historians and curators are the only ones to preserve and keep track of archival knowledge to be disseminated to the general public.
- the evolution of the archive into a learning organisation, a social laboratory (Sennett, 2012, p. 77) wherein knowledge no longer adheres to an elitist dimension (Pecorari, 2019) but instead becomes democratised, accessible, and actively disseminated among diverse stakeholders, catalysing collaborative learning and fostering inclusive participation. The culture preserved within becomes the asset for innovation and differentiation, and its narrative content is recognised as a value for final customers. Indeed, it is proven (Bertola et al., 2016) that the use of heritage assets and their potential to embed cultural content into final garments improves strategic marketing purposes and digital narratives (Martin & Vacca, 2018) to attract clients operating in the luxury segment and final customers.

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CAPTIONS

[fig. 01] The Gianfranco Ferré Fall Winter 1993 *Golden Jacket* from the runway show. Archival Images. Courtesy of Centro di Ricerca Gianfranco Ferré https://www.centroricercagianfrancoferre.it/home/FGFhome.php?lang=it

[fig. 02] 3D Scanning acquisitions with the Reality Capture App and the AI-driven Artec Leo 3D Scanner. Source: Authors

[fig. 03] Reconstructed digital pattern on Illustrator and consequent 3D prototyping and renderisation on Blender. Source: Authors

[fig. 04] Final 3D printed pieces. Source: Authors

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CONSUMER COMMUNITIES

OUR FASHION HABITS

A GEN-Z FEEDBACK ON ECODESIGN STRATEGIES FOR USE-PHASE

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Abstract

In recent years, consumers have assumed a central role in the transition for sustainable fashion. Consumers purchasing decisions have been crucial in determining new trends or making way for new business models; for a segment of conscious consumers, purchasing is experienced as a political choice. Recognizing fast fashion's detrimental impact, the European Commission's "Reset the trend" campaign, targeting youth with #fastfashionisoutoffashion, aims to promote sustainable culture. The research presented discusses the results of a survey conducted on a specific gen-Z target, the student of the bachelor in Textile and Fashion Design.
The research had the intention to investigate the target familiarity with eco-design strategies related to the use-phase, the one they are directly involved as consumers. The results provide feedback on the gap between policy and design direction and the actual consumers's engagement in the green transition.

Keywords: *Sustainable fashion; Consumer behaviour; Ecodesign strategies; Gen Z Awareness*

INTRODUCTION

The European Commission's "European Strategy for Sustainable and Circular Textiles" aims to ensure that all textile products on the EU market are durable, repairable, and recyclable by 2030. This initiative includes implementing strategies such as new branding services, Digital Passport, Extended Producer Responsibility, and consumer engagement. Despite Generation Z's sensitivity to environmental and social sustainability issues, they also demonstrate a marked addiction to fast-fashion. Consequently, the European Commission is focusing on consumer involvement, particularly targeting the purchasing habits of Generation Z. Although efforts to mitigate the environmental and social impacts, the fashion industry have struggled to counteract the effects of increased consumption. Fast-fashion remains prevalent, characterised by low product quality, recurrent consumption, impulsive buying and creating a sense of urgency and fulfilment (Anguelov, 2015; Heuer, 2018). From 1975 to 2018, global per capita textile production has doubled from 5.9 kg to 13 kg per year, with fashion brands now producing almost twice as much clothing as before 2000 (Niinimäki et al., 2020). Meanwhile, the wear-time of garments has decreased by 36% since 2005, with evidence of impulse purchases particularly prevalent in the UK and Norway (Laitala, 2018). A JRC study revealed that Italy has the worst purchasing habits among European countries (Köhler, 2021), with high textile consumption per inhabitant. In response, the "Reset the Trend" campaign was launched in 2023, targeting six priority countries, primarily

focusing on young people addicted to fast fashion. This paper provides an overview European strategy for the sustainable fashion industry, emphasising the importance of consumer behaviour during the product life-cycle, especially among Generation Z. A survey titled "Our Fashion Habits" investigates eco-design strategies at use-phase level, targeting students pursuing a Bachelor's Degree in Textile and Fashion Design at University of Florence (UNIFI). The focus target is being investigated because it identifies a type of public interested in sustainable fashion, who intends to delve deeper into the topic of eco-design. The results of the survey demonstrate how difficult it is for consumers interested in the topic to find information that allows them to transform the intention to make informed choices into sustainable purchases and behaviours. The study highlights a gap in translating eco-design strategies into consumer behaviours and concludes with recommendations for promoting sustainable practices and emphasising the importance of product ownership.

BACKGROUND

GEN Z ATTITUDES

For the European Commission, consumers play a pivotal role in steering the market, with good tools for informed decision-making forcing brands to adapt (EC, 2022). Research indicates a growing global awareness among consumers, transcending generational boundaries, regarding fair labour practices, resource scarcity, and environmental protection (Beltrami et al., 2019). Beltrami (2019) states that two-thirds of consumers express a willingness to change, avoid, or boycott brands based on their stance on controversial issues, with about half identifying as passion-driven activists. The author continues that 66% of consumers are willing to pay more for sustainable products, and 37% of Gen Z consumers seek information on product contents and production methods before purchasing, often relying on reviews and articles. Additionally, nine out of ten Gen Z consumers believe companies bear the responsibility to address environmental and social issues, advocating for greater brand involvement in social campaigns such as #metoo and #blacklivesmatter. Report suggests that while eight out of ten Italians desire information about the origin of raw materials in fashion production, behavioural changes remain elusive (Heiny et al., 2021). Despite efforts to promote transparency and sustainability in the fashion industry, studies (Amed et al., 2023) suggest a gap in consumer understanding of what constitutes sustainable practices and products, inconsistent sustainability claims erode consumer trust.

Overall, further research is needed to understand the nuances of consumer behaviour, particularly among specific demographics such as Italy's Gen Z population. Addressing these gaps can inform more effective strategies for promoting sustainable fashion practices and enhancing consumer engagement.

CONSUMERS IMPACTS

The literature highlights the significant impact of the use-phase in the life-cycle of fashion products. For instance, a cotton T-shirt's life-cycle emissions estimate reveals that 52 percent of CO2 emissions occur during the use-phase, primarily due to washing and drying practices (Carbon Trust, 2011). The variability in negative impacts during the use-phase, is influenced greatly by user habits such as washing frequency (Jewell et al., 2016). Simple changes in consumption practices, like eliminating tumble-drying and reducing washing temperature from 60 C° to 40 C°, could approximately reduce of 50% of product's impact on global climate change (Allwood et al., 2006). Synthetic garment use contributes between 20% and 35% to microplastic pollution in marine environments (Laitala et al., 2018). Furthermore, research reveals that the use-phase contributes substantially to environmental indicators such as human toxicity, ecotoxicity, and water depletion (Beton et al.,2014). However, it is often excluded from Life-Cycle-Assessment analysis due to assumptions about consumer behaviours (Quantis, 2018), although it could provide valuable data for eco-design strategies, particularly in material choice considerations (Laitala et al., 2018).

Concerning the garment's lifespan, consumer attitudes and expectations play a crucial role in determining clothing end-of-life (Cooper et al., 2022). Common causes are garment failure including pilling and colour fading. Changing consumer habits requires proper information on garment use and end-of-life options, which is increasingly addressed through legislation such as Extended Producer Responsibility for textiles in the European Union (EC, 2022).

SUSTAINABLE STRATEGIES DIRECTION

Examining critical issues related to the use-phase of garments reveals two main concerns: (*) the

amount of resources used and toxicity of substances released during washing, and (**) the duration of the product's functional lifespan. (*) Technological innovations are being developed to improve efficiency and reduce harm, such as innovative washing machine designs and less harmful detergents. Brands like Patagonia have collaborated together with Samsung to design a wash cycle and filter that dramatically reduces the release of microplastics during washing. Levi's are actively involved in providing information on product maintenance and promoting sustainable washing practices. (**) New circular business models that involve repair services and second-hand sales are spreading in order to extend the lifespan of products or their materials (Bocken, 2016; Abtan 2019). Collaborative consumption and sharing economy models, including rental and peer-to-peer sharing, are gaining popularity, especially among younger consumers (Zamani et al, 2017). According to the report conducted by BCG and Vestiaire Collective 2022[1] platforms and initiatives for second-hand garment exchange have made the phenomenon appealing to consumers, particularly Gen-Z, contributing to a global second-hand market worth billions of dollars. However, challenges such as transportation efforts, price barriers, availability, and hygiene concerns still exist, limiting the viability of rental as an alternative to fast fashion for many consumers (Niinimäki, 2017;Iran et al., 2017).

METHODOLOGY: 'OUR FASHION HABIT' SURVEY

The research aims to investigate the dynamics between consumers and their garments, focusing on purchasing habits, care, maintenance, and end-of-life decisions, to identify key issues for consumer engagement in sustainable fashion. The study targets a promising demographic, specifically a Gen-Z group interested in entering the fashion industry professionally in the coming years. The data presented in this article were collected during the semester course on Sustainability in the Textile and Fashion Sector in the 2022-2023 academic year, within the Bachelor of Textile and Fashion Design program at the University of Florence (UNIFI).
To conduct the research, a Google Form questionnaire was structured to achieve two main goals: firstly, to collect and store individual data systematically, and secondly, to serve as an ice-breaker activity during the first lesson of the Sustainability in the Textile and Fashion Sector course. This dual-purpose approach allowed the questionnaire to function not only as a data collection tool but also as a means to engage students from the outset. By participating in the survey, students were prompted to reflect on their own fashion consumption habits and the broader implications of these habits on sustainability.
The survey was designed to be anonymous, which encouraged honest and open responses from the students. This anonymity, coupled with the ability to collectively view the survey results in the classroom setting, fostered an environment conducive to critical thinking and discussion. Seeing the aggregated results allowed students to compare their habits with those of their peers, providing a broader perspective on common behaviours and attitudes towards fashion sustainability. This collective reflection was intended to seed students with a life-cycle thinking mindset, emphasising the importance of considering the entire life span of garments—from production to end-of-life.
The sample, consisting of 229 students, was given a questionnaire titled "Our Fashion Habits," administered via Google Forms. Of the respondents, 95% were between the ages of 18 and 25, with a majority (81%) identifying as female. This demographic information is significant as it highlights the specific target group being studied—young adults who are on the cusp of entering the fashion industry professionally and who represent the next generation of consumers and designers.
The survey data were meticulously analysed and compared with existing literature to identify trends, discrepancies, and opportunities for intervention. The questionnaire was structured into four distinct sections, each corresponding to a stage in the product life-cycle. This structure was intentional, designed to provide a comprehensive overview of the students' interactions with their garments at each stage.
1. Quantify: The first section aimed to quantify the amount of clothing owned by the students. Questions in this section explored the volume of garments in their wardrobes, frequency of use, and the variety of items. This data provided insights into consumption patterns and potential areas for reducing excess.

1 https://it.vestiairecollective.com/journal/bcg-x-vestiaire-collective/

2. Buy: The second section focused on purchasing habits. It investigated where and how often students bought new clothes, their preferences for certain brands or types of stores, and their considerations regarding sustainability when making purchasing decisions. This section aimed to uncover the motivations behind consumer choices and the potential for influencing these decisions towards more sustainable options.
3. Take Care: The third section examined the care and maintenance habits of the students. It included questions about washing frequency, methods of care, and the impact of these practices on the longevity of garments. Understanding these habits was crucial for identifying opportunities to promote more sustainable care practices that extend the life of clothing.
4. End-of-Life: The final section explored end-of-life decisions. It investigated what students did with their clothes once they were no longer in use—whether they were disposed of, donated, recycled, or repurposed. This section aimed to identify the most common end-of-life pathways and the potential for enhancing recycling and reuse efforts.
By structuring the survey in this way, the research provided a holistic view of the students' interactions with their garments and highlighted critical issues and opportunities for design action. The insights gained from this study are intended to inform future educational initiatives and design practices, encouraging a more sustainable approach to fashion among the next generation of industry professionals.

MAIN FINDINGS

PURCHASING DECISION

We surveyed participants to quantify their new purchases for the current year across three categories: shoes, pants/skirts, and T-shirts/cardigans. The majority (51.3%) reported purchasing under 5 pairs of pants/skirts, while 36.4% purchased under 10 pairs, with no respondents indicating buying more than 30 pairs. For T-shirts/cardigans, the distribution of purchasing rates was more balanced, with only 3.1% selecting the maximum value (more than 30). In contrast, for shoes, 45% of participants bought between 2 and 3 pairs, 21% bought between 4 and 10 pairs, and only 0.9% bought more than 11 pairs. These findings highlight a noticeable difference in purchasing quantities across categories, particularly with pants/skirts being purchased less frequently compared to T-shirts/cardigans and shoes. (fig. 01)
Inquiring about the drivers behind purchasing decisions, the majority of participants (70.2%) indicated making targeted purchases based on their current needs. Specifically focusing on the shoes category, nearly half of the participants (48.9%) confirmed buying new pairs to replace broken or heavily worn-out shoes. Notably, around 25% of participants stated that they mainly follow offers and discounts, with this percentage increasing to 30.1% for shoes. Additionally, 11% of participants mentioned dedicating a specific seasonal day for wardrobe renewal, with this percentage doubling for shoes. The discrepancy between responses to the generic garment question and the shoes-specific question highlights a tendency to base purchase decisions on needs, while also being influenced by offers and new seasonal collections, even when the need is not immediate. These findings align with research by Djaforova (2022) on Gen-Z purchasing habits, which reveals a gap between awareness of the environmental and social consequences of their purchasing choices and their actual buying behaviour.
The sample was asked if they prefer to buy products from collections claiming to be more environmentally and socially sustainable through green-tags such as Consciousness, Committed, Recycled, or similar. Results show that 11.4% of respondents declared that they consider products with green-tags more purchasable. Additionally, 25.1% and 29.7% expressed a high average interest value (3 and 4), while 7.3% and 10% indicated low values (0 and 1) regarding the increased accessibility of green-tagged products. Sustainability plays a significant role in influencing purchasing decisions, with consumers finding environmentally and socially sustainable choices more attractive. However, a Commission study from 2020 revealed that the majority of examined environmental claims in the EU were vague, misleading, or unfounded. (fig. 02)

TAKE-CARE

Firstly, it was found that 58,4% of the sample checks the composition label to make sure they do the washing correctly. Secondly we investigated washing practices habits and we asked participants to quantify the washes number. 50.9% of the sample does more than 8 washes per month, with 22.8% washing between 5 and 8 times per month, 21.1% washing once a week, and the remainder washing

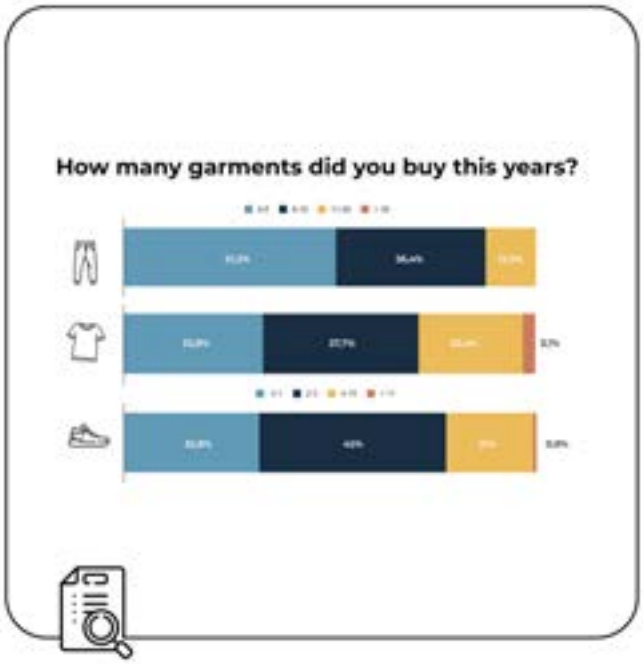

Fig. 01

Fig. 02

between 1 and 2 times per month. When asked about washing habits, 46% of participants wash garments after a single day of use only if there are obvious stains or odours, while 43.4% leave one-day-used garments out of the closet to air them out.
A study conducted in six countries revealed that Italy falls in the middle in terms of the average number of days worn before laundering, with T-shirts worn for 2 days and pants for 4.2 days (Daystar et al., 2019). Cultural and habitual reasons largely determine the frequency of washes, with only 7.5% of washes done for "heavy dirt" (Catton, 2007). This highlights the importance of considering not only material composition and appliance efficiency but also customs, values, knowledge, and skills related to washing when addressing sustainability in the use-phase (Fletcher, 2014).
Regarding the most frequent washing temperatures, the majority of the sample (57.5%) set low temperatures between 30-40°C, while 40.3% set a temperature between 50-60°C, and the remainder use 90°C. Concerning the spin-dryer speed setting, only 34.1% use the lowest 300-400 rpm setting, while the majority (49.8%) opt for the medium setting at 600 rpm, and 16.1% of the sample use the highest setting at 800 rpm. A study found that switching from warm to cold water washing could substantially reduce the overall cradle-to-grave impacts of apparel (Jewell et al., 2016). Specifically, washing at lower temperatures can reduce energy consumption by 10% for every 10°C decrease (ENDS, 2001).
The investigation found that 41% of the sample uses a dryer, which is relatively high for a Mediterranean country like Italy. In contrast, a study conducted in six countries showed that the average use of machine dryers in Italy is just 4%, compared to 12% for Germany and the United Kingdom, and 73% for the USA (Daystar et al., 2019). Dryer use accounts for 60% of the energy consumption in the use-phase. Eliminating this phase, along with ironing and adopting low-temperature washing, is estimated to reduce total product energy consumption by 50% (Allwood et al., 2006).
Regarding the type of detergents used for washing, 56.9% of the sample stated they prefer products with an ecolabel when possible. Strategies exist to reduce the impact of detergents, such as choosing concentrated detergents, which use fewer chemicals and have less packaging. Another option is biodegradable detergents with fewer surfactants. Perchloroethylene, the most widely used substance for dry cleaning, is a petrochemical-based solvent classified as hazardous for air pollution and is therefore strictly regulated (Fletcher, 2014).
(fig. 03)

END-OF-LIFE

Consumers play a crucial role in determining the end-of-life of a product, particularly in the fashion context, where they can adopt various

strategies such as: repairing or treating garments, finding new functions, exploring new business such as leasing or re-selling. Brands are increasingly focusing on strengthening strategies to prolong the life of products by offering services that benefit both economically and in terms of customer loyalty. Especially in certain areas, such as sportswear, repair and maintenance services carried out by the brands themselves or through tutorials offered on their platforms have emerged. Finally take-back services for reintegration into second-hand channels of the brand itself, services for renting garments or other production cycles are now developed. It was found that 50.7% of the sample frequently engage in repairing or mending garments, indicating a willingness to extend the lifespan of their clothing. However, only 2.6% stated that they have never repaired garments. When it comes to leather products, such as shoes, 47.1% of participants reported never applying treatments to maintain them. Regarding shoe repair, there is a significant gap, with 59.4% of the sample having never repaired a pair of shoes, particularly boots or hiking boots. This could be attributed to the popularity of sneakers, especially among the target audience, which are often made from materials that are challenging to repair. Overall, data suggests that only a small percentage of people in the country embrace the concept of circularity, with only 23% repairing their clothes and 25% regularly buying second-hand garments (Anguelov, 2015). However, increasing the use of a product can be achieved through various means, often driven by increased product satisfaction and a stronger bond between the consumer and the product.
(fig. 04)
Disposal often occurs not due to physical failure but because of changes in aesthetics, fashion trends, or body size. Consequently, many unwanted garments are either sold online or donated (Cooper et al., 2022). The survey revealed various practices among participants when dealing with garments that have lost partial function due to ruin or ageing. Interestingly, the majority (80.4%) reported the practice of keeping the garment but repurposing it for different contexts, such as using it as pyjamas or home wear. Additionally, some respondents mentioned reusing the garment as a rag or for other purposes, while a portion discarded the garment in the trash or attempted to resell it on online platforms. When garments are still in good condition but lose value for the user, 40.5% of the sample opted for donations, indicating a willingness

Fig. 03

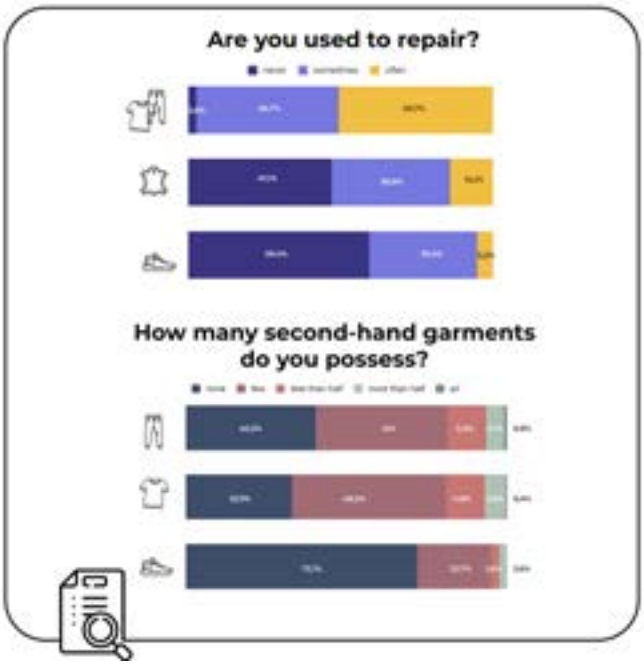

Fig. 04

to extend the lifespan of the garment by giving it to others in need. However, 33.5% admitted to simply storing the garments, and 24.2% attempted to sell them online. Interestingly, only a small percentage organised exchanges and swaps among friends and acquaintances. The low rate of swaps and resale is consistent with the data of second-hand garments among the sample.
Specifically, we investigated the presence of second-hand clothing in participants' wardrobes across categories such as t-shirts/cardigans, pants/

skirts, and shoes. For t-shirts and pants, similar patterns were observed, with 32.9% and 40% of respondents stating they have no second-hand garments in these categories, respectively. However, data regarding shoes showed a more significant trend, with 72.1% reporting no second-hand shoes at all, and only 22.7% indicating they have a few. This disparity in second-hand shoes may be attributed to concerns about hygiene as well as the likelihood that shoes are worn until the end of their usable life, limiting their availability in the second-hand market.

Finally, the participants were asked to identify the garment they have owned for the longest period of time. The oldest products primarily belonged to two categories: relatively recent basic garments (5-10 years) and accessories. Common responses included fast-fashion garments, grandmother's jackets, shoes, leather garments, and jeans garments, highlighting a predominant presence of fabrics in the oldest items. Research on the useful life of various garment types across six countries revealed an average lifespan of only 3.1-3.5 years per garment, with significant variations among countries (Dayster et al., 2019).

DISCUSSION

The analysis of the collected data reveals two main assessments. On one hand confirmation of the consumer attitude-behaviour gap observed in the literature (Heiny et al. 2021; Busalim et al., 2022), on the other hand the difficulty of finding reliable information that allows consumers to make conscious decisions. The sample demonstrates awareness of sustainability issues and exhibits some sustainable behaviours, such as preference for eco-labeled products, buying new products mainly to replace worn-out ones, and washing clothes only when necessary. However, there are discrepancies between attitudes and behaviours, as evidenced by high frequency of washing, use of dryers, frequent wardrobe renewals, and limited attention to repair options and second-hand purchases. The survey highlights distinct habits between products from different fashion sectors, with more negative habits observed for footwear. This includes less consideration for sustainable practices in purchase decisions, minimal ownership of second-hand shoes, and lack of repair options for shoes and leather accessories.

Furthermore, the survey highlights how emotional durability decides the future of clothes: a strong link between an item and its owner, supported by reparability and care behaviour, prolongs its life in the wardrobe but maybe not in its function. For Gen- Z, the aesthetic aspect is important and is also closely connected with ethical behaviour. Especially in the head care phase, the habits recorded are those that are learned in the family. This means that an awareness strategy focused on younger generations can have a positive impact on sparking change across all age groups.

In this regard, it is important to note that in Italy there are no active awareness campaigns against fast-fashion and for conscious use of one's clothes. The information activity is hopefully delegated to the brands themselves, but no official campaigns are yet active, despite the entry into force of the separate collection of textiles in January 2023. This leads to an often fragmented knowledge of the issues related to sustainable fashion, addressed in more depth by professionals. The target analysed, even if interested in entering the fashion sector, confirms that their behaviours are often superficial and that they are not dictated by conscious purchasing strategies.

To address these findings and promote a more sustainable fashion industry, the following design strategies are suggested here. (*) Tailoring eco-design strategies to sector-specific needs and size: European legislation should consider differences in the use-phase between clothing and footwear sectors and develop specific policies for eco-design implementation and development accordingly (starting from the two categories proposed in EU Strategy for a Sustainable Fashion); (**) strengthening consumer protection and empowerment: Policies should empower consumers to access tools for assessing sustainability claims and ensure transparency in information provided by brands see the Green Claim Directive Proposal); (***) mandatory integration of use-phase in life-cycle assessment (LCA) analysis: Use-phase impacts should be included in LCA analysis for material choice to provide a comprehensive overview of sustainability impacts necessary for eco-design, (pushing forward the Cooperative Reporting Standard Directive); (****) Implementing regulations to encourage brands to communicate strategies for prolonging product life: Policies should engage brands in communicating with consumers about strategies to extend product life, fostering trust along the entire supply chain (see the increasing role of Digital Product Passport to communicate with consumers and suppliers).

In conclusion, key issues include strengthening

brand engagement in product life extension and avoiding the risk of invalidating eco-design strategies by considering sectoral diversity within the textile industry. Integrating use-phase data into life-cycle assessments is crucial for informed eco-design decisions. Successful behaviour change requires supportive policies addressing social, cultural, economic, and material factors (Niinimäki et al., 2020).

CAPTIONS

[fig. 01] Garments bought in one year, data collected following the typologies: pants, T-shirt, shoes. "Our Fashion Habits" survey.

[fig. 02] Purchase decisions habits and Eco-tag affection in purchasing. "Our Fashion Habits" survey.

[fig. 03] Washes time perception and wash temperature habits. "Our Fashion Habits" survey.

[fig. 04] "Repair habits and second-hand garments. "Our Fashion Habits" survey.

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TRANSFORMING CIRCULAR FASHION IN VIETNAM

THE ROLE OF PRE-OWNED MARKETS IN SUSTAINABLE CONSUMPTION

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Abstract

This paper highlights the transformation of pre-owned fashion into sustainable consumption in Vietnam. It contrasts generational perceptions: older consumers often view pre-owned fashion negatively as reminiscent of overseas charity donations, while younger consumers value these items for their uniqueness, affordability, and as symbols of 'eco-awareness', based on observations of local media, two prominent pre-owned fashion platforms, and an online survey of young Vietnamese consumers. The study reveals that online media endorsements by celebrities and the role of social commerce, serving both as a selling platform and e-community, are key factors in transforming pre-owned fashion into sustainable consumption among young Vietnamese consumers. This research enhances the limited English-language literature on Vietnam's pre-owned fashion industry, illustrating how e-communities can transform responsible consumption among young Vietnamese consumers.

Keywords: *Vietnam E-Community; Circular Consumption; Digital Transformation; Pre-owned Fashion; Sustainable Consumerism*

INTRODUCTION

The textile industry is responsible for producing 92 million tonnes of waste annually (Taylor, 2022), making the "adoption of circular economy practices an urgent necessity" (MacArthur, 2021, p. 37). Inherently, the pre-owned fashion business aligns with the principles of a circular economy, as it helps to eliminate waste and recirculate products. In Vietnam, pre-owned fashion has been popular since the 1980s, valued for its affordability and unique designs. However, it has only been actively promoted as responsible consumption in the last five years, driven by local media, the social media engagement of young consumers and digital platforms (authors, 2022).

LITERATURE REVIEW

HISTORICAL CONTEXT OF PRE-OWNED FASHION

The concept of pre-owned fashion is not new, yet its acceptance and cultural significance have evolved significantly over time. Historically, the resale of clothing was driven by necessity, particularly in times of economic hardship. In the early to mid-20th century, second-hand garments were often associated with poverty and faced societal stigma. However, as environmental awareness and sustainability gained prominence towards the end of the century, perceptions began to shift. Globally, the pre-owned fashion market has experienced a resurgence in recent decades, fuelled by a growing awareness of the environmental

impacts of fast fashion, which accounts for a substantial portion of the world's textile waste. The digital revolution has been pivotal, enabling online marketplaces and platforms that facilitate the buying and selling pre-owned fashion, making it more accessible and appealing to a broader audience.

In Vietnam, the market for pre-owned fashion has been shaped by both cultural factors and economic development. Since the 1980s, as Vietnam opened-up economically, there was not only a surge in consumerism but also a growing consciousness about the value and practicality of pre-owned goods (authors, 2022; Nayak et al., 2019). The introduction of online platforms in recent years has further democratised access to pre-owned fashion, aligning with global sustainability trends. This historical perspective is crucial for understanding the current attitudes towards pre-owned fashion in Vietnam, which blends traditional thrift values with modern sustainable practices.

COMPARISON WITH FAST FASHION

As the global fashion industry confronts its sustainability crisis, the contrast between fast fashion and pre-owned fashion becomes increasingly relevant. Fast fashion is characterised by rapid production cycles, low costs, and high volumes, which contribute significantly to environmental degradation. According to a report by the Ellen MacArthur Foundation (2017), the fashion industry is responsible for 10% of global carbon emissions and is a major consumer of water resources while also producing substantial waste—much of which ends up in landfills or is incinerated. In contrast, pre-owned fashion represents a more sustainable model by extending the lifecycle of garments and reducing the demand for new production. This approach not only lessens the strain on natural resources but also mitigates the waste problem inherent in fast fashion.

Economically, pre-owned fashion offers consumers affordable clothing options while supporting a market that values longevity and quality over disposability. Socially, it encourages a culture of reuse and sustainability, aligning with the values of younger generations who are conscious of their environmental impact.

Furthermore, studies have shown that increasing the active use of clothing by just nine months can significantly reduce its environmental footprint (WRAP, 2017). Promoting and normalising the consumption of pre-owned fashion, has the potential to significantly alter consumer habits and reduce the overall environmental impacts of the industry.

This shift towards pre-owned fashion is not merely a trend but a necessary response to the unsustainable practices of fast fashion, offering a pathway to a more sustainable, economically viable, and socially responsible fashion industry.

MODERN TRENDS AND CONSUMER DYNAMICS IN PRE-OWNED FASHION

This section explores how recent advancements and societal shifts influence the pre-owned fashion market. A qualitative study based in Italy (Arrigo, 2021) highlights the macro-trends of collaborative consumption, including clothing reselling, renting, or swapping through digital platforms. These practices are particularly popular among Millennials and Gen Z, who are motivated by having access to an endless wardrobe at an affordable price. Similarly, a study of pre-owned fashion business owners in Vietnam (authors, 2022) found that younger consumers aged 15–30 years seek value for money and a unique personal style from pre-owned fashion, taking pride in the environmental benefits of their purchases. This aligns with findings from China, where younger consumers are more likely to buy second-hand clothes for the thrill of finding unique items and environmental values (Liang & Xu, 2018; Wang et al, 2022).

The shift towards 'eco-awareness' among Millennials and Gen Z is further supported by a theory-synthesis-based study (Mohr et al, 2022), which indicates that social media has helped popularise the trend of celebrities re-wearing their outfits or choosing vintage clothes for major events as a statement of environmental protection. Additionally, a discussion based on practitioner experience (Ryding et al, 2018) suggests that it has become normative for global celebrities to integrate pre-owned pieces with current collections, propelled by widespread e-communities such as social media, blogs, forums and other digital resources. The evolution of language from terms like 'charity', 'thrift' or 'second-hand' to 'pre-owned', 'pre-loved', or 'vintage' reflects a positive shift in perception. [authors] (2022) reconfirms this in their Vietnam study, noting that international e-commerce sites and local apps have become e-communities where consumers can connect with like-minded individuals and make more informed decisions about sustainable practices.

METHODOLOGY

The review of the literature (see Tab. 01) identifies that pre-owned fashion consumption is perceived as unique in design, offers value for money, and represents responsible consumption. Notably, the notion of 'responsible consumption' predominantly resonates with younger consumers (Liang & Xu, 2018). Based on this, a research question (RQ) has been formulated: '*What are the factors that lead to the transformation of pre-owned fashion into responsible consumption in Vietnam?*

To address this RQ, action research methodology is utilised to explore the cultural transformation toward sustainability practices in Vietnam (Crouch & Pearce, 2012, pp.143-150). This approach encompasses two primary methods:

1. **OBSERVATION OF MEDIA AND E-COMMUNITIES.** This method involves monitoring how local media and Vietnamese pre-owned fashion e-communities have promoted pre-owned fashion as sustainable fashion over the last five years. Specifically, the analysis focuses on two e-communities: a Facebook community in Ho Chi Minh City, established five years ago with 80,000 members nationwide, and a leading Vietnamese *pre-owned e-commerce site* established two years ago. These platforms are pivotal in facilitating discussions and sharing news about sustainable initiatives from January to December 2023.
2. **ONLINE SURVEY.** An online survey was conducted with 221 Vietnamese consumers of pre-owned fashion, recruited from the aforementioned e-communities. The survey was administered via a Qualtrics link posted on their platforms and social media in June 2023. Participants included young Vietnamese (born between 1990-2005), living in Vietnam, who had purchased pre-owned fashion items within the last five years.

Study	Method	Key finding(s)
Arrigo (2021)	Qualitative in-depth interviews with fashion rental enterprises (n =3) in Italy.	It highlights the trend in clothing reselling through digital platforms. Millennials and Gen Z motivated by having access to an endless wardrobe at an affordable price as sustainable consumption.
authors (2022)	Qualitative in-depth interviews with pre-owned fashion owners (n =5) in Vietnam.	Younger Vietnamese consumers (aged 15–30) are primarily seeking value for money and/or a unique personal style from pre-owned/vintage fashion, while using these purchases to promote their own 'eco-awareness' via their social media.
Liang and Xu (2018)	Consumers survey (n = 350), China.	Younger generation may have stronger intentions to consume second-hand clothes compared with older generation.
Mohr et al (2022)	A theory-synthesised conceptual article.	Social media has spread trend of celebrities around the world re-wear their outfits or wear vintage clothes to big events in the effort to protect environment.
Ryding et al (2018)	A debate based on practitioner experience.	Mixing luxury pre-owned pieces with current collections is a trend, led by celebrities around the world and widespread by digital resources.
Wang et al (2022)	A semi-structured online survey with 127 young consumers in China.	The purchase is motivated by treasure-hunting fun for uniqueness and styles.

Tab. 01

The survey comprised four sections:

- Demographics: This section gathered information on demographic variables.
- Consumer Habits: This section explored the habits associated with pre-owned fashion consumption.
- Motivations: This section sought to reconfirm the motivations behind purchasing pre-owned fashion.
- Transformation Factors: This section aimed to identify the factors influencing the transformation of pre-owned fashion into a form of sustainable consumption in Vietnam.

RESULTS

This section presents the findings from the survey conducted among Vietnamese consumers of pre-owned fashion. The analysis focuses on demographic characteristics, consumption habits, motivations for purchasing pre-owned fashion, and the key factors influencing the perception of pre-owned fashion as a sustainable practice. Each subsection is structured to systematically reveal insights into the factors that drive the transformation of pre-owned fashion into a responsible

consumption model in Vietnam. The results are derived from the responses collected via the online survey and are supported by quantitative data represented in various tables (Tab. 02, 03 and 04), providing a comprehensive overview of consumer behaviour and attitudes towards pre-owned fashion. This data not only supports the exploration of our initial research question but also highlights the broader implications for sustainable fashion consumption within the context of emerging economies like Vietnam.

SECTION 1: DEMOGRAPHIC ANALYSIS OVERVIEW OF DEMOGRAPHIC VARIABLES

This section analyses four demographic variables: gender, age group, education, and income, essential for understanding the consumer base of pre-owned fashion in Vietnam (see Tab. 02).

GENDER

The survey shows a predominantly female participation rate of 88.20%, indicating a higher engagement with pre-owned fashion among women. This is significant compared to general e-commerce fashion shopping ratios in Vietnam where females account for 54.3% and males 45.7% (Statista, 2022). The preference among females could be attributed to a broader range of options available on pre-owned platforms, often catering more to women's fashion, as reported by Vietnamese pre-owned business owners due to higher market demand.

AGE GROUPS

Dominated by Gen Z (born 1998-2005) who make up 78.30% of the respondents, this group is noted for their digital savviness and environmental consciousness, traits that align with their preference for sustainable consumption models like rental and resale (Kantar, 2019; Bell, 2022). Millennials (born 1990-1997) constitute about 22% of the respondents and share similar attributes, indicating a generational shift towards more sustainable fashion practices.

EDUCATION LEVELS

The survey reveals that 59.30% of participants are university graduates, with a further 38.50% having attained high school or lower education levels. This high level of education among respondents suggests that the consumer base is well-informed about environmental issues and eco-friendly products, echoing trends where educated consumers are more likely to engage in sustainable practices (Tran et al, 2022).

INCOME

Most respondents (57.50%) earn less than 5 million VND, highlighting that Gen Z participants, often with limited budgets, find pre-owned items an economically viable option. This affordability is crucial in facilitating sustainable fashion choices among younger consumers, like young consumers in China who are also inclined to make environmentally friendly fashion decisions (Nan, 2023).

Section	Items	Range	Percentage %
Demographics	Gender	Male Female Not defined	9.10 88.20 2.70
		Total	100
	Age group	1990-1997 1998-2005	21.70 78.30
		Total	100
	Education	High school or lower Bachelor Master or higher	38.50 59.30 2.20
		Total	100
	Income	Less than 5 million 5-10 million 10-20 million More than 20 million	57.50 25.30 12.20 5.00
		Total	100

Tab. 02

GLOBAL AND LOCAL CONTEXTUAL INSIGHTS

Both Millennials and Gen Z in Vietnam, like their counterparts globally, are increasingly concerned with social issues, seek new experiences, and demonstrate a significant preference for sustainable consumption models. This global trend towards environmental consciousness among younger consumers is mirrored in their shopping habits and preferences for pre-owned fashion, which not only satisfies their desire for unique, affordable fashion but also aligns with their ethical and environmental values.

