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Muhammad Nawaz Tunio · Hasim Altan ·
Shlagha Agarwal · Marina Checa Olivas *Editors*

Sustainable Design, Art, and Innovation

A New Paradigm on Creative Practice. (Edition 1. Volume 1)

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Foreword

The concept of the Sustainable Creative Art: Inspiration from Nature (SCIN 2024 VI) was when creativity and ecology became seen as not adjacent undertakings but common needs. Specifically, the practice of art has assumed a crucial check-life space in terms of questioning, raising and revising the way humans relate to nature, particularly in the environment where the world is rapidly experiencing environmental issues. The book was conceived as a platform upon which various voices could be brought together of artists, scholars, designers, and practitioners to illustrate that nature was not only inspirational to aesthetics but also to duty, strength, and renewal.

Since its establishment the volume has been informed by three beliefs. First, the art not only mirrors the ecological realities but also intervenes, it is a catalyst of cultural and environmental change. Second, that sustainability should be regarded as a cultural crop, as such that needs stories, symbols, and common practices as much as scientific information and policy paradigms. Third, the speaking of nature invites us not only to admiration but to responsive action: to learn in nature and to be an agent of creation in a restorative and not exploitative way.

Subsequent chapters underscore three aspects of the breadth and richness of this view. They explore the use of artistic interventions as environmental research, urban murals, which transform the local sense of community by developing biophilic design, and collaborations, which promote resiliency to landscapes and cultures having to be under pressure. With such a wide range of content and approach, the contributions, nevertheless, have in common the ability to attain the results of sustainable creative practice as a source of ecological and social renewal.

With respect to this book, the scholarly contribution to it is one of the features that is represented by the legislative contributors to the book, in as much as the work of the chapters in envisioning new futures. Had you not had the generosity of the authors in sharing their knowledge and experiences, or the communities and networks (which collaborative impulse rings true through the pages). We thank you, fellows, whose feedback and intellects have now helped this book takes its fine form.

It is our hope that readers of these chapters will have a resource and an invitation. An article to find out more about the interaction between art and sustainability. A challenge to consider how creativity as inspired by nature can change their practices and institutions or communities. Because in the event that art has the ability to stretch imagination, it can stretch responsibility, to assist in visualizing and implementing futures where both human systems and natural ones co-exist.

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Preface

In an era where the urgency of environmental sustainability is more pronounced than ever, the intersection of art and nature offers a unique and profound avenue for inspiration and innovation. "Sustainable Creative Art Inspiration from Nature (SCIN) 2025" investigates into the symbiotic relationship between the natural world and artistic expression, exploring how the beauty and resilience of nature can inspire sustainable practices in the creative arts.

This book is a culmination of extensive research, thoughtful analysis, and creative exploration. It aims to provide artists, designers, and creative professionals with insights and ideas that not only celebrate the wonders of nature but also promote sustainability in their work. By drawing inspiration from the natural environment, we can create art that is not only aesthetically pleasing but also environmentally responsible.

The journey through this book will take you through various facets of nature-inspired art, from the use of natural materials and eco-friendly techniques to the incorporation of themes that highlight the importance of conservation and environmental stewardship. Each section is designed to inspire and challenge you to think differently about your creative process and the impact it has on the world around you.

As you explore the pages of "Sustainable Creative Art Inspiration from Nature (SCIN) 2025," we hope you find the inspiration to create art that is not only beautiful but also contributes to a more sustainable and harmonious world.

Al Ain, United Arab Emirates — Hasim Altan

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The editorial team wants to express sincere gratitude to the scholars who have contributed in the book to this volume. We are grateful to the expert reviewers for their commitment and timely response. Their feedback strengthens the quality of the book. We extend our appreciation to the institutions and partner organizations for supporting research and practices documented in this book. We are indebted to the SPRINGER team, especially **Mayar Ehab**, Publishing Editor at IEREK, for coordinating, communicating, and guiding effectively and efficiently to complete this book successfully. Last but not least, many thanks to our families and colleagues for their motivation in the entire process.

