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NEW/OLD FEATURES

Strategies for Sustainability and Circularity: a New Value Chain for the Fashion Industry

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Sustainable Strategies, Rethinking Processes, Recycling Material, Identity Values, Awareness.

Abstract

The paper aims to analyse the evolution of the fashion system, particularly with regard to the sportswear (activewear) supply chain, linked to environmental sustainability, outlining some improvements, corporate strategies and alternative production models with consequences on the value chains, products and communication messages.

Sustainability is a complex issue that over the years has been enriched with new contents and key factors: from the environmental policy to the new configurations of manufacturing processes, until responsible purchasing and consumption behaviours.

The new social and cultural models, the rising of awareness and consciousness towards these issues, require companies to make coherent, effective and sustainable choices, mostly in the textile-clothing industry, one of the sectors with the greatest environmental impact. From the selection of low-impact resources, the analysis and development of product life cycle (life cycle assessment) and even the communication contents, the practices of environmental sustainability involve the whole value chain.

The paper, in the second part, focuses on these themes on the supply chain trend of the sport and outdoor clothing, one of the most involved in the change process, also considering the "natural" consumers interest in environmental problems, increasingly aware to supply system strategy that encourages a way of responsible consumer behaviors, from product design to marketing. The work is enriched by the case study of an Italian company, a leader in the global footwear and mountain clothing field.

1. Eco-Design and Sustainability Strategy in the Outdoor Apparel Industry

1.1. Sustainable Productive Phenomenon in Fashion System

There are many experiences in *fashion system* that propose new inclusive economic paradigms, partnership between socio-economic actors belonging to new value chains (Manzini & Vezzoli, 2003), which integrate the tangible and intangible component of the products (Vezzoli et al., 2014); systemic and circular production processes that follow the principles of industrial symbiosis, in which the production waste are resources for new processes (Bistagnino, 2011; Barbero, 2018); ethically and socially responsible productions evaluating the principles of equity in the availability of resources, the rules of democracy, human rights, respect for cultural identities.

Before the *Anti Fashion Manifesto* by Lidewij Edelkoort, which has highlighted the critical issues of fast fashion production, assessing social and environmental impact and effects on behavior, the environmental issues were addressed by companies marginally, through strategies lead mainly by the end of pipe approach.

Growing the perception that identifies the fashion industry as one of the main polluting sectors and the one with the greatest environmental and social impact, the company's choices and the production and communication strategies have been oriented to a redefinition of value chains and an assessment of the effects on market trends.

The recent report by Barclays denounces the impact of the business model of the fashion system, considering it “un-

sustainable” today and soon; according to Bcg and Global Fashion Agenda (2017) it is estimated that the sector will reach 3.3 trillion dollars by 2030, with an annual growth of 5%. To this increase will correspond a negative impact on the environment and according to the Ellen MacArthur Foundation, the fashion industry will consume 25% of the world’s carbon budget by 2050 (Casadei, 2020).

The fashion system industry is associated with terms such as quality, excellence, tradition, and innovation, but also with hyper-consumption, pollution, exploitation “... mistreating animals, applying unequal working and payment conditions to their employees and creating eco-style collections based on the heavy pollution industry” (Moretto et al., 2018).

Thus, the gap between slow fashion and fast fashion is increasingly wide, on the one hand, a model that enhances excellence, territorial networks, quality production, the workers communities and, on the other a model that introduces the acceleration of production, with several micro-seasons reaching up to 52 collections per year, increases textile production and distributes poor quality of products, confusing the consumer and leads to impulse buying choices.

H&M has implemented a sustainable program, *Conscious Action*, in which eco-material is used and promoted, the sustainable manufacturing manner in countries with a high sustainable consciousness is adopted, green distribution approaches with less emissions and energy use are used, and green retailing and educating consumers are promoted (Shen, 2014) (Fig. 1, 2).

Long live fashion!

How it works:

Every year, tons of textiles end up in landfills. But as much as 95% of these textiles and clothes could be used again. That's why we are now collecting clothes in our stores. Clothes of any brand, in any quality and any condition.

So if you've got something worn, torn or hopelessly out of style - don't throw it away or let it pile up in the back of your closet. Bring it to us, and help decrease the amount of fashion being wasted.

Bring your unwanted clothes to H&M stores. For each bag of clothes you hand in, you will receive a voucher with a discount for your next purchase.