These demographic insights provide a detailed understanding of the driving forces behind the participation in Vietnam's pre-owned fashion market, emphasising the alignment of environmental consciousness with consumer behaviour in the sustainable fashion sector.

SECTION II: THE HABITS OF PRE-OWNED CONSUMPTION

This section examines the specific habits associated with pre-owned consumption among young Vietnamese consumers, focusing on their shopping frequency, preferred platforms, and methods for disposing of unwanted clothing. These insights are crucial for understanding the practical aspects of sustainable fashion practices in this demographic (see Table III).

SHOPPING FREQUENCY AND PLATFORMS

Frequency of Shopping: The data reveals that 36.20% of respondents shop monthly, indicating a regular engagement with pre-owned fashion. Quarterly shopping is also significant at 28.50%, with weekly shopping at 17.60%. This suggests that pre-owned fashion is an integral part of the lifestyle for many consumers.

Preferred Shopping Channels: Social commerce is the most favoured platform, with 46.60% of participants using it. Physical stores follow at 31.20%, and other e-commerce platforms account for 17.20%. Social commerce platforms are particularly popular because they serve not only as sales channels but also as community spaces where consumers can connect, share styles, and gain inspiration. This dual functionality is especially appealing to Gen Z, who value digital platforms for their ability to foster community connections (Vogue Business, 2021). Additionally, 19% of shopping occurs on broader e-commerce websites, contributing to a total of 66% of purchases being made through digital platforms. This aligns with findings that in Vietnam, the leading social commerce product category is fashion, which accounts for 61% of the market, appreciated for its ease of use, convenience, and entertainment value, with Facebook dominating the social commerce channels at 94% (Statista, 2022).

DISPOSAL OF UNWANTED CLOTHES

Methods of Disposal: A significant portion of respondents opts for sustainable disposal methods: 37.10% give away their unwanted clothes to family and friends, and 34.80% resell them, underscoring a strong commitment to circular fashion practices. Only a small fraction, 4.50%, dispose of clothes through trash, which aligns with the global movement towards reducing fashion waste (Nan, 2023).

GLOBAL COMPARISONS AND IMPLICATIONS

The preference for social commerce and the significant resale activity reflects broader global shifts toward sustainable and circular fashion consumption. This behaviour is particularly prevalent among Gen Z, who prioritise environmental concerns in their purchasing decisions and are more likely to engage in the sharing economy (Vogue Business, 2021).

The practises of donating and reselling clothes not only benefit the environment but also offer economic advantages by prolonging garment lifespans and decreasing the demand for new clothing production, which are essential components of sustainable consumption (Statista, 2022).

IMPLICATIONS FOR SUSTAINABLE FASHION

Gaining insights into the consumption habits of Vietnamese youth reveals their significant role in driving and shaping the sustainable fashion market. These insights can help businesses, policymakers, and non-governmental organisations develop strategies that support and promote sustainable practices within the fashion industry.

By fostering environments that facilitate these sustainable behaviours, stakeholders can contribute significantly to the transformation of the fashion industry towards a more sustainable and ethical model.

Section	Items	Range	Percentage %
Shopping habit	Shopping frequency		
		Weekly	17.60
		Monthly	36.20
		Quarterly	28.50
		Semi-annually	7.70
		Annually	10.00
		Total	100
	Shopping channel		
		At the store	31.20
		Social commerce	46.60
		E-commerce	17.20
		Website	1.80
		Others	3.20
		Total	100
	Unwanted clothes solution		
		Trash	4.50
		Donate	18.60
		Give away to family/friends	37.10
		Re-sale	34.80
		Others	5.00
		Total	100

Tab. 03

SECTION III: MOTIVATIONS FOR PRE-OWNED FASHION CONSUMPTION

This section examines the motivations behind pre-owned fashion consumption among Vietnamese consumers, underpinned by studies that highlight economic, recreational, and ethical drivers.

OVERVIEW OF MOTIVATIONAL THEORIES

Research aligns with the second-hand shopping motivation theory posited by Guiot and Roux, which categorises motivations into economic, recreational, and critical dimensions (Wang et al, 2022). The economic motivation encompasses bargain hunting for cost savings, recreational motivation arises from the pleasure of discovering unique items at low prices, and critical motivation stems from ethical considerations such as combating waste and overconsumption. These motivations have been confirmed in the Vietnamese context by [authors] (2022), who observed similar patterns in consumer behaviour.

HYPOTHESES FORMATION

Based on these findings, the following hypotheses are proposed to further explore the motivations for purchasing pre-owned fashion in Vietnam (see Tab. 04):

- H1a: Consumers purchase pre-owned clothes/accessories to save money
- H1b: Consumers purchase pre-owned

Section	Items	Range	Percentage %
Motivation	To save money		
		Strongly disagree	5.90
		Disagree	2.30
		Neutral	21.30
		Agree	41.20
		Strongly agree	29.30
		Total	100
	To find something unique		
		Strongly disagree	3.20
		Disagree	4.50
		Neutral	18.60
		Agree	43.40
		Strongly agree	30.30
		Total	100
	To protect the environment		
		Strongly disagree	0.90
		Disagree	2.30
		Neutral	27.60
		Agree	37.60
		Strongly agree	31.60
		Total	100

Tab. 04

clothes/accessories to find something unique
- H1c: Consumers purchase pre-owned clothes/accessories because it's environmentally friendly.

QUANTITATIVE ANALYSIS OF MOTIVATIONS

The survey result shows 'unique design' as the strongest motivation, with ~74% of respondents 'agree/strongly agree' (see Tab. 04). This suggests the desire for uniqueness is a significant driver of pre-owned fashion purchase. 'Saving money' and 'Environment protection' follow with ~70% and ~69.2% respondents 'agree/strongly agree' respectively (see Tab. 04). The results align with the findings from [authors] (2022) with younger Vietnamese consumers' perspectives. Their main motives were identified as value for money compared to buying new items and its ability to allow the wearer to create a unique style while promoting their 'eco-awareness'. This critical factor has emerged as a distinct trend over the last five years in the country, with pre-owned items has been widely promoted via media and social media as sustainable fashion. The US market echoes similar trends where pre-owned consumption is not just about 'being sustainable', it is about being unique, accessible and cool (Farra, 2020).

SECTION IV: KEY FACTORS THAT LEAD TO THE TRANSFORMATION OF PRE-OWNED FASHION AS SUSTAINABLE CONSUMPTION IN VIETNAM

The research theme (Tab. 01) is used to form the following hypotheses:

- H2: Global and local media on pre-owned fashion as sustainable consumption influences consumers' perception
- H3: Digital platforms make it more accessible/ convenient for consumers to purchase pre-owned fashion
- H4: Influence of global and local celebrities on pre-owned fashion

The survey result shows celebrity influence as leading factor for the transformation, with ~69% 'agree/strong agree' (see Tab. 05). This reinforces the important role that celebrities play to normalise the pre-owned consumption, especially in Asia where 'face' value is significant. In Vietnam, 77% of the people said they have purchased an item because it was endorsed by an influencer (Statista, 2022). Similarly, in the study with founders (n=5) of eco-friendly fashion start-ups in Latin America and Middle East, it suggested that influencers are helpful to awaken a fancy perception in sustainable fashion, communicating green fashion across different cultures (Dickenbrok & Martinez, 2018). This worldwide celebrity pre-owned fashion endorsement is spread by global and local media, with ~40% 'agree/strong agree' and 43% 'neutral' (see Tab. 05). The impact of global and local discourse in the last five years in Vietnam around pre-owned as sustainable fashion is significant, supported by social media communication initiatives. Elle Vietnam (one of the biggest fashion magazines in the market) has published a special sustainability issue to coincide with the annual "Earth Day" event since 2018 as an effort to raise awareness and ask for actions towards sustainability in fashion (Elle, 2022). The growing discussion of climate change on social media has certainly played a major role in building both consumer and industry interest in the notion of sustainable fashion in Vietnam and worldwide (authors, 2022). The survey result proposes the convenience of digital platforms made it easier to access pre-owned fashion, with ~63% 'agree/strong agree' (see Tab. 05). Benissan (2023) suggests that Gen Z is a digitally native generation with their communication, entertainment and shopping habits are all mobile-first. Thredup, a pre-owned fashion site, has been connecting with Gen Z by launching 'Fast Fashion Confessional' hotline, hosted by a celebrity, with the effort to help combat Gen Z's enthusiasm for fast fashion. This platform also teamed up with a TikTok influencer to launch the 'Dump Fast Fashion' shop that used AI tool to show users similar items listed on Thredup. This proves that a fashion platform can also play as an e-community where they can connect and offer solutions to their young customers. With the two e-communities in Vietnam selected to be observed for this research, the members of pre-owned fashion community on Facebook often post their #ootd (outfit of the day) and/or shared tips on how to mix and match pre-owned/vintage fashion. They are proudly promoting their pre-owned fashion as their hobby and as a smart, creative way to spend on their wardrobe. They attract more members each year, with 80,000 members all over Vietnam in the last five years. On the other hand, the *pre-owned e-commerce site* that established two years ago has quickly become the leading site for pre-owned fashion in Vietnam. Besides being a marketplace for pre-owned fashion shops or individual

Section	Items	Range	Percentage %
Key factors	Influence from global and local media	Strongly disagree	3.20
		Disagree	14.00
		Neutral	43.00
		Agree	30.30
		Strongly agree	9.50
		Total	100
	Access easily via online channels	Strongly disagree	0.50
		Disagree	7.70
		Neutral	29.00
		Agree	49.80
		Strongly agree	13.00
		Total	100
	Influence by global and local celebrities	Strongly disagree	3.20
		Disagree	6.80
		Neutral	21.30
		Agree	38.80
		Strongly agree	29.90
		Total	100

Tab. 05

consignors, this site organises monthly workshop on how to sustain the pre-owned business for business owners who are mainly Gen Z and/or how to style pre-owned items for consumers. News update on sustainable practices and initiatives are also included in the site to create regular conversations with the audience as an e-community.

DISCUSSIONS AND IMPLICATIONS

MOTIVATIONS FOR PRE-OWNED FASHION CONSUMPTION IN VIETNAM

The primary drivers of pre-owned fashion consumption among young Vietnamese consumers are their quests for unique items, cost savings, and environmental stewardship. Uniqueness stands out as the most compelling motivation, aligning with the second-hand shopping motivation theory by Guiot and Roux (Wang et al., 2022), and is further supported by interviews with local business owners (authors, 2022).

The local pre-owned fashion industry can capitalize on this 'uniqueness' motivation by promoting the purchase of pre-owned luxury or vintage items, which are often of higher quality and comparable price to new fast fashion items. This approach not only supports sustainability but also encourages Vietnamese fashion brands to focus on unique designs, potentially alleviating supply chain bottlenecks currently reliant on overseas suppliers (authors, 2022).

KEY FACTORS LEADING TO SUSTAINABLE CONSUMPTION

Two key factors contribute to the transformation of pre-owned fashion into sustainable consumption in Vietnam. First, online media, particularly social media, plays a crucial role in spreading the influence of celebrities and influencers who endorse pre-owned items as a form of sustainable consumption. This exposure helps raise awareness about global climate change and promotes circular models such as re-used and recycling. Second, social commerce platforms like TikTok, Facebook, and Instagram serve not only as selling points but also as e-communities that educate and connect young consumers about sustainability. With the resale market projected to reach $350 billion by 2027, and Gen Z leading this growth, there is significant potential for social commerce platforms to enhance their community engagement (Benissan, 2023). Turning social commerce into an e-community may provide further opportunities for local platforms to have a stronger connection with their customers. In terms of communication, the two aspects 'standing out from the crowd' and 'supporting circular consumption' should be front and centre in Gen Z-focused communications for pre-owned fashion businesses to succeed (Bargeron, 2023).

CONCLUSION

This study, based on the observations of local media, two pre-owned platforms, and an online survey of 221 young Vietnamese consumers, supports findings that motivations for purchasing pre-owned fashion include seeking value for money, a unique personal style, and responsible consumption (authors, 2022). It identifies online media influence and the role of social commerce as pivotal in transforming pre-owned fashion

consumption among young Vietnamese consumers into a sustainable practice.

STRATEGIC IMPLICATIONS

Turning pre-owned social commerce platforms into vibrant e-communities could provide substantial opportunities for local platforms to strengthen connections with their customers. Furthermore, developing education programs and gathering expert opinions on circular consumption could empower consumers, fashion designers, and other stakeholders to create unique, sustainable designs. These initiatives can extend the product life cycle and enhance the marketability of items in the pre-owned and archive fashion sectors.

LIMITATIONS AND FUTURE RESEARCH

This research is limited to participants from two pre-owned platforms predominantly selling women's fashion items. Future studies should explore the behaviours of male consumers in the pre-owned fashion market to understand its potential in a demographic where males constitute nearly half of Vietnam's population (World Bank, 2024). This could provide a more comprehensive understanding of the market dynamics and consumer preferences in Vietnam's pre-owned fashion industry.

CAPTIONS

[Tab. 01] Literature review: key studies informing the research questions

[Tab. 02] Statistic summary of demographic variables. Source: Qualtrics result on 1 July 2023 (n=221)

[Tab. 03] Statistic summary of pre-owned fashion shopping habit in Vietnam. Source: Qualtrics result on 1 July 2023 (n=221)

[Tab. 04] Statistic summary of motivations of purchasing pre-owned fashion in Vietnam. Source: Qualtrics result on 1 July 2023 (n=221)

[Tab. 05] Statistic summary of key factors that lead to the transformation of pre-owned fashion as sustainable consumption in Vietnam. Source: Qualtrics result on 1 July 2023 (n=221)

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ORDINARY FASHION CONSUMPTION

INVESTIGATING THE PRACTICES OF CLOTHING PURCHASE, USE AND DISPOSAL IN DANISH AND UKRAINIAN CONTEXTS

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Abstract

Through the lens of the theory of fashion consumption temporalities and by employing wardrobe studies with two different age groups of consumers in Danish and Ukrainian contexts, this paper investigates how ordinary practices of purchase, use and disposal have evolved over time due to the transformations of the societal macro characteristics. The study details the peculiarities of the consumption patterns of different participant groups and highlights the differences in interpretations of sustainable clothing consumption practices at specific historical periods. Moreover, the present research demonstrates that due to the characteristics of the transitional temporality of consumption (from fast to slow), which combines the macro and micro characteristics of fast and slow temporalities in different ways, the consumption patterns of Danish and Ukrainian participants present certain similarities. The transitional temporality of consumption (from fast to slow) has emerged during this research, challenging the previous studies, and it is particularly relevant for those studying transitions towards sustainability in fashion. It is because this temporality sheds light on both sustainable and unsustainable behavioural consumption patterns within temporality and can inform practical strategies, which can provide the practice elements of which the desired ways of consumption can be made.

Keywords: *Ordinary Fashion Consumption; Clothing Consumption Temporalities; Scandinavian And Post-Soviet Contexts; Transition Towards Sustainability*

INTRODUCTION

Before the 1980s, fashion consumption studies primarily concentrated on the spectacular and visual aspects of consumer behaviour, the symbolic and semiotic significance of commodities and their role in constructing individual and group identity (Baudrillard, 1970; Gronow & Warde, 2001). At the same time, the less flamboyant and visible practices were typically ignored (Campbell, 2005; Watson & Shove, 2008). This unbalanced account of consumer behaviour was challenged by several authors who observed that a significant part of consumption is "ordinary" (see Gronow & Warde, 2001) and occurs "as items are appropriated in the course of engaging in particular practices" (Warde, 2005, p. 131). Accordingly, by the end of the 1990s, the images of consumers as passive subjects manipulated by the market forces were progressively exorcised (Gronow & Warde, 2001), and consumers started to be seen as active, creative, self-reflexive agents who, motivated by a desire for self-expression, bring their "skills implied in the use, integration and desiring of items required for the effective accomplishment and performance of daily life" (Watson & Shove, 2008, p. 3). Simultaneously, also the concept of "slow fashion", which implies valuing local resources and transparent production systems with fewer intermediaries between producers and consumers, was brought to the foreground and started to permeate mature capitalist societies. Within such a framework, resourceful clothing consumption

practices are seen as one of the possible small-scale and personal responses to the overwhelming problems of fast consumption and waste (Fletcher, 2016; Fletcher & Tham, 2019). Moreover, "slow fashion" presupposes that "fashion objects should be considered an investment" (Gurova, 2015, p. 140), and clothing longevity, durability, and practicality should be valued, as it was in societies of the past (Holroyd et al., 2023).

THE CONCEPTS OF CLOTHING CONSUMPTION: PERMANENT, TRANSITIONAL, FAST, AND SLOW

The links with the past were then further explored by Gurova (2015), who analysed the temporal rhythms of clothing consumption and the transformation of consumers' daily practices in Russia within different social groups, depending on the macro characteristics of societies at a specific historical period. Gurova argued that temporality can be understood on both the macro-level (type of society, the institutional conditions, the economic conditions, and the development of retail markets) and the micro-level (individual clothing consumption practices of purchase, use and disposal of fashion objects). The interaction of micro and macro factors produces a certain fashion concept within a particular temporal regime. As a result of this research, Gurova distinguished four concepts of clothing consumption:

- *Permanent*, where due to the inefficiency of the Soviet planned economy, consumers continuously repair and revitalise their clothing, extending their use phase to the extreme.
- *Transitional*, where, within the transition to the market economy, consumers have the access to low-quality foreign goods, which reduces the service lifespan of clothing.
- *Fast*, where due to the low prices of fast fashion brands, it is easier to replace worn-out things with new ones instead of prolonging their lifespan within the home.
- And *slow*, where consumers take a more responsible position towards environmental issues and return to do-it-yourself practices.

The theory of consumption temporalities demonstrates that permanent and slow concepts of consumption present certain similarities while occurring for different reasons. The consumption patterns of the permanent temporality are dictated by the State (see Fehér et al., 1983), while the patterns of the slow temporality are a consequence of the consumer's choice. Despite these macro-differences, both concepts imply handmade and local production, repair and maintenance, upcycling and downcycling, personalisation, circulation of clothing and shopping in second-hand stores. Although Gurova's findings result from the study of (post)-Soviet societies, rhythms and routines have spatial qualities, and every society has its unique concept of time and prevailing rhythm inherited in the everyday practices of its members. Shove et al. (2009) suggested that a greater focus on multiple rhythms and temporalities can be a promising way to promote more sustainable behaviour related to consumption. On these premises, and through the lens of the theory of clothing consumption temporalities, I propose to draw a parallel between the rhythms of clothing consumption in Western and (post)-Soviet contexts (specifically in Denmark and Ukraine) and to investigate how ordinary consumption practices of purchase, use (in particular mending practices), and disposal of clothing have evolved over time in both contexts.

INVESTIGATING CLOTHING CONSUMPTION PRACTICES THROUGH WARDROBE INTERVIEWS

The present qualitative study employed wardrobe interviews—a methodological approach that links the material and the social life of clothes and helps to understand the materiality of clothing practices, which are difficult to grasp and verbalise by asking the questions alone (Klepp & Bjerck, 2014; Fletcher & Klepp, 2017). Since age is one of the key characteristics in defining consumption (Douglas & Isherwood, 1979), the 14 participants of this study were divided into two groups: those aged 50 – 65 — 'mothers', and those aged 20 – 35 —' daughters'. This division helped to identify the main differences defining the clothing consumption cultures, as well as how the consumption cultures have evolved over time in two selected contexts. The participants were recruited through snowball sampling (Biernacki & Waldorf, 1981), and among the selection criteria were age, cultural background, level of education, and practicing mending on the regular basis.

The wardrobe interviews were conducted in the participants' homes in 2021 and were documented by audio and video recording and by photographing every mended garment found in the wardrobes

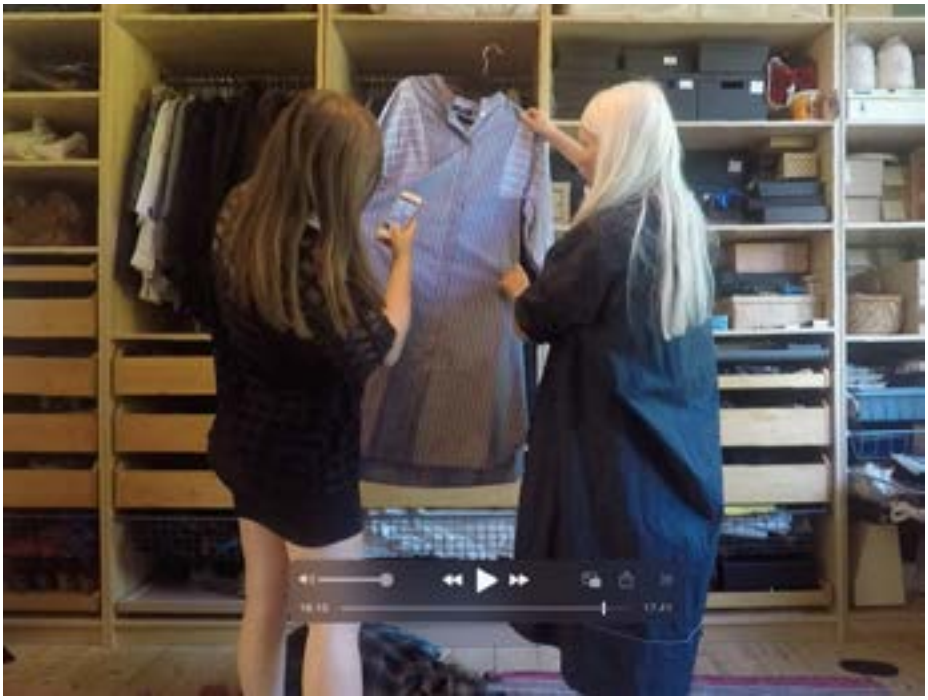

Fig. 1

(fig. 01). The data was analysed by employing the essential grounded theory methods as defined by Birks and Mills (2015). In the next section, I will present and discuss my findings based on the narratives of four participant groups.

POST-SOVIET 'MOTHERS': "I TREAT MY CLOTHES CAREFULLY AND USE THEM FOR A VERY LONG TIME"

Due to the inefficiency of the planned economy, the manipulations with clothing during the Soviet times were very popular, and consumers "sewed clothes, repaired them, constructed new ones from the old, and beautified ready-made items" (Gurova, 2015, p. 137). Simultaneously, goods produced and sold abroad were a synonym for high quality and the object of desire. However, acquiring them was an uneasy endeavour.

After the disintegration of the Soviet Union, foreign goods suddenly saturated "poor and extremely polarised" post-Soviet countries (ibid.: 2015, p. 140), and the rich could finally purchase overpriced luxury fashion items sold in boutiques, while the poor had to satisfy their "hunger" for foreign novelties by buying cheaper low-quality imitations of branded clothing. Accordingly, consumers who could not afford anything other than fake brand clothing in the 1990s still today perceive the novelty and quality of clothing as a marker of success or failure in social life and are reluctant to second-hand shopping:

"There was a time when I was buying whatever I could… But then the quality was so poor… Today, I can buy differently… I look at the quality first. I always examine the quality of the seams and fabric quality… No, I do not buy my clothes second-hand because when I was young, buying second-hand clothing was associated with poverty" [Elena, 59 y.o.].

As during adulthood, the group of "mothers" assimilated the values oriented towards conspicuous consumption, they associate practices of mending and handing things down with necessity. Even so, these participants mend clothes when necessary, and one of the main drivers for mending is the extension of the clothing use phase: "It is not that I cannot afford new clothes. But if you buy something, it means that you like this thing, right? That is why I treat my clothes carefully and use them for a very long time. Sometimes old, mended clothes are even better than new ones" [Marina, 65 y.o.].

As evidenced by this quote, the participants of this study group reside within the transitional temporality of consumption, where the desire to get comfortable things that fit and last over time (permanent temporality) and the desire for newness (fast temporality) coexist. In their endeavour to maintain clothes' original appearance, the post-Soviet "mothers" make good use of their advanced wardrobe maintenance (e.g. washing, stain removal, ironing and proper storage) and DIY skills, which are praised and described with epithets

such as *masteritsa na vse ruki* [woman particularly good at doing things with her own hands]:
"These pants were mended by my friend Valushka because the repair required a high level of mastery, which I do not have. Since she is such a masteritsa na vse ruki, she just helped me… I would not be able to do such fine work" [Elena, 59 y.o.].
As for the final disposal of clothes, throwing things away does not belong to the consumption patterns of "mothers". When clothes lose their *vneshnij vid* [their ability to look good and be socially appreciated or accepted] and cannot be worn in public any longer, they undergo different stages of clothing use. Initially, they are worn at home and later utilised as clothing for outdoor activities at *dachas* [summer houses] or given to acquaintances or relatives who live in the countryside since their clothing is not subjected to the urban norms of *kulturnost* [culturedness]. Finally, when clothes cannot be worn any longer, they are not thrown away either but stored for further potential use as something else:
"I have a lot of sweaters and shirts that lost their vneshnij vid. For example, when the material is worn, or the colours are faded, I wear these clothes at home. And if they are too worn even for home, I send them to the village. There, they are used until their end" [Tamara, 50 y.o.].

POST-SOVIET 'DAUGHTERS': "THERE IS A SECOND-HAND BOOM… BUT MENDING IS NOT FASHIONABLE"

Post-Soviet participants aged 20 – 35 grew up in a market economy and experienced socialism only through the memories of their relatives of older generations. Since their childhood, the "daughters" consumed clothes in a fast way. Despite this, they partially inherited their parents' values of permanent consumption and, therefore, participate in several care practices, which today are considered sustainable (e.g. mending, swapping and handing clothes down to others). However, such practices for them are "intuitive" (Tania, 34 y.o.) and rarely motivated by environmental concerns. It can be said, therefore, that these participants reside within another transitional temporality (from fast to slow), where the desire for unique fashion items coexists with the inherited values of care:
"Sometimes, we organise swap activities… with these exchanges, it is possible to find something unique and, at the same time, find someone interested in giving my clothes a second life" [Tania, 34 y.o.].
Giving a second life to clothing by enacting slow fashion practices does not occur only physically since Internet technology often facilitates such practices today. The "daughters" in the post-Soviet context make great use of online platforms and social media to buy and sell second-hand clothing:
"I got this dress from a person who posted a photo on the group of our housing complex… Sometimes, I buy and sell second-hand clothes through different apps. Usually, I discover such things on TikTok. There are many people who buy second-hand, customise, and then resell things again" [Diana, 21 y.o.].
Such consumers, who are both participating in the consumption and production of what is consumed, were defined by Campbell as "craft consumers" (Campbell, 2005, p. 24). Stemming from a desire for self-expression, "craft consumers" purchase mainly to engage in creative actions to "mark off" mass-produced goods from "identical twins" (Campbell, 2005, p. 32). In doing so, craft consumers utilise their "skills, judgment and passion" (ivi.: 23) both for the selection of second-hand products and for their transformation. Although this group of participants enact several craft consumption practices, mending is not considered creative or fashionable. Still today, it carries the stigma of practical necessity and is regarded as a "boring" activity rather than an opportunity for self-expression:
"Our people always try to be trendy and stylish, and there is a second-hand boom in Ukraine. But mending… not really. It still should be presented as a cool and fashionable activity" [Ksenia, 26 y.o.]
In contrast to their relatives of older generations who value good quality and are used to praising DIY skills and mend clothes rigorously, this age group accepts imperfections more easily, does not value high-quality clothes and rigorous mends. These participants, therefore, have a rather rough approach to mending (when they mend themselves and not with the aid of a professional) (fig. 02):
"My mother does everything rigorously and with great care… she always has perfect stitches. If she does not like something, she can leave it for a while and then return to it and do everything perfectly. But I can do things roughly and will not feel bad about that" [Marta, 24 y.o.]
Since, in the Ukrainian context, mended clothes are not used to be worn in public, such roughly mended clothes are then worn at home until they

Fig. 2

undergo other use stages already described in the previous section:
"Usually, if clothes are not wearable anymore, like if they are really worn out… then I wear them at home for some time until they are sent to the village. What a fashionable environment the village has become! Every week is just like fashion week [laughs]" [Marta, 24 y.o.].

WESTERN 'MOTHERS': "IF I LIKE SOMETHING, FOR ME, IT IS WORTH CARING FOR IT"

The formative period (a period of adaptation to adult life (Yatina, 1998)) of the Western participants aged 50 – 65 occurred in the 1980s when sustainability concerns started to be pronounced and began to permeate various aspects of Danish welfare capitalist society. Therefore, the enactment of sustainable clothing consumption practices of Western "mothers" is motivated by environmental concern, and generally, these participants assign high value to their favourite clothes and care for them:
"The motivation that guides me in this way of consuming is that I would like to avoid throwing away things, generating garbage, and exploiting natural resources. [And] then… if I like something, for me, it is worth caring for it" [Hanne, 58 y.o.].
Buying relatively expensive brand clothing for this age group means obtaining a higher quality, constituted by timeless design, superior craftsmanship, premium materials, and meticulous attention to detail. High quality, therefore, is an important factor in the decisions of their purchase, which does not occur exclusively in physical stores.
Similarly to post-Soviet "daughters", the Western "mothers! engage in online second-hand shopping (even if it is not the main channel of their clothing purchase):
"It is not how I usually buy my clothing. I buy second-hand only if it is something very special, like [this] velvet kilt… It comes from shopping in New York" [Marianne, 57 y.o.].
As for the practices of clothing mending, in contrast to post-Soviet mothers, who mend almost everything, the Western participants of the same age mend only clothing they are emotionally attached to, while other clothing is easily replaced:
"I do mend my clothes, but I do not spend time mending basic items, like tank tops. It is not worth it…I do not mend my socks, either. I throw them away and buy new ones…" [Marianne, 57 y.o.].
It can be said, therefore, that the consumption patterns of this group present both traces of fast temporality, since some items (i.e. socks or tank tops) are not mended and are easily replaced, and slow temporality, since one of the main motivations for mending lies in their commitment to sustainability. In line with the patterns of slow consumption, which presupposes "enjoyment of creativity and longevity of material objects" (Gurova, 2015, p. 149), the mending practices of

this participant group are not guided by necessity and often acquire the meaning of creativity and self-expression. Even so, an expressive approach to mending is not prioritised. Contrary to the post-Soviet participants of the same age group, the invisibility of mending for Western 'mothers' is not motivated by associations with low socio-economic status but is driven by the characteristics of the damage, characteristic of the garment design, and characteristics of the overall wardrobe:

"This is my beloved old dress… And there is wear and tear in the armpit. It is right next to the seam. It has ripped. So, the mend is pretty invisible because it is under the arms, so… I did not want it to look lumpy and to attract attention…" [Marianne, 57 y.o.].

Regarding the different stages of clothing use, in contrast to post-Soviet participants of the same age group, Western "mothers" rarely differentiate between clothes for external and home use. When clothes lose their functional value, these participants transform them into something with another function:

"I use them [clothes] till they are absolutely rags and then… I use them for polishing the windows… or I turn them into rugs" [Marianne, 57 y.o.].

WESTERN 'DAUGHTERS': "I WAS RAISED TO CARE ABOUT THE WORLD… SO, [I] TAKE CARE OF THINGS"

The Western "daughters" aged 20 – 35 absorbed their parents' sustainability values, and since their childhood learned how to care for the environment. These values were then reinforced by the increased attention to sustainability, which occurred during the formative period of this age group:

"I was raised to care about the world, the people, and the environment, so it is natural for me that I do not throw things away but fix them. My whole family taught me how to take care of things" [Tea, 35 y.o.].

These participants reside within the slow temporality of consumption and associate slow fashion practices with creativity, self-expression, and commitment to sustainability. Accordingly, they purchase second-hand, swap, wear clothes handed down to them, upcycle, alter, customise, and repair. In particular, second-hand shopping is pivotal in their clothing consumption patterns since it is the main channel of their clothing purchase:

"Most of my clothes are thrifted. I would say probably 80% of my clothes are thrifted… When I buy clothes from thrift stores, which I almost exclusively do, they are already worn. So, I buy them with the idea to mend, to extend the life of things. That is why I mend and alter; I know how I want my clothes to look and fit me. And I can create that by mending and altering" [Emilie, 26 y.o.].

Similarly to Western "mothers", this group of "daughters" values high quality and appreciates good design, craftsmanship and natural materials. They recognise that high quality is essential for the physical durability of clothing, and it can allow clothing to defy time. Despite this fact, when these participants buy second-hand clothing, they take into account their overall lifecycle, and driven by a desire to reduce waste and prevent things from landfill, they buy even low-quality items:

"The thing about quality… it is important to me. I appreciate when it is natural mono material. But when you search for second-hand clothing, you also find a lot of H&M clothes or other cheaper clothes. I think that it is nice to buy them anyway, at least you prevent them from a trash bin" [Gerda-Marie, 29 y.o.].

Unlike the 'mothers', who mend only the clothing items they are emotionally attached to, this group of "daughters" repairs absolutely everything until clothing items fall entirely apart. Naturally, mending until the items fall completely apart can result in particularly distressed aesthetics, which, in the Western context, increase the "social status of those who are able to mend" (Middleton, 2015, p. 265):

"I love mending clothes, altering clothes, sewing clothes, decorating or whatever. Because you wear a unique "new" thing and receive so many compliments" [Emilie, 26 y.o.].

Although the mending practices of this participant group often transform the damaged areas into unique design features with the aid of different craft techniques (fig. 03), like their 'mothers', the 'daughters' prioritise a discreet approach to repair:

"I think that I like a bit of a cleaner look, and it is also hard to put embellishments in places where I would rather not put them… But when there is damage that cannot be mended invisibly, I would make it decorative. But I would always do the invisible mend first" [Emilie, 26 y.o.].

Finally, the approach of this group of "daughters" to wear clothing until it literally falls apart does not leave much space for different use stages. Like the Western "mothers", "daughters" wear the same

Fig. 03

clothes both at home and in public, and when clothes lose their use value, they are disassembled, and their elements, such as fabric scraps, zippers, buttons, and elastics, are utilised for future DIY projects. Such an approach to mending, which lacks the idea of disposability, is very similar to the mending practices of permanent temporality of consumption.

CONCLUSION

This paper illustrates how studying everyday clothing consumption practices of different age groups in the Danish and Ukrainian contexts through the lens of clothing consumption temporalities allows us to understand how the macro characteristics of Western and post-Soviet societies at different historical periods affect individual clothing consumption practices of purchase, use and disposal of fashion objects. The results of this research are summarised in fig. 04, which highlights that the consumption patterns of the groups of post-Soviet "mothers" and Western "daughters" are consistent with the patterns of consumption temporalities distinguished by Gurova (2015) (transitional (from permanent to fast) and slow, respectively). Post-Soviet "mothers", who used to live in the Soviet society characterised by scarcity, still associate resourceful clothing consumption practices with necessity. In contrast, Western "daughters", who live in a time of eco-anxiety, associate the same practices with sustainability. Despite these macro differences, both participant groups assign a high quality to clothes and extend their use phase by enacting several sustainable clothing consumption practices. Although Gurova (2015) has distinguished four temporalities of clothing consumption: permanent, transitional (from permanent to fast), fast and slow, within my analysis, another transitional temporality (from fast to slow) has emerged. It is characteristic to the group of post-Soviet "daughters", aged 20 – 35, and the group of Western "mothers", aged 50 – 65. The consumption patterns of these two groups include the peculiarities of both fast and slow temporalities but in distinct ways, resulting in additional transitional temporality. The idea of this additional temporality of consumption is plausible both in consideration of another transitional temporality (from permanent to slow) distinguished by Gurova (2015) and in consideration of Shove, Trentmann, and Wilk's statement that transitions from one temporality to another are not characterised by the "wholesale shifts" (2009, p. 4). Recognising that this additional temporality exists, as well as recognising that its boundaries are fluid due to different combinations of macro and micro characteristics is important for those who study transitions towards sustainability in fashion. It is because this temporality sheds light on both sustainable and unsustainable behavioural consumption patterns within a temporality and can inform practical strategies, such as the development of circular infrastructures, which can provide the

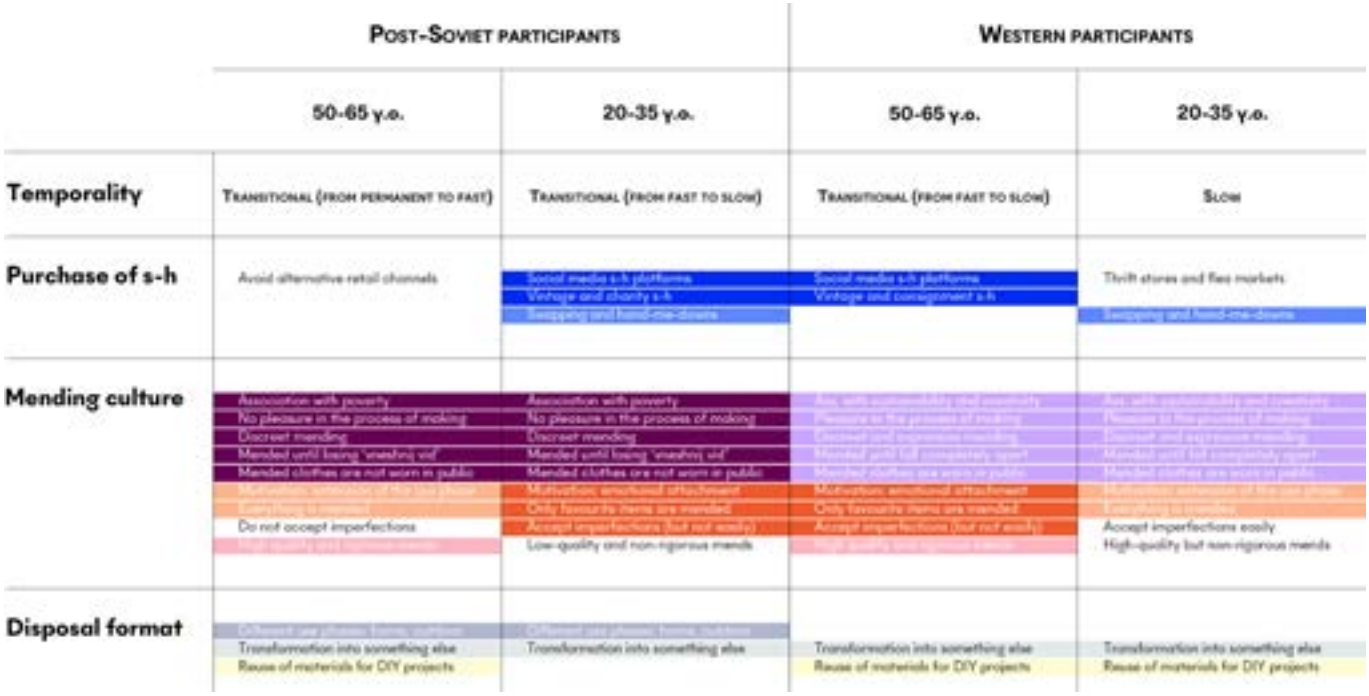

Fig. 04

elements of which the desired ways of consumption can be made.