Muhammad Nawaz Tunio

Contents

Biomimetic in Leather Goods: A Communication Gap Between Product, Sustainability and Processes

Filippo Maria Disperati, Nicholas Bortolotti, and Elisabetta Cianfanelli

Abstract

Green communication in fashion is experimental, merging innovation, sustainability and storytelling. Brands use this to educate consumers on environmental impacts, adopting various expressive approaches and digital platforms for immersive experiences. Despite this potential, many brands have been slow to implement sustainability-focused campaigns. Green branding varies from minimalist, nature-inspired graphics to detailed narratives on eco-friendly materials and craftsmanship. The interplay between digital and natural aesthetics is a key area of study. Fashion media serves as a bridge between technology, products, designers and consumers, shaping symbolic representations and legitimising the industry. Cultural content enhances brand visibility, creating strong emotional connections and fostering loyalty. However, narrating sustainability in fashion remains a challenge due to the complexity of design and production processes. This study examines how brands integrate natural aesthetics with digital codes. Leather is central to this discussion, tanneries have made significant sustainability advances, improving resource management and securing certifications, yet their communication remains limited and underutilised. Identifying this gap, the study explores case studies from Etro, GANNI, FAEDA and ECCO Leather, analyzing their strategies and visions. These examples provide insight into emerging communication trends. Ultimately, communication plays a vital role in defining new sustainable production methods in fashion, bridging the gap between products and processes.

Keywords

Communication · New media · Leather goods · Sustainability · Brands

1 Introduction

Green communication in the fashion industry is highly experimental and sits at the intersection of innovation, sustainability and creative storytelling. This unique intersection allows brands to educate and raise consumer awareness about the environmental impact of products. Fashion companies are encouraged to explore various expressive approaches and technologies to convey authentic design and ecological values, adapting different aesthetics to reach specific audiences and target groups. Digital platforms, in particular, offer an ideal space for experimentation, exploiting their broad reach and ability to create interactive and immersive experiences. However, fashion manufacturers and brands have been relatively slow to adopt rhetorical approaches that emphasise sustainability initiatives or to launch communication campaigns aimed at improving the perception of sustainable fashion (Peirson-Smith & Evans, 2017). Brands' green campaigns range from minimalist graphics that evoke a clean, natural aesthetic to visually rich representations that illustrate the life cycle of a product, the use of environmentally friendly materials or narratives about handmade, artisanal production techniques. This dynamic interaction between the digitally constructed natural dimension and biomimicry represents a fascinating area of study. The flexibility of digital media, from social

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media to augmented reality, from video documentaries to immersive simulations, allows brands to show their environmental commitment through their products in great detail. Fashion media can thus be seen as a bridge connecting technological innovations, products, designers and brands with consumers and audiences. Media messages transform the materiality of fashion into infinite symbolic forms, at the same time legitimising the existence of the industry (Laing, 2024). The use of culturally evocative content helps brands stand out in a crowded symbolic marketplace by creating strong emotional connections with the audience. This approach not only fosters brand loyalty, but can also broaden brand appeal (Piancazzo et al., 2024). Communication strategies and aesthetic languages find in the fashion product a particularly fertile dimension, open to the experimentation of new forms, messages and meanings. This contribution, however, intends to highlight the presence of a major communicative challenge when it comes to narrating the sustainable aspects of the processes that materialise fashion objects. Design, form-making and production are difficult to fully articulate in this context, leading to a communication disparity that serves as the starting point for this exploratory investigation. The study analyses in particular the increasing tendency of fashion brands to adopt communication strategies in which the biological-natural aspect integrates and appropriates digital aesthetic codes. In this scenario, leather and its supply chain represent a focal point in the production process leading to the finished product. On the occasion of the fifth edition of the *Fashion & Luxury Talk* organised by the *RCS Academy Business School* (July 2024), Prada, with *Lorenzo Bertelli*—Head of Sustainability of the Prada Group—and Ferragamo, with *Davide Triacca*—Sustainability Director of Ferragamo—emphasised how leather can embody the green concept in fashion as a circular element and an expression of upcycling of a precious by-product of the food industry. Today, tanneries are quietly making substantial and tangible progress, far from the outdated image of polluting and degrading facilities. Over the years, these production sites have made great strides, implementing concrete actions to improve resource management, from water to energy. Furthermore, their dynamic orientation has led them to actively pursue traceability and sustainability certifications, as required by the market, brands and new EU regulations. Despite this progress, tanneries' communication remains silent and relatively unexperimental, failing to fully achieve its information and awareness-raising objectives.