Your clothes are sent with our usual deliveries to the nearest processing plant. The clothes are then graded and hand-sorted. Zero waste is the goal. Items that are too worn and torn to be reused will be recycled and turned into raw materials and new products.

Re-wear. Clothing that can be worn again is marketed worldwide as second-hand goods.

Reuse. Textiles that are no longer suitable to wear are converted into other products, such as cleaning cloths.

Recycle. Textiles that can't be reused get a new chance as textile fibers, or are used to manufacture products such as damping and insulating materials for the auto industry.

Energy. When re-wear, reuse and recycle are not options, textiles are used to produce energy.

Figure 1. H&M Conscious collection, *Long live fashion*, 2016.



Figure 2. H&M, *Recycling System 'Loop'*, Loop uses a technique that disassembles and assembles old garments into new ones, 2020.

Therefore, the consumer is pushed to hyper-consumption of poor quality garments with accelerated obsolescence and is unable, in most cases, to distinguish the real effectiveness of company actions in favor of the environment and the social impact of the productive process (Crivellaro et al., 2012).

The change in the economic and production paradigm, with a view of environmental sustainability, requires a synergic set of actions, implemented at different scales, and based on the creation of interconnections and relationships through a systemic approach¹ concerning the supply of raw materials, production processes, the company's commitment to the protection of workers, and no less important, packaging and logistics management (Bistagnino, 2017).

In the outdoor and activewear segment, the adoption of sustainable strategies throughout the entire life of the product, the coherence between philosophy, values and actions is closely correlated with the lifestyles of the target audience. The athleisure, sportswear or activewear phenomenon, from which brands such as *Outdoor Voice*, *Lulemoon*, *Aday*, *Girl-friend Collective*, *Patagonia* were born is supported by consumer interest in environmental and socio-ethical issues and by an increasingly widespread trend towards healthy, active and dynamic lifestyles.

1 The systemic design approach proposes, starting from the optimization and exchange of raw materials and industrial by-products of the industrial symbiosis approach, an approach based on the concept of an open industrial system (Lanzavecchia et al., 2012). As an alternative to the linear model, the circular economy aims, through systemic design, to reduce the waste of resources and transform the outputs into inputs, i.e. resources for another production cycle. Reducing waste, reviving waste, and extending the life cycle of the garment are essential features of the project in a waste-free policy.

These companies not only operate according to the logic of systemic design and design for sustainability but also convey socially responsible and ethical values responding to the growing demand generated by *eco-conscious consumers*. The commitment to these issues is perceived by these consumers as more authentic, effective, and credible.

They are informed, aware of production impacts, attentive to the life cycle of the product, and demanding on the performance of the garments.

The adoption of sustainable models, value chains and promotion strategies are clearly expressed by companies operating in the outdoor apparel segment, who are able to adopt sustainable processes and technologies, to research on hi-performances of materials, to transfer to the consumers intrinsic values linked to environment respect.

1.2. Signals of a Value Chain Reconfiguration: Actions, Products, and Storytelling

Ethical and sustainable fashion no longer defines a trend, codified by aesthetic canons and storytelling, but by the value chain reconfiguration of the fashion industry. The interest in building value chains, models, and sustainable promotion strategies has led brands to make their production processes explicit, with the aim of informing and transferring good practices for sustainable production, purchasing, and recycling.

This can be seen in the numerous digital activism initiatives carried out by brands supporting online movements, like *#WhoMadeMyClothes*, created after the Rana Plaza disaster in Bangladesh in 2013, that has mobilized 500 collaborations worldwide, involving more than 300 NGOs and cultural and

educational organizations, it has been followed in 60 countries, with more than 1800 events and over 44,000 social media posts in the last year (Fig. 3).

In the sportswear sector, many companies are working to reduce waste, recycling plastic material from the seas, or using organic material for eco-friendly fabric production.



Figure 3. Fashion Revolution, Who made my clothes? Campaign, 2018.

Ecoalf, a pioneer of the *Upcycling the Oceans* project, involves local fishermen and sailors from over 32 ports and transforms plastic waste into fabrics for high-quality products and promotes environmental responsibility campaigns, thanks to the #becausethereisnoplanetb movement, raising climate change issues awareness and replying to initiatives in other seas (Fig. 4).

The seas and oceans protection are a commitment of leading sportswear companies such as Adidas, which actively collaborates with the *Parley for the Oceans* association for the production of Primeblue yarn, used in the Adidas x Parley line.