Although this research provided fresh insights into the practices of clothing consumption and studied them in-depth, I do acknowledge that the research was affected by the particulars of its research design and the participant sample. Therefore, there are some limitations to the study. The most obvious limitation is that the research was context-specific, and it was conducted in two countries (Denmark and Ukraine), where the conceptualisations of sustainability vary significantly. Another obvious limitation is the size of the sample; the analysis was based on the experiences of 14 participants. Accordingly, their experiences cannot be regarded as generalisable. However, this limitation is common to all qualitative studies that aim to gather textured information relevant to the phenomenon under investigation and support the depth of analysis. Finally, although the study call was open to participants of both genders, all those who chose to participate were women. To represent the consumption patterns of an overall specific context, the experiences of both genders should be included. Nevertheless, although the mentioned weaknesses regarding the context, sample size, and gender limit the generalisability of a study's conclusions, they also surface possibilities to think about complex issues in different ways and present many avenues for future research.

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CAPTIONS

[Fig. 01] Video recording of wardrobe interview. Credits: Emile Bech.

[Fig. 02] Participant's rough approach to mending. Ph: Iryna Kucher.

[Fig. 03] Participant's transformation of clothing damaged area into a unique design feature. Ph: Iryna Kucher.

[Fig. 04] Summary of research findings. Table: Iryna Kucher

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DESIGN SOLUTIONS FOR CONSCIOUS AND SUSTAINABLE FASHION CONSUMPTION

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Abstract

The paper refers to the extensive fashion consumption of our times, focusing on the emerging target audience and the level of awareness regarding fashion industry sustainability. Through an analysis of the current state of the art and virtuous sustainable case studies, the paper aims to present possible emergent service design solutions for more sustainable and conscious fashion consumption that are quietly reshaping the fashion market Second-hand shopping, collaborative sharing of wardrobes, and the rediscovery of craftsmanship are creating new experiences and opportunities to engage with fashion, modifying the communication strategies and policies of several brands in order to be chosen by more conscious consumers, such as the Gen Z community.

Keywords: *Service Design; Second Hand; Sharing Fashion; Custom Made Fashion; Gen Z*

FASHION, CONSUMPTION AND CONTEMPORARY VALUES

The consumption is one of the main driving forces of the global economy, while it continues to impact the health of the planet (Giannetti et al, 2023). In recent years, the fast fashion phenomenon has emerged as a central issue connected to sustainability, positioning it as the second most environmentally damaging industry after the oil one (Bailey et al., 2022). This has led to significant global challenges in managing textile waste, as the majority of textile products are discarded in landfills, despite their potential for recycling and reuse.

The phenomenon of compulsive shopping among consumers has expedited an over production and consumption cycle of goods, especially during the 2020 – the covid period -, largely due to various platforms and companies offering free returns (Maraz et al., 2022).

Often consumers are not completely aware of the unsustainability of the fashion industry, mainly due to the poor and misleading brand communication about the production, the supply of raw materials, the manufacturing process, the transportation, the use, and disposal of clothing. The greenwashing practices, employed by some companies to appear more sustainable than they actually are, contribute significantly to the ongoing perpetuation of the issue (Peña et al., 2023) distorting the public perception regarding the severity of environmental problems thereby indirectly contributing to the

exacerbation of the ecological crisis.
The public attention is increasingly critical towards the fashion industry and much more careful to the environmental impact of the different fashion brands. The acts of denunciation against the fashion industry are countless and increasingly forceful, including those from figures within the fashion system itself. One example is *Junk*, the docuseries co-produced by Will Media and Sky Italia with Matteo Ward, CEO and co-founder of WRÅD, benefit corporation and design studio dedicated to sustainable innovation and social change, but also former senior manager of Abercrombie and Fitch.
Circular economy principles are becoming increasingly important in this sector, known for its significant environmental footprint, urging for necessary sustainable reforms (Hugo et al., 2021). In 2018, the industry was responsible for emitting 2.1 billion tons of greenhouse gasses, accounting for about 4% of worldwide emissions (Berg et al., 2020).
The spread of globalization has greatly exacerbated the issue of excessive consumption in fashion (Diddi et al., 2019). According to the Ellen MacArthur Foundation report (Ellen MacArthur Foundation, 2017), approximately $500 billion are lost annually due to garments that are only worn a few times before turning into waste without being donated or recycled.
This trend in clothing consumption stems from various factors, among which the fast fashion industry[1] plays a prominent role by offering an increased number of new clothing collections every year at very low prices. The significantly cheap costs come from the exploitation of people and the environment[2], a problem which has drawn scrutiny to the fashion system and sparked the ongoing trend reversal.
The attractiveness of the fashion system is notably high due to its communicative value. Clothing has been serving as a privileged channel of communication for the younger generations since the 1960s (Giraldi, 2022), conveying messages, values and ideas in which people recognize themselves. Moreover, clothing reflects hopes, social and personal attitudes, and stances. Therefore, garments are laden with immaterial and connotative messages.
Currently, fashion system clothing expresses social values tied to inclusion, acceptance of diversity, and social commitment, among others, mostly representing Gen Z thoughts and attitudes. These values reflect the growing awareness of social responsibility and inclusivity among young consumers, prompting them to seek out brands and products that align with their values and beliefs[3].
Consequently, the industry faces a growing call for the adoption of eco-friendly practices in response to its adverse effects (Kim et al., 2021), prompting a call to action for immediate change (Berg et al., 2020). In this context, the United Nations Department of Economic and Social Affairs for Sustainable Development strives to mitigate the adverse environmental and social effects associated with the fashion industry (Garcia-Ortega et al., 2023). Specifically targeting Sustainable Development Goal 12 *Responsible Consumption and Production*, the United Nations seeks to decrease waste generation through prevention, reduction, recycling, and reuse, while urging companies to embrace sustainable practices (i.e. produce less to recycle less).
The shift towards sustainability is influencing new generations' views on the fashion industry, reflecting a new societal mindset (Gazzola et al., 2020). Several elements, including the rise of digital technology and shifting generational dynamics, have fueled the expansion of new trends of fashion consumption. Particularly, consumers from the newer generations (Gen Z and Millennials) exhibit a heightened focus on sustainability compared to Generation X and the preceding ones (Gazzola et al., 2020), showing a greater inclination towards alternative consumption types over traditional fast fashion brands.
These new consumption choices are necessarily impacting the contemporary fashion industry landscape, influencing the communication strategies of fashion brands, which often are rethinking their policies in order to reach and be

1 A term used to describe an accelerated fashion business model that is characterized by increased numbers of new fashion collections every year, quick turnarounds and often low prices. from London's fashion footprint. An analysis of clothing material flows, emissions and levers for climate action in London, June 2023

2 For example, in this regard, see the exploitation of the populations and territories of India, Bangladesh, Chile, Ghana, documented by Matteo Ward in the series Junk - Full Closets.

3 The paper refers to different studies about the perceptions, attitudes and values of generation Z consumers, conducted by: Nguyen, M.T.T. and all (2019); Kovacs, I. (2021); Arora, N., Manchanda, P. (2022); Dragolea, L.-L., Butnaru, G.I., Kot, S.,Zamfir, C.G., Nuță, A.-C., Nuță, F.-M., (2023); Cristea, D.S.; Ștefănică, M., (2023); Gomes, S.; Lopes, J.M.; Nogueira, S., (2023).

chosen by new generations.
In this context, the paper aims to examine the current most popular consumption trends carried out by new generations and the resulting shifts in communication design strategies adopted by several fashion brands to face this new fashion market landscape.
Moreover, the research investigates how the new values shared by Gen Z through social networks are changing the fashion market and prompting the adoption of more conscious and future-oriented business practices by several fashion brands.
Furthermore, the ultimate goal of this paper is to underscore the strategic importance of design in fostering new development opportunities within the contemporary panorama of the fashion industry. Innovative design products such as virtual spaces and digital platforms, showcases their pivotal role in delivering a delightful and sustainable fashion consumption experience.
Through insightful analysis and examination of notable examples, this paper aims to highlight the transformative power of design in shaping the future of fashion consumption.

THE DIGITAL GREEN GENERATIONS

The determination of birth years for Gen Z and Millennials differ among scholars and sources. Commonly the studies delineate Millennials, or Generation Y, the individuals born between 1981 to 1995, and Gen Z, as those born post-1995 until the early 2010s. Gen Z is also referred to by various nicknames including 'iGeneration', 'Gen Tech', the 'Online Generation', 'Post Millennials', and 'Switchers', reflecting their digital nativity (Dolot, 2018).
Gen Z, is emerging in the contemporary global fashion landscape as an influential key stakeholder. Young people of Gen Z are "... constantly connected using multiple platforms and digital formats simultaneously" and at the same time "Gen Z see themselves as protagonists of the contemporary age. They have strong ideals and give importance to the values they believe in: sustainability, attention to safeguarding the planet, freedom of thought, equality, authenticity and multi-culture." (Giraldi, 2023). According to this definition, Gen Z is characterized by a strong ethical sense, a commitment to sustainability, a critical approach towards traditional consumption channels, but also, since they are the first native digital generation, by a strong need and inclination to the 'sharing' practices and values.
The desires, inclinations, and values of Gen Z are heavily influenced by their digital upbringing and societal awareness. They prioritize sustainability, community, and convenience in their choices, which is reflected in their preference for sharing services.
This generation seeks environmentally friendly alternatives and values experiences over ownership. They are drawn to sharing platforms that offer flexibility, cost-effectiveness, and social connectivity. Services like ride-sharing, bike-sharing, and accommodation-sharing resonate well with Gen Z's desire for seamless integration into their fast-paced lifestyles. Moreover, they appreciate the collaborative and communal aspects of sharing, as it aligns with their belief in social responsibility and collective well-being. Overall, Gen Z's affinity for sharing services underscores their commitment to social and environmental sustainability.
In their study, Gazzola et al. (2020) confirm that younger generations, particularly concerning consumer behavior, are increasingly focusing on sustainability and the principles of the circular economy. Moreover, several studies[4] show that Gen Z prioritizes authenticity and ethics in consumption choices, but they are also characterized by a strong inclination towards individualism and customization, considered a means to express their uniqueness.

VIRTUAL COMMUNITIES AND FASHION CONSUMPTION

Galante Amaral and Spers (2022) have indicated that an individual's perception of consumption can impact a person's willingness to buy and altering its consumer behavior. Perception is defined as the process by which people interpret an idea or object (Ou, 2017), and it is culturally influenced. Cultural elements shape how people view the world and interpret events, but also guide the formulation of specific messages and the interpretation of these events (Ou, 2017). An individual's culture is closely related to the community to which it belongs. The new technological landscape has led to the creation of virtual communities, based on social relationships and social connections and not confined by geographical boundaries, which offer platforms for users to construct and communicate their shared

4 *Ibid.*

identities.
These communities flourish through interactivity, nurturing social connections where consumers can engage with peers who share similar interests, develop stronger bonds, and attain a sense of social status and inclusion within the community (Huangfu, 2022). Virtual communities can be found on social media, in online video games (such as *Fortnite*), and in the metaverse.
If the remarkable influence of social media is well recognized, so are the other platforms where their virtual communities could profoundly shape consumer behaviors and perceptions of ideas.
Referring to Gen Z, TikTok quickly became one of the perfect virtual spaces to explore and express their identities and foster digital communities (Boffone, 2021). According to the report published by the *Morning Consult* (He, Case, Briggs, Burns, Marlett, Tran, 2024), over 69% of Gen Z users spend 4 hours of their time on the app.
Described as 'complex, cultural artifacts' (Schellewald, 2021), TikTok videos transcend the notion of being merely frivolous content devoid of significance. Instead, these creations offer deep insights into the individualities and cultures of specific persons or groups.
Within the platform are in fact identifiable countless subcultures, each of which presents its own aesthetic, set of codes, social customs, trends, and literacy practices. TikTok videos and trends serve as 'identity blueprints' mapping out and reflecting the distinctive characteristics and values of their creators and audiences (Boffone, 2022).
In this perspective, the several available social networks are not only channels for brands advertising but also vital platforms for collective engagement and the dissemination of values.
In fact, the increase in user autonomy in virtual communities makes them no longer mere passive recipients of information, but active content creators, capable of creating and promoting new values and also practices of consumption.
The ways in which virtual communities actively influence fashion consumption are countless, just consider the viral phenomenon of *Unboxing* and the current power of influencer marketing. The contribution takes into consideration three phygital alternative consumption practices that have been significantly boosted by virtual communities and Gen Z users, highlighting how the design discipline, and specifically different digital design products (digital spaces and platforms, social networks, etc.) are established themselves as key elements for the new directions undertaken by the fashion system.
The following sections present examples of innovative service design solutions that align with the most viral contemporary sustainable consumption trends in virtual communities: thrifting or second-hand shopping, sharing fashion, and the rediscovery of craftsmanship.

THE SECOND HAND SHOPPING TREND

Second-hand shops and the idea of *thrifting* are increasingly becoming more and more popular, driven not only by the vintage trend but also by their underlying principles: reusing well-preserved items and reducing the buildup of unwanted garments.
According to the Collins definition the word 'Thrifting' refers to "the activity of searching in second-hand shops for interesting and/or valuable pieces". This phenomenon has become particularly popular among younger generations as a sustainable and eco-friendly choice, reducing the consumption of new products and thus contributing to waste reduction and environmental impact. Thrifting is also seen as a way to express one's individuality through unique fashion and style, as well as an enjoyable activity and treasure hunt for finding rare or valuable items at affordable prices (Demir et al., 2021).
The behavior of these second-hand shoppers is analyzed through the lens of conscious consumption, or green theory. This concept, introduced by Peattie in 1992, refers to the decisions made by consumers to buy or not buy products based on environmental or social considerations.
Hristova (2019) points out that the main factors propelling the second-hand market include economic, emotional, and social incentives. According to ThredUp (2022), a vast majority, 82%, of shoppers experience positive feelings when buying second-hand goods. Regarding this, Kim (2020) documented a notable increase in the popularity of secondhand stores between 2014 and 2019. They also observed a shift in the search terms associated with secondhand shopping, moving from an emphasis on cost and savings to a focus on sustainability and current trends.
Moreover, the rise of several online marketplaces, platforms and mobile apps (such as Vinted, ThredUp, Vestiaire Collective, Wallapop, and

more..) has greatly facilitated the purchasing and selling of secondhand clothing. According to its corporate website, Vinted, born in 2008, has 75 million active users all over the world. The success of these platforms, while not representing the final solution to the fast fashion industry's problems, and having in turn several and numerous criticalities, expresses a contemporary consumption trend, which gives users the opportunity to save money and be more sustainable.

The second hand fashion trend is largely viral between the Gen Z consumer, also thanks to the influence of social media, especially Tiktok (fig. 01). Gen Z's strong interest in second hand fashion is driven not only by economic considerations but also by their strong sense of environmental responsibility and a desire for individual expression. Moreover, second hand fashion, therefore, is not perceived only as a choice of style, but as part of a wider cultural and social movement. The design can actively help in developing innovative services for the promotion of more conscious consumption choices. According to the second hand trend, the global denim brand Levi's has introduced an innovative service called *Second Hand*. This program aims to repurchase and resale of used Levi's garments directly through the brand's official platform.

This service not only allows Levi's to regain control over the market for its second-hand products but also promotes more conscious and sustainable consumption, while ensuring the brand's authenticity and quality to consumers at reduced prices. (fig. 02)

Similarly, in 2024, Carhartt initiated several initiatives to promote the second hand clothes market of their apparel, and encouraged the extension of the lifecycle of its products.

The brand introduced specially designed labels that identify the various previous owners of the garments, aiming to impart authenticity and sustainable value to the products themselves. Furthermore, Carhartt offers consumers the opportunity to perform repairs independently through specific *do-it-yourself repair kits*, thus helping to reduce consumption and waste of

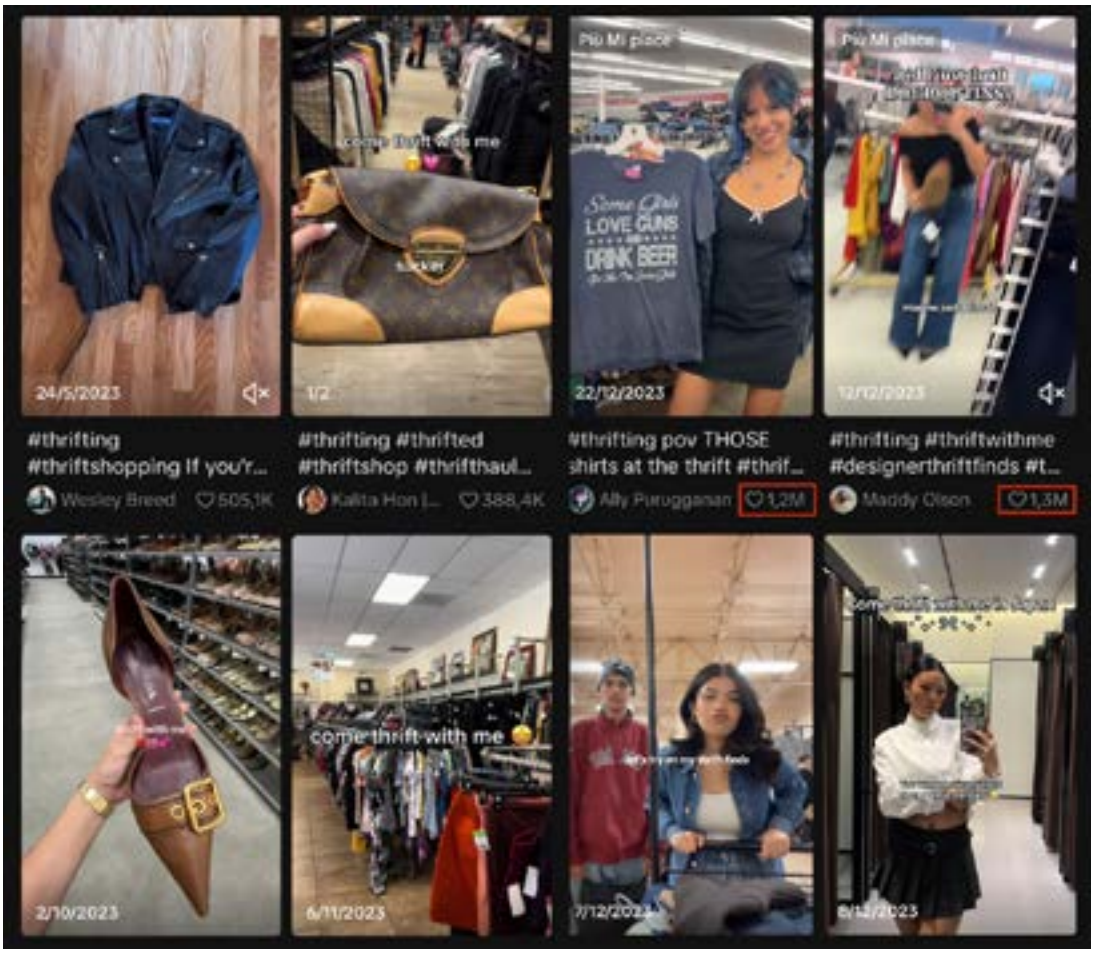

Fig. 01

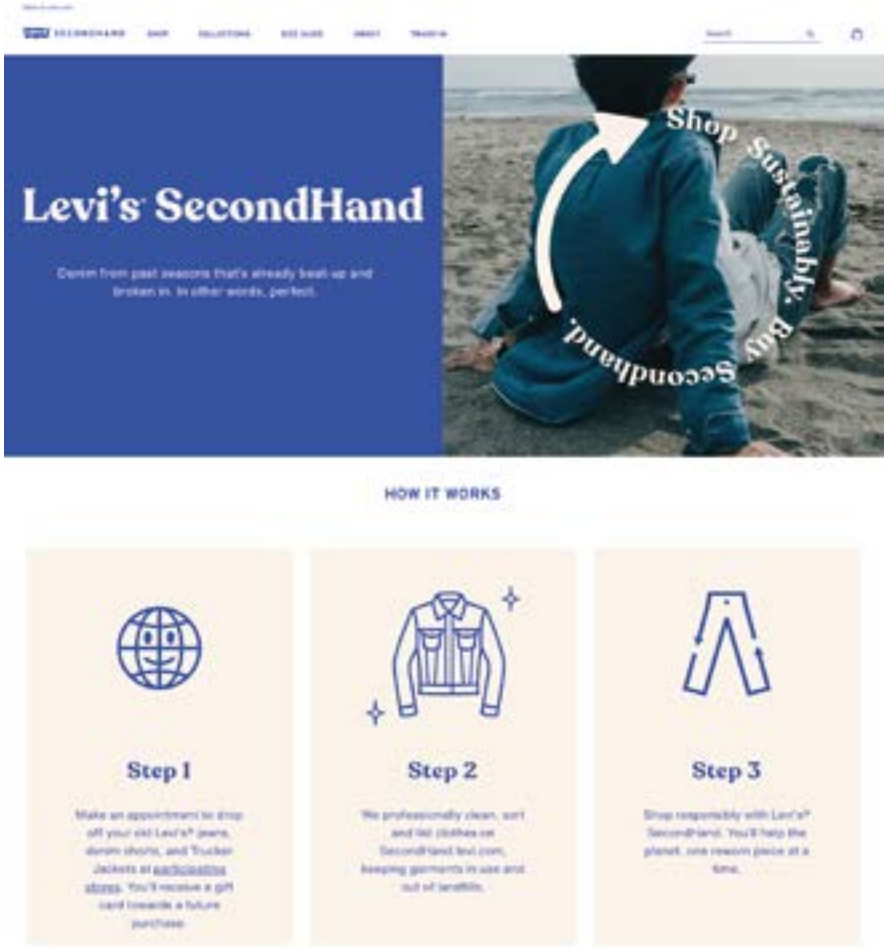

Fig. 02

resources by repairing and reusing the garments. This trend to offer service oriented to secondhand consumption is confirmed also by the S:W:A:P (Shopping Without Any Payment) Freitag initiative that represents another example of how service design can contribute to extending the product life cycle. The brand proposes, through its website, the opportunity to freely exchange one's used product through an 'exchange' service with other consumers' used Freitag products, promoting second-hand use and discouraging the purchase of new products.

THE SHARING FASHION TREND

As already mentioned, GenZ is particularly interested in sharing services as they underscore their commitment to social and environmental sustainability. The sharing trend is thus providing numerous design opportunities to embrace a more sustainable and ethical approach, not only in terms of mobility, housing, and food but also in relation to fashion consumption, through the practice of renting clothes.

Renting stands as the antithesis of fast fashion, offering an ideal solution for those aspiring to a vast wardrobe without contributing to waste and pollution. Caterina Maestro, founder and CEO of the Milan-based fashion rental startup Dressyoucan, mentioned that Gen Z has grasped the significance of renting garments as a contribution to a greener future.

Following this scenario, in 2019 Twinset launched the *Pleasedontbuy* initiative, and the claim *rent your dream* with the aim of making their products accessible to a wider audience. The dedicated website allows people to choose and rent clothes from the collections. This initiative not only contributes to waste reduction but also makes it possible to wear high-end garments that may not be accessible to everyone, especially younger generations. Furthermore, it highlights the Made in Italy label, showcasing the craftsmanship and quality of Italian products. In the same way, Selfridges in partnership with HURR has launched REselfridges, a similar initiative, which allows the rental of high-end brands at affordable prices. (fig. 03) Through the special section, Selfridges is committed to making high-quality clothing

at disposal of a wider audience, thus reducing consumption and promoting sustainability in the fashion industry.
Renting shopping offers the opportunity to access high-quality, fashionable clothing without the hefty price tag associated with purchasing such items outright. By renting, people can indulge in luxury fashion experiences for special occasions or everyday wear without the burden of long-term ownership costs. This economic aspect of renting shopping appeals to a wide range of consumers, from those seeking occasional splurges to budget-conscious individuals looking to maximize their wardrobe options without breaking the bank. By renting garments instead of buying them outright, consumers contribute to the reduction of fashion waste, the extension of product lifetime and the conservation of resources. This shift towards a more sustainable and economically savvy approach to fashion consumption reflects changing consumer attitudes towards ownership and the recognition of the environmental impacts associated with fast fashion and overconsumption.

THE REDISCOVERY OF CRAFTSMANSHIP

The strong inclination of new generations towards self-identification and their need to express social values and uniqueness through their clothes, often results in searching and buying products as distinctive as possible.
For this reason, craftsmanship in small businesses is becoming really popular among the new generations. In fact, these brands offer products perceived as highly unique because of their handmade production, but also for their great possibility of customization.
If customization services offer the possibility of having a one-off product with endless personal variations of the same product (Wang et al., 2021), a handmade customization enhances the uniqueness of it, creating a one-of-a-kind product with high emotional value.
Through social media, such as Instagram and TikTok, several handmade brands are promoting their work, emphasizing their craftsmanship values and an exclusive shopping experience, principally user centered.
An example of this trend is the Italian brand Melidé Factory that, founded in 2014, went viral thanks to the virtual community in Instagram for its artisan-embroidered basic t-shirts. The brand offers a sustainable and high-quality collection of basic clothing that users can personalize with handmade custom embroidery. However, the brand's embroideries are not the 'classic ones'. The brand has introduced ironic garments, based on a linguistic code typical of the virtual community of reference, which could be also additionally customized by the user. Unlike the traditional customized claim t-shirts, the graphics have not been created using a screen printing technique, but have been meticulously hand-embroidered by Italian artisans. The brand's products have gained so much popularity within the social community that they have driven a rejuvenation of the perception of the embroidery technique, encouraging the birth of new brands, and influencing also the fashion industry proposals.
On the other hand, if these kinds of brands are promoting a more ethical and sustainable consumption, they are not discouraging an over fashion consumption, as others are trying to do, like the one founded by the London based designer and artisan Helen Kirkum.
Through the Bespoke service, the Helen Kirkum Studio proposes an extension of the life cycle of the user's sneakers, creating a unique handmade

Fig. 03

product, starting from the old shoes. The owners are urged in this sense not to throw out their used, worn and loved sneakers, but to use this new service that, after careful personalized consultancy, will create new pairs of sneakers totally custom and unique in the world, enriched with great emotional values. This trend highlights the importance of the sense of uniqueness of the users in this new consuming scenario.
Service design in this context is essential to create relationships that are increasingly innovative, sustainable, but also highly involving and emotional, able to suggest to the virtual communities new more sustainable ways of consumptions.

FUTURE DESIGN DIRECTIONS

Faced with this radical change in consumer values and preferences, fashion brands are reviewing their communication strategies and improving their offers. According to the new trends of sustainable consumption, transparency, corporate social responsibility and engagement on environmental issues are becoming key elements in the fashion market. In this scenario the design and in particular the service design, as shown, is proving its importance and strength in designing relationships, connections, processes, and experiences acting as a facilitator of a value process.
The described trends of second-hand shopping, sharing fashion, and rediscovery of the craftsmanship showed how easily service design could act and be involved in the green revolution of the fashion field. Platforms for reselling or renting clothes and accessories like Vinted or HURR are concrete examples of how service design can promote the circular economy and collaborative consumption, as well as the improvement of the perceived value of a product and the consumption experience, could allow to lengthen its life cycle. Also, all these design strategies demonstrate how shopping experience and its narration within the virtual community are a key factor of contemporary fashion consumption, both for online and physical retail, especially by the digital native generations. Such actions, in addition to fostering the creation of positive and meaningful experiences for public audiences, contribute to the establishment of 'green communities', in line with the new generations values and increasingly oriented towards a more responsible and sustainable consumption awareness.
Moreover, regarding the fashion consumption landscape, it is essential to take into high consideration also the new virtual communities, such as those that are developing in online videogames and in the metaverse, as they represent a fertile ground for service designers, still poorly explored. In these virtual communities, users can create and express themselves using one or multiple avatars, 'virtual identities' that can be easily personalized through skins. According to this, increasingly, brands, such as Louis Vuitton, Gucci, Moncler, Vivienne Westwood, but also those of mass market as H&M, are developing and selling limited editions of virtual digital fashion products to be used as digital avatar skins, thereby promoting a new practice of fashion consumption.
This new and future 'phygital' scenario represents a strategic landscape through which service design could promote more sustainable fashion consumption practices. By developing innovative design products that follow current trends and languages, and keeping in mind the contemporary environmental emergency, it can also propose sustainable solutions for a greener and more ethical future, not limiting the desire of new generations to differentiate and communicate through clothing language but proposing a more sustainable and affordable alternative within everyone's reach.

CAPTIONS

[Fig. 01] Thrifting Virtual Community's contents on TikTok. The picture highlights the insights of the most liked contents.
[Fig. 02] Levi's SecondHand platform. Explanation of how the levi's service work
[Fig. 03] Detail of a bag rental price in the pop-up store ReSelfridges, in collaboration with HURR. Selfridges Mall London, March 2024

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COMMUNITY-DRIVEN CONSUMPTION DYNAMICS

AN ANALYSIS OF HOW CONSUMER PARTICIPATION IN FASHION RETAILING CAN STRENGTH SUSTAINABILITY

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Abstract

The challenge of overproduction in the fashion industry results in surplus clothing and significant environmental damage. This problem has arisen due to increased clothing production over the past two decades, despite a decrease in clothing usage. Unsold inventory can create financial burdens for brands due to storage and maintenance costs, often resulting in incineration or landfill use, further polluting the environment. Researchers have often focused on solutions for earlier stages of the supply chain. However, there is a growing interest in exploring the final stages regarding retailing dynamics as potential pathways towards a more sustainable future, specifically distribution and use, through Collaborative Fashion Consumption models of resale, rental, and subscription services. Conducting a case studies analysis, this paper analyzes the relationship between community involvement in retail practices and business commitment to sustainability. Within this research, the term 'community' refers to individuals who actively participate in retail activities, such as product authentication, promotion, price negotiation, and payment/delivery. The analysis identifies a business's commitment to sustainability through qualitative factors such as consumer education on circularity, financial support for sustainable practices, collaboration with partners, and development of progress tracking systems, aiming to investigate the interplay between community engagement and businesses sustainability efforts.

Keywords: *Collaborative Fashion Consumption; Community-driven Consumption; Sustainable Fashion; Fashion Retail; Circular Economy*

INTRODUCTION

The environmental and social impacts of the Fashion System, characterized by overproduction, overconsumption, and waste, have come under scrutiny. This relates to the fact that there is a discrepancy between the amount of clothing produced and the amount that is purchased. As a matter of fact, the *Circular Economy Strategies for Climate Action* report released in 2024 states that 400% more clothes are produced now than 20 years ago, yet clothing utilization has declined by almost 40%. Within this context, the existence of unsold inventory has noteworthy environmental and economic implications. Disposing of unsold clothing frequently involves incineration or landfilling, which contributes to pollution and textile waste. Furthermore, brands incur storage and maintenance expenses when they store unsold stock (Ellie Jin & Shin, 2020).

Although the fashion industry generates almost half a trillion dollars annually, it also produces a significant amount of waste, with most clothes ending up being incinerated (Delloitte, 2024). Regarding this, the European Union (EU) is spearheading a significant shift in the fashion industry towards sustainability. A 2022 strategy outlined the plan to move away from fast fashion and embrace a circular economy (CE), with a focus on producer responsibility and waste reduction (European Union, 2022). This vision is being translated into concrete actions through new regulations. Notably, a December 2023 initiative targets textile waste, aiming to make sustainable

products the norm. Key measures include holding brands responsible for their products' lifecycle (EPR), banning the destruction of unsold clothes, setting ambitious recycling targets, implementing transparent labeling, and investing in sustainable textiles and recycling technologies. These multifaceted efforts aim to revolutionize the fashion industry and minimize its environmental footprint (European Union, 2023).

However, research on retail practices within this complex system remains limited despite growing interest in sustainable fashion (Yang et al., 2017). Most current studies on this problem focus on the first phases of the fashion supply chain, including raw materials, design, and manufacturing phases, and not on the last part of the fashion supply chain, that includes distribution, use, end of product life. Within this context, Collaborative Fashion Consumption (CFC), such as resale, rental, and subscription services, could be potential solutions for sustainable fashion (Becker-Leifhold, 2018; Iran & Schrader, 2017), rethinking the end of life of fashion products while integrating the consumer as one of the key players in the dynamics of retail.

In the light of this scenario, this paper provides a conceptual overview of the current collaborative consumption fashion scene and related concepts, followed by a case studies analysis of Fashion Rental and Resale services to investigate the interplay between community engagement and businesses sustainability efforts.

CONCEPTUAL BACKGROUND

COLLABORATIVE FASHION CONSUMPTION & CIRCULAR ECONOMY

Changes in consumer behavior have led to a paradigm shift in the retail ecosystem, influencing the way companies engage and interact with potential clients. The shift, which has been accelerated by the Covid-19 pandemic, is influenced by the new generations of consumers, specifically Gen Z and Millennials, and their demand for sustainability (Jain et al., 2022). One of the areas that has been remodeled within this process of change is that of used clothes. A market that, while not new (Gregson & Crewe, 2003), has been reinvented by digital platforms that are themselves facilitating peer-to-peer (P2P) and Business-to-Consumer (B2C) business models. Used clothing services fall under the premise of Collaborative Fashion Consumption (CFC), first defined and classified by Iran & Schrader (2017) proposing a conceptual framework to assess its environmental impacts. The authors categorize gifting, sharing, landing, swapping, second-hand, renting and leasing services into P2P and B2C categories, as well into monetization factors and peer and corporate involvement.

Within this scenario, two types of services have emerged as prominent: Resale practices, often referred to as Second-hand (Gopalakrishnan & Matthews, 2018; Roussat et al., 2023) and Rental practices, frequently associated with Subscription services (Camacho-Otero et al., 2019; Day et al., 2020; Lee & Huang, 2020; Muylaert et al., 2022). The digital fashion resale market has a notable presence in Europe and the United States, and is experiencing remarkable growth, emerging as a significant force within the fashion industry. It involves the buying and selling of pre-owned clothing, accessories, and footwear, providing an alternative to traditional retail models. On the other hand, fashion rental services through digital platforms are less common in Europe and more common in the United States, those cases are mainly related to the rental of clothing for special occasions and luxury accessories or wardrobe rotation through subscriptions programs. Furthermore, Rental services are inherently more complex logistically than Resale, which involves a single transfer of ownership. Renting requires managing a larger inventory, fitting readjustment, and ensuring garment upkeep.

PSSS IN FASHION: CO-CREATION OF VALUES THROUGH COMMUNITY-DRIVEN CONSUMPTION DYNAMICS

Fashion Rental and Resale services are directly linked to the Product Service System (PSS) concept. The term was initially defined as a marketable set of products and services capable of jointly fulfilling a user's need (Goedkoop et al., 1999). Since its emergence, the term has gained new meanings, such as Sustainable Product Service System (S.PSS), an approach where the implications of the PSS can occur in three pillars of sustainability: economic, environmental or social (Vezzoli, 2017), but the PSS approach does not guarantee environmental and social improvements unless it is specifically designed for that purpose. Tukker (2015) argues that the most PSSs would probably lead to some environmental improvements, being product renting, sharing, pooling and functional PSSs probably the most promising ones. Still, the author affirms that most PSS modalities are not expected

to result in radical gains. Therefore, the PSS should be intentionally developed for the purpose of the CE, linking economic development to better use of natural resources through new business models. Moreover, the motivations of consumers to join fashion collaborative services are not yet fully understood due to the relatively short history and unclear boundaries of these platforms (Güçlü et al., 2023). However, consumers play a critical role in this scenario. Singh & Giacosa (2019) suggests that the state should be cautious in implementing the policies for CE and take a bottom–up and inside–out approach to CE, which begins with understanding how consumers perceive CE, its business model and how it is important for them. Consumers may favor CFC to fulfill hedonic motives, unless they are exclusively driven by the desire to consume more sustainably (Becker-Leifhold & Iran, 2018). Additionally, researchers often relate circular fashion models to Generation Z and Millennials (Jain et al., 2022), but Herold & Prokop (2023) highlights the importance of specific marketing and noting that older generations would adopt such practices, just more slowly. From a consumer point of view, the lack of a clear value proposition and information by the companies were identified as a concern, while the lack of cost-efficient and convenient reverse-logistics supply chains is a business concern (Becker-Leifhold & Iran, 2018).
There is a peculiarity in the retail practices of fashion Resale and Rental platforms. In some of these services, the consumer becomes an active participant in the retail process, rather than just a recipient, dynamic defined by Fehrer & Wieland, (2021) as *social-collaborative loops*. Consumers drive fashion retailing practices, shaping a complex value chain, the rise of sustainable consumption, fueled by digital engagement, offers opportunities for a more responsible fashion system, though awareness doesn't always translate to action (Brewer, 2019). The emergence of *social-collaborative loops* challenges traditional consumer models. Customers are active participants in the co-creation of consumption systems. This paradigm shift requires a focus on open and collaborative governance structures to fully exploit the potential of these loops. Sharing platforms exemplify this concept, where different actors collectively govern practices (Fehrer & Wieland, 2021).
Furthermore, both businesses and consumers face various barriers when engaging in access-based consumption models (Becker-Leifhold & Iran, 2018; Singh & Giacosa, 2019). Businesses grapple with logistical challenges, inventory management, and potential damage risks. Consumers, on the other hand, might encounter concerns around limited selection, sizing availability, and potential hygiene issues associated with the clothes cleaning logistics.