2 Sustainable Digital Communication of Fashion and Its Processes

Eco-responsible marketing communication has now become an integral part of awareness-raising in the field of sustainability and in the fashion industry. Through sustainable communication, companies try to reach as many people as possible. Digital tools enable sustainable communication between individuals and consumers through different platforms: mass media, social media, company websites, blogs or apps (Kusá & Urmínová, 2020). To promote sustainable products (not just fashion), companies had to change their marketing strategy to better communicate the ecological characteristics of products. Brands and companies started using new terminology, such as 'eco, green, natural, organic, sustainable', etc. However, these promotional messages are not always explicitly defined, i.e. they lack accuracy and the consumer does not always have adequate information about the materials, production, methods and processes implemented, etc. (Yan et al., 2012). Today's advertising by brands targets consumers who have no time to waste, are less impressionable than in the past and at the same time are surrounded by unengaging images and information. Fashion brands are required to directly involve consumers in communication (Borboni, 2019). It is therefore necessary for companies to communicate authentically about the actions they take regarding environmental, ethical and recruitment issues. In particular, due to the heightened consumer awareness in recent years, companies' behaviour towards environmental or charitable issues is subject to intense scrutiny by the organisations they interact with. Emotional attachment is a necessary condition for consumer-company identification, as an organisation that consumers identify with should have a certain level of emotional appeal (Karaosmanoglu & Melewar, 2006). The message related to green aspects for brands is unclear and not aligned to help consumers make informed decisions in order to implement sustainability in the fashion industry. Fashion consumers find the brand's message about the green aspects of the product expressed in vague, complex or contradictory terminology. Specifically, in the field of leather goods and accessories, it is interesting to note a lack of communication about the processes implemented by subcontractors who supply materials to both large and small fashion brands, such as tanneries or metal hardware suppliers.

3 Methodology

To better understand the current gap between product communication and the sustainable processes implemented by fashion brands, particularly in the leather goods sector, a qualitative selection of case studies has been chosen.

Through the collection of semi-structured interviews, direct observation and document analysis, this study aims to explore the communication strategies that influence consumer perceptions of sustainability. The methodological approach adopted combines *Research Through Design* (RTD) and qualitative case studies—tools that allow for an investigation of not only existing practices but also the proposal of new perspectives. *Research Through Design* considers objects and processes as its subject of study (Herriott, 2019) and enables an exploration of how communication can shape the perception of sustainability through visual, textual and narrative elements. This method is complemented by the selection of case studies that offer a concrete overview of the application of communication and sustainability strategies in contemporary fashion. An effort has been made to compare the Italian landscape with that of other European Union countries, analyzing diverse realities. A key aspect of the investigation is communication through biomimetics, a practice that uses models from nature to raise consumer awareness of sustainability. Throughout history, challenges related to observing biological phenomena and capturing key dynamics within mathematical models have remained a source of progress. On the other hand, biomimetic computation has evolved from mathematical descriptions to systems engineering models and, eventually, large-scale executable algorithms (Casey & Cai, 2023). The practice of biomimetics is evident in the choices of brands like Etro in Italy and GANNI in Denmark, which integrate a nature-inspired aesthetic with a declared commitment to sustainability. Similarly, the analysis of tanneries such as FAEDA (Italy) and ECCO Leather (Netherlands) allows for an examination of how production processes communicate sustainability and how this narrative is transmitted along the supply chain to the final consumer. Researcher *Edoardo Brunello* also emphasises the importance of communicating commitments to social and environmental sustainability, starting directly from the supply chain itself. Within it, brands are required to disclose information on production locations, material composition and origin, while at the same time, raw material suppliers and manufacturers remain concealed (Brunello, 2024). The objective is to understand how companies in the leather goods sector use communication as a strategic lever to promote a more responsible production model. This overview aims to introduce reflections on sustainability in fashion communication, highlighting the role of communication as a discipline in shaping new production methods. The analysis of selected cases, through the lens of RTD and qualitative research, will provide valuable insights for developing innovative communication models that can respond to the evolving needs of the industry. Thus, communication is not merely an informational tool, but an active agent in transforming the fashion system towards greater environmental and social awareness.