Figure 4. Ecoalf, *Because there is no planet B* Collection, 2020.



Figure 5. Yatay, *No more plastic collection*. 100% sustainable shoes from recycled fiber and bio-based resins with a biodegradable PU sole.

To make consumers aware of plastic pollution, brands such as Yatay,² on the other hand, are engaged in research into innovative bio-based materials such as wood, corn, rubber, and bio-polymers, for the production of 100% eco-sustainable sneakers. A solution for the integral replacement of plastic components, from soles to uppers, to reduce the pollution of microplastics released into the environment (Fig. 5).

Organic Basic, informs clearly consumers on environmental impact reduction of the production cycle, using the annual Impact Report, which assesses water, emissions, energy, chemicals, and waste used in new product development and in organic and recycled materials.

² Yatay, the Italian company engaged in the production of vegan shoes since 2008, supports the non-profit foundation No More Plastic with numerous initiatives, to generate public awareness about plastic pollution, advocate the need for alternatives to single-use plastic products and foster innovative solutions to invent the future of consumption.

Communicating the impact of its production chain is one of the branding strategies supported by numerous brands in the segment, which through environmental activism initiatives educate consumers, who are increasingly involved and attentive to their purchasing behavior.

The communication models are also oriented to convey the ethical and sustainable commitment through social responsibility actions and campaigns, aiming at equality, inclusion, traceability of resources and processes, the safety of environments including people.

Girlfriends Collective, specialized in ecological and high-quality fabrics from recycled materials, promotes rights and safe conditions for all workers, through initiatives that ensure legality, safe conditions, gender equality, fair wages, combating child labor. The company is also committed to supporting the #blacklivesmatter movement and organizations that are at the forefront of human rights advocacy.

Features such as the choice of organic materials, traceability of resources and production, and fair trade are the center of communication of brands such as Veja, specialized in the footwear sector. Among the production phases of footwear, the sole is the one with the greatest impact on CO2 emissions. Therefore, the Italian shoe brand ACBC completely rethinks the components of the Zipshoe™ shoe, making the sole and upper modular and interchangeable, in a system of 100 different combinations, reducing both the impact of production and transport. In addition, in a circular vision, the brand takes care of the collection of post-consumer shoes, allocating them to charity organizations for the production of anti-shock flooring for playgrounds in areas of need.

Clearly ahead of its competitors, Patagonia³ has based its corporate philosophy on values such as credibility, transparency and authenticity, constantly communicating its commitment to the environment protection. The brand's commitment to cross-cutting issues related to protecting the planet has built its competitive success, making it a pioneer in the sector. Its mission is to “build the best product, cause no unnecessary harm, use business to inspire and implement solutions to the environmental crisis”.

The company produces high-quality garments, resulting in careful construction and narration of the production sustainable process. All the garments in the Patagonia collections use only eco-oriented materials such as organic cotton, recycled polyester, nylon from post-industrial waste fibers, wool from sustainably managed farms, hemp, and TENCEL, an innovative fiber obtained from the pulp of eucalyptus trees. Patagonia also puts particular attention to microfibers release into the environment, caused by its products, and is committed to reducing pollution and plastic waste during storage and sales, with eco-oriented packaging.

The ethical approach and social responsibility are the driving force behind the company's competitive success, attentive to raising awareness among its customers, promoting the repair and recycling policy summarized in the slogan “buy only what you need, reuse, recycle or re-imagine your old garments, we will take them back or repair them”.

3 Patagonia is committed to donating 1% of sales revenues to environmental associations or organizations of activists for the health of the planet, for a total of 41.5 million dollars from 1985 to today. It has also created a digital platform called Patagonia Action Works that deals with providing funding to environmental protection organizations.

DON'T BUY THIS JACKET



It's Black Friday, the day in the year retail turns from red to black and starts to make real money. But Black Friday, and the culture of consumption it reflects, puts the economy of natural systems that support all life firmly in the red. We're now using the resources of one-and-a-half planets on our one and only planet.

Because Patagonia wants to be in business for a good long time—and leave a world inhabitable for our kids—we want to do the opposite of every other business today. We ask you to buy less and to reflect before you spend a dime on this jacket or anything else.

Environmental bankruptcy, as with corporate bankruptcy, can't happen very slowly, then all of a sudden. This is what we face unless we slow down, then reverse the damage. We're running short on fresh water, topsoil, fisheries, wetlands—all our planet's natural systems and resources that support business, and life, including our own.