METHODOLOGY

The structure of this article consists firstly of a theoretical background, conducted through a literature review, followed by the analysis of case studies. A total of 57 cases were analyzed, with 35 focused on resale and 22 on rental services.
To provide a more detailed analysis, the author selected 7 resale and 5 rental cases for in-depth examination, described in the next session. The selected cases are those that demonstrated not only a greater presence in the market, but diversity in terms of community involvement in retail practices, providing an analysis that encompasses different types of collaborative platforms.
The analysis aims to explore the influence of community involvement in retail processes as a fundamental aspect that enhances the sustainability of the fashion industry, specifically examining digital platforms (acting as e-commerce/marketplaces) related to Resale and Rental within the field of CFC. Other services within the broader concept (gifting, sharing, swapping and leasing) although considered, are not deeply examined. Furthermore, 'traditional' initiatives - those that primarily operate through physical locations rather than digital platforms - are excluded from the research. Transitions made through groups on social networks, such as Facebook and WhatsApp, are also not considered. The cases examined in this study primarily relate to the European and United States markets and have geographical limitations. Therefore, this analysis does not focus on markets in Central and South America, Africa, or Asia.
The analysis mainly investigates the relationship between community and involvement in retail practices and businesses sustainable commitment. In this context, community refers to the consumer/user who participates in retail practices.
The qualitative parameters to identify community involvement in retail practices are:

- Retail actions in which the community is involved, namely: Authentication; Item Promotion; Price Negotiation; Payment; Delivery; Hygienisation and Returns. This

parameter aims to understand how much involvement is the consumer in practices that traditionally are conducted only by the retailer.

The qualitative parameters to identify sustainable commitment are:
Advocacy: Consumers education through awareness about circularity options and their benefits.

- Actions: Financial support to businesses developing and implementing circular solutions; Collaboration with various stakeholders across the supply chain to drive systemic change; Infrastructure enhancement by establishing systems and processes to support and scale circular solutions.
- Transparency: Technology and metrics development, creating tools and standards to measure and track progress towards a circular textile industry.

FINDINGS

As Resale and Rental markets become increasingly important in the Fashion Retail industry, there is a corresponding trend to meet this demand. Start-ups have been established to moderate the P2P dynamics of Resale and Rental transactions. Meanwhile, fashion businesses, including well-knowing e-commerce marketplaces, leading fashion labels, luxury brands, and fast-fashion retailers, are striving to adjust and enhance their offerings. The luxury market continues to be the most targeted segment in the resale and specially in the rental context. This is due to the superior quality standards and longevity of luxury items, as well as their high prices, which make them exclusive to specific social classes. Additionally, certifying the authenticity of luxury goods poses a challenge, leading to the emergence of authentication as a distinct service to address this issue.
The market for CFCs is closely linked to social and environmental sustainability, often referring to circular business models. However, the fashion industry is a complex and highly polluting system, with much of the blame lying on the mass market segments due to constant overproduction and overconsumption. In contrast, fast-fashion brands like H&M, Zara and Shein have recently introduced resale services which raised debates, since these brands adopt linear models and are often related to the social-environmental problems within the fashion system.

This Case Studies Analysis divides Resale and Rental platforms into three main groups: Independent Platforms, Brand-owned Platforms and Resale/Rental Services Integrated into Existing Platforms, exploring the influence of community involvement in retail processes as a fundamental aspect that enhances the sustainability of the fashion industry.

FASHION RESALE

This section examines seven fashion retail platforms: Vestiaire (2009), Vinted (2008), ThreadUp (2009), Depop (2011), Pangaia Rewear (2021), Zara Pre-owned (2022), and Farfetch Second Life (2019) (fig. 01). The first four, representing Independent Platforms, are well-known P2P European and North American platforms. The fourth and fifth regards Brand-owned Platforms. From one side, the known fast-fashion Zara, and the other Pangaia, a brand that embodies sustainability and is dedicated to making a positive impact on the environment. Finally, Farfetch illustrates Established Platforms that integrated resale services.
Vestiaire, Vinted, ThreadUp and DePop are the examples that have the highest level of community participation regarding the resale market, where they are active in resale retailing activities such as item promotion, price negotiation and shipment. As P2P platforms, user interaction reinforces the concept of community, even if it is mediated by the platforms. When it comes to their commitment to sustainability, Vestiaire declared a 'Fight Against Fast Fashion' in 2023, pledging to gradually remove garments from this segment from their platform. Otherwise, they promote sustainability by minimizing their environmental footprint through reduced packaging and local deliveries, as well as educating consumers on responsible shopping practices. They're also committed to influencing broader industry reform by partnering with leading brands and organizations working to create a more sustainable fashion system, such as the Ellen MacArthur Foundation, the UN Fashion Alliance, ParisGoodFashion and the prAna movement.Vinted instead, released its first "Climate Impact Report Summary" in 2023, teaming up with Vaayu (automated carbon software for retailers to measure, monitor and reduce their carbon footprint) to analyze the climate impact of shopping second-hand fashion of the platform. In addition to advocating sustainable practices, the "Vinted Go" was created in 2022, a locker where the

seller and buyer can deliver/pick up their parcels entrusted to the Vinted Go service. The initiative aims to reduce carbon emissions compared to home delivery, while improving the sales and shopping experience by making it more convenient. Furthermore, Depop released its first ever sustainability in 2021 plan outlining the actions the company will take to address its impact. Now, part of Etsy Inc., it has deepened its commitment to a sustainable future with the new Impact Goals, which include a Net Zero goal that aims to reduce carbon emissions, including sourcing 100% of electricity from renewable sources to power their offices globally; helping sellers reduce emissions from the packaging they use to ship orders, through both reused packaging and more sustainable options and support of policy solutions aimed at helping to drive carbon reduction from product delivery in the long-term. In addition, they are members of Tech Zero, a group of tech companies of all sizes who are committed to fighting the climate crisis.

Finally, ThreadUp is focused on advocating in favor of Second-hand consumption, James Reinhart, the Co-Founder & CEO of the platform affirms that their mission is rooted in circularity. In addition to annual reports with quantitative data on the collaborative fashion market, the platform also offers consultancy via the business model called Resale-as-a-Service (RaaS), partnering up with other companies to handle the resale of those companies' products.

Community interaction on Brand-owned Platforms is different from P2P approaches. The buyer or reseller of the garments participates in the retail actions but interacts directly with the platform, not with other buyers or sellers. This approach raises two different positions on the commitment to sustainability. On one hand, Zara, a brand with a fast-fashion production model that is incompatible with circularity, is attempting to enter the collaborative fashion market by declaring its "commitment to a more sustainable model", In the other hand, Pangaia, launched its "Rewear" platform, proposing an interesting use of QR codes as part of authentication process, allowing the customer to be her/his own product authenticator in the process. However, despite being a brand with a sustainable focus, especially in the use of innovative raw materials, it is not highly committed to disseminating data or

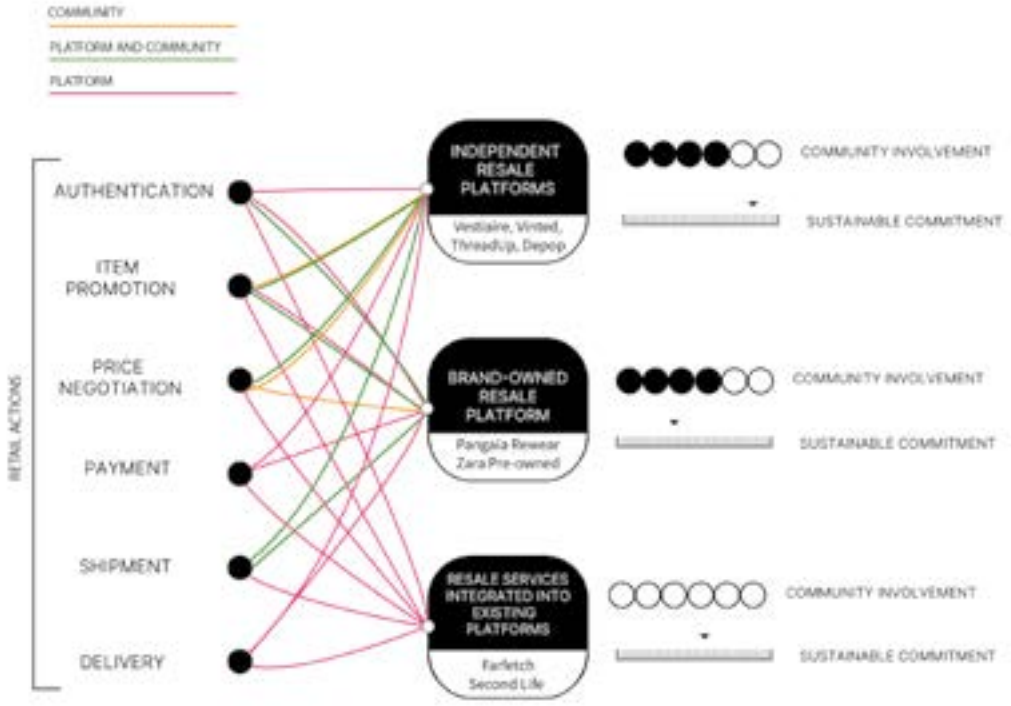

Fig. 01

promoting awareness of the fashion market. Implementing reseller services on existing B2C platforms can be challenging. In 2018, the e-tailer Zalando launched its Zircle app, which expanded into markets across Europe to meet the increasing demand for second hand, but in 2022 the service was discontinued. In the case of Farfetch Second Life, Retail practices are controlled by the platform, as it purchases the items approved for resale, thereby ending the interaction between the original owner and the buyer. Regarding sustainable commitment, FARFETCH has implemented the 'Positively FARFETCH' initiative, which involves a partnership with the 'Good On You' agency to label sustainable products as 'Positively Conscious', the company has annually released a sustainability report.

The analysis of the Fashion Resale market reveals that independent platforms exhibit the highest level of consumer engagement and commitment to sustainability. This is unsurprising given their P2P business model, which places a special emphasis on the user/consumer. Meanwhile, fashion brands that are already established in the market with a B2C approach are attempting to meet the new sustainable demands by offering second-hand services. However, their practical actions in this regard are limited compared to independent platforms. Furthermore, e-commerce platforms attempting to adapt to the new collaborative fashion market face the challenge of promoting awareness through the resale service itself, they often justify its implementation as part of a previously established sustainable plan.

FASHION RENTAL

This section analyzes five fashion rental services (fig. 02): By Rotation (2019), HURR (2018) and My Wardrobe HQ (2019) represent Independent P2P Platforms, the most common typology in this type of service. Next, Nully (2019) is analyzed as a Brand-owned Platform and Selfridges Rental (2021) as a rental service integrated to an existing platform.

By Rotation, HURR and MY Wardrobe HQ have a high level of community engagement. These platforms open up space for users to promote, negotiate and ship the item themselves, in some cases also the sanitization is in charge of the owner. In this type of CFC service, the platform is a mediator for the retailing dynamics.

Since 2019, By Rotation's mission has been to extend the life of clothing by fostering a P2P rental platform. Recognizing that consumers want to understand why and how P2P fashion rental goes beyond affordability, the platform offers a feature called 'The Impact Scale', which tracks the positive savings made by renting rather than buying.

They have also partnered with aftercare specialist BLANC to offer our users a sustainable alternative to dry cleaning and encourage them to repair and restore items to extend their lifecycle. In September 2020, By Rotation joined the Sharing Economy UK. In addition, all By Rotation hire items are packaged in compostable mailer bags, which have a secure seal and double-faced adhesive, allowing them to be reused.

HURR, on the other hand, became the world's first fashion rental platform to achieve B Corp status in 2023, a highly demanding certification that evaluates our social and environmental performance, transparency and accountability. Additionally, in partnership with CoGo, a Carbon Savings Calculator was created, showing the environmental savings from renting compared to the environmental costs of manufacturing those same items for the first time and wearing them once. Regarding My Wardrobe HQ sustainable actions, it works with brands to give unsold stock a second life, diverting it from landfill and educating consumers about the environmental benefits of quality, long-lasting clothing. To fully address the carbon footprint, they plant a tree with every hire or sale, offsetting the environmental impact of each transaction.

Furthermore, the presence of Brand-owned platforms is not yet so common, but Nuuly can be considered a relevant case even though it presents a high limitation on community interaction. Nuuly is part of URBN (a portfolio of global consumer brands) and has a considerable commitment to sustainability, for the cloths hygiene process , they use a non-alkaline and phosphate-free cleaning solutions in our wet washing process, which are gentler on the environment than household laundry detergents. They also ensure diverse representation of models in race, size and age, enacting high standards for diversity across all their social channels. Besides that, URBN is the new home for FABSCRAP's Philadelphia fabric recycling plant, helping expand their reach and reduce commercial textile waste. Finally, a report shows how the URBN family of brands applies creative thinking to environmental and social responsibility.

As with reseller services, it's not common to find

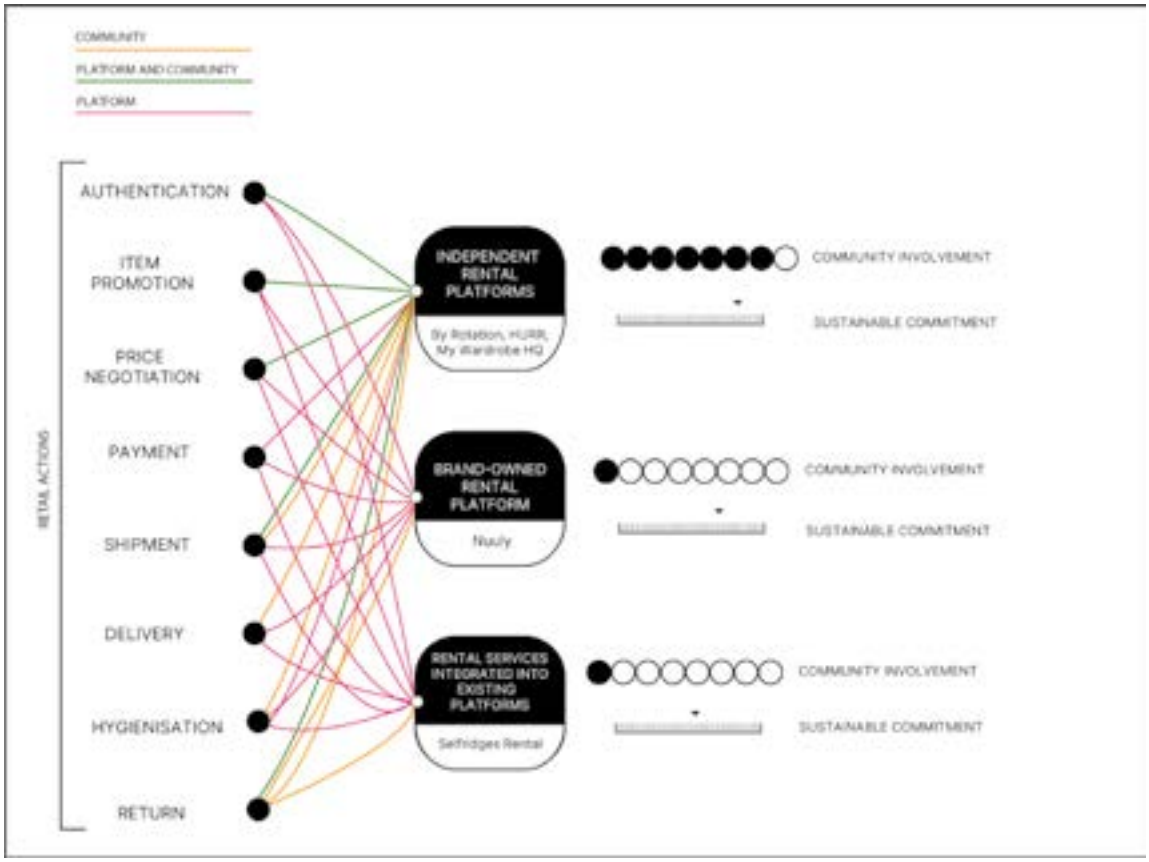

Fig. 02

relevant cases where rental services have been added to existing platforms. Selfridges Rental is a service offered by the department store Selfridges that enables customers to rent designer clothes and accessories instead of purchasing them. This service, which has a B2C approach, is part of their Project Earth initiative, which prioritizes sustainable shopping experiences. The retailer affirms that 45% of their transactions will come from circular products and services by 2030 and that they will achieve net-zero carbon emissions across the business by 2040. Overall, there is a strong commitment to meet sustainable demands. Compared to fashion resale services, fashion rental services demonstrate a stronger commitment to sustainability. Independent platforms, which use a P2P approach, are founded with sustainable intentions, and seek to promote circular fashion, sustainable packaging and shipment, and collaboration with institutions and companies to create a more sustainable fashion system. Besides that, they also have a high level of community involvement. Fashion brands already established in the market do not tend to expand their own platforms with resale services, and the case analyzed in this article shows little community engagement in retail practices, despite having a considerable commitment to sustainability. The same applies to well-established e-commerce/marketplace platforms, where the commitment to sustainability exists, but community involvement as an integral part of retail practices is limited.

CONCLUSION

This research explores the correlation between a community's participation in retail activities and a business's dedication to sustainability. The term 'community' is defined as those who are actively involved in retailing actions, including verifying product authenticity, promoting products, negotiating prices, and completing transactions. The author analyzed factors such as a business's efforts to educate customers on the circular economy, financial support for sustainable practices, collaboration with other businesses towards sustainability, and development of progress tracking methods. The analysis reveals that independent platforms with a P2P approach have the highest community involvement and commitment to sustainability in the fashion resale and rental service sector. Furthermore, renting is promoted alongside a greater number of sustainable practices and discourses.

This study contributes to research on the collaborative fashion market and aims to broaden perspectives on retail practices as a solution to the

problems presented by the fashion system.

CAPTIONS

[Fig. 01] Elaborated by the author; Scheme of Fashion Resale Platforms Analyses

[Fig. 02] Elaborated by the author; Scheme of Fashion Rental Platforms services Analyses.

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KNITWEAR CONSUMERS, COMMUNITIES AND MAKERS

REDEFINING FASHION ENGAGEMENT

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Abstract

Mutable trends and a dynamic interplay between the past, present, and future characterize the contemporary fashion industry. Knitwear, a sector deeply rooted in tradition, is experiencing a resurgence and is becoming pivotal in bridging creation and consumption, challenging traditional fashion norms, and empowering individuals to engage with fashion as a form of self-expression, activism, and community building.
The article employs a qualitative research approach and focuses on contemporary sources to analyze the sector's response to changing consumer preferences, technological advancements, and global events, as well as to understand how knitwear embodies the significant paradigm shifts of our days. The analysis highlights knitwear's transformative potential in questioning consumers' position by fostering creativity, sustainability, and ethical and collaborative practices. Knitwear emerges as a dynamic space where cultural innovation thrives through a blend of heritage craftsmanship, modern design aesthetics, and technological advancements.

Keywords: *Fashionscapes; Knitwear Sector; Individuals and Community; Creation and Consumption*

MUTABLE FASHION IN MUTABLE TIMES

The inability to define the contemporary has made it challenging to determine the future, altering our perception of time. Agamben (Fiorani, 2020) addresses what it means to be contemporary by suggesting that it is not about aligning with the present but rather about a transversal stance, a disconnection, a time lag, an anachronism. The contemporary individual is one who, by dividing and interpolating time, can transform it and relate it to other temporalities. We live in a time where the present and the past constantly influence each other, redefining our desires and needs.
Fashion inherently tends to change; it is mutable, generating change and evolving from constant change, often referencing and re-referencing the past in the present to envision the future. "The creative processes are characterized by flexibility, which involves considering multiple solutions to a problem, fluidity, meaning the frequency and ease with which multiple ideas are generated, and the development and refinement of an effective strategy in problem-solving by evaluating and selecting available opportunities" (Fiorani, 2021, p. 130). In a complex context and an ever-evolving society, fashion and all its related sectors must be reinterpreted as *fashionscapes* (Calefato, 2021). These *fashionscapes* increasingly demonstrate the interconnectedness between everyday styles, domestic and laboratory clothing production forms, and an unpredictable network of exchanges,

translations, and fusions among fashion symbols circulating in the social imagination through digital media.

In this scenario, the knitwear sector is rediscovering itself as an area where the culture of craftsmanship—the essence of modern and contemporary work—intersects with products capable of narrating the here and now using primarily traditional techniques within an industry undergoing technological advancements. In knitwear, the fusion of artisanal craftsmanship (Conti & Franzo, 2020) with technological research to produce innovative solutions is paramount: "For knitwear, the innovation and update of industrial manufacturing processes led to a production made by numerical control machines (CNC) where the technological contribution and the level of automation are very, and the convergence of physical and digital environments, at the heart of the Fashion Industry 4.0 debate is an established feature of knitwear design practice" (Motta et al., 2024, p. 706). The discourse on products is no longer necessarily linear; often, an image, a touch, or a gesture is enough for storytelling to draw from the wealth of knowledge deposited in cultural heritage. "It can emerge as an original narrative using hybrid communication channels that blend analog with digital and virtual realms" (Calefato, 2021, p. 58)

METHODOLOGY

This article combines the exploratory and qualitative aspects (Creswell, 2014; Bauer & Gaskell, 2000); consequently, the research uses a multi-method approach by investigating the current representation of the knitwear sector from a systemic perspective. The investigation is framed in the European area, where the authors' research activity is situated. Consequently, the selected sources and the case studies belong to this area. However, they do not leave behind the links they may have with other countries with similarities in market dynamics and cultural influences, like North America.

The methodology used combined Grounded Theory (Glaser & Strauss, 2017) and the observation of the results (Kawamura, 2015; Denzin & Lincoln, 2006) by the most authoritative contemporary observers (AA.VV., 2024) with qualitative case studies. The aim is to build a qualitative picture of the European knitwear production sector, of the evolving role of consumers in it, and of its relation with the paradigm shifts of contemporary times.

THE SPACE FOR KNITWEAR IN CONTEMPORARY CONSUMPTION

As already stated in the Introduction, the inteThe textile and apparel industry has been integral to Europe's economy for centuries, with a rich heritage of craftsmanship and innovation. Italy, with its long-standing tradition of excellence in fashion and textile production, has emerged as a leading hub for knitwear manufacturing and design. Data highlight the sector's impact on the global market landscape: in Europe, the value of knitwear imports is estimated at €25.8 billion (The European market potential for knitwear | CBI, s.d.) in 2022, while exported knitwear worth €18.5 billion, with an average annual rate of 9.7% between 2017 and 2022 (Knitwear Market, s.d.). The market dynamics indicate a positive outlook for the industry with opportunities for growth in various segments like outerwear, innerwear, sportswear, and others, all areas worth exploring for knit designers.

These opportunities are reinforced by the recorded significant shift in consumers' preferences towards healthier lifestyles that propel comfortable, home, low-luxury clothing and the technical outdoor (The State of Fashion, 2024), all categories perfectly embodied by knitwear. These fashion segments match well with the latest knitwear technologies, which allow the design of engineered garments that offer performative solutions at the edge between functionality and style.

However, are these the only reasons why people appreciate knitwear?

We can state there is much more. Aside from mere market data, knitwear is positioning itself at the intersection of traditional ways of consuming garments and new emerging perspectives.

The public is moving towards a slower, more attentive, and more engaged way of consuming, demonstrating an interest in the process of making besides the product itself. An exemplary case is Artknit's production and offerings. "Through a digital platform and a 100% digital brand, Artknit ensures direct access, without intermediaries, to the purchase of high-quality garments (cashmere, extra-fine merino wool) with modern and timeless designs. Artknit produces on-demand and ships directly from partner knitwear factories to customers' homes, thus ensuring a luxurious, sustainable product at affordable prices" (Conti & Franzo, 2020, p. 132). Alternatively, consider Rifò (Vezzoli et al., 2022), which started as a social and

sustainable project with the idea of creating a line of garments made in the textile cluster of Prato with recycled materials and giving a part of the profit to local NGOs. Rifò was born as a project, and we are progressively shifting towards a more design-oriented fashion brand, with the intent to propose products at an affordable price, with sound design development, and with values behind them, cultivating both the social and environmental aspects. As Niccolò Cipriani said (Motta, in Vezzoli et al., 2022, p. 65), "There is a lot of attention and interest in the process and the benefits, even if the end customers are always looking for something well done but at an affordable price. The attention of the final customers is growing faster".
The birth and raising of such realities demonstrate the existence of new attention that allows the blurring of boundaries between products, processes, consumers, and makers.

KNITWEAR AS A PRIVILEGED CONTEXT TO EXPAND THE BOUNDARIES BETWEEN CREATION AND CONSUMPTION-ACKNOWLEDGEMENTS

A new condition where boundaries are blurred is advisable, but it is still subtle. The reality still presents an overcrowded market where understanding the dynamics that influence consumers' tastes is mandatory, and crucial for businesses that must meet demands and stay competitive to survive. This is true for any fashion business and any knitwear designer and company, forced to generate the new while constantly monitoring a complex interplay of factors that regulate consumption patterns: fashion trends, seasonal demand, material preferences, pricing, sustainability concerns, and technological advancements.
Let these factors alone guide design decisions. In that case, we run one of the main risks of the contemporary fashion industry, namely leaving aside the cultural contents to follow the market demands, resulting in collections heavily entrusted to data and guidelines provided by merchandising. In an ideal scenario, designers' creative contribution should balance the market's requests. However, today's fashion industry tends to prioritize merchandisers' and buyers' work, which is driven by data analytics, market research, consumer behavior insights, and sales forecasts to meet market demands and generate profits. Inherently linked to societal values, cultural influences, historical references, and individual expression (Smith, 2018), the work of designers used to influence cultural icons and challenge gender norms (Jones, 2019), making fashion a force of change for cultural cues (Armitage & Roberts, 2016) and a shaper of contemporary landscapes. However, in such a merchandise-driven system, designers need to retain the role of cultural mediators they used to hold.
If, in big companies, the cultural content of fashion is being jeopardized by merchandising, we need new spaces for designers to be cultural sense-makers, finding new ways to explore untrodden paths, and detecting trends that arise in contexts other than traditional ones. Not least, we should question the role of consumers themselves, as they hopefully will change from consuming fashion to choosing consciously what to buy, eventually not anymore – or not only– buying it but co-designing and making it in multiple ways. A transformative path from consumers, through customers, to contributors.
When observed from a broader perspective on the contemporary, we can see such changes in the practices, attitudes, and roles of consumption as expressions of the main transformative paradigms of the modern: sustainability, digitalization, and the human need for interconnectedness and mutual support (Haraway, 2003).
Restarting from this broad view, the following paragraphs of the article provide an interpretation of the three paradigms through the lens of knitwear designers, makers, and users, to understand how their practices represent opportunities to meet a new contemporaneity. This is where the above-cited cases of Artknit and Rifò find even more space and relevance. The following section frames the relation between the three paradigms and the essence of knitwear, and subsequently supports the thesis through additional case studies classified in five relevant categories.

KNITTING IN THE PARADIGM SHIFTS OF THE CONTEMPORARY: CASE STUDIES AND DISCUSSION

Born as a manual practice passed from hand to hand through generations, knitwear has transitioned into public spaces and gained popularity in recent years, evolving from a traditional craft to a trendy practice that resonates with individuals seeking a sense of creativity, accomplishment, and community building. From here, knitting has become a means of self-expression, activism and empowerment, and action

towards sustainability, especially among younger generations who are increasingly conscious of fast fashion's environmental and social impact (George, 2020). The rise of social media platforms has facilitated the formation of solid knitting communities where individuals can connect, share their creations, and engage in discussions. Overall, knitting and knitted products have transcended stereotypes and, alongside they belong to a flourishing industrial sector, they easily connect with individuals in many forms and thus hold substantial potential for cultural innovation made by individuals themselves, on society and products. They are a fertile ground for people to relate and experiment with the contemporary, above-listed paradigm shifts. First, sustainability – both environmental and social –is met with self-production, mending, upcycling of old garments, and the diffusion of knitting as a practice for well-being and preserving heritage. Second, digitalization deals with intelligent manufacturing technologies, innovative software, digital environments, and spacing from large-scale industries to independent makers. Third, human connectedness, with knitting communities that recall the definition of creative community as described by Meroni (2007): a collaborative context where creativity happens on-field, with common characteristics: "a nonrhetorical view of reality, a positive even cheerful attitude, and an intrinsically entrepreneurial spirit (and courage)" (ibid., p. 10). This sense of community, together with courage, naturally opens space for dialogue and confrontation, generating social commitment and several forms of non-violent activism (Greer, 2008).

This experimental attitude moves more from individuals with their cultural identity rather than from the market data. Moving into the space of action created by knitwear, people are free to experience and experiment with all the above-cited aspects interconnected, detaching themselves from being mere consumers and becoming aware makers. Following these considerations, the following section reports cases where, thanks to the opportunities generated by the traditional features of knitting and the most updated tools of contemporaneity, we see boundaries blurring and opportunities rising.

The five case studies represent five knitwear phenomena that are either pulled by individuals or impact individuals' consuming behavior. They have been selected as they belong to the knitwear scenario and strongly depend on the typical features of knitting practices, techniques, or technologies.

Each carries elements connected to all three paradigm shifts: albeit at a different balance, each case pursues environmental and/or social sustainability, exploits and promotes digital innovation, and enhances and leverages human connectedness.

CREATIVE KNITTING COMMUNITIES

Free from market constraints, knitting creative communities dare to experiment with new techniques, textures, patterns, and silhouettes, introducing fresh and unique concepts to the market that then absorbs some of them. They foster collaboration and knowledge-sharing among designers, artisans, manufacturers, and consumers; they create platforms for networking, education, and skill development, nurturing a supportive ecosystem that benefits the entire knitwear industry. Moreover, creative communities play a vital role in preserving cultural heritage and traditional craftsmanship in regions with rich knitting traditions. They celebrate indigenous knitting techniques, patterns, and motifs, ensuring continuity and relevance in contemporary fashion. An example in this sense is the Oomingmak Musk Ox Producers' Co-operative in Alaska[1].

This cooperative is dedicated to promoting the use of qiviut, the soft underwool of the musk ox, in traditional Alaskan Native knitting practices. The cooperative works with indigenous knitters who create intricate and culturally significant garments using qiviut yarn, blending traditional designs with contemporary styles. By incorporating qiviut into their knitting projects, these artisans not only preserve the cultural heritage of Alaskan Native communities but also support sustainable practices and economic development within these communities.

Although not situated in the European territory, this case is a best practice among the initiatives taken by creative communities and is relevant to the European market when we observe it is increasingly fascinated by traditional artifacts from remote countries, too often superficially labeled as "ethnic" or "exotic", with no further question or cultural investigation. We see the importance of such initiatives, which serve as proof of the existence of diverse cultural heritage, as a catalyst for an aware

1 https://www.qiviut.com/ last accessed March 14th, 2024

dialogue between cultures, and as a limitation to the risk of cultural appropriation.

Sustainability °°°

Digitalization °

Human connectedness °°°°°

KNIT ACTIVISM

As a ready-to-practice technique, knitwear products are often used as communication vehicles for societal messages by activist movements (Myzelev, 2009; Greer, 2014). Born as protest objects, knitted handworks usually find space on catwalks and spread on the market, influencing mainstream fashion trends.

It was the case of the *Pussyhat*, a symbolic knitted pink hat that gained prominence during the *Women's March* in 2017. It became an iconic representation of women's rights, gender equality, and solidarity. The *Pussyhat Project*[2] was diffused through the web and encouraged people to knit pink hats and wear them during protests to make a visual statement for women's empowerment and social justice. The Pussyhat ended up on Missoni's catwalk during Milan Fashion Week in 2017 (Okwodu, 2017) as a powerful statement of solidarity and activism while adorned with Missoni's signature zigzags and stripes. The show began with models wearing these iconic hats, setting a political tone from the start and emphasizing the collection's protest theme. The fashion show became a platform for activism and solidarity, and the symbolic hat became a fashion product carrying its power and meaning.

The seamless transition of the Pussyhat from a protest symbol to a high-fashion runway piece exemplifies the power of knitwear as a medium for social commentary and activism. Its journey from the Women's March to the Missoni catwalk underscores how fashion can transcend mere aesthetics and become a potent platform for amplifying societal messages. By embracing the Pussyhat's symbolism and incorporating it into their collection, Missoni demonstrated solidarity with the cause and elevated the garment's significance, transforming it into a statement piece that carried the weight of its origins. This symbiosis between fashion and activism highlights the industry's potential to catalyze change and inspire dialogue on pressing issues, ultimately using creativity as a force for positive impact.

Sustainability °°°

Digitalization °

Human connectedness °°°°°

CUSTOMIZATION AND PERSONALIZATION

Suitable to be handmade, knitted garments are great for open spaces for customized and personalized options, catering to individual tastes and preferences. They empower consumers to express their creativity and individuality through bespoke designs, made-to-order services, and DIY knitting patterns.

Among others, *Unmade*[3] is a relevant experiment as it offers mass customization through digital technologies. It enables customers to design and order custom-made jumpers, scarves, and other knitted products without minimum order requirements, making factory production accessible to everyone. Thanks to the ultimate knitting technologies, *Unmade*'s approach challenges traditional fashion production methods and empowers consumers to participate actively in the design process, fostering a deeper connection with the garments they create. By eliminating the need for stock holding and minimizing textile waste, *Unmade*'s mass customization approach also promotes sustainability within the fashion industry. This consumer-centric model represents a paradigm shift, where individuals become decision-makers, and their creativity is celebrated. As the demand for unique, personalized products continues to grow, such innovative concepts will undoubtedly shape the future of fashion, harmonizing self-expression with environmental consciousness.

Sustainability °°°°

Digitalization °°°°°

Human connectedness °°°

SUSTAINABILITY AND ETHICAL PRACTICES

By prioritizing eco-friendly materials, artisanal craftsmanship, and fair labor practices, knitwear communities and producers are at the forefront of promoting sustainability and ethical practices in the sector. Knitwear allows sustainable practices also

2 https://www.pussyhatproject.com/ last accessed March 14th, 2024

3 https://www.unmade.com/ last accessed March 14th, 2024

for bigger industries that are recently exploiting technology to reduce costs and relocate production where working conditions are safe, and wages are fair, also saving time and transport, with their harmful emissions for the environment.

Benetton's project *TV31100*[4] leverages Wholegarment knitting technique to increase the efficiency in knitwear production by eliminating yarn wastage and reducing environmental impact. The result is seamless pullovers of high quality and comfort, sustainable in two respects: first, environmentally, as there is no waste of yarn; second, ethically, as the technology optimizes the ratio revenues-costs, decreasing the time of production and increasing automation, resulting in the opportunity for the company to relocate part of the production in Italy, where working conditions and wages are regulated by laws that respect human rights.

These technological advancements demonstrate how innovative knitting techniques can enhance efficiency, reduce waste, and minimize environmental impact. This holistic approach exemplifies the industry's potential to harmonize environmental consciousness with ethical considerations, paving the way for a more responsible and sustainable future for fashion.

Sustainability °°°°°

Digitalization °°

Human connectedness °°°

DIGITAL INNOVATION

With the rise of digital platforms and social media, creative communities leverage technology to showcase their work, engage with audiences, and facilitate direct-to-consumer sales. Online marketplaces, crowdfunding platforms, and social commerce channels provide new opportunities for independent designers and small-scale artisans to reach a global audience.

Kniterate[5] is a pioneering company that has introduced the digital knitting machine concept to transform how knitwear is designed and produced. The aim is to overcome the barrier of industrial knitting machines – complexity, expensiveness, dimensions – by providing a computer-controlled and easy-to-operate machine that can be used by individuals. This represents an opportunity for hand-knitters to converge towards the makers' world and for small businesses to start small productions with sustainable costs.

By making computer-controlled knitting accessible to individuals and small businesses, Kniterate has bridged the gap between handcrafted and industrial production, fostering sustainable and cost-effective manufacturing. This innovative approach not only celebrates the convergence of traditional craftsmanship and modern technology but also paves the way for a more inclusive and diverse knitwear industry.

Sustainability °°°°

Digitalization °°°°°

Human connectedness °°°°

CONCLUSIONS

As shown by the case studies, knitting, as practiced by individuals and creative communities, contributes to market diversification by offering the opportunity to experiment with more sustainable products and digital technologies, spreading into new market niches. Whether it is avant-garde knitwear for high fashion enthusiasts or handmade artisanal pieces for conscious customers, they expand not just the range of options available in the market but also the spaces people have to innovate their tastes, choices, and roles. Precisely due to the inherent characteristics of knitwear, individuals and communities hold a unique and multifaceted role in driving innovation, sustainability, and inclusivity within the distinctive sector that knitwear represents. By fostering creativity, collaboration, and community engagement, they contribute meaningfully to the industry's growth and evolution.