4 Case Studies

4.1 Etro

Among the brands that combine a strong inspiration with elements of nature and aspects of sustainable and digital communication in Italy is *Etro*. Etro's Spring–Summer 2024 ADV campaign entitled 'Nowhere' sparked a dialogue on the role of AI in creative projects. *Silvia Badalotti*, art director and photographer of the campaign said: 'In my case, technology becomes my ally, a medium that amplifies my artistic vision' (The information on Silvia Badalotti is extracted from the transcript of an interview that took place on the Google Meet platform on 21 May 2024). According to Badalotti, artificial intelligence and new technologies do not go hand in hand with sustainability, as they are highly polluting due to the large amounts of water required to cool the servers needed to store data. She adds that, despite this, AI is undoubtedly our present and future, so we must learn to coexist with its increasing presence and find solutions that reduce its negative impact. The AI-generated images for the campaign simulate natural landscapes and, at times, anthropomorphic forms that coexist, particularly with the leather accessories from the collection, such as the brand's iconic *Vela* bag. This creates a kind of visual connection that, in turn, makes the object at the centre of the image appear almost like a 'living being' (See Fig. 1). Badalotti's latest works are a fusion between artificial intelligence and real objects photographed in the studio, as she still considers the product itself to be important. Her practice involves photographing a product and integrating it into the AI-generated world she creates, resulting in a perfect 50–50 match between the real and the virtual. For *Silvia Badalotti*, digital technology can enhance certain messages of a sustainably made product and influence consumer behaviour towards a more responsible attitude. However, the technological experimentation developed by *Etro* did not stop at the use of artificial intelligence. For the Spring–Summer 2025 runway show, the brand introduced an alternative yet highly immersive experience, offering a selection of its top clients worldwide the opportunity to watch the show live through the *Apple Vision Pro* headset for augmented and virtual reality (Salibian, 2023).

The activation of this collaboration represented the first live broadcast of a fashion show for a fashion brand on Apple's new device and follows in the footsteps of other players in the industry who are exploiting the potential of Vision Pro to enhance their offer and interaction with customers.