The environmental cost of everything we make is astonishing. Consider the R2 Jacket shown, one of our best sellers. To make it required 135 liters of

COMMON THREADS INITIATIVE

REDUCE

WE make useful gear that lasts a long time
YOU don't buy what you don't need

REPAIR

WE help you repair your Patagonia gear
YOU pledge to fix what's broken

REUSE

WE help find a home for Patagonia gear you no longer need
YOU sell or pass it on*

RECYCLE

WE will take back your Patagonia gear that is worn out
YOU pledge to keep your stuff out of the landfill and incinerator



REIMAGINE

TOGETHER we re-imagine a world where we take only what nature can replace

water, enough to meet the daily needs (three glasses a day) of 45 people. Its journey from its origin as 60% recycled polyester to our Reno warehouse generated nearly 20 pounds of carbon dioxide, 24 times the weight of the finished product. This jacket left behind, on its way to Reno, two thirds its weight in waste.

And this is a 60% recycled polyester jacket, knit and sewn to a high standard, it is exceptionally durable, so you won't have to replace it as often. And when it comes to the end of its useful life we'll take it back to recycle into a product of equal value. But, as is true of all the things we can make and you can fix, this jacket comes with an environmental cost higher than its price.

There is much to be done and plenty for us all to do. Don't buy what you don't need. Think twice before you buy anything. Go to patagonia.com/CommonThreads or scan the QR code below. Take the Common Threads Initiative pledge, and join us in the fifth "R": to reimagine a world where we take only what nature can replace.

patagonia
patagonia.com



TAKE THE PLEDGE

*If you sell your used Patagonia product on eBay, and take the Common Threads Initiative pledge, we will ship your product to patagonia.com for no additional charge.

Figure 6. Patagonia, *Don't buy this jacket* Campaign, 2011.

With these messages, the company continually renews customers' confidence in the brand, with campaigns such as "Don't buy this jacket" or the Worn Wear touring initiative in 2015, which repairs worn garments, extending the average life to 2.2 years and reducing carbon footprint, waste, and water by 73% (ThredUp, 2018) (Fig. 6).

The case studies reported have been selected for their approach to the project, oriented to interpret the sustainable vision of the company and to transfer it, coherently, in strategies, identity values, processes and products. From this brands overview emerges that the adoption of new communication and branding models are able to attract emerging segments of the market, still "thin" in size, but no longer niches, essential because they are young, socially active, affluent, acting as pioneer / first mover/trendsetters and seem able to inspire and guide the purchasing and consumption trends of the mass market (Wang & Shen, 2017).

In the fashion industry, the construction of a valid branding strategy, transferred to the entire communication system in a coherent manner, takes on value thanks to initiatives that convey messages configuring and

incorporating cultural elements because it is these that drive both consumption and communication and trigger the process of mutual emulation, the dynamics of 'fashion'. [...] the instrumental nature of the product dissolves in the communication of its symbolic action, assuming mainly an identity value. (Conti, 2012, p. 14-15)

2. Market Analysis, Values, and Trends in the Outdoor Industry: La Sportiva Case

2.2. Company's Overview

The single-case study selected is an Italian company, La Sportiva, a mid-sized firm which operates in the world outdoor market because it is particularly suitable for highlighting a holistic approach to sustainability, which is assumed as a core principle of corporate strategy. The case analysis allows to show how a company may adopt a real and holistic approach to sustainability, against / as opposed to the “greenwashing”, a behavior that could be defined “poor environmental performance and positive communication about environmental performance” (Delmas & Burbano, 2011).

La Sportiva was founded in Tesero, a village at the foot of the Dolomites in 1928; in the 1950s, the boom of winter holidays and the consequent increase in demand for mountains equipment prompted the company to manufacture the first ski boots. In the mid-Eighties, due to strong competition and the advent of plastic boots, the company specialized in the production of climbing shoes. In 1981 La Sportiva launched *Mariacher*, a climbing shoe that was a breakthrough innovation as well as a design revolution. Few years after, the company was the first to introduce a “ballerina”, that in a short time became a must-be for climbers worldwide.

Since then, product design and innovation capabilities have contributed to transform the company. Over the years, La Sportiva has grown up to become one of the leading players in the global industry of climbing shoes and mountain boots.



Figure 7. La Sportiva, Didier Raboutou climbing in Verdon with La Sportiva *ballerine*, 1984.