Suppose we do not want the marked-driven approach to jeopardize creativity. In that case, the case studies demonstrate that there is space to experiment with an opposite mindset, collecting what is proposed from the bottom in an enlarged bubble-up theory. The trickle-up effect of fashion consumption, first described by Paul Blumberg in the 1970s, here does not concern just product aesthetics and cultural facets but is transferred to new modalities, practices, and motivations for making and owning.

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CONSUMER CULTURE

ECONOMY OF THE EPHEMERAL

BLOOM AND DECAY IN TIME-CENTRIC CONSUMERISM

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Abstract

This paper explores fashion as the 'Economy of the Ephemeral', focusing on the cyclical and impermanent aspects of fashion through the scope of consumerism. Chapter I, 'Bloom,' analyses the historical roots of fashion's seasonal system and its evolution into a rapid, ever-changing matter. It delves into the profound impact of technological advancements and production innovations, which have not only accelerated fashion's cycles but have also fostered a disconnection from the natural rhythm of seasons, profoundly altering the ecological landscape. Chapter II, 'Decay,' focuses on the Maison Martin Margiela *9/4/1615* exhibition, held at the Boijmans van Beuningen as a case study for the impairment of fashion matter. The exhibition presents a time-based narrative that explores the interactions between living organisms, materials, and the museum environment. This paper offers a comprehensive exploration of the interplay between time, consumerism, and the impermanence of fashion. Therewith it encourages a deeper understanding of the cyclical patterns that extend beyond the traditional notions of bloom, and aid in encompassing the significance of decay.

Keywords: *Cyclical patterns; Perpetual Renewal; Planned obsolescence; Consumer behaviour; Material agency*

PERPETUAL RENEWAL OF FASHION CONSUMERISM

Fashion's economic framework flourishes within the perpetual cycle of creation, consumption, and disposal of garments, placing significant emphasis on the transient nature of trends. This ephemeral quality cultivates a sense of time scarcity, fuelling impulsive and immediate consumption behaviours. As a result, a severe neglect of the long-term consequences of consumer choices and their impact on their surroundings and other non-human entities involved has emerged.

Fashion as an economy of the ephemeral highlights the cultural significance attributed to the temporariness of novelty through monetary means, and how this shapes consumer behaviours accordingly. This paper seeks to explore how fashion's mechanism of perpetual renewal is intertwined with time from a consumer-oriented perspective. This by focusing specifically on two principal life cycle phases: bloom and decay.

In part I 'Bloom', a trans-historical analysis of the seasonal system of timekeeping is made by analysing the correlation between fashion's value creation and its ongoing cycle of bloom and decay. This will be explored further by connecting this analysis to theories on neoliberal economics and production methods through the lens of modernity, explaining how these developments have contributed to the advent of the Anthropocene. Part II: Decay will extend this analysis by discussing designers who use the temporal dynamics of

fashion to critique consumer culture. For this, the 9/4/1615 exhibition by fashion designer Martin Margiela, showcased at the Boijmans Van Beuningen Museum in 1997, will be used as a case study. This exhibition presents a time-based narrative founded on the construction of Western value ideologies.
This exhibition not only symbolises the ecological-philosophical concept of a metamorphosis between bloom and decay, but also demonstrates how fashion can function as a social critique that questions the economic system and proposes a design approach that's more holistic in tune with nature. This paper will utilise this exhibition to formulate a discussion regarding eco-politics, material agency, and how this could influence consumer perspectives and value determination.

BLOOM

Fashion's essence may be elusive; however, its structure is periodical and, in certain ways, rigid. Historically, the fashion industry has aligned its production and distribution logic with the temporal measures of nature, particularly in the designation of (Western) seasons (Evans & Vaccari, 2020, p. 50). This seasonal thinking has legitimised the periodic creation of styles in the fashion industry. Even more pronounced than adhering to a seasonal rhythm, fashion operates in cycles. It begins with the abstract concept of newness, which then materialised through the commodification of garments. These garments are subsequently consumed and ultimately discarded. This cycle is then perpetuated by the emergence of a successive style that renders the current style obsolete, marking the dawn of a new cycle.
Considering fashion's deeply embedded desire for the next, the most successful styles are those with the shortest life cycles (Svendsen, 2006, p.31). Technological and production innovations have accelerated this progression, resulting in an immense proliferation of styles, or so-called trends, often in and out of fashion within a single season. The rapid turnover of trends has ultimately caused fashion to outgrow its original seasonal structure (Svendsen, 2006, p.32). Nowadays, it is not uncommon for fast fashion brands to offer 52 so-called micro collections per season, launching new styles every week, instead of presenting a collection that is embedded within a particular season. Fashion is therefore not as harmonised with the ecological structure of the seasons as it was historically; however, it is more than ever kindred with the neoliberal pursuit of providing products at an ever-evolving speed.
This ongoing movement towards the next exemplifies how fashion embodies the utopian promise of hope and new beginnings, urging the abandonment of the past in favour of a more meaningful future (Wilson, 2003). These ideas position fashion as a striking example of modernity, as modernity championed liberation from tradition and embraced innovation. Industrialization and economic strategies emphasising efficiency and speed, such as Fordism and Taylorism, further bolstered this modernistic thinking (Bolton, 2020). This mindset permeated not only factories and workspaces but also the consumer landscape and strengthened their reciprocal impact. During the period of modernity, the desire for the new was not only legitimised but became normalised. Consequently, consumption patterns were reshaped and thus the way people utilised goods and services.
A key business strategy in these systematic efforts on consumer behaviour was planned obsolescence (Packard, 1960, p.53). The goal of planned obsolescence is to render an object superfluous based on non-essential qualities, thereby establishing a timely death date for the product on the premise of novelty. (Packard, 1960, chapter 7). Fashion, and its irrational pursuit of change for the sake of change, is exemplary for planned obsolescence, by mostly aesthetical and superficial enhancements to a product (Aspers & Godart, 2013, p.173). Planned obsolescence has effectively created a method of timekeeping, and inventing limitations that were otherwise non-existent. A mechanism brought into life for mere capitalistic reasons (Wilson, 2003, p13).
From this perspective, fashion can be understood as an economy of the ephemeral, representing the cultural significance that Western society attributes to the temporariness of novelty and how this intertwines with belief systems regarding value. Expanding this, fashion could then be viewed as an ideology in which time and desire determine an item's worth, in the context of relevancy and money. The latest it-bag epitomises the ultimate celebration of the present and the transient. Over time it will become the equivalent of a plastic bag, a mere throwaway product, intended for brief use possessing minimal long-lasting value. Thus, this constructed socio-cultural perception of value,

reinforced by the influx of mimetic desires, and optimised by technological advancements, is how the economy of the ephemeral spring to life.
The rapid change inherent in fashion often involves not genuine innovation but rather references to its historical precedents, frequently drawing inspiration from past styles. This concept, termed as a 'Tigersprung' by Lehmann Ulrich (2000), describes fashion's ability to leap into the past to create an ever-changing present. In this way, fashion demonstrates its capability to dissolve boundaries between temporal periods and different timelines, resulting in a non-chronological existence (Benjamin, 2020, p. 77). By doing so, it takes on the form of a metamorphosis, oscillating between progression and retrogression, undergoing a constant process of inhabiting the future, present, and past within a single time continuum (Lehmann, 2020, p. 80).
This lays the groundwork for hypothesising that as fashion advances, it might adopt a 'rhizomatic' timeline instead of a linear one. Philosophers Deleuze and Guattari (1988, p. 25) support this notion through their concept of the rhizome: "A rhizome has no beginning or end…it is always in the middle, between things, inter-being." From a philosophical perspective, their statement could be understood as the sprawl of time itself, existing throughout different periods and timelines. A fashion style or trend does not arrive at one moment and disappear the next; rather, it is a gradual process. Thus, fashion mimics nature's evolutionary pattern in a multitude of ways, transitioning from new to old, and transforming from blooming into decay. But never definitive, never completed.
When mirroring the workings of fashion to those of nature, a metaphorical resemblance between life and fashion can be uncovered. Both possess an ephemeral core that encapsulates the passage of time. This rhizomatic state can be linked to what political theorist Jane Bennett (2010, p. 10) describes as "The comings and goings of ideas, sensations, values, objects, and relationships that shape us and are shaped by us". This in-between state illustrates how a multitude of factors influence each other, connected to a specific time and place, ultimately creating a lively moment of concurrence. Fashion has indeed always been influenced by social and cultural forces. However, when considering Bennett's concept of in-betweenness, fashion emerges as a vibrant assemblage that encompasses not only these external influences but also material, organic, and natural elements in a specific moment in time and place.
When addressing the importance of time and place, it is crucial to include the global and rapid development of design within postmodernism and consumerism and its profound impact on the natural world in the discussion. The paradigm of human exceptionalism at the heart of these developments has led to grave consequences in the beginning of the twenty-first century. Overconsumption, misuse of resources, and carbon dioxide emissions have caused various severe changes to the ecological system (Haraway, 2016, p. 30). This dominant attitude of the twenty-first century is often referred to as the Anthropocene, a new geological epoch in which humans have obtained a hierarchical position in relation to other living and non-living matter (Haraway, 2016). As a direct result of this, humans have made life increasingly more uninhabitable for plants and animals. Political theorists and philosophers such as Bennett, Haraway, and Escobar advocate for greater recognition of the importance of other material and lives to re-establish a more balanced existence on Earth. The concept of 'becoming-with' emphasises the significance of human responsibilities to nurture a relationship with nature and animals based on mutual respect. Haraway (2016, p. 244) argues that equality among animals, plants, and humans is necessary to care for all beings involved, promoting a collective and interspecies way of living together without separation or individualistic thinking. Central to achieving this is the acknowledgment of material rights, regardless of how small or seemingly insignificant a life or materiality may be. Granting greater material agency could potentially lead to a shift in contemporary consumption behaviour, assigning equal value to both the decaying and blooming phases of existence.

DECAY

Historically, humans have asserted their superiority over other forms of life, and the fashion industry is no exception. Few designers possess the rare ability to seamlessly meld ecological philosophy with poignant cultural commentary through aesthetic expression. Among these exceptional talents stands Hussein Chalayan. For his Tangent Flows collection from 1997, Chalayan buried silk dresses covered with iron filings for several months before

unearthing them and incorporating them into the collection (Vrencoska, 2009, p. 873). The buried garments emerged with stains, rust marks, and an overall weathered appearance, creating a visual narrative of transformation and the passage of time (Kiziltunali, 2012, p. 2). Moreover, it implicitly addressed issues of sustainability and the lifecycle of clothing, themes that have become increasingly relevant in contemporary fashion discourse.
Likewise, Iris van Herpen drew inspiration from the wonders of the natural world and the captivating properties of ferrofluids. As part of the Future of Fashion is Now exhibition held at the Boijmans van Beuningen in 2014, Van Herpen created an installation in which the 3D printed Ferro Fluid dress was immersed in a bath of ferrofluids, while rivulets of ferrous liquid dripped down from above (Boijmans, 2014). These drops adhered to the dress, enhancing the garment over time as they interacted with magnets that were incorporated in the dress. The dress underwent a gradual metamorphosis, its contours shifting and evolving in a fluid, almost organic manner. This dynamic interplay between the dress and its magnetic environment imbued it with a narrative of constant transformation and renewal. Van Herpen's installation demonstrated that fashion can be shaped and altered not just by humans, but also by non-human forces.
The Maison Martin Margiela 9/14/1516 exhibition, held in 1997 at the Boijmans van Beuningen Museum in Rotterdam, showcased both the effects of natural forces on garments, similar to Hussein Chalayan's experimentation with natural forces and Iris van Herpen's real-time processes. This exhibition wasn't merely a presentation of a collection; it was a collaborative process of creation. Humankind was not the master of matter, but rather a participant in nature's ethereal inclinations in a certain place and time. These aspects are deeply rooted in its title: 9/4/1516. The 9 represents the fashion house's nine years of operation, the 4 signifies the days during which mould and bacteria had time to develop before the exhibition's opening, and the 1516 denotes the hours the collection would be on display at the Museum (Evans, 1998, pp. 75-77). The title simultaneously references the three protagonists in this time-based fashion narrative: the designs of Maison Martin Margiela, the microorganisms, and the Boijmans van Beuningen Museum. From the outset, this triangular relationship illustrates the relationship between humans, nature, and culture.
For this retrospective exhibition, Maison Martin Margiela displayed designs from its collection up to that moment. Notably, the Maison crafted replicas of these archival designs. A total of 18 sets were recreated using textiles in whites, beiges, and greys, treated with cultures of microorganisms such as green mould, pink yeast, and fuchsia or yellow bacteria (Duits, 1997, p. 153). Thereafter, the garments were placed within a modified cubical greenhouse for four days. The purpose of this was to create a humid atmosphere that would expedite the development of the yeasts and bacteria (Evans, 1998, p. 75-77). In reaction to these biological forces, the presence of microorganisms unfolded, showcasing their colours on the textiles, and gradually overtaking the design discourse of the garments (Duits, 1997, p. 153). Uncontrolled exposure to the sun and rain had enhanced the development of microorganisms, resulting in a variation of dark and lighter patches of mould. Particularly underneath the revers of the suits, inside the jacket hems, and within the crevasses of the cuffs this became evident. Photos from the exhibition vividly illustrate this process, revealing an absence of the original white, beige, and grey textiles by the end of the 1516 hours (Evans, 1998, p. 79).
This mechanism of mutual influence, resulting in uncontrolled aesthetics, aligns with anthropologist Arturo Escobar's concept of ontological design, which he defines as "The interaction between understanding and creation" (Escobar, 2018, p. 4). Ontological design entails grasping the interconnectedness of materiality and how one entity continuously reshapes and redesigns another. It underscores the idea that all materials exert influence on one another and are intricately interrelated with other materialities and entities. The 9/4/1516 exhibition illustrates this concept: while microorganisms are originally part of the natural world, within this exhibition, Margiela positions them to become part of culture. They are brought under cultivation, becoming an integrated part of a design object. Margiela seemingly did not initiate this interaction for the mere sake of decoration, but rather as a study on non-human agency, thus extending relationships between the human and nonhuman world. The interaction between organisms, material, and museum gradually transformed the collection of non-living canvas pieces into beings.
Additionally, it is important to acknowledge

the role of the Boijmans Museum within this interaction, as it serves as another facilitator of external influences. In this exhibition, the typical museum setting was reversed: the collection wasn't installed inside the museum walls but outside on the patio. The garments were not merely presented; instead, they were planted within the museum garden, allowing them to grow and develop. Instead of presenting the collection in a well-preserved, climate-regulated space with white walls and impeccable lighting, this exhibition was set outdoors, left to the whims of nature. The museum park served as a backdrop, and the rising and setting of the sun functioned as stage lighting. In this setting, the garments were experienced from a distance, creating an unobtainable grasp. While museums typically strive to preserve objects as best as possible, aiming to conserve time through objects, the Boijmans van Beuningen Museum set several mechanisms in motion to enable the opposite.

The 9/4/1516 exhibition is inherently dialectical, considering that the museum, as a cultural institution, has the obligation to society to preserve acquired objects for generations to come, contrasts sharply with fashion's deep dedication to rendering the current obsolete as quickly as possible, ensuring its eventual obscurity to maintain its short-lived existence. Margiela subtly critiques both fashion and the museum by showcasing the transience of design objects within an institution primarily focused on object conservation. The exhibition creates a tension where the museum cannot assert ownership or control over the presented matter, as the garments, microorganisms, and textiles act autonomously. The garments resist being subjected to the museum's will, refusing to become its subjects. Thus, demonstrating a high level of material agency.

As indicated in the title, the exhibition lasted for 1516 hours. Annemartine van Kesteren, Curator of the Boijmans van Beuningen Museum, conveyed via email correspondence that following this duration, the pieces deteriorated to such an extent that they completely perished in the weeks that followed. Therewith, neither Maison Martin Margiela nor the Boijmans van Beuningen could archive this collection in their depot. The garments slipped through the fingers of both the museum as a cultural institution and its creator. The Boijmans van Beuningen museum respected time, place, and life by allowing nature to run its own course. This allowed a peculiar event to occur: the museum became subject to the object. Moreover, microorganisms hijacked and perpetuated consumerism by consuming it themselves.

Margiela's body of work, characterised by its use of deconstructivism, was at that time primarily perceived as a critique of the rapid pace of the fashion industry and consumerism (Rocamora & Smelik, 2015, p. 266). Offering a critical reflection on garments as symbols of hyper consumerism, being produced quickly, inexpensively, and consumed in the same manner. However, when re-situating this exhibition in the twenty-first century, another commentary emerges, one that extends beyond discussions of neoliberal capitalism and labour conditions and delves into socio-natural configurations and cultural-political reflections. The exhibition as an archival report prompts for exploration of boundaries between subject and object, nature and culture, matter, and spirit, fostering a dialogue about material agency and its role in resource utilisation and the negligent attitudes towards fashion consumption.

CONCLUSIONS

Maison Martin Margiela's ephemeral exhibition offered a commentary on the passage of time and consumerism through the lens of nature and ecology. In this exhibition, the development of bacteria was accelerated by favourable conditions, while the pace of fashion was deliberately slowed down, highlighting its decay rather than its bloom. However, both phenomena embody a life cycle, albeit at different speeds. The 9/4/1516 exhibition mirrored the workings of planned obsolescence, wherein, akin to the conventional manner, its decay was planned. Consequently, the exhibition can be viewed as an ephemeral artefact that critiques, yet also meaningfully celebrates fashion's transient essence and its notion of value. Margiela demonstrated the undeniable power of nonhuman entities and how they can influence discourses of design, matter, and life. Margiela liberated fashion from its neoliberal pursuit to be a coveted object of novelty and allowed its ephemerality to serve as a humbling experience regarding one's place in the world and its relation to it. In essence, this exhibition delved into debates about ecology and material agency, offering a performance by garments that gradually established joint agency between nonhuman and human. More importantly, it showcased how cyclical patterns need not solely revolve around bloom, but also around decay. Instead of obscuring this phase, it was

honoured—not perceived as a mere commodity, but as a material being undergoing lively transitions through time. Ultimately, it encouraged reflection on alternative modes of consumption.

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FASHION, CONSUMER CULTURE, AND CLASS STRUGGLE

A MARXIST READING OF TOILE DE JOUY

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Abstract

Toile de Jouy, a distinctive textile associated with the world of fashion, originated in France during the 18th century. Initially embraced by the aristocratic class, it has since transcended social boundaries to become a prevalent phenomenon in contemporary society. In this paper, I will explore the underlying themes that highlight the social dynamics depicted in the narratives portrayed on this fabric. From a conceptual perspective, this study aims to illustrate the intrinsic relationship between the labor of the proletariat and the consumption patterns of the bourgeoisie as reflected in Toile de Jouy. Drawing upon the theoretical frameworks of Karl Marx and Jean Baudrillard, I will investigate the interrelation between fashion, means of production, consumer conduct, and simulated phenomena.

Keywords: *Toile de Jouy; Capitalism; Consumption; Fashion; Simulation*

INTRODUCTION

One must be able to read into the future to know which type will supplant that which is already in place because everywhere, there is a type that is more sought after than the others and this will always be the case. The most skilled is also the man who knows when to stop in time in order to have the fewest leftovers when that type ceases to please…

–– Christophe-Philippe Oberkampf (Gril-Mariotte, 2009)

Historically, fashion has served as a mechanism through which the upper class has engaged in consumption practices. In contemporary society, particularly within the realm of modern fashion, this phenomenon extends beyond aristocratic circles, attracting individuals from diverse socioeconomic backgrounds, races, cultures, and genders. However, this widespread consumption often overlooks considerations of authenticity regarding the goods and the labor invested in their production. Therefore, in this study, my focus will be on Toile de Jouy (fig. 01) as a product, tracing from the Enlightenment era to the present day. I will investigate the hidden premises of the work as I show the integration of the labor, the essence of the product, and cultural consumption of this design pattern, which is often used for various interior decoration, clothes, and ornaments.

Semiotically, Toile de Jouy may refer to various connotations depending on different contexts: on the one hand, it appears as a decorative fashion

Fig. 01

pattern; on the other hand, from deeper layers, it reveals the essence of labor. Etymologically, the term 'toile' finds its roots in the French language, where it denotes the meaning of 'fabric'. Consequently, Toile de Jouy signifies textile, often cotton in composition, originating in the town of Jouy-en-Josas in France. This town is situated in the southwestern periphery of Paris, merely four miles distant from Versailles. Other French towns also engaged in the production of analogous textiles, such as 'Toile de Nantes' and 'Toile d'Orange.' However, from a historical perspective, 'Toile de Jouy' is specifically indicative of printed fabrics crafted by the French-German industrialist, Christophe-Philippe Oberkampf, in Jouy-en-Josas during the period spanning from 1760 to 1843. Distinguishing authentic de Jouy textiles from those produced by alternative manufacturers necessitates the identification of a distinctive printer's mark. This identification practice was obligatory throughout the manufacturing process due to the proliferation of numerous companies that created similar toile styles both before and after the existence of the Oberkampf Manufactory (Sporn, 2023). It's essential to state that before that time, during the late 16th century, India held the distinction of being the world's leading producer of cotton textiles. They employed highly intricate printing techniques, utilizing vibrant and richly colored dyes. The importation of these colorful cotton chintz fabrics from India was perceived as a threat to the livelihood of French wool and silk weavers. Consequently, they lobbied the government to enact legislation prohibiting the importation and use of these textiles. Although this ban was officially enforced in 1686, it was consistently disregarded by individuals who prioritized fashion over the law. It wasn't until 1759 that the ban was lifted, as French manufacturers had at last acquired the knowledge to produce their own colorful and durable variations of printed Indian cotton.

Sporn (2023) states that Oberkampf hired a painter – Jean-Baptiste Huet – to create designs celebrating the factory's recognition as a 'Manufacture Royale'. Huet later became the factory's chief designer, known for integrating scenes into copperplate-printed textiles. The rise of copperplate printing in the 1750s is credited to Francis Nixon and Theophilus Thompson in Ireland, but Oberkampf introduced it to France, contributing to the Rococo style of de Jouy prints. Copperplate prints involved etching designs onto copper squares and were ideal for detailed and narrative motifs. This technique allowed for mass production and conveying political messages through textiles.

Critics shed light on Toile de Jouy as a unique work of design, for instance, Gril-Mariotte and Warner (2009) focus on the origin of the fabric –– they state that the Jouy factory established in 1760, aimed to manufacture printed cotton under the leadership of Oberkampf, who sought to address the demand for skilled textile-printing artisans. The facility experienced swift growth due to its product excellence and continuous innovation in design (p. 162). Then the critics shed light on the value of the work saying that: the surviving drawings and printed fabrics from that era illustrate how Oberkampf's designers ingeniously translated contemporary events and trends into textiles intended for interior decoration. These interpretations of current events aimed to appeal to a broad audience. This cultured, if not prosperous clientele, typically made their purchases at boutiques in the Palais-Royal or in the shops of major provincial cities (p. 163).

Besides Gril-Mariotte and Warner, Fikioris (1970) claims that the printed cotton manufactured at the Oberkampf factory accurately mirrored the evolving preferences of the French populace during the latter part of the 18th century. This transformation is evident in the thematic choices made by their principal textile designer, Huet, who was affiliated with the company from 1783 until his passing in 1811. Initially, he depicted a range of subjects including historical narratives, sophisticated political allegories, as well as vibrant scenes of everyday life and idyllic pastoral settings. However, from around the mid-1790s onwards, he shifted towards a stricter, more academically

inclined neoclassical style of ornamentation that was fashionable during that era (p. 75).

THEORETICAL FRAMEWORKS

This article employs a qualitative approach, through a close reading, I explore an invisible aspect of de Jouy textile. In terms of production and consumption – it seems quite significant to highlight Marxist insights as theoretical frameworks related to the selected subject. As a modern reader, my concern is rather with the essence of Toile de Jouy as a product – how it has been produced; the means of production, and then the consumers. That's to say, through Marx's notion of capitalism, this study shows two groups within society: the working class – the producers (proletariats) and the upper class, I shall say the consumers (bourgeoises). Furthermore, this paper draws its argument from the theory of simulation by Jean Baudrillard –– highlighting how consumers are influenced by the prevalence of simulated realities. Consequently, works featuring de Jouy patterns have been utilized without consideration of their intrinsic value.

MARX'S THEORY ON CAPITALISM

Karl Marx's concepts regarding communism and capitalism laid the foundation for Marxism. Central to his ideas is a critical examination of capitalism and its deficiencies. Marx anticipates the self-destruction of the capital system, envisioning a scenario where marginalized workers, who are estranged, would rise against their employers to seize control of production, thereby initiating a society without class distinctions (Kenton, 2024). He also introduces the concept of alienation to characterize how capitalism impacts the working class. Before this, the understanding of alienation evolved over centuries. In his *Economic and Philosophical Manuscripts of 1844*, Marx portrays alienation as the condition in which the product of labor appears to the worker as something separate and independent and an external force detached from the producer (Guy-Evans, 2024). At this point, I would clarify Marx's concept as it appears to give literal meanings such as estrangement or separation. The notion seems to propose deeper issues in the context of capitalism, that is to say, the working class – proletariats – are alienated from not only society and daily life but also from their identity and the goods they produce.

In other words, alienation seems to be not exclusively tied to Marx's ideas but significantly associated with his intellectual legacy, which denotes a specific societal problem characterized by the disconnection between entities that should naturally belong together. Typically, the 'subject' refers to an individual or a collective, while the 'object' represents an entity that may not be recognized as a subject itself, maybe another subject(s), or may even be the original subject (thus allowing for a reflexive relationship). The relationship between the subject and object is marked by a troublesome separation. Both aspects of this characterization hold significance (Wolff & Leopold, 2021). Marx goes further as he examines alienation from a historical, anthropological, and socio-economic standpoint: in his analysis of alienation, particularly concerning alienated labor within the capitalist economic system, he illustrates how individuals – especially workers – become estranged within specific historical economic systems and ownership structures. He also explains how these relationships are perpetuated through alienated labor and exist in a mutually reinforcing manner (Christ, 2015).

JEAN BAUDRILLARD'S SIMULATION

Baudrillard posits that in postmodern culture, societies have become heavily reliant on models and maps to the extent that they have severed all ties with the genuine reality that existed before these representations. Instead, reality has begun to mimic the model, with the model now taking precedence and dictating what constitutes reality. In his words: " [t]he territory no longer precedes the map, nor does it survive it. It is nevertheless the map that precedes the territory—precession of simulacra—that engenders the territory". Baudrillard suggests that in the realm of postmodern simulation and simulacra, the concern is no longer about imitation, duplication, or even parody since they appear as a reality for the public (Felluga, 2011).

Baudrillard's argument (1994) extends beyond labeling postmodern culture as merely artificial. Unlike the notion of artificiality, which implies a reference to some form of reality for comparison, he contends that we've completely lost the capacity to discern between what is natural and what artificially constructed.

On images, Baudrillard states:

it is the reflection of a profound reality;

it masks and denatures a profound reality;
it masks the absence of a profound reality;
it has no relation to any reality whatsoever;
it is its own pure simulacrum.

Then he goes further saying:

In the first case, the image is a good appearance - the representation is of the sacramental order. In the second, it is an evil appearance - it is of the order of maleficence. In the third, it plays at being an appearance - it is of the order of sorcery. In the fourth, it is no longer of the order of appearances, but of simulation. (1994, p. 6). Plainly, in this context, the details of de Jouy fabric evoke Baudrillard's statement on 'images' in terms of how these representations are replacing the realities and the value of labor.

CLASS STRUGGLE AND SIMULACRUM IN TOILE DE JOUY

The fabric of de Jouy appears to capture the essence of nature and the rural lifestyle, the sentiments evoked by these diverse works of design connect to a shared fascination with pastoral existence and the daily work of farmers. However, there is an irony within the selected work; as it was produced and became popular during the middle of the 18th and early 19th century – throughout history – its aura has been somehow lost. Hence, I would examine this irony; as a fashion design, Toile de Jouy has been used by the bourgeoisie for centuries, for instance, the textile emerged as the favored option for both attires and interiors, even the trend-setting, Queen Marie Antoinette, personally toured Oberkampf's factory in 1781. As the demand for de Jouy fabric surged, numerous printing enterprises in France, England, and the United States began producing similar textiles. Without copyright protection for Oberkampf's designs, these patterns were widely replicated, appearing on various items ranging from porcelains to wall coverings (The History of Toile de Jouy, 2020). This seems to propose multiple explanations, on the one hand, as Marx explains, aristocrats are the consumers of such items, while the producers are alienated from their achievements. On the other hand, the problem of simulation is evoked, as explained by Baudrillard, he provides the example of maps asserting that in postmodern culture, society has become excessively dependent on models and maps to the extent that we have severed our connection with the real world that existed before the creation of these representations (Felluga, 2011). Moreover, reality has now transitioned into merely imitating the model, which has taken precedence and holds sway over what is considered the real world. Metaphorically, Baudrillard's theory plays a key role in this context, not only because, the textile of de Jouy has been copied and re-produced in other countries and the original work has lost its essence, but also, because of the images on the fabric; from shallow layers, the material appears as a design which is being traded and consumed by the individuals. However, upon close examination of the signs and symbols depicted in the textured paintings, it suggests a complex interpretation of the constructed reality by social ideologies.

Here, I want to focus on the social norms, particularly the consumption by the public: one could raise the question of whether the real value behind Toile de Jouy is merely the phenomenon, the pattern, or the consumers would desire to see the stories of the working class depicted on the fabric. This riddle elicits the philosophical aspect behind the means of production, the goods, and the consumers. This is how capitalism operates within communities. It's also simulation, because the irony within this work is shown through a close reading of the images on the fabric, one could realize the aesthetic of the rural life, pastoral scenes, and cultural significance has become commercialized and widely popularized in the modern world.

Among these depictions, one can observe the designer Huet (fig. 02) alongside a female co-worker, engaging in sketching activities outdoors. Additionally, there are portrayals of dyers expertly mixing colors, and printers diligently employing the printing blocks. The final phase of the process is illustrated as the finished cloth undergoes drying on the factory's premises. This unique concept of representing scenes from the manufacturing process highlights the Enlightenment-era fascination with the achievements of humanity, reflecting the spirit of intellectual curiosity and appreciation for human endeavors. Once again, a critical reading of the work and the figures in the toile shows the concept of 'alienation' which has a longstanding presence in the history of Western theology and philosophy. For instance, the depiction of the women in (fig. 03), as each one appears disconnected from the others, with none facing each other or the viewer, symbolizes the sense of isolation and the loss of self in the labor process. Despite this detachment, the resulting product— presumably textiles featuring these scenes— is utilized in clothing and furniture

Fig. 02

Fig. 03

by the bourgeoisie.
On a metaphorical level, there's a striking paradox – the upper-class consumers utilizing imagery that depicts the labor of the lower class. This trade has expanded not only through the mechanisms of production but also through the dissemination of the depicted truth printed on the fabric.
In contemporary times, de Jouy patterns persist in drawing inspiration from French design aesthetics. However, these textiles have evolved beyond their traditional pastoral themes to embrace a more diverse range of motifs, including animals, plants, and celestial patterns. Once again, this exemplifies the notion of simulation, illustrating how the original has transformed into replicas devoid of consideration for the intrinsic value of labor and its true significance. For instance, since its debut on Avenue Montaigne, toile de Jouy has established itself as a recognizable and enduring design within the Dior brand (Fig. 4). Over the years, this classic pattern has been reinterpreted and incorporated into various collections by numerous esteemed designers associated with Dior. Notable among these designers are John Galliano, who brought his unique vision to the concept, Gianfranco Ferré, who added his distinctive touch, and more recently, Maria Grazia Chiuri, who has continued to explore and innovate with Toile de Jouy in her contemporary collections. These designers, among others, have ensured that the fabric of de Jouy remains a significant and celebrated element of Dior's design heritage. Experiencing a resurgence in popularity, de Jouy textiles have made a notable comeback in both modern interior designs. Its influence was particularly pronounced in the 2019 summer and cruise collections of renowned houses such as Chloé, Dior, and Oscar de la Renta, showcasing its enduring relevance and versatility in the ever-evolving landscape of creative expression (The History of Toile de Jouy, 2020). This evokes the concept of capitalism and also simulation; Workman and Lee (2011) state that fashion consumer groups consist of two main categories: style change agents and trend followers. Fashion change agents, as the name suggests, are individuals who play a pivotal role in initiating and adopting changes, this group includes design innovators, who are among the first to embrace new fashion trends by purchasing and wearing them. Additionally, there are fashion opinion leaders who influence others to adopt new styles through persuasion. Some individuals fulfill both roles, acting as innovative communicators who both adopt new trends themselves and encourage others to do the same. On the other hand, mode followers are characterized by their tendency to wait until new trends have gained widespread acceptance among other consumers before they adopt them themselves (p. 51).
It's fair to say that in the contemporary context, de Jouy fabrics have adorned both home textiles and garments. These picturesque prints have transcended their original medium and have been reproduced on wallpaper as well. These wallpapers (Fig. 5) enjoy widespread popularity, transcending urban townhouses to find a place of equal appeal in quaint country cottages. Their delicate yet intricate designs lend an aesthetic charm to rooms, whether the style is soft and expansive, filling the

Fig. 4

Fig. 5

wall space, or sharp and detailed, adding grandeur to the interior. While traditionally characterized by a limited color palette, the addition of vibrant highlights can create striking focal points, particularly in smaller rooms. Moreover, Toile de Jouy maintains its status as a timeless pattern, consistently favored in interior design – among the numerous options available, Les Oiseaux and Chateau de Loire (Fig. 6) stand out as particularly esteemed. The patterns evoke exquisite imagery reminiscent of Provence, capturing the essence of how Marie-Antoinette perceived the "idyllic" lives of French peasants (Toile de Jouy: Classical Scenes for Timeless Interiors, 2024). Strikingly, this seems to evoke Baudrillard's S*ymbolic Exchange and Death* (1976), in which he succinctly explores the core premise that capitalist society has nullified its Other, extinguishing all possibilities by redefining death as the antithesis of life rather than an integral component of it. Capitalism's erasure of death signifies not only the elimination of mortality but also the eradication of any opposition or alternatives to its hegemony. In negating death, capitalism destroys all opposites and imposes its dominance over society (Arcypanjin, 2006). In other words, the work has lost its origin in the modern day and within the capital system. Ma et al. (2012) assert that the primary theoretical perspectives on the consumption of design dating back to the 1970s can be summarized as follows: fashion consumption serves the dual purposes of displaying status and establishing individual identity. That is to say, consumption patterns typically follow a hierarchical flow, starting from the upper echelons of society and gradually filtering down to lower social classes. Once a design trend is adopted by lower social classes, the upper classes often discard it in favor of new styles, thereby perpetuating a cycle of continual change and renewal in the fashion industry (p. 87). Thus, in this context, I would present Thorstein Veblen's theory of "conspicuous consumption," which stems from the emergence of a leisure class characterized by individuals who do not engage in productive work but instead appropriate the surplus produced by the labor of the working class. As societies generate surplus wealth, the relationship between private property ownership and social status becomes increasingly significant. As a result, the accumulation of property becomes a crucial element for individuals aiming to preserve and enhance their reputation and social standing. This leads to the formation of a social hierarchy in which the ownership of property is directly linked to the conferment of prestige and honor. Those who possess substantial property are elevated within this hierarchical structure, enjoying increased respect and admiration from their peers. Conversely, individuals who lack property find themselves at a significant disadvantage, experiencing a corresponding decline in status and recognition. The disparity between property owners and non-owners thus becomes a defining feature of the social order, reinforcing the importance of the products as a marker of one's position and worth

within the community (Trigg, 2001, p. 3).

CONCLUSION

In this paper, I have opted to examine Toile de Jouy, a historical French design pattern originating from the 18th century, as a lens through which to study the socio-economic implications inherent in the fusion of fashion. I have emphasized two theoretical frameworks relevant to the contemporary context of postmodernity, particularly concerning consumption patterns and simulated phenomena. My analysis involved a deep examination of the semiotics embedded within the de Jouy fabric, explaining how the capitalist system appropriates the product devoid of consideration for its aesthetic qualities, labor origins, or intrinsic essence. Consequently, I have juxtaposed my interpretive framework with the theoretical insights of Karl Marx and Jean Baudrillard, focusing on their analyses of capitalism and simulation. The prevailing reality emerges wherein consumers constantly acquire these products while factory owners replicate them without regard for the value of the labor involved. This highlights the common influence of social norms and cultural traditions within communities, prompting a philosophical inquiry into these dynamics.

CAPTIONS

[Fig. 01] Toile de Jouy
[Fig. 02] Jean-Baptiste Huet collaborating with fellow workers
[Fig. 03] Toile de Jouy details of labor
[Fig. 04] "An archive image of the perfume table at Dior's 30 Avenue Montaigne boutique, where toile de Jouy was used for the décor"
[Fig. 05] Toile de Jouy wallpaper
[Fig. 06] Toile de Jouy fabric in interior designs

Fig. 6

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APPROACHING FASHION IN THE METAVERSE

A CONSUMER PERSPECTIVE

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Abstract

Although there is not yet a consolidated and shared definition of metaverse, this concept has established itself in recent years within the public debate, in particular within specific markets, such as in the case of fashion.
We constantly read in specialized and non-specialized magazines, about brands who landed in the metaverse or opened their first store there, or released their first Non Fungible Tokens (NFTs).
However, the apparent concreteness of these statements corresponds to a widespread confusion from the consumers' side.
The aim of this article is to reflect, starting from the results of a qualitative research on international Millennials and Generation Zed consumers, on the meanings associated with the metaverse, on the overlap between it and the concepts of fashion digitalization and digital clothing; finally on the effective media literacy and expectations of who should be the target of these innovations. In particular, the goal is to investigate the well-known relation between fashion and individual self-presentation within the metaverse.