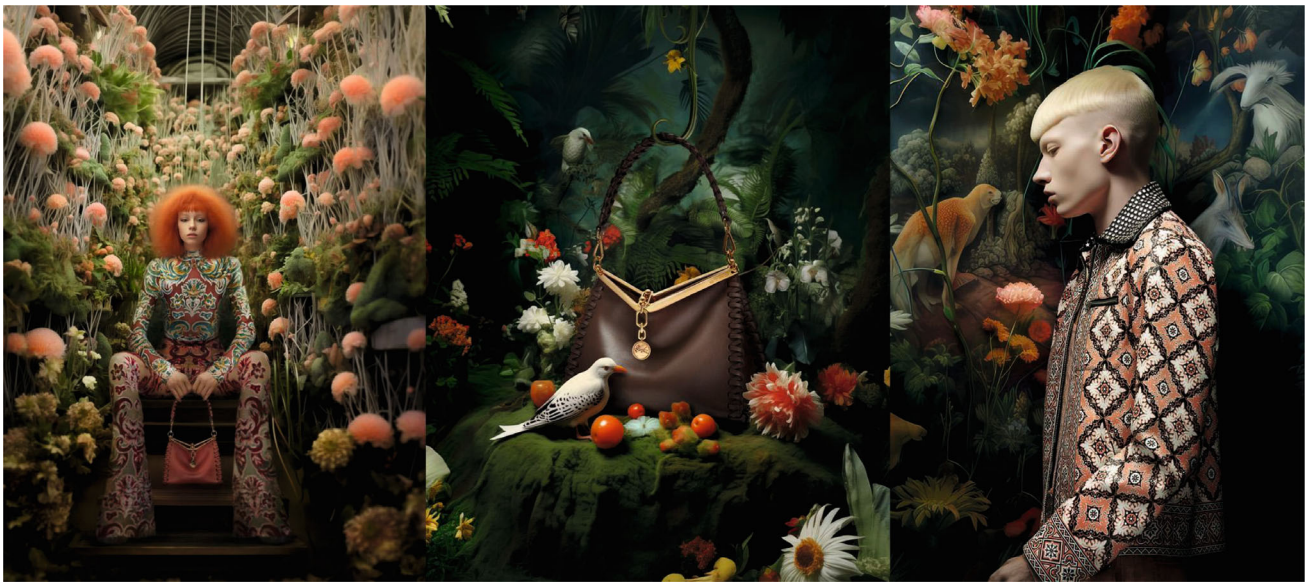

Fig. 1 Etro Spring–Summer 2024 Campaign, courtesy of Silvia Badalotti

4.2 GANNI

Looking abroad, the Danish brand *GANNI* is doing remarkable work in developing a communication strategy that combines elements of nature with technology. The Spring–Summer 2024 collection, *Hello, World!*, for example, was inspired by the rise of artificial intelligence, exploring the relationship between humans, technology and nature (Chan, 2023). GANNI's creative director, *Ditte Reffstrup,* created a design brief using *ChatGPT*, which she then passed on to the creative team. The brief served as the starting point for designing the collection, incorporating elements from nature—such as flowers, plants and animals—while also providing specific guidance on silhouette structures through a prompt designed to implement biomimicry aspects. Additionally, the collection was presented during *Copenhagen Fashion Week* in collaboration with artist *Cecilie Waagner Falkenstrøm*, who programmed five AI-powered 'naturalized' robots in the form of living trees. These trees 'spoke' through speakers hanging from their branches, reciting a series of words meant to represent the *GANNI* woman, creating a unique soundtrack for the show (See Fig. 2). *GANNI* has also long been engaged in the development of innovations in environmentally sustainable materials especially for accessories and leather goods, from Pyratex banana waste fabric to the alternative Ohoskin leather, made from orange and cactus waste and used for accessories. The brand is also working on a project called 'Fabrics of the Future', for the development and research of sustainable materials, including *Oleatex*, an alternative to leather produced using waste from olive oil production; Algreen, biodegradable and recyclable sequins made from algae and agricultural waste; *BioFluff's Savian*, a latest-generation, highly innovative synthetic fur, produced in Italy, (100% vegetable and GMO-free), made from natural plant fibres such as nettle, hemp and flax, about 50% of which can be obtained from agricultural waste streams, and contains no petrochemicals; Circulose, a recycled material made from 100% textile waste (The information about GANNI is taken from the brand's website).

Finally, another key aspect to highlight is the brand's dual communication strategy on social media. *GANNI* uses a dedicated Instagram account, *@ganni.lab*, to showcase its initiatives promoting sustainable processes, featuring a visual identity strongly inspired by nature and its forms (Martelli & Yates, 2023). Meanwhile, its main account, *@ganni*, is primarily commercial, where sustainability and environmental responsibility take a backseat in favour of product sales. The content on this account consists of polished, fashion-forward imagery typical of a mainstream clothing and accessories brand.

4.3 FAEDA

Located within one of the Italian tanning districts par excellence—the Veneto region of Arzignano—*FAEDA* represents a historic tannery that has been able to evolve the culture of leather processing, moving towards a more sustainable and less impactful idea. Its history, like that of many Italian realities, has seen constant research towards innovative solutions since 1956, proposing very high quality leathers destined for the world of luxury, from footwear to leather goods, up to furniture and automotive. In the pursuit of these objectives, the desire to make the leather manufacturing process

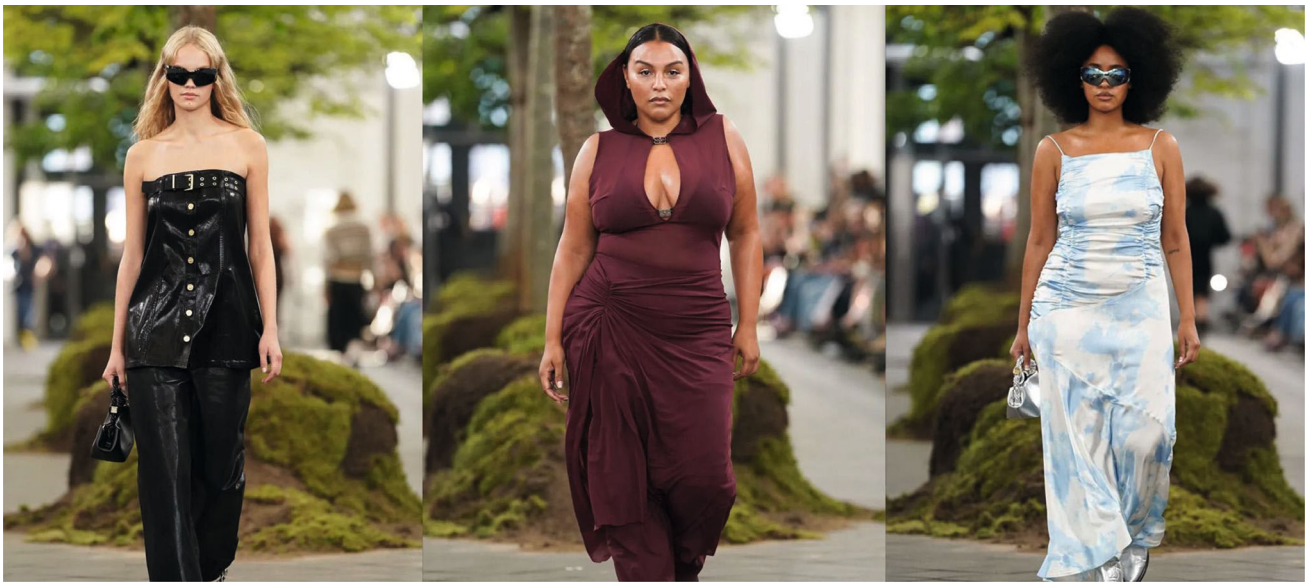

Fig. 2 Hello, World!, Ganni's Spring–Summer 2024, pictures from Ganni's official website

more green and sustainable appears to be a concrete action. Specifically, this reality strongly believes in the objectives of the UN 2030 agenda, seeking solutions and approaches capable of reducing the impact generated by the tanning production process. To achieve this, a fundamental focus concerns the optimisation of available resources, from water consumption to the use of chemicals and energy. It is interesting to consider that 96% of the water used for leather processing is returned to the environment purified and that half of the energy is produced from renewable sources internally. It seems clear that, despite a clear and favourable direction of a green idea of leather, its communication still remains little explored. The tannery and its processes allow the creation of a semi-processed material necessary for the creation of visionary objects already present in the minds of fashion creatives. This production site not only produces but also strives to evolve processes that preserve the environment and its inhabitants while experimenting with effective and contemporary communication channels. The innovative and environmental efforts conducted by *FAEDA* are made explicit through transparency actions and the relevant certifications. The certifications represent the achievement of rigorous and reliable quality and environmental standards that brands and consumers seek. In this specific case, the company uses the LWG audit protocol, which examines and evaluates both the environmental performance and the qualitative and ethical management of the manufacturer. A second example concerns TS SC410 certification, by which the tannery is subjected to checks on its supplies, mapping the traceability of hides. Finally, the standard UNI11427:2015 Leather with reduced environmental impact, issued by the ICEC.