Keywords: *Metaverse, Fashion, Consumer, Digital Clothing, Digitalization*

THE METAVERSE IN SEARCH FOR A DEFINITION

Although there is not yet a consolidated and shared definition of metaverse, this concept has established itself in recent years within the public debate, even more than in the scientific field; in particular, the idea of the metaverse is mainly evoked with reference to its economic business potential within specific markets, as in the case of the fashion.
Before going into the broader reflection on the effective potential of the metaverse for fashion consumers, we need to accomplish a first necessary goal: that of understanding what is the common shared definition of 'the metaverse'. As a matter of fact, although the term has forcefully entered the storytelling of many companies and their business and investment strategies, there is still no common or unanimously accepted definition (Kim 2021). The lack of clarity also derives from the different perspectives from which the so-called 'metaverse' is observed: namely it is fundamental to notice whether the focus is on the technological dimension of immersive digital environments and on the augmented reality, virtual reality (AR, VR) tools used there; or whether we generally refer instead to the synchronous online sharing of space or time (which obviously overlaps the social network sites experiences); or whether, finally, we see the metaverse as a simple evolution of the Internet in terms of potential for interaction, especially when it comes to e-commerce services, etc. One of the most comprehensive definitions of the metaverse has been offered by Ball (2022) who suggests that the metaverse is:

A massively scaled and interoperable network of real-time rendered 3D virtual worlds which can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments.[1]

According to Ball the metaverse is persistent (it just continues indefinitely), synchronous and live (just as in 'real life'), providing each user with an individual sense of 'presence' and with an experience that spans between digital and physical worlds, private and public networks/experiences, and open and closed platforms. It also provides a fully functioning economy, offers unprecedented interoperability and it is created and operated by an incredibly wide range of contributors.[2]

THE METAVERSE AFTER *SECOND LIFE*. A LITERATURE REVIEW

Media scholars will be able to immediately notice that many of the characteristics that emerge from the definitions of the metaverse clearly evoke the experience of *Second Life*: launched by Linden Lab in 2003, it promised to build an online space that Internet users could access by creating their own avatar. The goal was to allow its users to escape the confines of the material world and of their corporal and psychical selves within a virtual space in which to experiment the self, independently of their offline life.

Within *Second Life*, fashion already represented an interesting space for experimentation, both as a shopping experience and more generally with respect to the relationship between fashion and the body, where in Second Life the user was asked to build their own avatar, with a body, an identity style of which clothing and accessories were the main tools (Liao 2013). In an experience like that, it became even more evident and tangible than in physical life as to how much clothing becomes a technology for managing identity (Davis, 1992). As a matter of fact, in the physical world, within social media, within *Second Life* or within the more recent frame of the metaverse, it is through clothing that the body is made an object in public space. As Calefato (2004: 2) states, "the clothed body expresses the way in which a subject is in and of the world through his/her aesthetic and physical appearance, his/her relation with other bodies and lived bodily experiences". Starting from the consideration that clothes provide the body with experiences, this becomes even more true in the virtual world, where clothing has to provide avatars with body experiences. In other words, the virtual body needs clothes, just as the physical body does, since "dress or adornment is one of the means by which bodies are made social and given meaning and identity" (Entwistle 2000:7).

From Second Life experience we have learnt that every part of an avatar could be customized, from the physical shape of one's body, to eyes, hair, skin color, up to one's gender, identity or age. The idea that *Second Life* represented a second life, a world that is alternative to the physical one, in a certain sense prompted individuals to experiment with those aspects that would not have been modifiable (with rare exceptions) in offline life.

Within this context, fashion as an economic system assumed a strategic role. The purchase of virtual clothes for one's avatar could become a millionaire business, while satisfying the aspiration towards a fashionable identity, which is definitely bounded by the fashion industry. Referring once more to Entwistle (2000: 39) dress is a "situated bodily practice", and the wearing of clothes is an embodied activity within a social (and economic) environment.

The experience of Second Life as a daily management of an alternative life was a failure, except for the educational field. However, starting from it we can reflect on the potential of the metaverse, on the uncertainties and enthusiasms of brands toward it and on consumers' expectations regarding digital fashion consumption and its meanings.

First of all, it is worth noting the different technological context of the current metaverse: in twenty years the evolution of connecting technologies and the diffusion of mobile devices have made the difference between being online and offline totally invisible to the users/consumers. Mobile applications make technology increasingly transparent in terms of daily use and closer to daily interaction (also thanks to the implementation of AI within online systems); the development of 3D environments, experimented in particular in the gaming world, has made the representations of online experiences progressively more convincing, close and attractive. At the same time, media

1 https://www.matthewball.vc/all/forwardtothemetaverseprimer
2 https://www.matthewball.vc/all/themetaverse

and technological competences are increasingly growing among the younger generations.
Finally, from a brands' perspective, digitization has gone from being an option to an imperative, especially during the COVID-19 pandemic: the digitization of fashion has emerged in terms of design, product customization, but also, inevitably, in terms of communication and consumer engagement.
Another crucial aspect to consider is inherent in the different raison d'être of *Second Life* and the more recent metaverse experiences, especially in relation to the fashion system: *Second Life* allowed its users a sense of an alternative agency, to connect with others, to love, to shop, to live, to be. What it guaranteed was namely a complex life experience, perceived as an alternative to the physical one, where goals could be fulfilled, especially if in the physical life this had not been possible up to that moment. The empowerment within *Second Life* is similar to that of some gaming experiences where the user takes on the role of a character, with characteristics that are very often totally different from those of everyday life: special powers, alternative physicality, in some cases even non-human shapes, as well as behavioral models that are alternative to those ethically accepted within the society where the player used to live. They are precisely alternative worlds, where the user can assume the subjectivity of a character within a world, which is as convincingly naturalistic as the external lifeworld (King, Krzywinska, 2006). On the contrary, the user who today enters the metaverse proposed by fashion brands is a consumer who has already experienced his/her multiple identity on a daily basis through online environments, where they can experience sociality, relationships, to develop passions and interests, to share professional skills.
Even more, new technologies and online environments that have become part of everyday life operate in terms of enhancing the users' personal identities within a technology that pushes towards experiential reality. As Bolter and Grusin (2003: 24) have written, digital technology has the "need to deny [its own] mediated character" through the promotion of the notion of a transparent or invisible interface. Our immersion in the digital experience then allows us to deny or better to ignore the fact that the experience is merely digital; it is exactly this denial that allows the process of immersion.
An incontrovertible confirmation of this emerges when we observe the self-presentation of the individual within the platforms they habitually attend and participate in: users tend to present themselves with their own face, with their name and surname, with their own characteristics, maybe customized on the basis of both the goals of each platform or the kind of available network
As we will see presenting the results of the research, the contemporary consumer mixes in their expectations towards the metaverse a certain pragmatism combined with a desire for experimentation. The latter results in being able to play with fashion in ways that life conditions, the economic, social, cultural context, have not allowed. But pragmatism leads to turn self-experimentation into concrete actions of consumption, whose role is to let the user enter into the experiential reality that is most proper to them.

APPROACHING THE METAVERSE FROM A CONSUMER PERSPECTIVE. METHODS AND RESEARCH GOALS

The objective of the research, conducted in 2023[3], was to investigate the relationship between fashion and the metaverse, starting from the point of view of the consumers, also exploring their expectations, fears, resistances or enthusiasm in relation to the different levels of awareness among fashion consumers. The identified target was that of both the Zed Generation and Millennials, considering their level of familiarity with digital technologies and their potential role in the future of the metaverse.
Considering the high level of novelty associated with the concept of the metaverse and a general lack of clear shared explanations, we have chosen a qualitative method – more specifically the semi-structured in-depth interview – in order to collect definitions, opinions, ideas and expectations. Moreover, the goal was to understand how much the potential experience of the metaverse by fashion consumers could be connected with the level of skills expressed in terms of media literacy and online fashion consumption.
The interview track was then organized in different sections, aimed at different but complementary

3 The research was conducted as part of the Fashion Branding and Consumer Experience course activity at Sapienza University of Rome, Fashion Studies Master Programme.

goals: first, we aimed at investigating the interviewee's digital media consumption and media literacy, as a background that would explain their views, their potential expectations of the metaverse and even their concrete approach to it. The second and third sections concerned the interviewee's fashion consumption habits, both in-store and online, investigating in particular the resistance to online shopping and how it was partially overcome during the pandemic.

Then, in the next section the interviewees were expected to reflect on the topic of fashion digitalization, in order to identify meanings and potential misunderstandings related to such a broadened concept. This section opens a gateway for the final discussion about the metaverse.

We have collected 132 interviews, equally divided between the Zed Generation (10–25 years old) and Millennials (26–41 years old), from different countries. It is worth noting that we did not find differences between interviewers from different countries and cultures, while generation seems to be an element to be considered when it comes to inclination for innovation.

MEDIA LITERACY, GAMING EXPERIENCE AND THE COVID PANDEMIC AS PREMISES TO THE METAVERSE

As we might expect, every participant has acknowledged themselves to be an active Internet user, defined by the usage of various mobile devices, but most prominently mobile phones and computers/laptops.

Overall, the interviews confirm the evidence that Millennials and Gen Zed are heavy Internet users with a high level of media literacy. The number of applications downloaded on their smartphones confirm the total integration and transparency of technology in daily life and the potentialities in terms of empowerment they can guarantee.

Social media are also used in relation to fashion consumption (as in the case of Pinterest or Instagram), but when it comes to define the role of the influencers in their life the interviewees asserted themselves as being very selective and to choose to follow people who have an authentic style that aligns with their taste. As Maksymilian (21 years old) explains: "They wear everything that's trendy right now, but not majorly [influence my purchasing decisions], because I still have my own style. I like what they wear but it doesn't mean that I would wear it too."

Another aspect we have considered as a premise to the metaverse is the diffusion of the gaming experience among young people. In our hypothesis this may count for a lot, both in terms of avatar construction (as in metaverse-like games such as *The Sims, Animal Crossing, Habbo*, particularly widespread among female players) and in the fictional universes' management.

Self-presentation is crucial for player experience in avatar-based games, and in-game purchasing has further revealed the focus on individual factors as a motivation to players' digital consumption (Cai, Wohn, Freeman, 2019).

Considering as an example the very famous online game *Fortnite*, the in-game items are designed to be merely cosmetic with no instrumental functions to improve someone's gameplay performance. All the items bought by the player from weapons to outfits simply serve as fashionable accessories to personalize players' avatars, providing the player with a more pleasing aesthetic experience of the game (Wang, Sun, Luo 2022).

This consideration must have prompted fashion brands to be part of this kind of gaming experience. To name a few examples, Balenciaga created skins for *Fortnite*, Burberry collaborated with *Minecraft* and a digital version of the Gucci Gardens was created in *Roblox*.

Another significant factor at work in terms of increasing digital media literacy, in general, and in relation to online fashion consumption has been the COVID-19 pandemic.

As confirmed by all the interviewees, the house confinement during the lockdown periods and the impossibility of shopping for items that were not considered essential (i.e. fashion items) have been the drivers to overcome many of the resistances associated with e-commerce (Bhatti et al. 2020), particularly in reference to fashion.

More specifically, in the case of fashion the consumers' resistance is connected to various factors: the lack of tactile verification of clothes to buy, the lack of trying on an item of clothing in the dressing room, and very often also the lack of the leisure dimension of the in-store shopping experience.

The majority of our interviewees have expressed a clear preference for the in-store experience, particularly because of the chance to try on clothes and to be sure about the item they are buying.

Another negative aspect of the online experience

is the sense of disorientation that can be perceived when shopping online and the problems with return services. As Charline (female millennial) stated:

But what I don't like online is that, for me, there are too many things and it's difficult to really understand if this piece of clothing will be really good for you, yes or no. And I don't like to return the clothes. It takes so much time. This is the reason why my online experience is not great. I will say I prefer to buy in shops.

However, these elements do not presuppose a total closure toward online shopping, if anything, they are more a slowdown waiting for innovations more in tune with the real needs of the consumer. Moreover, online shopping is perceived as an unmissable opportunity to reach brands that are not locally available.

Although fashion brands have strongly invested in promoting their online communication, strengthening the relationship with consumers and developing online assistance services, interviewees felt that many websites are still quite unreliable, as the product sizes differ and the quality of the material is not as described, as well as the process of delivering the parcel to their home.

But something is going to change in the consumer expectations: as mentioned by Lorena (female zed), who preferred the app because "you have your user, they give you points or they recommend sizes from other purchases", the implementation of online shopping may lead to a more customized experience, made available by big data and customer profiling – and open the door to the metaverse.

WHAT DOES FASHION DIGITALIZATION MEAN?

As has already emerged from the previous paragraph, the most common and shared idea of fashion digitalization has to do with the potential transformations in the online shopping experience, especially if brands are engaged in making the process easier and more efficient.

As clearly envisioned by Deniz (female zed):

I feel, like, just having an online store for your actual store, um, well, your physical store, everything that you had in the store, the sections, the accessories, everything being transferred into an online store and at the same time you can have advertisements on there and pay online. Like, it's just literally a virtual physical store for me in that sense.

Other interviewees underlined the need for an improvement in the customer experience, to be managed by brands through social media, where the same brands can potentially receive customer feedback and invest in consumers' engagement.

Beside this idea of fashion digitalization, the interviewees also have referred to fashion digitalization as a strategy to make the fashion industry more sustainable and less polluting. In this case, the focus is on how digitalization can intervene in the production process – for example, reducing waste and producing just according to the actual needs of the market.

More interesting for the purpose of this paper, was that perspective on digital fashion that directly addresses the objects of fashion, introducing the so-called 'digital clothing'. The opinions on this topic are quite heterogeneous, while a general sentiment of resistance or a lack of comprehension have emerged around it.

The most part of the interviewees consider brands that only make digitized clothes, a bit useless, while others have tried to make sense of digital clothing associating it with other kinds of experiences and objects, as in the case of art and the expression of creativity allowed by digital technologies, recognizing the value of the digital object in the effort spent in producing it.

With regard to digital clothing, there is not a lack of technological competences or media literacy but rather a sense of uselessness. When asked "Could you imagine a world, for instance, where fashion is just digital?" one interviewee answered, "Intellectually I could, but it doesn't make sense to me intuitively." (male, zed)

The most skeptical interviewees have evidenced that virtual clothing could have sense only in relation to a tangible version of it, but it is worth noting that when invited to reflect in more depth on this topic, the interviewees started to be more aware of the potentialities of digital clothing even in everyday life. As Illyas (zed female), said:

Yeah, I saw, like, different brands during COVID, creating these types of clothes that you buy for 10€, 20€, and then you can wear them, like on your stories or Instagram photos. I saw that. I feel like it's still useless because people are not just buying clothes to show on Instagram or whatever, you know? Well no, I'm lying. Yeah, some are

doing that, but I feel like they still don't have the reputation that will have the last 'it-bags' on your photos.

This consideration leads us to reflect on the sense of continuity that the younger generations feel between their habits on social media and the potentialities of digital fashion. We cannot fail to mention here the high usage of digital AR filters among adolescents on social media in order to present a better self. As a matter of fact, the popularity of AR face filters is evidence that they clearly tap into specific user needs, most of them related to hedonic motivations and important identity-related gratifications (Javornik et al. 2022). Coming back to our research results, then, most respondents tend to view virtual clothes as a way to showcase their individuality and creativity, often incorporating them into their online persona and social media presence. The perception of the potential of digital clothing also in terms of enhanced shopping services seems to be less evident among them. The AR filters are very often used as tools for shopping purposes (Hilken et al. 2017; Kumar, 2022), from make-up products, to sunglasses, to clothes. The usage of filters that are superimposed on the consumer body (as now happens through the magic mirrors in-store) can promote and facilitate the consumer's decision, while at the same time providing enjoyment and fun as it happens on social media every day.

A FASHION DIGITAL WORLD. INTRODUCING THE METAVERSE

All participants have at least heard about the metaverse. Many of them even provided a partially correct definition of it, focusing on specific different perspectives or examples related to it. Some talked about the metaverse as a general and abstract concept, while others clearly referred to the services proposed by Meta. Many of them borrowed keywords and ideas from their gaming experience.

The Gen Z Maksymilian (male) explained it simply: *It's basically an idea of a fully virtual world where you have an online society, and where everyone has their avatar that represents them in this virtual world. It's like the real world but online and with more cool stuff, I guess.*

An important aspect of this definition concerns the lack of opposition between 'real' and 'virtual'; moreover a normalized idea of the avatar clearly emerges.

To better understand this point, we can underline that most of the interviewees were more interested in building an avatar resembling themselves than experimenting with an alternative identity. As previously anticipated, the relationship with one's online identity is now certainly mediated by the experience of social media platforms, where users present themselves with their own profile, even though one tries to make it as attractive and fashionable as possible, i.e. using AR filters. Digital fashion, then, can, be considered a filter or a mask, through which the consumer can play in the variable representation of the self. As clothing embodies different social identities, there are always some kinds of clothes that one appreciates but does not wear, because of the price, social roles associated with them, and/or the shape and size of one's body. The metaverse seems to allow consumers to overcome the physical world limits (materials, social and cultural), providing a kind of identity experimentation through which consumers can play with the qualities of its subject. As Tiffin and Rajasingham(2003: 146) stressed in their essay about virtual university, the avatar may represent the physical appearance and reflect the emotional condition of desire of its user; "*it would also be possible to adjust the avatar cosmetically so that it looked more the way a person wanted to be seen or it could be anything at all.*"

- *"I would wear similar clothes but with some different colors, more exuberant, things that I don't wear normally but still following my own style".* – (male, millennials).
- "*As I said before, my style would be more futuristic, although now thinking about it I think it would be fun to dress my avatar the same way I would dress*". – (male zed).

The metaverse, therefore, is not perceived by the interviewees as excessively futuristic, but very practical, as in the case of digital clothing, which can be applied to any digital interface and any personal device.

Our interviewees then see the metaverse as a reflection of real life and can function as an instrument for making decisions that affect the real world. So, it may work as an element of inspiration or an opportunity to virtually test products, clothes or accessories, or trying styles, haircuts or make up. It also includes the use of filters or virtual clothes to create content for social media. All these elements

are produced digitally but their final objective is to improve a real visual identity:

In the future, if everyone will have their one-to-one similar avatar, people will be able to try on different digital fashion products without ever leaving their house, which will make purchasing clothes much more convenient. Less time will be needed to purchase it, because the catalog would be right in front of you and your avatar will try it on (male, zed).

PROVISIONAL CONCLUSION

The first aspect that emerged from this exploratory research experience on the metaverse and on the digitization of fashion from the point of view of the consumer, is that the younger generations generally show a curious attitude and are open to the innovation prefigured by the metaverse. They reflect on it in extremely concrete and practical terms, and they always try to emphasize the continuity with previous consumer experiences rather than interpreting it as a revolution. Even when skepticism seems to prevail, it emerges above all in terms of the impossibility of grasping a concrete use value for technology rather than for any cultural resistance whatsoever.

The reason can be found, of course, in that sense of familiarity with digital technologies and online platforms that are constitutive of the younger generations' everyday life.

Despite this positive attitude of consumers towards the metaverse, they seem to be little considered and included by brands in the overall development process.

Perhaps one aspect that brands could develop in addition to the immersive amplification of the consumption experience is to encourage a greater inclusion of consumers in the production processes and in building awareness of consumption practices that also take into account the goal of sustainability. Exactly in the same way it is now possible to enter the virtual shop in the metaverse, so it will be possible to enter the industries, to become part of the production process, turning into prosumers, as imagined by Toffler in the third wave, where the consumer had the possibility of supporting the industry in goods production: AR tools may allow customers a holographic trial (product preview or virtual try-on) when the physical product is still absent and the brand could be able to plan its production according to this process of co-creation. Moreover, brands could allow all their customers to virtually tour their production lines or supply chains so as to connect further with their customers, to enhance transparency, and to focus on responsible sourcing. It is perhaps here that an important challenge for sustainability in fashion could be played out.

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CONSUMING DIGITAL FASHION IN ONLINE COMMUNITIES

A MIXED-METHODS RESEARCH ON CONSUMPTION MOTIVATIONS FOR DIGITAL FASHION END PRODUCTS

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Abstract

Contemporary fashion consumption is deeply intertwined with digital tools, spanning from pre-purchase browsing to post-purchase sharing on social media. This paper delves into the expanding realm of digital fashion, particularly focusing on the consumption motivations behind digital fashion end products. Despite their contrast with tangible clothing, digital fashion end products have garnered significant interest, especially during the COVID-19 pandemic. However, consumer adoption of digital fashion remains underexplored.
This study focuses on the consumption of digital fashion end products, such as NFT fashion, videogame skins, AR filters, and more, among its consumers and, through a mixed-methods approach including digital ethnography, an online survey, and qualitative interviews, it investigates the profile of the community and culture surrounding digital fashion consumption. The research findings indicate that digital fashion serves as a powerful medium for identity formation and self-expression, echoing the dynamics observed in material fashion but amplified in virtual environments. The avatar or virtual body becomes a sociocultural entity, offering consumers a perceived freedom of expression unconstrained by physical limitations. Furthermore, this study uncovers a hybrid *phygital i*dentity, where physical and digital identities co-construct each other, influencing consumption practices and brand affiliations across interconnected digital and phygital universes.

Keywords: *Digital fashion; Online consumption; Virtual environment; Digital identity; Digital ethnography*

INTRODUCTION: FASHION CONSUMPTION IN THE DIGITAL REALM

When we consider contemporary fashion consumption, what comes to mind is its high dependence on digital tools from pre- to post-purchase (Andò et al., 2019). From shopping on e-commerce websites (Crewe, 2013) to sharing on social media (Choufan, 2022) and personalising clothes online (Park & Chun, 2023), digital technologies take central place. There is no denying that fashion and technology have gone hand in hand for centuries, from the creation of garments to technology integration in 'wearable technology' (Toussaint, 2018). As such, "fashion itself can be considered a history of technology" (Quinn, 2002, p. 3). Each Industrial Revolution has driven fashion forward, and the current era, the 'Fourth Industrial Revolution', has given rise to 'fashion 4.0'. This paradigm, as highlighted by Bertola and Teunissen (2018), prioritises sustainability goals and blurs the lines between physical and digital realms through the fusion of fashion with 'smart' technologies. The convergence of fashion and digital tools is particularly evident in the realm of digital fashion, a phenomenon that gained significant traction during the COVID-19 pandemic (Casini & Roccetti, 2020).
Digital fashion encompasses the creation, promotion, and sale of virtual clothing and accessories designed specifically for digital platforms and virtual environments (Giraldi, 2023; Särmäkari, 2023). These digital fashion

'end products' (Chan et al., 2023) can vary from NFTs (Non-Fungible Tokens) to videogame skins, influencer skins, superimposed images, AR (Augmented Reality) filters and digital twins. They are created digitally, using digital software such as *CLO3D* or *Marvelous Designer*, for consumption and use in digital or virtual space.

The internet has led to the democratisation of fashion, making it possible for anyone to become a designer or fashion influencer (Kawamura, 2023). Platforms like Instagram enable designers to directly reach a global audience, build their brands, and gain recognition without significant financial investment. Additionally, social media and fashion blogs empower consumers, giving them a voice in the industry. In such a process, the creation of fashion, as a system of signs, meanings and discourse (Barthes, 1967/1990), is now constructed offline and online, through online magazines and social media (Noia et al., 2023). In light of this dematerialisation of goods, contemporary fashion consumption needs to be studied again.

This paper investigates why digital fashion end products are consumed despite their seeming contrast to the material clothing we wear every day. Motivations for material fashion consumption range from protection to self-expression, cultural norms, and more (Kaiser, 1997). For digital fashion end products, some motivations seem inconsistent, while others may also exist. Consuming fashion goes beyond simply buying or wearing clothes; it is the subjective experience of incorporating fashion – from dress to culture, values and discourse – into one's existence. This study focuses on digital fashion end product consumption and aims to trace the community profile of its consumers. It does so by way of a mixed-methods approach including digital ethnography, an online survey and qualitative interviews.

LITERATURE REVIEW

DEFINING DIGITAL FASHION

The definition of digital fashion is as ambiguous as the merging of 'digital' and 'fashion', an oxymoron in its essence. It is thus necessary to establish what definition of digital fashion this study employs.

This paper considers two systematic literature reviews (SLRs): first, there is the SLR conducted in July 2019, covered in two separate articles (Nobile et al., 2021; Noris et al., 2020). In this SLR, digital fashion is defined as "all those processes that include (i) marketing and communicating tangible and intangible products; (ii) the development and implementation of processes that support the advancement of the industry; (iii) the effects of digital advances on society" (Nobile et al., 2021, p. 297).

This definition, as the second SLR (Chan et al., 2023) illustrates, is broad yet fails to include the industry perspective of digital fashion as an end product used in three-dimensional and/or virtual environments. The definition proposed by Chan et al. is the following:

Digital fashion refers to the overlap of 3D virtual technologies and fashion. The 3D CAD [Computer Aided Design] rendered garment […] serves as a tool to elevate tangible product development, for example, in aspects of design and production (D&P), enabling retailers/ manufacturers to preview designs virtually during the design and sampling stages. In terms of communication and marketing (C&M), it is a VTO [Virtual Try-On] tool that enables shoppers to preview the fit and style virtually before purchase. On the other hand, digital fashion can be sold as a tangible end product that only exists digitally. (Chan et al., 2023, p. 11)

This definition incorporates Nobile et al. 's whilst also including the 3D CAD-rendered garment that encompasses most digital fashion goods. Chan et al. identify six categories for digital fashion end products: digital skins for gamified environments, digital skins for virtual influencers, superimposed images, AR filters, fashion NFTs, and digital twins. For this research, digital fashion end products and their corresponding categories are adopted as the defining framework, with an acknowledgement of the potential existence of additional categories.

CONSUMPTION MOTIVATIONS BEHIND DIGITAL FASHION

What is currently underexplored, as both SLRs indicate (Chan et al. more explicitly), is consumer adoption of digital fashion. Understanding the consumption motivations behind digital fashion allows us to understand whether these forms of consumption align more with that of material fashion or with other digital products. Despite retailer interest, there is insufficient research in this area (Chan et al., 2023).

Two studies addressing consumer motivations for purchasing digital fashion were recently published (Sheng, 2023; Zhang et al., 2023). Although both examine digital fashion end products (albeit

without explicitly adopting this categorisation), their focal points diverge. Xu Sheng explores consumer motivations by focusing on NFT fashion consumers in China, while Zhang et al. investigate consumers' perceptions and attitudes toward purchasing digital fashion from luxury brands. Sheng (2023) identifies nine key themes of consumer motivation: aesthetic, self-expression, novelty, self-satisfaction, social display, social interaction, attracting attention, visual authority and investment collection. The author acknowledges the findings as preliminary and refrains from delving into them extensively. The study's scope is limited to a homogeneous audience, primarily targeting the Chinese market. However, digital fashion operates on a global scale through online platforms and social media channels. Sheng's localised focus may not capture the full spectrum of consumer motivations and does not address potential barriers hindering consumers from engaging with or purchasing digital fashion products.

Zhang et al. (2023) suggest that various factors such as attitudes, perceived social value, and environmental involvement play significant roles in shaping consumers' perceptions and intentions regarding digital fashion consumption, particularly in the luxury segment. However, this study faces several limitations. The respondent cohort consists solely of Americans, predominantly women (78.5%). While digital fashion consumer demographics lack definitive research, Vogue Business (McDowell, 2022) indicates that 61% of virtual goods or NFT purchasers in the US are male, although this may vary across platforms and digital fashion categories. Additionally, the respondents' prior knowledge of digital fashion remains unclear, which could significantly influence their attitudes and purchase intentions.

Both articles examine digital fashion as exclusively end products, through the lens of luxury fashion and NFTs, overlooking alternative manifestations like videogame skins. This narrow focus fails to capture the nature of digital fashion, limiting the understanding of its multifaceted dimensions. Consequently, prior research only addresses fragments of the phenomenon and its audience, neglecting the broader community of users.

METHODOLOGY

The literature review underscores a research gap in understanding consumers' motivations to adopt digital fashion end products. To address this, we have conducted mixed-method research including digital ethnography (Boellstorff et al., 2012), an online survey and qualitative interviews. Our study specifically employs digital ethnographic techniques to investigate the cultural and community dynamics within the realm of digital fashion end products by immersing ourselves within their respective virtual ecosystems. The study presents a reflective auto-ethnography, using the researchers' direct observations of the community as data. While this approach may introduce subjectivity, it provides a richer and more participatory perspective on the observed context and dynamics. This methodological endeavour also accommodates the digital essence intrinsic to both fashion items and their consumption practices, thereby constituting a foundational aspect of our research inquiry.

The survey was conducted in English using Qualtrics and was digitally distributed in November 2023. It encompassed a diverse range of question formats, including multiple-choice queries, open-ended responses, and sliders. This methodological diversity facilitated a multifaceted exploration of the consumption motivations among the surveyed audience, while concurrently serving to attenuate potential researcher biases that might arise from our specific positioning within the digital fashion domain. To this end, the inclusion of open-ended questions permitted respondents to articulate their perspectives, unveiling insights that may have otherwise been overlooked during the survey's design.

The audience, digital fashion end product consumers, was reached through various channels: in the first stage, through Discord, which has become a staple platform for all sorts of online communities to gather, including digital fashion brand communities.[1] As such, the survey was distributed through several Discord servers.[2]

Our initial goal was to expand the survey to include servers associated with communities of physical fashion brands present in the digital fashion field or collaborating with digital designers. These servers

1 Discord is a popular online communication platform combining written text, image and video sharing, initially created as a social platform for gamers in 2015.

2 The Discord servers encompass digital-only fashion brands and platforms like *DressX*, virtual environments such as Meta's *Horizon Worlds*, and gaming communities like *Animal Crossing* that feature fashion-related gameplay.

are tailored to meet the specific needs of their community and attract discerning consumers who engage with digital fashion, rather than serving the broader brand community.

Unfortunately, many of the Discord communities have imposed restrictions preventing regular users from sharing links, as we discuss in the results section. Despite our best efforts, access to specific demographic data regarding this population remained elusive, preventing us from gathering comprehensive insights about this group. Yet, existing marketing research by McKinsey & Company suggests that Discord communities around fashion brands are typically comprised of: a) experienced Discord users, including enthusiasts who also frequent the digital-only fashion Discord servers already included in our research; and b) Discord novices and early adopters who primarily use alternative social media platforms (Amed et al., 2023).

Hence, to deepen our understanding of and gather feedback from digital fashion end product consumers with varying levels of expertise, we broadened the questionnaire's distribution beyond the borders of Discord. It was shared among our circles and on social media platforms such as Instagram and LinkedIn, with a message encouraging survey dissemination to generate a snowball effect. This expansion aimed to ensure a comprehensive representation of perspectives and insights across diverse consumer segments.

To broaden and validate the findings from the survey analysis, semi-structured follow-up interviews were undertaken with accessible survey respondents. This approach facilitated the adoption of a reflexive perspective (Bourdieu, 1992; Bovone, 2010) to investigate how external structures influence our relationship with social objects and help prevent interpretive distortions. Eight interviews, each lasting around 45 minutes, were conducted via video call between late January and early March. The data were analysed through thematic analysis, drawing on both deductive (codes developed a priori) and inductive (codes developed in accordance with the interviewees' accounts) coding strategies. The variety of interviewees confirms that the different array of audiences we planned to get in contact with has been met. To delve deeper into the outcomes of the survey, and to probe unanswered queries that arose from the survey data, a comprehensive list of interview topics was formulated.[3] Our focus was twofold: first, on emergent themes, and second, narrative constructions, recognising language as a fundamental element that facilitates the necessary objectification and gives order and meaning to existence (Berger & Luckmann, 1966).

RESULTS

The survey collected a total of 56 responses, of which the majority answered within the first two weeks the survey was distributed. After the initial two weeks, the survey was further distributed through other channels besides Discord, as mentioned before. Six responses contained no answers to the questions, thus 50 useful responses remained.

Currently, no study gives insight into the size of the digital fashion end product community. Nevertheless, we presume the size to be significantly larger than the number of respondents. Acquiring more respondents was hindered by general distrust towards and restriction of sharing hyperlinks in Discord channels. This has to do with fears of being deceived into providing sensitive online information. Some community members directly voiced their worries, stating that they would not click on the survey link unless shared by Discord moderators. This issue of legitimation in Discord etiquette made it difficult to find respondents. Despite efforts to contact Discord moderators, they were unwilling to share the survey link.

Nonetheless, given the inherent difficulties of audience outreach, the number of respondents reached within the limited timeframe in which the survey was accessible is commendable. Examination of both the survey data and the interview transcripts reveals a heterogeneous spectrum of expertise among the participants, including cryptocurrency experts, avid gamers,

3 These topics include motivations for consuming digital fashion end products, identity formation through digital fashion consumption, self-expression facilitated by digital fashion consumption, impact of digital fashion consumption on personal identity and collective identity, influence of social and cultural factors on digital fashion consumption, relationship between digital fashion consumption and self-esteem, comparison of digital fashion consumption motivations with material fashion consumption, gender differences in motivations for consuming digital fashion, consumer behaviour in digital fashion communities, evolution of personal style through digital fashion consumption, perceived societal norms and digital fashion consumption choices, role of community belonging in digital fashion consumption and role of community belonging for identity and self-expression.

technology enthusiasts, as well as fashion lovers and amateur consumers.

When it comes to how the respondents found the survey, 30,77% indicated receiving it from someone else (i.e., family, friend or colleague), whereas 50% indicated Discord and 19,23% indicated receiving it directly from the surveyors. This shows that the snowballing effect was successful. Having contributed to over a third of the survey results. Figure 01 provides a demographic overview of the respondents, predominantly Gen-Z and millennials, known for their activity in virtual environments (McDowell, 2022). The study also highlights diverse gender expressions and sexual orientations, challenging heteronormativity and cisgenderism, and intersecting with issues of identity and self-expression. While direct communication reached fewer respondents than Discord, there is no clear reason for 80% being from Europe. Most respondents work part-time, reflecting the age groups, with over half being students. This pool is more diverse than in previous studies, with all respondents being familiar with digital fashion end products

In response to the definition of digital fashion end products outlined by Chan et al. (2023), 90% of respondents expressed agreement, indicating widespread acceptance of this definition among consumers of digital fashion end products. Because language gives meaning and structure to existence, it follows that the definition of digital fashion end products shows its practicality for current and future research within digital fashion communities' endeavours.

In terms of consumption prevention, price and utility stood out from the responses. One respondent wrote: "Usually items I like are way over my budget. Also, I think it's still not up to its potential, technically. AR fashion still looks very glitchy." Another noted that they are wary of spending money on videogame skins, due to the possibility of them not playing the game in the future and no possible transferability between videogames. Utility, in this context, includes interoperability between virtual environments. These preventions do not halt all consumption practices, as several respondents have indicated using items provided for free, won in-game, or gifted by brands.

Figure 02 illustrates that while traits commonly associated with digital fashion end products, such as sustainability, affordability, and accessibility,

Category	Item	%
Age	<18	15,38
	18-24	50,00
	25-34	26,92
	35-44	03,85
	45-44	03,85
Gender expression	Female	42,31
	Male	26,92
	Non-binary/third-gender	19,23
	Other	07,69
	Prefer not to say	03,85
Sexual orientation	Heterosexual	34,62
	Bisexual	19,23
	Homosexual (gay/lesbian)	15,38
	Prefer not to say	19,23
	Other	07,69
	Asexual	03,85
Continent	Europe	80,77
	Asia	07,69
	Oceania	07,69
	North-America	03,85
Occupation	Employed part-time	42,31
	Unemployed	23,08
	Self-employed	19,23
	Employed full-time	07,69
	Prefer not to say	07,69
Student	Yes	65,38
	No	34,62

Fig. 01

are highly valued by consumers, diversity in clothing styles and personalisation are also important.[4] This confirms self-expression as a major driver of both digital and physical fashion consumption, arising the idea that consumption patterns in digital realms mimic those of physical environments. The interviews further explored the topic of self-expression; all interviewees frequently mentioned motivations related to self-expression, elaborating on realistic to idealised or alternative representations of the self, as we will discuss in the next section. All in all, both the survey and the interviews show that consumers use digital fashion end products to express an identity through which they want to represent themselves in digital space.

EFFECTS OF CONSUMING DIGITAL FASHION END PRODUCTS ON

4 In the survey, these categories were defined as follows: sustainability refers to simultaneously less material waste in the production, design and consumption of fashion goods, as well as more sustainable awareness through the consumption of fashion; affordability refers to an affordable cost of price for the consumer; accessibility refers to the being allowed to purchase fashion items; diversity in clothing styles refers to a variety in styles presented to consumers with which they may or may not identify with; and finally, personalisation refers to the degree to customizability of fashion goods to make them more personalised and unique to the consumer.