4.4 ECCO Leather and HOTSHOP

From the Italian peninsula, the exploration continues north to Dongen, in the Netherlands, meeting the tannery and brand *ECCO Leather* (Recognisable by its Apparition, a patented transparent wearable leather, *ECCO* not only represents a tannery and brand of shoes and leather goods, but through its concrete actions contributes to the design and cultural enhancement of this incredible sector and material). The company was founded in 1991 by its ancestor *ECCO* Shoes, specialising in the production of shoes. This reality expresses a strong awareness of both the environmental dimension of leather, investing resources and energy in optimising water use, experimenting with new processes and innovative recyclable and sustainable treatments and promoting its efforts and actions using effective and impactful communication. 'Working at *ECCO Leather* means striving every day to improve in everything we do, including sustainability. We believe that small steps can make a big difference, so we do what we can, one day at a time'. These are the words of Panos Myratos—CEO of *ECCO Leather*—when expressing the goals and intentions the brand wishes to promote through their work. The desire to innovate and inform the world about the intricacies and benefits of leather remains an essential prerogative, seeking to break down sedimented prejudices. Specifically, they urge an awareness of the issue, committing to preserving the planet and finding increasingly sustainable methods and processes with less impact on the tanning process. This attitude is made explicit within their processes by using the patented *DriTan*™ technology, which both optimises the use of water and prevents the tanning sludge from being dispersed into the environment. The intuition starts by

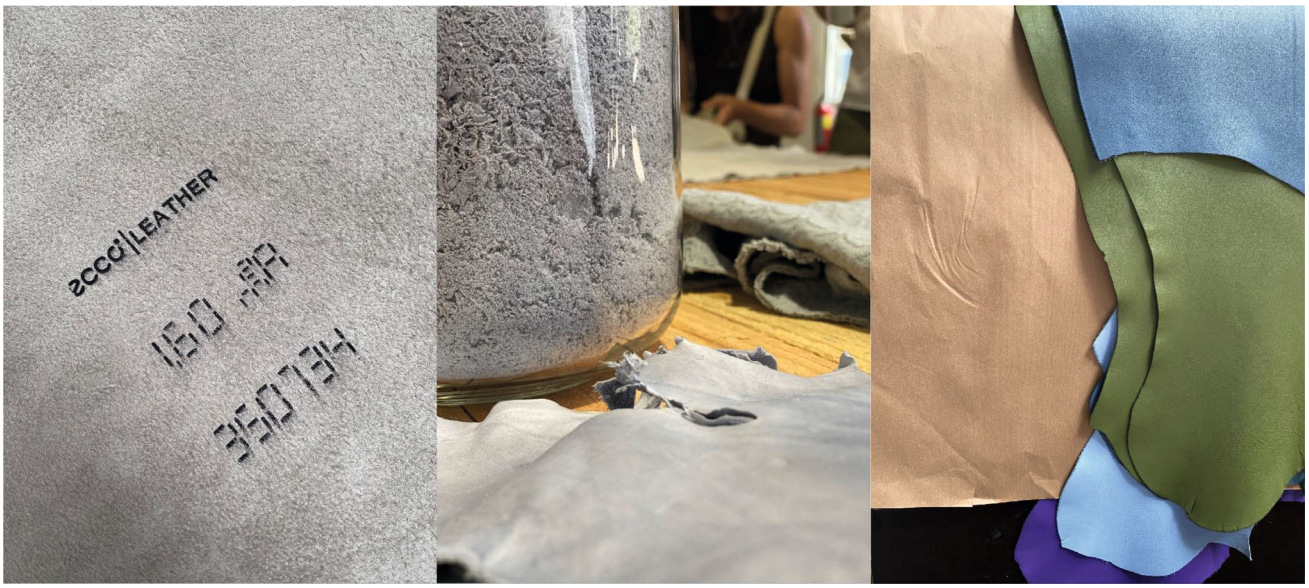

Fig. 3 Photographs taken during the HOTSHOP17 workshop in June 2024 in Dongen

questioning the possibility of reducing or even eliminating the use of water in tanning processes, responding to a real awareness of the scarcity of the world's water resources (See Fig. 3). Applied research has led to work on the liquidity of the leather's natural collagen, creating a tanning process capable of utilising and recovering the moisture already present inside the leather. In this way, the tanning process is revolutionised, obtaining a leather of the highest quality, saving the use of water and finally combating the formation of waste water. This technology thus avoids using 20 L of water for each hide and preventing the dispersion of 600 tonnes of sludge into the environment, not to mention the 34% reduction in carbon emissions. With regard to optimising and reducing production waste, *ECCO Leather* patents *Respin*™, a fabric made entirely from leather tanning waste. During the entire process, waste is formed which has a considerable impact, rethinking these materials by giving them a second life turns out to be a visionary insight that has led to their transformation into fibres that can be woven into a fabric or knit to be used for footwear. In addition to these remarkable green innovations, *ECCO Leather* uses innovative communication by appropriating more contemporary and effective languages.