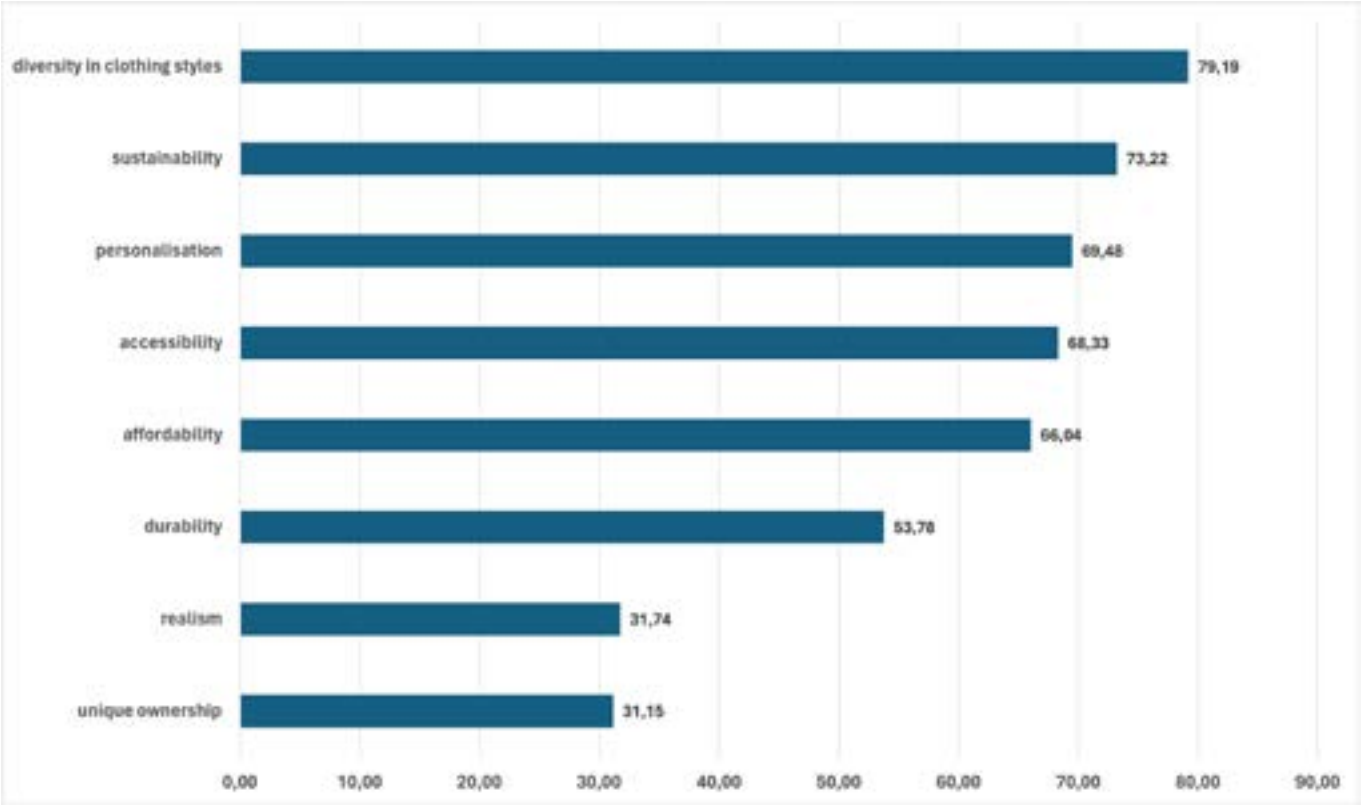

Fig. 02

IDENTITY AND SELF-EXPRESSION

We have identified five main effects of digital fashion end product consumption on identity and self-expression among its consumers, which we will discuss in conjunction with the survey and interview data. First, like material fashion, digital fashion end products are drivers of identity formation and self-expression. If the ready-to-wear designer is an interpreter of street and youth culture (Mackinney-Valentin, 2017), then direct-to-avatar (D2A) designers do exactly that for virtual space, in which fashion trends are now created (Giraldi, 2023). The difference, however, is that digital fashion end products are not physically restricted and thus provide alternative forms of fashion design.

Consumers can be active players in the process of self-expression. For example, interviewee 1 explained how in *Animal Crossing*, she creates clothing that fits her style. "The clothes you can buy are lovely," she says, "but sometimes I want a certain thing the game does not provide, something unique to my style." Similarly, interviewee 3 makes use of aesthetic mods (modifications) in videogames like *The Sims* to make the gameplay more personalised. Consumers directly participate in the production of personalised garments (Varini, 2023), and are actively 'fashioning' their identity by going beyond the clothing that the virtual environment supplies (Giraldi, 2023; Mackinney-Valentin, 2017).

Second, the avatar body becomes a sociocultural, 'fashioned' body. The avatar is not simply a virtual person, it is the digital manifestation of our extended self (Belk, 2013; Giraldi, 2023). "There is always a piece of me in the avatar," interviewee 3 says. Notably, Joanne Entwistle (2015) argues that the material presence of our bodies is culturally interpreted. So too is our immaterial presence, our 'habitus' (Kawamura, 2023). The body as a socially constructed object thus translates to virtual space. Several respondents stated that feeling more comfortable expressing their sexual orientation and gender expression through clothes in virtual space. One respondent said: "I created a Sims character that looked like me, but a more openly queer version of me. Sometimes I make a male version of me." Consumers perceive a bigger freedom of expression in virtual space. Interviewee 2 says: "The nice thing about digital fashion is that it has no physical limitations, and this gives me the freedom to create any identity I want." Dressing one's avatar means dressing oneself beyond their physical constraints, whilst remaining socially constructed.

Third, despite a seeming separation of physical and digital, this dualism does not suffice. Rather, we consider a hybrid phygital (physical and digital). We point to Haraway's (1991) formulation of

the cyborg, a cybernetic organism that brings forth a leaky distinction between animal-human (organism) and machine, but also blurs the boundaries between physical and non-physical. Deborah Lupton (2019) argues that the nature of contemporary, digital technologies has changed the cyborg body into a digital body that goes beyond the datafication of our bodies.

Connected to this, interviewee 4 stated that while her dressing behaviour online differs from offline, "[e]verything still comes from the same person. It's a matter of switching masks." Interviewees 2 and 5 both mentioned that this hybridity is already the case on social media; "It is the consumer's choice of how much they want to invest in their virtual presence" says interviewee 5. According to interviewee 2, it is impossible to divide the two: "It's not like you can say that you're only a physical being and that whatever you do online does not impact your life. It is a part of who you are. The way you wear clothes online says something about you, even offline."

The fourth effect concerns the collective identity shared between brands and consumers. We consider Russell Belk's application of the extended self in digital space:

[The self] is now co-constructed with much more instantaneous feedback that can help affirm or modify our sense of self. [It] can no longer be conceived from only a personal perspective and is not only jointly constructed but shared, that is, a joint possession with others. (Belk, 2013, p. 490)

This joint possession with others translates to brand communities, as emphasis is put on collective community identity over individual identity. Similarly, to achieve personal gratification in the consumer society, one must please others, and as such individuals are encouraged to seek validation elsewhere (Baudrillard, 1970/1998).

Survey respondents have indicated purchasing items from fashion brands or virtual environments with the intention of "being part of" a group. This suggests that social belonging and collective identity formation play significant roles in their purchasing decisions. Interviewee 6 mentioned being part of The Fabricant's community, and stated the importance of owning the brand's items but also engaging with this item by showing it off on social media.[5] This ownership of and engagement with items – for example through blockchain – is what distinguishes community members from mere 'observers' (Belk, 2013).

Finally, considering all effects, virtual environments are not simply adjunctive spaces of identity expression, but an ensemble of interconnected digital universes where identities co-exist and interchange with the physical realm.

In other words, when we navigate between virtual and physical realms, using different avatars for each virtual environment, we're showcasing various facets of ourselves. This multiple identity expression mirrors our behaviour in the physical world where in our daily interactions, we assume different personas and clothing, and by controlling how we are perceived, we attempt to influence others' perceptions of ourselves (Kaiser, 1997).

All interviewees hinted towards this interchanging as something they already always do, both online and offline. Interviewee 2 specifically comments on this when it comes to joining a new virtual environment: "I wouldn't know what is seen as cool in that specific world, or how I should dress. […] You don't know what is normal in a specific digital world." Each environment has its own social rules. Interviewee 8 perceives these to be similar to the social rules we have already established in the physical world: "Every virtual space has its own norms and expectations that you need to understand and follow, but they are all based on real-world experiences." Consumers are required to switch and adapt between virtual environments, just as swiftly as between physical contexts such as work and home.

CONCLUSION

This study focused on the consumption patterns behind digital fashion end products, unveiling the intricate dynamics of the community and culture surrounding their adoption. Our findings underscore a profound parallel between digital fashion and its material counterpart in shaping identity and self-expression. However, within virtual environments, these effects are intensified due to the absence of physical constraints and a perceived expansion of freedom of expression. Digital fashion emerges as a potent catalyst for

5 The Fabricant is an Amsterdam-based digital-only fashion couture house with an active community that operates mainly on Discord.

identity formation, wherein the avatar or virtual body evolves into a sociocultural entity, actively fashioned by consumers. Rather than adhering to a rigid physical-digital dichotomy, our research illuminates a novel hybrid 'phygital' identity paradigm, where physical and digital identities and realms coalesce to co-construct each other. This interplay extends to brand communities, where consumers collectively shape and possess brand identities through their engagement with digital fashion end products.

The research presented, even if not free from limitations, represents a step forward in current research on digital fashion and offers new lines of thought. First, the broad definition of digital fashion end product poses two opposite risks: focusing excessively on a specific niche of consumers (Sheng, 2023; Zhang et al., 2023) or depicting a too general representation of the community. As our interviews show, further research aimed at clustering consumers of digital fashion end products is needed. To do so, we plan to analyse other motivations – such as utility, sustainability, accessibility or affordability – that come forward in our data in future research. To stay within the scope of this article, we have restricted our analysis to identity and self-expression. Finally, the paper represents a pioneering mixed-methods research on digital fashion communities, but it has also shown that, due to internal restrictions set on Discord, reaching a broader audience proved to be more difficult than anticipated. Future research endeavours should explore alternative entry points and incorporate multilingual approaches to foster inclusivity and broaden the scope of inquiry.

To Baudrillard, the place of consumption is in everyday life (Baudrillard, 1970/1998), yet a widespread adoption of digital fashion end products by society has not yet taken place. Digital fashion end products remain niche commodities primarily embraced by younger generations. Integration into mainstream fashion consumption is anticipated as digital technologies become more pervasive and younger demographics' purchasing power increases. Digital fashion is poised to transition from a specialised niche to an integral component of everyday fashion consumption, reshaping the landscape of the fashion industry in the process.

ACKNOWLEDGMENTS

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CAPTIONS

[Fig. 01] Demographic summary of the survey respondents/ digital fashion end product consumers.

[Fig. 02] Consumption motivation types and their value appreciation in mean percentage, based on survey responses

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A PLATFORM-BASED INQUIRY ON SUSTAINABLE FASHION AND DESIGN IN THE MILANESE METROPOLITAN AREA

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Abstract

The paper presents a work that inquires about the themes of fashion and design from a sustainable perspective in the metropolitan area of Milan. The research borrows methodologies aimed at inquiring about societal issues through data derived from web platforms and attempts to readapt them to discover territorial initiatives. Starting from a relevant stakeholder promoting sustainable fashion and design practices, the research exploits algorithmic recommendations to find new accounts connected to meaningful initiatives. It analyzes them with qualitative, statistical, and visual methods. Thirty-six exemplar cases are identified and used to synthetically describe typologies of promoters of virtuous consumption models active in the studied geographical area. In conclusion, reflections on the effectiveness of the method are presented.

Keywords: *Sustainability; Urban Landscape; Algorithmic Recommendations; Fashion And Design; Milan*

INTRODUCTION

The contribution presents research that inquires about the themes of fashion and design from a sustainable perspective. The research aims to identify meaningful initiatives in the metropolitan area of Milan through collecting, visualizing, and analyzing social media data. The approach is derived from the methodological outlook of Digital Methods (Rogers, 2013) that use web platforms (i.e., social media, search engines, websites, etc.) as proxies to learn about cultural change and societal conditions, with the fundamental underpinning that "the real" and "the virtual" represent no separated realities (Rogers, 2009). It is, therefore, assumed that the interplays that occur on social media (i.e., the use of hashtags or the mentions among users) can be used to inspect relationships at the urban landscape level. Although similar approaches have been widely used to represent and study societal trends and issues, they appear less experimented on a territorial scale.

The objective of the research is to experiment with the application of digital methods to identify innovative sustainability initiatives around fashion and design in a specific geographical area by (1) devising and testing a method to collect data from social media platforms, (2) inquiring emerging topics around the selected themes and the relationships among urban actors, and (3) identifying initiatives connected to sustainable consumption models.

The research is built around the Instagram platform and the account of Manifattura Milano, an initiative of the Department for Economic Development

and Labour Policies of the Municipality of Milan, realized by the Urban Economy, Fashion and Design Project Management[1]. It is a predominant hub that promotes urban initiatives related to urban manufacturing, social inclusion, and the rehabilitation of former industrial areas in cities. It strongly focuses on sustainability and circularity concerning fashion and design. Its account appears well managed, with posts that systematically mention the actors with whom it collaborates, often corresponding to urban figures. For this reason, it is assumed to represent a good starting point for a survey aimed at discovering which Milanese stakeholders (i.e., associations, institutions, professionals, traders, producers, disseminators, etc.) are active in sustainability and circularity and, at the same time, are interested in fashion and design.

BACKGROUND

There is a growing momentum among consumers, policymakers, and industry stakeholders to address sustainability efforts, advocating for greater transparency, ethical labor practices, and the adoption of circular economy principles (Henninger et al., 2017; Potting et al., 2017) to the point that sustainability can be defined as the "mantra for the 21st century" (Dyllick & Hockerts, 2002). The concept of sustainability is complex and multifaceted, leading to difficulties in adopting a unique definition due to the proliferation of multiple theories and perspectives (Purvis et al., 2019). Sustainability can refer to the achievement of socioeconomic equity among people while preserving the natural environment and cultural achievements for future generations (Dyllick & Hockerts, 2002). The notion of the "three pillars of sustainability," very similar to Elkington's "Triple Bottom Line" (Elkington, 1997), is generally accepted as the model that gained more traction (Dyllick & Hockerts, 2002; Giddings et al., 2002; Purvis et al., 2019). It clearly indicates that the overall sustainability of a system relies on three dimensions: economic, environmental, and social sustainability.

Policymakers, institutions, and NGOs are supporting a transition towards a more sustainable fashion industry, having acknowledged it as one of the most impactful ones both on environments and people. Multiple researchers participate in the transition, measuring the phenomenon (Ellen MacArthur Foundation, 2017), reviewing the literature (Arrigo, 2021; Chen, 2023; Prado et al., 2022; Yang et al., 2017), or producing experimentations on business models (Bastos Rudolph et al., 2023; Bocken et al., 2019; Hu et al., 2014). Many works focus on implementing principles of circular economy (Potting et al., 2017) that aim to use resources wisely, increase the lifespan of products and materials, and defer their disposal. The approach promotes the reduction of the production of new items, the reuse of existing products, the preservation of their functional state with caring and reparations techniques, and the recycling of materials at the end of life. It is opposed to the so-called linear economy, which accepts that products are produced, used, and disposed of without recovering materials or parts. In the area of fashion, under the guises of "collaborative consumptions" (Arrigo, 2021; Cardoso & Spagnoli, 2023), developed various forms of strategies successful in prolonging garments life by reselling, renting, and swapping them. Such actions can be supported by services for upcycling (Moisio, 2018) and maintenance. While services are seen as a good strategy to reduce the industry's impact (Ricchiardi & Bugnotto, 2019; Tosun & Tosun, 2023), researchers suggest also focusing on educational interventions suitable for increasing the culture of sustainability, which can potentially be done both in consumers and in retailers. Design practices are recognized as important assets in supporting the transition towards sustainability because they participate in the definitions of productions, experiences, and endurance of the human-made environment (Walker & Giard, 2017). Still, the proliferation of approaches based on the "eco-modern focus on technological advancements" that foster efficiency and support economic growth can be seen as problematic because they are not capable of addressing the issue of over-consumption (Changede et al., 2022).

Digital methods represent a broad suite of techniques and approaches for analyzing digital media, online cultures, and the societal implications of digital technologies. These methods encompass a range of digital tools and analysis techniques tailored to investigate the Internet's digital landscape, affordances, and components. As

1 The project Manifattura Milano (https://www.manifattura.milano.it/) is implemented by the Centrinno EU project, aimed at showcasing urban cultural landscapes and turning them into inclusive hubs of entrepreneurship for city residents while fostering sustainability (https://centrinno.eu/).

digital platforms have become central to cultural, political, and social life, digital methods have become essential tools for media researchers aiming to understand these domains in depth (Rogers, 2015). The approach utilizes the Internet not only as a research site but also as a source of data, highlighting the intrinsic value of digital traces for scholarly inquiry. Such data can be collected using application programming interfaces (APIs) or web scraping techniques (Krotov et al., 2020; Marres & Weltevrede, 2013). One weakness of the approach is the difficulty in separating the studied phenomena from the features of the platform from which they are observed (Venturini et al., 2018), with platform affordances being both the access and the modifier. Among platform affordances that can be used to conduct similar studies are algorithmic recommendations, namely functionalities designed to suggest contents identified according to the activity of profiling conducted on users to identify their interests. Recommendations proved to affect users' experience, for example, by producing the so-called "filter bubble" that causes feeds to prioritize contents deemed of interest to the user over others, introducing risks that may include radicalization. The presented research aims to experiment with digital methods and recommendation algorithms to study the sustainable transition in a selected geographical area and collect examples of meaningful initiatives.

METHODOLOGY

The research followed a three-stage methodology, in which every step produces inputs for the following (fig. 01). The first stage is the discovery, collection, and categorization of accounts performed on the social media platform and enriched using a netnography approach (Kozinets, 1998); the second is the automatic collection of posts and their metadata, including hashtags and mentioned users; and the third is the visual analysis of networks of hashtags and users in search of clusters of themes and actors.

DISCOVERY AND COLLECTION OF ACCOUNTS

Using the web platform recommendation algorithm, an approach based on snowball sampling (Leighton et al., 2021) on social media was devised to collect actors related to the inquiry theme. Using a virgin account is necessary to prevent the platform from providing suggestions unrelated to the inquiry theme. The research

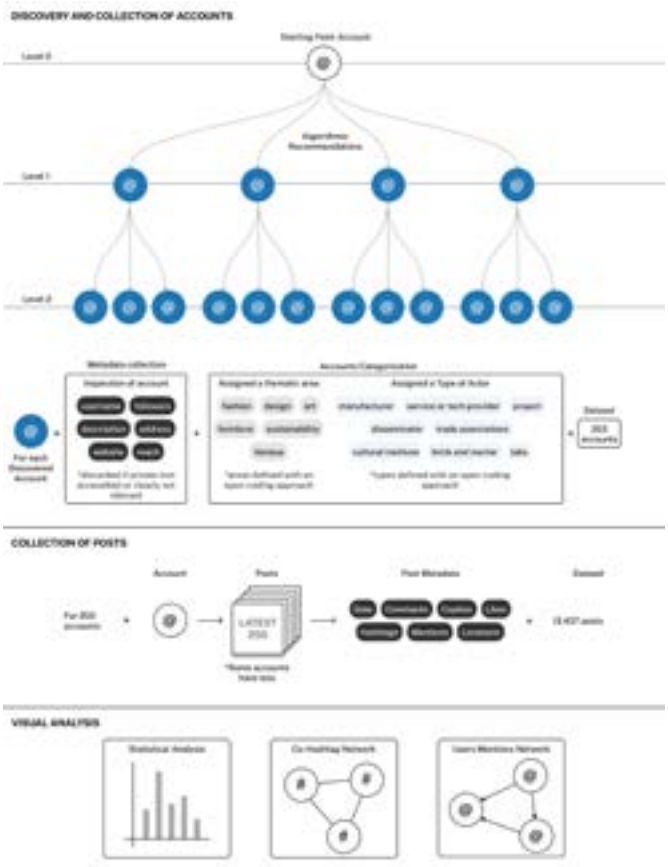

Fig. 01

starts from the account of Manifattura Milano (@manifatturamilano) (level zero) and uses the Instagram "suggested" feature to identify similar accounts to follow (level one). The same process was applied to the newly discovered accounts to increase the number of actors. The accounts are collected into a dataset with further information from the web, as described in Tab. 01, and coded according to thematic areas and actor typologies (Tab. 02 and Tab. 03) that emerged during the research following an open coding approach. The approach, commonly used in the context of grounded theory, is employed to form groups into data for a consequent quantitative comparison (Corbin & Strauss, 1990). The accounts that were private or unrelated to the research aim were discarded. The method produced a total amount of 203 accounts.

COLLECTION OF POSTS

Starting from the accounts list presented above, a Python script based on Instaloader[2] was implemented to collect the latest 250 posts for every

2 More information about Instaloader can be retrieved from https://instaloader.github.io/

Table 1: Account metadata	
Hyperlink profile	Link and name of the Instagram account discovered during the research
Number of followers	The amount of Instagram accounts that follow the discovered account at the moment of data collection
Website	The official URL of the actor behind the account
Address	The address of the activity (if retrievable)
Description	A brief description of the purpose of the actor
Reach	The reach of actors on an international, national, or local level

Tab. 01

Table 2: Thematic areas	
Fashion	
Design	Active in the industry of fashion
Art	Active in the industry of design or using design to innovate the urban landscape
Furniture	Active in the art field as a creator, collector, curator, or institution (museum)
Sustainability	Active exclusively in the industry of furniture design
Various	Actors with a focus on sustainability and active in multiple fields
	Actors that are not included in the definitions above

Tab. 02

Table 3: Type of actor	
Manufacturers	Designers, startups, brands, or micro-enterprises that provide goods as the main core of their business.
Service or Tech Provider	Actors whose main activity is to provide services or technological solutions.
Projects	Temporary activities that are undertaken to achieve specific goals with defined timelines, resources, and objectives.
Disseminators	Companies or individuals that spread information about sustainability and circularity.
Trade associations	Organizations representing collective interests, advocating, and providing resources and support.
Cultural Institutes	Institutes focusing on research, education, cultural heritage, arts, or traditions.
Brick And Mortar	Businesses that sell goods or services in physical spaces.
Labs	Companies that have design labs open to the public as their core business (mostly digital fabrication).

Tab. 03

Table 4: posts metadata	
Label	**Description**
code	Identifier of the Instagram post
user	The Instagram handle of the account (e.g., @manifattura_milano), stored without the “@”
date	Date of the post in the iso format YYYY-MM-DD
likes	Number of likes at the moment of data collection
comments	Number of comments at the moment of data collection
locationName	The name of the location associated with the post (string); undefined if not provided
usertags	Users tagged in the picture of the post
caption	The caption of the post
hashtags	Hashtags extracted from the caption
mentionedUsersCaption	User mentions extracted from the caption

Tab. 04

account and, for each post, its data, as presented in Table 4. After setting a threshold of 25 likes, the collection produced a total amount of 13.437 posts. Besides collecting metrics related to comments and likes, the collection allows the discovery of new accounts because they are mentioned or tagged in posts, and the used hashtag is useful to inquire about thematic areas of discussion on the platform.

VISUAL ANALYSIS OF RESULTS

The visual data analysis uses a custom-made tool created on the ObservableHQ[3] platform. The tool[4] visualizes the above data in the form of network graphs (Barabási & Pósfai, 2016) using two visualization techniques. The former, hashtag to hashtag graph, visualizes the co-occurrence of hashtags in the captions of the collected posts and allows the discovery of thematic areas of discussion. Nodes represent hashtags and are connected if used in the same post caption; size represents the occurrence of hashtags in the body of collected posts. The latter, user-to-user graphs, visualizes mentions among users (i.e., a user that mentions other users in one or multiple posts). The users mentioned extend the previous list; therefore, the graph reveals further actors in the area of interest. Nodes represent users, and size represents their occurrence in the body of collected posts.
The final visualizations are produced using different software. Gephi (Bastian et al., 2009) is used to improve the spatialization of nodes thanks to the Force Atlas 2 algorithm (Jacomy et al., 2014). In the case of hashtag to hashtag graph, the Louvain method (Newman, 2006) is used to recognize groups of strongly interconnected nodes that can be recognized using colors. Finally, the graphics are finalized using vector editing software to visually polish them. The resulting network graphs have been printed and analyzed using the visual network analysis method suggested by (Venturini et al., 2015), which invites the researcher to label clusters and subclusters, linger on the empty space that separates them, and identify the bridge nodes, namely those that connect different clusters. The analysis led to the identification of labeled communities and the most important hashtags they contain. Annotations are then integrated into the visualizations for a conclusive presentation.

RESULTS

TOPICS AND URBAN ACTORS

A quantitative analysis is used to understand which categories are predominant among the discovered accounts. It reveals that the most present actors are cultural institutes, producers, service providers, disseminators, and projects. Laboratories, brick-and-mortar shops, and trade associations seldom occur. Design is the most present thematic area, followed by sustainability, art, and fashion. Most of the actors, however, ended up uncategorized because they were too diverse (category "various"). The fact that brick-and-mortar and labs appear not well represented may require further research to better understand the role that such actors, which include retailers, play in relation to sustainability on a local scale. When looking at thematic areas against the actor's typology, the analysis suggests a non-homogenous distribution, with disseminators generally focused on the theme of sustainability, cultural institutes on art, producers on fashion, and providers on design. The distribution of local actors appears only satisfactory, resulting in 44% of the discovered accounts. Local actors are predominant among Cultural Institutes and Service or Tech Providers and well represented among all the other typologies of actors (fig. 02).
The network of hashtags, qualitatively analyzed using the visual network analysis, is used to grasp information concerning the discourse about sustainability and circularity in different thematic clusters. In the lower-right corner, the pink nodes compose the cluster that is named Sustainable Fashion, in which hashtags like #consciousfashion, #reducereuserecyle, #criticalfashion, #noplanetb, #zerowaste, or #innovation bring attention to the roles and responsibilities of fashion in switching to a more sustainable production. In the above right angle, there is a Jewels cluster, with hashtags like #poeticmetalworks, #poeticjewellerydesign, #handmadejewelry, or #independentdesigner. The cluster appears to be focused on artisanship with a limited interest in sustainability, represented by the marginal presence of ideas related to slow jewelry (#slowsimpleseasonal, #recycledbrass). Jewelry is adjacent to two clusters: the Made in Italy and

3 ObservableHQ is a web platform for the creation of Javascript code notebooks. The platform simplifies the creation of data-oriented visual solutions (https://observablehq.com/about)

4 Access the tool at this url:
https://observablehq.com/@iosonosempreio/visualizing-instagram-data-from-zeeschuimer-v1-5-0

Fig. 02

the Interior-Architecture clusters. The formers touch upon #madeinitaly, #handmade, #vintage, #shoes, and luxury fashion on demand; quality and style appear to be predominant to sustainability. The second cluster focuses on architecture, and more specifically on the landscape (#landscapearchitecture, #masterpaesaggio, #gardendesign) and interiors (#homedesign, #surfaces, #designshowroom, #moodboard). Another big and important cluster is the one of Artistic Production (#contemporaryart, #artist, #culture, #masterpiece, #drawing, #photography, #artecontemporanea), which is visibly influenced by posts produced by actors located in France or Venice. Even in this case, there is a thematic lack in relation to sustainability and circularity. Still, the analysis may suggest that art can play a role in the communication of positive and progressive messages. A smaller cluster, also related to arts, is one of the Alternative Exhibition Spaces, which testifies to the existence of unexpected shopping windows dedicated to art in certain train stations. Design and Circularity (#designers, #milandesignweek, #repubblicadeldesign, #rigenerazioneurbana, #tunnelboulevard, #t12lab, #dacosanascecosa, #adi) is the last remarkable cluster, which testifies the commitment of Milanese designers in working towards a more circular and sustainable city, also in terms of social sustainability. The visualization analysis suggests that the topics of circularity and sustainability are not equally distributed in the recognized clusters, with some paying more attention to them (fig. 03). The network of mentions among users is used to understand the most interconnected actors and to reveal further accounts that can be inquired into future iterations. The blue nodes represent the account identified in the first iteration, while the purple nodes appear after analyzing mentions

in posts. The visualization reveals a central agglomerate with important Milanese accounts that work across design, innovation, digital fabrication, and art. Among them are important projects of urban regeneration; although they are not the ones that mostly occur in our dataset, they appear as the most interconnected. We can find institutions, universities, and news outlets among the newly appeared nodes. Another cluster collects accounts oriented to the fashion industry and dedicated to promoting ethical and sustainable approaches. Another cluster is related to arty accounts that appear strongly connected with Venice, although some newly discovered ones appear locally in Milan. Art is also trending in the cluster of alternative exhibition spaces, which includes several artists and designers. The last cluster describes the network of a slow luxury fashion brand (fig. 04).

PROMOTERS OF VIRTUOUS CONSUMPTION MODELS

A close reading analysis of the discovered accounts reveals thirty-six examples of local initiatives that nurture sustainable consumption models in the Milanese metropolitan area (Tab. 05). Initiatives are described in relation to their thematic area and commented on in relation to the theoretical background of the research. In *fashion*, there are examples of innovative usage of locations that are readapted to host collaborative consumption

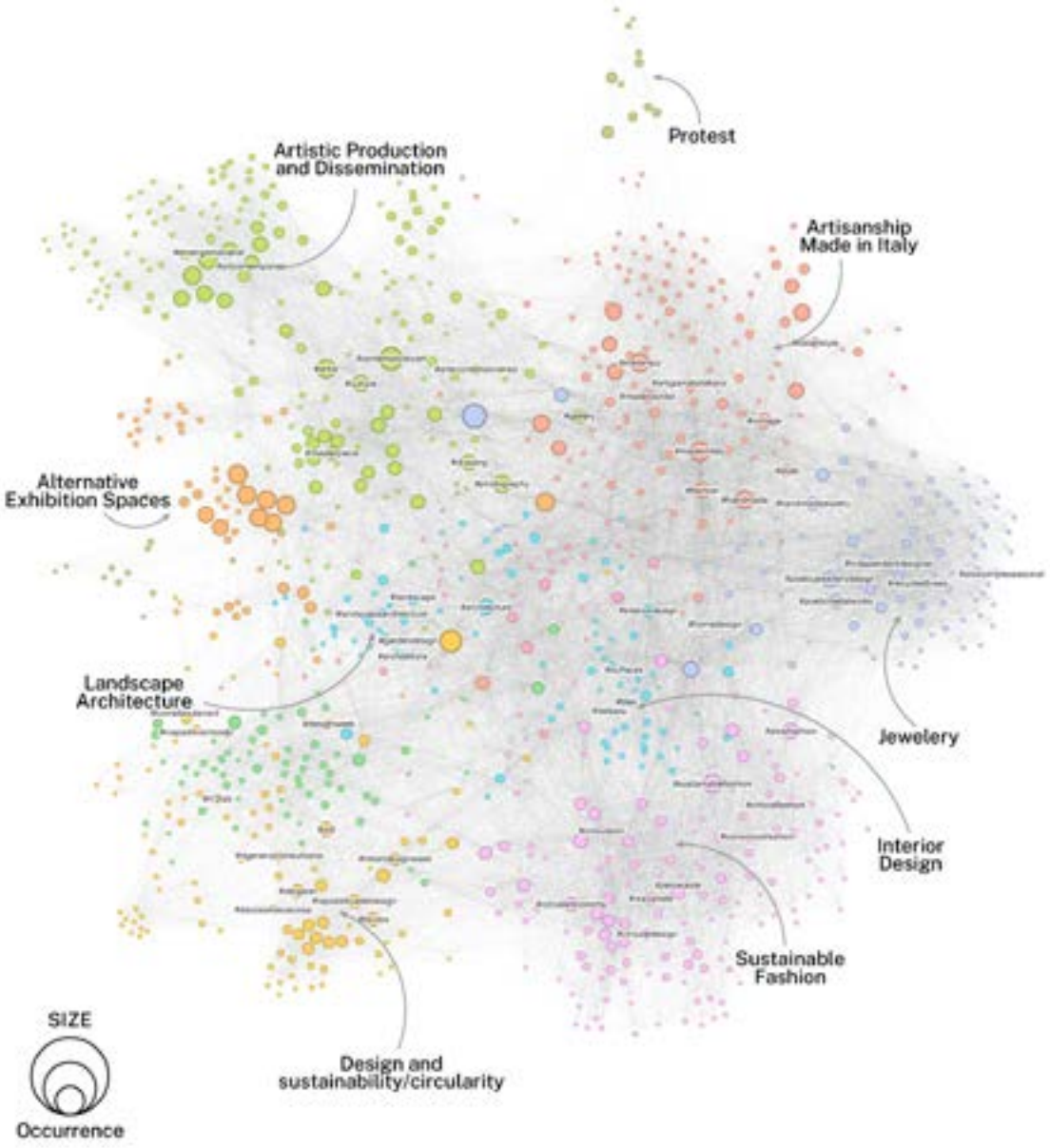

Fig. 03

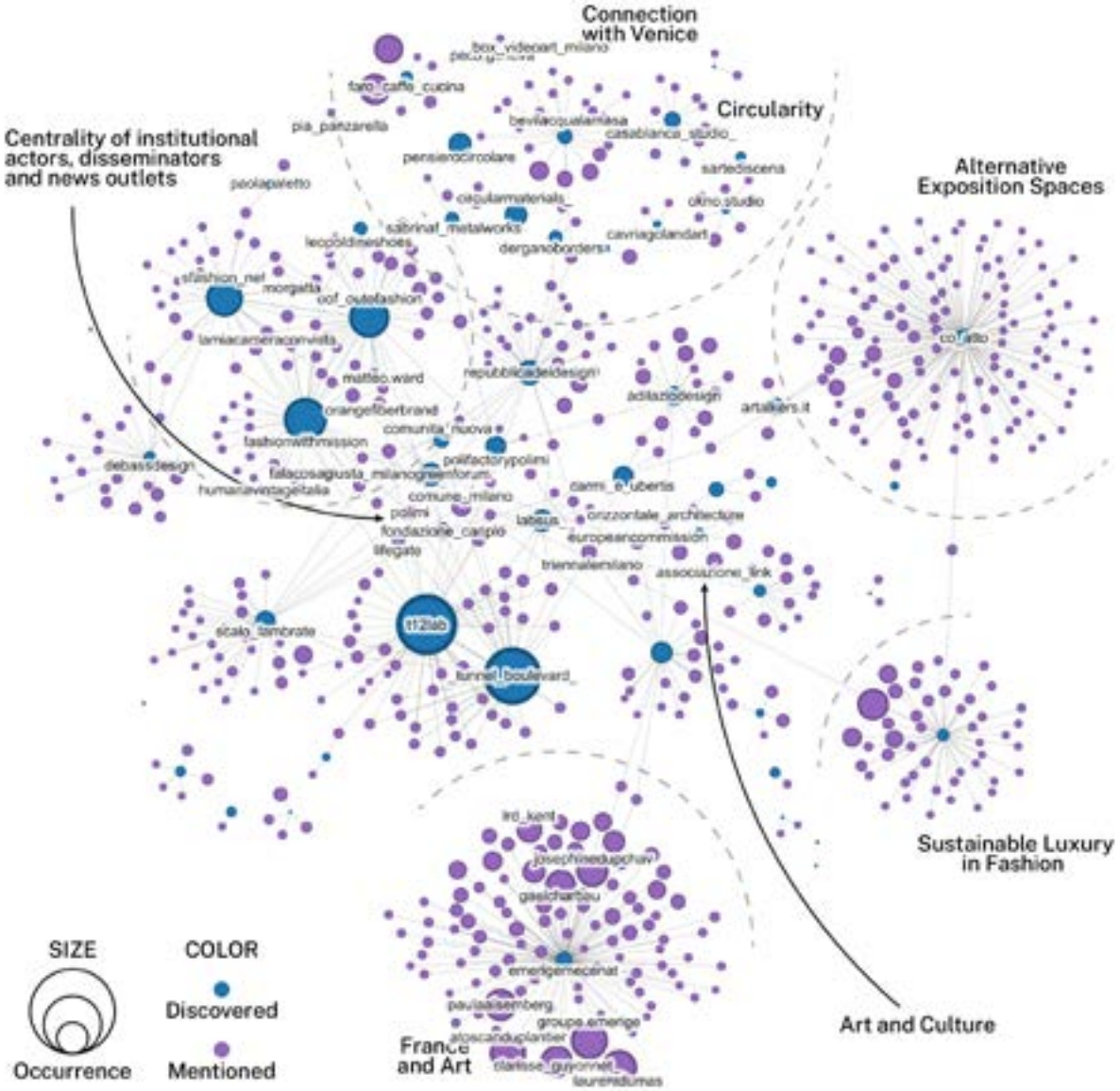

Fig. 04

events; no initiatives of collaborative consumption appear to be related to brick-and-mortar businesses. Some accounts represent initiatives that make use of sustainable materials to produce garments or jewelry or that promote upcycling techniques to prolong the life of products or their materials. Such initiatives are complemented by disseminators and institutions that promote slow fashion and communicate in very diverse ways, including influencers, journalists, and theater performances. In design, it is possible to recognize initiatives connected to the production of new products and experimental projects aimed at social sustainability. Some accounts represent laboratories that promote and teach circular strategies for prolonging the lives of objects and furniture, upcycling, and recycling techniques; at the same time, they offer inhabitants places and occasions to meet and strengthen social relationships. One specific example focuses on social and public space design, creating social contexts capable of fostering sustainable behaviors. Other accounts represent design studios specifically oriented to sustainable products aimed at hindering overproductions or using systemic approaches to help businesses become more sustainable. The local actors that fall into the sustainability thematic area are mostly disseminators who affirm themselves on social media as promoters of sustainable materials, brands, solutions, and behaviors. From a more general perspective, it appears that sustainability initiatives are connected to a social dimension, with many cases that create occasions for collectively learning, designing, making art, and strengthening relationships at a neighborhood and urban level.