This attitude is certainly expressed by his modus operandi, iterating directly with creative people in the industry, creating co-creative moments and weaving relationships and connections. The method or language is represented by an annual workshop called *HOTSHOP* (See Fig. 3). The 2024 edition of *HOTSHOP17* was titled *Material Matters*, a five-day event in the heart of the Dongen tannery district, inspired by a festival that merges innovation with creative leather experimentation. In this setting, *ECCO Leather's* headquarters opens its doors to creatives from around the world, inviting them to co-create new design solutions alongside the brand. Participants are given the opportunity to explore the tannery and its resources before working in co-creative groups to develop leather collections. Under the guidance of the brand's style office, which provides inspirational inputs and creative prompts, the participants begin their experimental process. Within these groups, artists and designers collaborate, supported by the tannery's specialised staff, to manipulate and transform leather, discovering innovative and experimental solutions. This dynamic fosters an incredible design synergy, bringing together the fresh, unrestricted creativity of guest designers with industrial expertise. Their interaction and co-creation generate a moment of exchange, merging different skills and creating synergies that transcend individual limitations, paving the way for experimentation with more sustainable materials and processes. In the leather industry—where innovation is crucial to staying competitive and addressing ecological challenges—co-creation proves to be an essential tool for exploring new horizons and developing products that are not only functional and aesthetically appealing but also environmentally responsible. This initiative represents a truly surprising and innovative approach to communication in the leather industry—where roles are redefined and united by the shared ambition to contribute effectively to green design and creative progress.

5 Results

The comparison between these four case studies highlights how sustainability can be communicated in vastly different ways. While *Etro* and *GANNI* focus on aesthetic

and symbolic storytelling, *FAEDA* and *ECCO Leather* place greater emphasis on material and process innovation. An interesting aspect is how Etro uses artificial intelligence to create immersive worlds where leather accessories blend with biomimetic landscapes. However, the brand does not delve deeply into sustainability in terms of materials or production processes, focusing more on visual and communicative impact rather than substantive change. In contrast, *GANNI* demonstrates a strong balance between technological innovation and sustainability research, developing cutting-edge materials such as Oleatex and Circulose. A notable element is its differentiated communication strategy: while the main Instagram account remains sales-driven, *GANNI* uses a dedicated profile, *@ganni.lab*, to educate consumers about its sustainability initiatives. This approach reflects a more structured branding strategy compared to *Etro*. *FAEDA*, on the other hand, represents an example of production excellence that could benefit from a more strategic and modern communication approach. Finally, *ECCO Leather* stands out as the most innovative case in terms of sustainable research and development, thanks to patented technologies such as DriTan™, which significantly reduces water consumption in tanning processes, and *Respin*™, which transforms leather waste into fabrics. What sets ECCO apart is its ability to integrate innovation, production and communication by actively engaging creatives through events like *HOTSHOP*. However, the real challenge remains the effective integration of research, production and communication so that sustainability is not merely a marketing tool, but a tangible and perceivable transformation for the public.

6 Conclusions and Future Research Developments

Through this brief reflection, made explicit by the proposed case studies, a rethinking of green communication strategies used by fashion is necessary. The article exposes the lack of consideration on the subject, identifying in the discipline of fashion that privileged dimension capable of experimenting and disseminating new communicative solutions that are fundamental for achieving a more sustainable and appealing language. The potential that this mechanism expands concerns the possibility of truly providing sustainable and green fashion communication. The challenge for the future will therefore be to find a balance between material innovation and visual impact, between advanced research and effective storytelling. A key proposal could be the creation of an even more complete mapping of the European scene, capable of collecting and analysing the most innovative and significant practices in the relationship between sustainable processes implemented above all by third parties and their communication to the outside world. A structured, up-to-date and easily searchable database would make it possible to network companies, designers, institutions and consumers, facilitating the sharing of best practices and encouraging strategic collaborations.

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