Table 5: the selected thirty-six accounts of sustainable initiatives	
Account	**Description**
@chezbabettegaragesale Reach: Local Actor Type: Brick and Mortars Thematic Area: Fashion	A vintage shop hosted in a garage with a high number of followers. They create various initiatives around collaborative consumption.
@co_atto Reach: Local Actor Type: Brick and Mortars Thematic Area: Varie	Situated at Milan's Porta Garibaldi station, serves as a research and collaboration hub, driving hybrid projects that merge diverse experiences and skills. It aims to infuse the city with innovative partnerships, fostering connections with local dynamics through a diverse lineup of events. Emphasizing its role as a connector and activator, it embodies a cross-disciplinary ethos.
@milanogreenforum Reach: Local Actor Type: Cultural Institutes Thematic Area: Sustainability	Organisation dedicated to hosting people who talk about environmental issues in every field and who can create knowledge and business
@manifattura_milano Reach: Local Actor Type: Cultural Institutes Thematic Area: Sustainability	Manifattura Milano is the platform dedicated to craftsmanship, urban manufacturing, and the circular economy in the fashion and design sectors
@ciq_milano Reach: Local Actor Type: Cultural Institutes Thematic Area: Varie	CIQ: Centro Internazionale di Quartiere. A place where to organize cultural activities like concerts, courses, workshops (adults, children), thematic dinners, movie projections, book presentations, exhibitions, etc. The aim of CIQ is to nurture proposals of a creative, artistic, and social nature with a focus on internationality
@ecologista.imbruttita Reach: Local Actor Type: Disseminators Thematic Area: Sustainability	Divulgator VERY MILANESE on themes of ecology and sustainability
@milanoisgoood Reach: Local Actor Type: Disseminators Thematic Area: Sustainability	Milano Goood promotes active citizenship and a sustainable lifestyle
@materiarinnovabile Reach: Local Actor Type: Disseminators Thematic Area: Sustainability	Renewable Matter is an international online magazine focusing on the bioeconomy and circular economy. It delves into various sustainability topics, such as waste recycling, renewable materials, and innovations contributing to a circular economic model.
@falegnameriacuccagna Reach: Local Actor Type: Labs Thematic Area: Furniture	Falegnameria Cuccagna, part of Cascina Cuccagna in Milan, offers woodworking spaces for education, skill-building, and inclusion. It focuses on empowering young migrants through vocational training and promotes integration. The project advocates for community engagement, social fabric enrichment, and creative exchange, fostering an inclusive social enterprise.
@designdifferente Reach: Local Actor Type: Labs Thematic Area: Furniture	Fablab focused on the circular economy, also offering space for events or retail
@conservami_attrezzeria Reach: Local Actor Type: Labs Thematic Area: Sustainability	A space where it is possible to repair objects of Various kinds, from bicycles to furniture, including garments
@rub.objects Reach: Local Actor Type: Producers Thematic Area: Design	Design studio focused on creating a bridge between industrial production and craftsmanship to reshape the current overproduction and consumption paradigm
@materialsfortransitions_polimi Reach: Local Actor Type: Producers Thematic Area: Design	MaDe/Trans focuses on investigating emerging materials from a designer's view, developing research, applied projects, and knowledge transfer activities
@opellamilano Reach: Local Actor Type: Producers Thematic Area: Fashion	Opella realizes fashion and design jewelry, the product of research and experimentation with new materials
@melampo_milano Reach: Local Actor Type: Producers Thematic Area: Fashion	The contemporary Italian fashion brand specializes in"slow luxury," creating on-demand pieces with upcycled materials, not for every item but significantly present across their collection.
@_tunnel_boulevard_ Reach: Local Actor Type: Projects Thematic Area: Design	Project for the regeneration of the public area via Pontano with its railway tunnels through activities of social design and public art that promote the participation of active citizenship, thus creating social cohesion (from obstacles inside the city to a public area suitable for everyone)
@dacosanascecosa_rdd Reach: Local Actor Type: Projects Thematic Area: Sustainability	The project involves redeveloping the Bovisa district to gradually shift habits towards the conscious use of waste materials, transforming them into beauty (e.g., benches for the community).
@t12lab Reach: Local Actor Type: Service or Tech Providers Thematic Area: Design	The cultural association and research agency focuses on social and public spatial design, employing recycling as a strategic and technical element. They specialize in creating site-specific installations, custom pieces upon request, and limited series production. Their signature project, "Tunnel Boulevard," exemplifies their approach to integrating recycled materials into urban design initiatives.
@wfawebfashionacademy Reach: Local Actor Type: Service or Tech Providers Thematic Area: Fashion	Leading Waste Couture regenerative production chain made in Italy since 2009. The brand identifies the waste of value and the value of waste. Guarantees to the consumer fashion and design products that were created respecting the rules established by the Waste Couture Protocol for production processes designed to make the closed cycle.

Tab. 05

Table 5: the selected thirty-six accounts of sustainable initiatives	
Account	**Description**
@milano_greenweek Reach: Local Actor Type: Trade Associations Thematic Area: Furniture	A week dedicated to exploring and celebrating Man's commitment to community welfare, participation, and sustainability. Through various activities, it aims to engage participants in experiencing and understanding the city's sustainable practices and civic engagement.
@oof_outofashion Reach: National Actor Type: Cultural Institutes Thematic Area: Fashion	Leading platform for the promotion of sustainable fashion
@circularmaterials_ Reach: National Actor Type: Disseminators Thematic Area: Design	To empower and inspire designers with a materials palette for a circular economy. Consulting specialized in circular materials
@fashionwithmission Reach: National Actor Type: Disseminators Thematic Area: Fashion	An educational platform on responsible fashion practices
@lamiacameraconvista Reach: National Actor Type: Disseminators Thematic Area: Fashion	Journalist and blogger working on sustainable fashion, made in Italy, food, lifestyle, and traveling. Collaborates with Connecting Cultures and Out Of Fashion
@sfashion_net Reach: National Actor Type: Disseminators Thematic Area: Fashion	Sfashion-net is a network promoting slow, critical, and independent fashion brands. They support a new fashion interpretation, celebrating small enterprises oriented toward slow fashion.
@threen.it Reach: National Actor Type: Disseminators Thematic Area: Sustainability	Magazine about sustainability, discussing different topics (sustainability, fashion, beauty, health, food, etc.)
@tantarobasostenibile Reach: National Actor Type: Disseminators Thematic Area: Sustainability	Ideas for being sustainable every day
@curiousgrid Reach: National Actor Type: Producers Thematic Area: Fashion	Curious Grid is a Unisex clothing brand created through the visionary journey of love for old vintage things. The idea is created by upcycling stocks of fabric pieces left over in mills and yarns unused at the factories and creating classic yet modern fashion.
@repainted_beachwear Reach: National Actor Type: Producers Thematic Area: Fashion	Repainted is a fashion label integrating marine conservation awareness with luxury design. Utilizing regenerated Lycra, their production process emphasizes eco-friendly practices. Garments are handcrafted in Italy, underscoring a commitment to quality and sustainable fashion. Through upcycling, Repainted'ss operations contribute to waste reduction
@magasintorino Reach: National Actor Type: Producers Thematic Area: Furniture	Restyling, upcycling, and creative recycling techniques to refurbish antique furniture and home decor items in collaboration with local artisans and artists. This approach integrates traditional craftsmanship with contemporary artistic expression to preserve and transform functional art pieces
@mixcyclingsrl Reach: National Actor Type: Producers Thematic Area: Sustainability	Innovative startup developing organic material blends by recovering plant-based industrial waste
@sartediscena Reach: National Actor Type: Projects Thematic Area: Fashion	Movement for supporting the rights of show business tailors (females)
@officinecircolari Reach: National Actor Type: Service or Tech Providers Thematic Area: Design	A consultancy specializing in systemic design and the circular economy aimed at optimizing resource value and minimizing environmental impact. They provide strategic advice, eco-product design, and effective communication, focusing on economic, environmental, and social sustainability. Their services cater to private entities, public bodies, and the third sector, promoting fresh ideas and professional approaches to sustainability.
@sssuperlocal Reach: National Actor Type: Service or Tech Providers Thematic Area: Design	SUPERLOCAL™, established in 2015 by Andrea de Chirico, is a research-oriented design studio based in Turin and active in Milan. It focuses on the localized production of everyday objects, critically examining and promoting the concept of regional manufacturing as a sustainable practice. The studio operates across multiple platforms to explore and implement strategies that enhance local production capacities.
@climatestandard Reach: National Actor Type: Service or Tech Providers Thematic Area: Sustainability	Climate Standard produces certifications created to provide a benchmark for companies interested in climate sustainability and embodies the most important research, guidelines, and technical reports from specialized bodies in the global landscape.
@recircle.it Reach: National Actor Type: Service or Tech Providers Thematic Area: Sustainability	A project aimed at developing a digital platform that connects major Italian enterprises interested in green waste disposal to facilitate their participation in a circular economy. The platform's objective is to enable cost-effective waste management communications between entities that view waste as a low-cost raw material and those needing to dispose of it economically.

Tab. 05

EFFECTIVENESS OF THE METHODOLOGY

The research has identified numerous actors considered to be local, although over half of the discovered accounts are active nationally and internationally. It was noticed that accounts suggested at the first iteration of the snowballing process (fig.1) are more likely to belong to the geographical area of interest. In contrast, the noise increases in the second iteration. The result can depend on Milan's status as an international hub, which still contributes to a better understanding of the initiatives related to the inquiry theme. Visualizing user mentions only partially maintains a local focus, occasionally linking to accounts of low relevance to the investigated theme. The hashtag network offers interesting insights into the research area, but their territorial specificity is unclear. An analysis of post metadata reveals that only a small part of these indicate a location; when they do, they are, in most cases, far from their area. Therefore, it seems not feasible to use localization to learn about the theme of inquiry in the intended area.

Ultimately, thirty-six local accounts were selected as exemplary in promoting virtuous consumption models. These cases were pinpointed through close reading, as visual methodologies based on platform metrics proved ineffective to this goal; still, they helped in effectively browsing the number of discovered accounts. The correspondence between accounts and initiatives was not always well recognizable, as many were not explicitly dedicated to sustainable fashion and design actions. For this reason, all personal profiles were discarded.

In conclusion, the recommendation algorithm provided numerous examples of sustainable fashion and design initiatives, albeit only partially aligned with the desired territorial focus. Future studies might identify more effective strategies to achieve a territorial focus, for example, by nurturing more clear profiling, selecting local hashtags to study, or exploring direct connections with local initiatives.

CONCLUSIONS

The research experimented with applying methods derived from media studies to inquire about sustainable fashion and design initiatives in the Milanese area. The methodology exploits recommendation systems of social media platforms to collect examples of initiatives related to the inquired themes. The conducted work mixed qualitative (close reading) and quantitative (data visualization) approaches to analyze data, themes, and actors and to produce a selection of thirty-six meaningful territorial initiatives about sustainable fashion and design. Still, in the produced data, we mainly find accounts that refer to non-territorial initiatives, with only 44% of discovered actors clearly traceable to the territory under analysis. This raises doubts about the method's efficacy: does the signal overcome the noise? Although the research was successful in gathering promoters of sustainable initiatives, further research can be conducted to understand how to employ similar techniques to inquire into territorial contexts more effectively.

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CAPTIONS

[Fig. 01] The diagram represents the research protocol that exploits algorithmic suggestions and other affordances of the social media platform.

[Fig. 02] Statistical analysis of results, displaying quantities concerning the performed categorization.

[Fig. 03] The network graph visualizes the co-occurrence of hashtags retrieved from the captions of the collected posts. Hashtags are connected if appearing together in one or more posts. Only the most relevant labels are displayed to reduce cluttering in the visualization.

[Fig. 04] The network graph visualizes mentions among users (i.e., a user who mentions other users in one or multiple posts). The users mentioned extend the original data; therefore, the graph reveals further actors in the area of interest.

[Tab. 01] Metadata was collected for each discovered account

[Tab. 02] Descriptions of the thematic areas used to categorize the discovered accounts

[Tab. 03] Descriptions of actor typologies used to categorize the discovered accounts

[Tab. 04] The script is designed to collect the above metadata from posts and to organize them in a new dataset.

[Tab. 05] The table describes the thirty-six selected accounts representing initiatives that embody sustainability projects of different types in the Milanese area.

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SUSTAINABILITY LABELLING IN FASHION

MANIPULATING CONSUMER ENGAGEMENT

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Abstract

This paper analyses the impact of persuasive technologies in sustainable fashion. The analysis focuses on this sector as it shows certain ambiguities that pose significant risks for digital consumers. The main controversial aspect concerns sustainability labels and the rationale behind their implementation. This controversy appears extremely compromising when it meets the functioning of the digital world. The persuasion provided by digital technology becomes ethically problematic for some specific digital consumers. By analysing consumer preferences, the paper affirms that agents with a weak preference for sustainable fashion risk being manipulated by PTs. However, manipulating individuals in their garment choices raises ethical concerns related to the formation and expression of people's identities.

Keywords: *AI; Digital Technologies; Sustainability; Consumer Behaviour; AI Ethics*

INTRODUCTION

The concept of sustainability is ever more important in the fashion industry and has been playing an increasing role in consumers' clothing purchasing decisions. This trend has been growing positively since the 1990s. However, despite such an increase in attention towards sustainability, mainly verged as environmental sustainability, only around 10% of the current clothing market is dedicated to sustainable fashion (Jacobs et al., 2018). Even if people express sensitivity to sustainability and show a growing interest in sustainable fashion, their purchasing decisions do not reflect this inclination (McNeill & Moore, 2015). The causes of this phenomenon are multiple and include economic, cultural and behavioural factors.

There is a clear asymmetry between consumers' attitudes towards sustainability and their purchasing behaviour. This discrepancy is defined in the literature as the 'attitude-behaviour gap', whereby many consumers recognize the importance of environmentalism and agree with the principles of sustainability but their purchasing actions do not reflect this ethical awareness (Wiederhold & Martinez, 2018). Addressing this gap requires a holistic approach that involves not only consumers but also companies, governments and the other key players in the fashion industry. Furthermore, the gap highlights the complexity of consumption dynamics and the need for more effective strategies to promote sustainability in the fashion industry.

The paper aims to analyse these aspects of sustainable fashion by relating them to the

mechanisms underlying digital platforms. The analysis delves into the consumption patterns of sustainable fashion and the impact that persuasive technologies (PTs) have in influencing consumers' behaviours. With the overarching goal of highlighting the potentially adverse effects of PTs, the paper's objective is to demonstrate how these technologies can significantly impact the formation of consumer identities within the sustainable fashion sector. To show the different implications of PTs influences, the paper draws on the insights from the theory of consumer preferences. The paper states that PTs in the sustainable fashion field create the possibilities for the formation of people's controversial self-identity representations.

The paper is structured as follows. After this introduction, section 2 delves into various aspects of sustainable fashion, elucidating how apparel can demonstrate to be sustainable. This section focuses on the importance of sustainability labels. Section 3 introduces what PTs are and analyses the role they play in influencing users' fashion choices. This section shows the implications of the functioning of PTs on two different types of consumers: those who make purchases following the criterion of sustainability and those for whom sustainability represents just one of the many factors that play a role when buying a fashion product. Section 4 concludes by detailing some final remarks highlighting how dangerous preferences' manipulation is related to fashion items.

SUSTAINABILITY LABELS IN FASHION CONSUMPTION

WHAT DOES 'SUSTAINABILITY LABEL' MEAN?

The gap between attitude and behaviour poses a significant challenge in sustainable fashion marketing. In order to address this issue, several marketing strategies grounded in the theory of nudging have emerged. Indeed, by fostering an attitude in favour of sustainability, consumers can be gently influenced to a deeper understanding of the importance of ecological choices, which will consequently be reflected in purchasing decisions. In this sense, sustainability labels represent precisely that gentle push that could lead consumers towards sustainable fashion products. The sustainability label is the main mark that allows to verify the sustainability of a garment. These labels represent a method to simplify purchasing processes and at the same time help consumers make sustainable choices. Sustainability labels help consumers identify sustainable products and at the same time influence their purchasing behaviour (Thøgersen et al., 2012).

It is worth noting that just as the importance of sustainability in the fashion sector has increased in recent years, sustainability labels have become ever increasingly common. These labels can be marks approved by third parties who verify their truthfulness, as well as private marks, i.e., certifications produced by the clothing manufacturers themselves (Fig. 01). The change in attention towards sustainability verified in recent years is also demonstrated by the change in the label's meaning that occurred in recent years. Recently the term sustainability label has replaced that of eco-label. The latter used to refer to labels that provide specific information on the environmental performance of a product, the former has a broader meaning and also includes the concept of social sustainability, in addition to environmental sustainability.

Therefore, sustainability labels are the primary method developed by the sustainable fashion industry to align consumers' preferences and behaviours. These labels provide a direct indication of a product's sustainability, encouraging consumers to make informed choices. In this way, labels act as a nudge, indirectly guiding consumer behaviour without imposing specific decisions. Sustainability labels capture consumers' attention and translate people's environmental sensitivity into purchasing choices. It is then not surprising that with the recent increase in consumer interest in the environment sustainability labels have become one of the distinctive and popular elements in the fashion industry (Gossen et al., 2022).

CLASSIFICATION OF SUSTAINABILITY LABELS

According to the International Organization for Standardization (ISO), the market is mainly dominated by three types of labels: (i) labels verified by third parties, which certify compliance with predetermined sustainability requirements; (ii) private labels, which are based on self-declarations by the producers themselves and do not require verification by a third party; (iii) labels that serve for exchanging sustainability information regarding products among businesses and mandates independent verification by a third party (ISO, 2016; ISO, 2018). With increasing consumers' environmental awareness, private labels have been enjoying growing popularity.

Third-party label: the Global Recycle Standard ensures the content of recycled materials in their products, both intermediate and finished, the maintenance of traceability throughout the entire production process, restrictions in the use of chemical products and compliance with environmental and social criteria in all phases of the production chain from the recycling of materials, to the subsequent manufacturing phases, up to the labelling of the finished product.	Private label: FairWertung - the German Fair Recycling Federation - is a network of non-profit organisations and social enterprises that comply with criteria laid down by FairWertung itself for a fair collection and marketing of second-hand clothes.

Fig. 01

However, despite this classification, labels present several problematic aspects. First, we should note that due to the increasing attitude to sustainability a multitude of new labels constantly emerge escaping any ISO classifications, thus creating an immense heterogeneity of sustainability labels on the market (Minkov et al., 2020). Secondly, sustainability can refer to different meanings: it can be social, environmental, economical, energetically, etc. Furthermore, the concept of sustainability does not necessarily concern the entire production process of clothes. It can only refer to one phase of the production process. For these reasons, the comparison between sustainability labels is difficult. They can refer to different phases of the production cycle of a garment and focus on specific and different sustainability aspects. To make an example, let's mention the well-known sustainability label, the Carbon Trust, renowned for assessing the quantity of greenhouse gas emissions generated during the production process of a specific item. It is clear that comparing this label to another focusing on the percentage of recycled materials would make no sense and be misleading for consumers.

In addition, there is the need to mention that in the realm of digital fashion, a third label emerges to convey the sustainability of a garment. Specific to online retailing, sustainability tags, which are markers designed to highlight compliance with the products' sustainability, can be considered a type of sustainability label. These tags can be based both on the very sustainability labels of the products (when present) and on certifications provided by the same retail platform in which the product is on sale. Therefore, these tags can represent a sustainable label verified by third parties (e.g. the Amazon Climate Pledge Friendly), a private label self-certified by the company manufacturing the product, or they can be a self-certification affixed by the retailing platform. The presence of sustainable tags indicate also that digital platforms recognise the growing importance of the sustainability concept among consumers.

It is essential to underline that the sustainability tags system is extremely useful for digital retailing, as it offers consumers an even quicker and more intuitive method to identify sustainable products during their purchases. This system not only simplifies the search for eco-friendly items but contributes to raising consumer awareness of the importance of sustainability in the fashion sector. At the same time, its implementation is also advantageous for retailers, as it offers them a more efficient and cheaper way than physical labels to communicate their commitment to sustainability, thus improving the brand's and platform's reputation.

However, it is important to consider that the introduction of sustainability tags increases the ease of greenwashing practices. These include misleading advertising linked to logos, labels and environmental sustainability certifications, without a real commitment from the brand to reduce the environmental impact of its products. Therefore, while sustainability tags offer undoubted

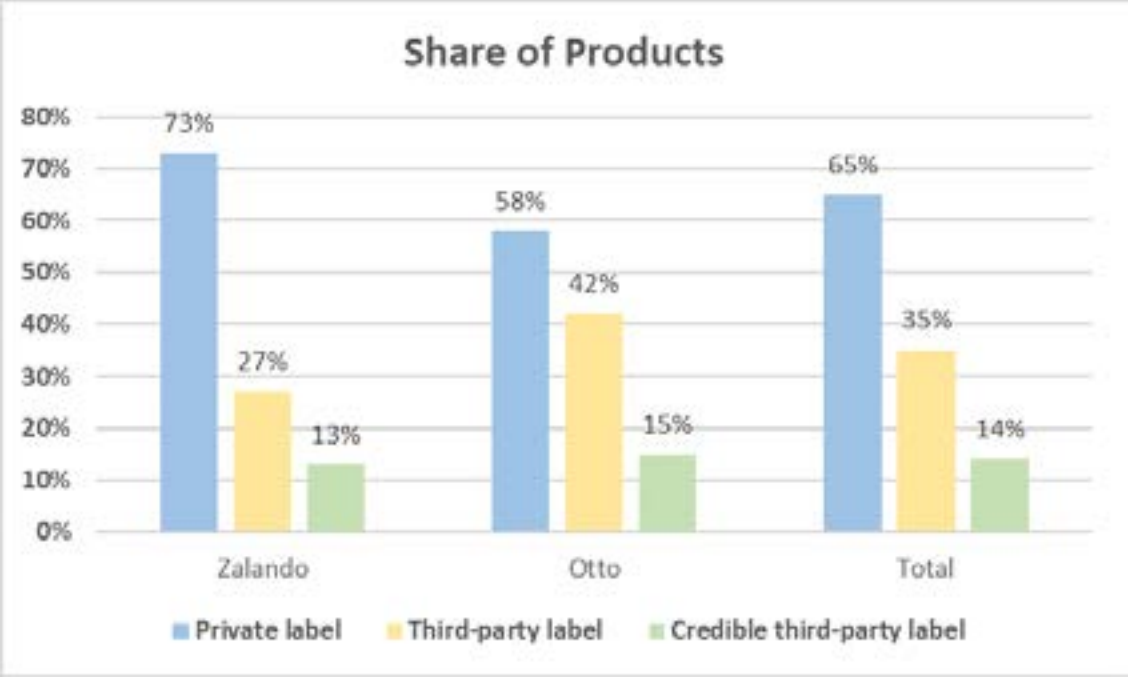

Fig. 02

advantages in terms of transparency and accessibility of information, consumers must remain aware of the possibility of encountering sustainability claims not supported by actual sustainability-oriented corporate actions and policies.

SUSTAINABILITY LABELS ISSUES

The vast diversity of labels and tags has a significant impact on consumers. Only a minority of individuals can navigate between the multiple types of labels and distinguish their peculiarities (Hwang et al., 2015). Due to the great heterogeneity of sustainability labels available, people often find themselves confused and this inevitably creates trust issues towards the very labels (Grunert et al., 2014). In addition to such great heterogeneity, a second aspect that entails confusion among consumers derives from the multiplicity of sustainability aspects to which the labels refer. As explained above, this makes it difficult for consumers to accurately assess the sustainability of products. As a result, consumers feel undecided and insecure in their purchasing choices, compromising trust in the decision-making process and generating a further need for clarity and transparency from manufacturers and retailers. Finally, a third confusing aspect concerns the labels' credibility. An analysis of the credibility of sustainability labels and tags at the two leading online fashion retailers in Germany, Zalando and Otto, revealed that around two thirds of fashion items are marked with private labels, while only a third provides sustainability information approved by third parties (Gossen et al., 2022). And only 10 out of the 25 third-party labels identified could be defined as credible. Out of a total of 16,878 fashion products featuring a sustainability tag on Zalando and Otto, only 14% presented sustainability information considered credible (fig. 02). These findings raise significant concerns regarding the consistency and reliability of sustainability information expressed through labelling, highlighting the need for greater standardization and transparency in the sustainable fashion sector. Therefore, although labels are a tool designed to guide consumers towards more responsible choices, several problems lead people to ignore such labels rather than rely on them.

PTS, SUSTAINABILITY AND FASHION CONSUMERS

PTs represent an interactive technology capable of influencing a person's attitudes or behaviours (Fogg, 1998). One of the main aims of PTs is to offer a representation of reality that reflects users' values and beliefs to increase the time spent on digital platforms. PTs are based on artificial intelligence algorithms, which by collecting and classifying user preferences, are able to constantly suggest content in line with these preferences. The goal of PTs is to maintain user engagement as high as possible. Strengthening users' beliefs by making

people communicate within a closed system is an effective way to increase such engagement. Indeed, numerous social networks have proven to do so (Cinelli et al., 2021).
PTs are based on many different persuasive strategies. The Persuasive Design System framework identifies 28 strategies that are classified into four categories based on the type of task they aim at: primary task support, dialogue support, system credibility support, social support (Fogg, 2002). As shown by Adaji & Adisa (2022), in the literature about PTs to influence sustainable behaviours, 20 of these strategies mainly arise. Among these, 9 are the most common: reward, suggestion, self-monitoring, feedback, competition, reminders, social comparison, comparison in goal setting (fig. 03.a). It is important to observe that the technologies on which these strategies are applied are manifold. PTs can indeed be developed as mobile applications, IOT devices, serious games, web applications and virtual realities (fig. 03.b) (Adaji & Adisa, 2022).

PTS INFLUENCE

PTs exert a significant influence on people's choices and behaviours. The literature has widely analysed the types of influence exercised by PTs, defining them mainly in two ways. On the one hand, PTs influence is seen as beneficial as it helps people navigate through the vast amount of information present in the digital world, allowing them to avoid choice overload and decision fatigue. In a context where the enormous flow of online information could overwhelm users, the persuasive functioning of technologies is considered essential and advantageous. On the other hand, this persuasion is often seen as a type of negative influence as it is based on user preference profiling techniques and the reduction of available choice options. PTs filter out options for users, thus controlling what they see and read and how they behave.
PTs entail the creation of what in the literature has been defined as epistemic bubbles and echo chambers (Piazza & Croce, 2022). These are conditions whereby people are led to live in environments that constantly propose the same themes and make people interact mainly with individuals with whom they share the same preferences, interests and opinions. In the echo chambers, information and content are always in line with the user's interests. Such chambers and bubbles imply that existing ideas and opinions are amplified and reinforced as different perspectives are missing. Therefore, they contribute to

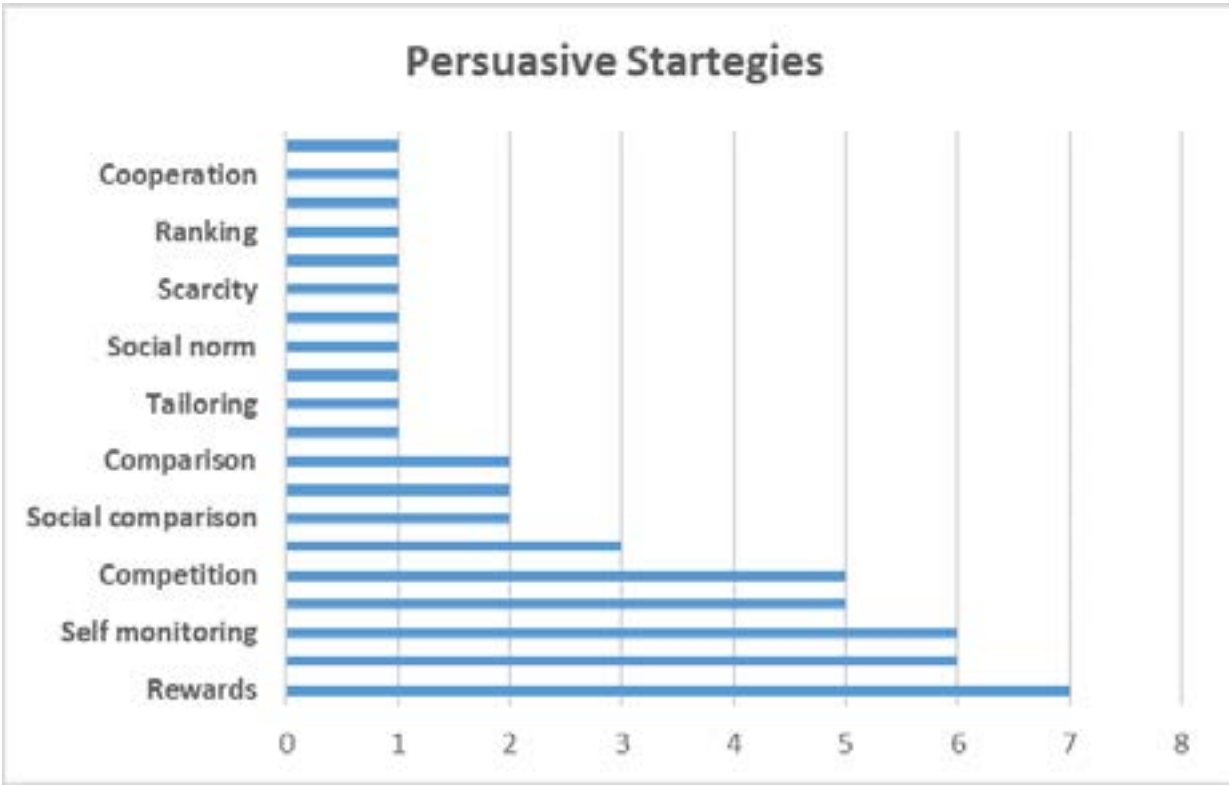

Fig. 3a

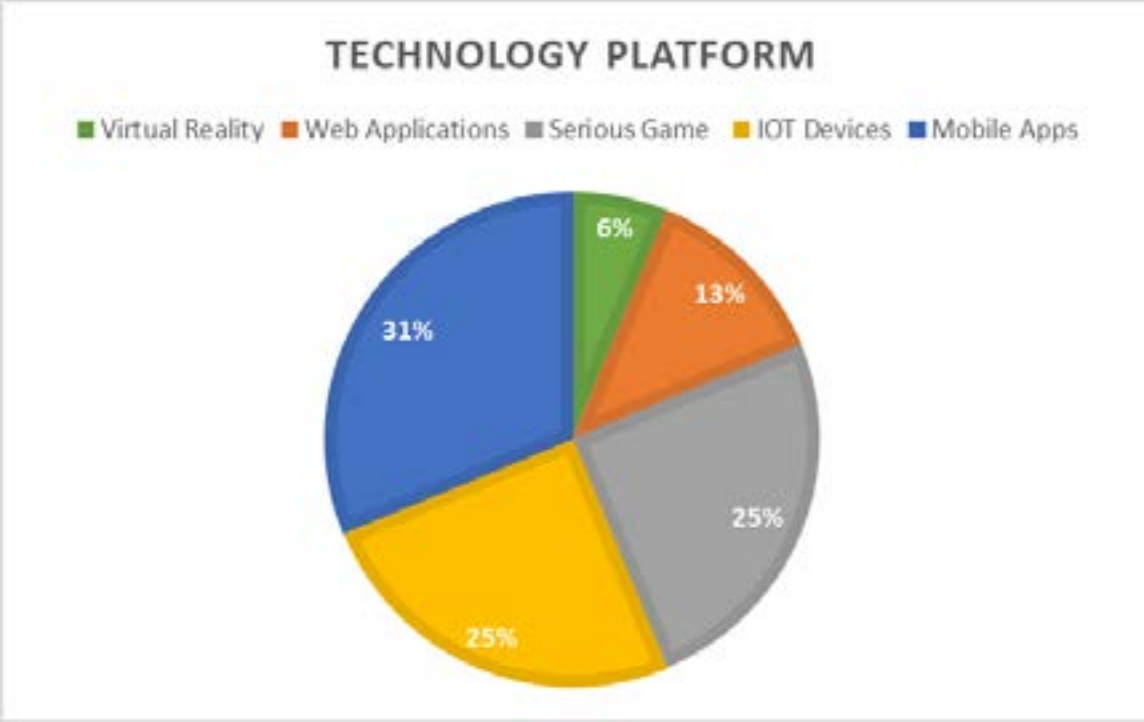

Fig. 3b

polarisation of pre-existing preferences (Sunstein, 2002). However, this mechanism presents the risk of preference manipulation. By determining and limiting the set of options from which users can choose, PTs imply predetermined decisions. According to this interpretation, PTs manipulate users, undermining their autonomy and freedom of choice.

SUSTAINABILITY AND CONSUMER'S PREFERENCES

As described above, consumers have an ambiguous attitude towards the sustainability principle. This section will refer to the consumer preference theory, according to which the agent presents a preference ordering of strong and weak relationships (Angner, 2016). Considering this theory allows us to understand how due to ambiguous sustainability market conditions, PTs can imply serious identity problems for certain types of consumers. Obviously, not all the neoclassical assumptions behind individual preference orderings are considered. In fact, here it is not necessary to consider preferences perfectly stable and rational, that is responding to the criteria of completeness, reflexivity, transitivity and continuity. The reference to the consumer preference theory only serves to assume that people show to some extent both well-defined (strong) and vague (weak) preferences. Strong preferences are characterised by a high degree of awareness in the individual. They can be the result of well-defined values, desires and goals and be pretty stable over time. On the contrary, weak preferences are less evident or less conscious in the individual but nevertheless exist and influence decisions. This distinction does not imply that strong preferences cannot change or mutate in different circumstances (Elster, 1983). It is simply an indicative description of people's awareness.

The growing percentage of consumption of sustainable products and the attitude-behaviour gap highlight that consumers show at least two different types of preferences for the sustainability principle. Some have a strong preference for sustainability and are those who are consciously guided by this principle in their fashion purchases. Others, instead, show a weak preference whereby sustainability represents just one of the various factors borne in mind when purchasing a garment. For the latter, sustainability is only one component (along with many others, such as price, style, availability, etc.) that determines the choice of one clothes over another. By weak preference, it is meant a preference for characteristics that are not directly sought by consumers but respond more to factors that, when encountered, play a role in the purchasing decision.

Therefore, it is plausible to think that only some consumers, those with a strong preference for sustainability, can navigate the great heterogeneity of labels. By being steered by the aim to wear

sustainable, they tend to understand what sustainability labels and tags means. It means that these people are willing to make the effort to understand which labels are reliable or not. These groups of consumers will be able to benefit positively from the influence of PTs.

Is it different for people with a weak preference for sustainability? Do PTs have a different impact on these consumers? It is possible to assume that offline a person with a weak preference for sustainability will not exclusively look for eco-friendly clothes since, as mentioned before, sustainability is not the main criterion guiding their choices. Such a person may occasionally come across items with sustainability labels and decide to purchase them. However, offline and online worlds present substantial differences. It happens online that PTs influence preferences in marked and targeted ways. As mentioned, digital platforms entail the phenomenon of epistemic bubbles and echo chambers. By definition, the echo chamber and filter bubbles involve repetition and amplification of information that reflects people's preferences, creating an environment in which individuals tend to be exposed to content that confirms and reinforces their pre-existing beliefs. Concerning sustainable clothes, this phenomenon is further fostered in online retailing where the number of sustainability labels is increased by the presence of tags.

PTs adapt and shape the shopping experience based on the user's preferences proactively presenting sustainable products that match their interests and behaviours. Indeed, through digital profiling techniques, contents that reflect preferences are constantly offered to users. In this context, even a person with a weak preference for sustainability will be exposed to a greater variety of eco-friendly options than offline and therefore be more likely to purchase sustainable clothing. This highlights the potential of PTs to change and influence the purchasing decisions of digital users. Necessarily, this underlines the importance of understanding how these technologies shape consumer behaviours in the digital environment.

To summarise, thanks to the presence of sustainability tags the quantity of online sustainability labels increases, thus users have more possibilities than offline to encounter sustainable fashion products. Furthermore, this possibility increases even further due to the functioning PTs which imply the phenomenon of echo chambers whereby once a preference has been expressed, it is repeatedly and intentionally proposed to users by the system. By being subject to this more than proportional exposure to sustainable fashion content compared to the offline world, it is plausible to think that consumers with a weak preference for sustainability will increase their purchases of sustainable products. Therefore, it is possible to conclude that PTs' functioning manipulates these consumers. Indeed, although there is no change in preferences, people who show a weak preference for sustainability will be more likely to buy and wear sustainable clothing. This is due exclusively to the PTs mechanism and the ambiguity concerning sustainability labels. This highlights the necessity to solve both the credibility and reliability issues of sustainability labels and to analyse the effect of PTs on consumer fashion preferences.

CONCLUSION

The paper analysed the implications of PTs on consumers with preferences for sustainable fashion items. It showed that PTs' mechanism is ethically problematic, especially in a sector where there is a lot of vagueness around the concept of sustainability. Starting from ambiguous market conditions, such as the credibility of sustainability labels and the attitude-behaviour gap, PTs' influence can be harmful not only because it is manipulative but also because by manipulating consumers it determines an asymmetry between how people think they represent themselves and who they actually are. Given the great heterogeneity of sustainability labels, the difficult understanding of their meaning and the discrepancy between attitude and behaviour among consumers regarding the concept of sustainability, the influence exerted by PTs can have extremely negative implications for people's identity formation and expression. Manipulation based on unreliable labels not only compromises consumers' autonomy to make informed decisions but also undermines their sense of identity and personal integrity. Furthermore, it creates a disconnection between the individual and their impact on the environment, as consumers may believe they are adopting sustainable behaviours when instead they could be contributing to environmentally harmful practices.

To avoid these problematic consequences, it is necessary for the sustainable fashion industry to eliminate the ambiguities that lie behind the concept of sustainability. It is crucial to promote the transparency and reliability of information on fashion sustainability to protect consumers'

autonomy and authenticity, as well as to promote a more responsible and aware consumer culture.

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CAPTIONS

[Fig. 01] Examples of third-party and private labels

[Fig. 02] Share of products with private and third party labels and percentage of credible third-party labels (results of Gossen et al. (2022) analysis about labels' credibility)

[Fig. 03a] PTs for Sustainability. Most used Persuasive Strategies in Sustainability

[Fig. 03b] PTs for Sustainability. Technology Platform used to implement persuasive strategies

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