Thanks to its technological reputation, it is not only an iconic brand for the world climbing community, but also for outdoor footwear and clothing market (Fig. 7).

For over 90 years, the company had never moved its headquarters and it still produces mainly in its factory at Ziano di Fiemme, operating in the fascinating environment of Dolomites, a UNESCO world heritage site.

Company's footwear is positioned at the high-end of the market in mounting running, trekking and ski mountaineering segments. Each product is designed, developed and tested in close collaboration between R&D departments and a team of athletes (climbers, mountaineers, mountain runners, and skialpers) who act both product tester and brand ambassadors. Recently, the company diversified, entering into the apparel market with a wide selection of technical clothes for mountain running and climbing. Nowadays, it is a total look company (footwear and apparel) focused on "those who love to experience mountains at any latitude and altitude, from the professional to the enthusiast. The goal is [...] to be all for someone, not something for everyone" (La Sportiva, website). The turnover was 96 million euros in 2018, showing a double-digit average annual growth (16,6%) since 2012, and is over 80% from abroad.

Beyond its organizational capabilities, from product design and innovation technology to marketing communication, La Sportiva has been a forerunner in the sustainability policy.

2.3. An Integrate Strategic Approach to Sustainability

La Sportiva's strategic approach to sustainability may be analyzed by applying a circular economy framework.

Circular economy is an economy restorative and regenerative by design.⁴ As pointed out by Walter Stahel (2016, p. 435), a circular economy «would turn goods that are at the end of their service life into resources for others, closing loops in industrial ecosystems and minimizing waste. It would change economic logic because it replaces production with sufficiency: reuse what you can, recycle what cannot be reused, repair what is broken, remanufacture what cannot be repaired». The concept of circular economy is linked to other analogous approaches, as the cradle-to-cradle design model (Braungart & McDonough, 2002), the biomimicry paradigm by Janine Benyus (1997), the natural capitalism by Hawken, Lovins & Lovins (1999), and the industrial ecology (Lifset & Graedel, 2002). Finally, industrial ecology (Lifset & Graedel, 2002), by focusing on product design and manufacturing processes, views firms as agents for environmental improvement because they possess the technological expertise that is critical to the successful execution of environmentally informed design of products and processes. Moreover, it considers non-human ‘natural’ ecosystems as models for industrial activity as well as it “places human technological activity in the context of the larger ecosystems that support it, examining the sources of resources used in society and the sinks that may act to absorb or detoxify wastes” (Lifset & Graedel, 2002, p. 4).

4 Circular economy is based on three main principles: design out waste and pollution; keep products and materials in use; regenerate natural systems. “The concept recognizes the importance of the economy needing to work effectively at all scales – for large and small businesses, for organizations and individuals, globally and locally. Transitioning to a circular economy does not only amount to adjustments aimed at reducing the negative impacts of the linear economy. Rather, it represents a systemic shift that builds long-term resilience, generates business and economic opportunities, and provides environmental and societal benefits” (Ellen MacArthur Foundation, 2017).

United Nations Agenda 2030 for Sustainable Development	La Sportiva statements
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	La Sportiva is committed to identifying circular economy solutions for recycling and reusing materials in production. The company creates products characterized by durability, sensitizes consumers and encourages reuse by offering a repair service to extend the life of the product.
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Innovation is a characterizing aspect of the industrial development of the company, which constantly introduces new products partly patented on the market. The efficiency orientation of the production process is another important asset, as shown by the conception of the new plant.
3 GOOD HEALTH AND WELL-BEING	The quality of the work environment, corporate welfare, training, health and safety at work are important issues for La Sportiva, committed to the prevention and protection of health and to improving safety in the workplace.
13 CLIMATE ACTION	The quality of the air, the reduction of emissions and the management of environmental impacts along the entire production chain are aspects that La Sportiva takes special care of. The virtuous project of re-using processing waste allows the reduction of emissions in the production chain. Emission control is also achieved through the management of home-work commuting and parking.
7 AFFORDABLE AND CLEAN ENERGY	La Sportiva is committed to increasing energy supply from renewable sources and improving energy performance. The main projects include the district heating plant built for the new production site with the collaboration of the Magnifica Comunità di Fiemme.
8 DECENT WORK AND ECONOMIC GROWTH	La Sportiva creates employment opportunities at local level, contributing to the economic growth of the Val di Fiemme, both through recruitment and through the selection of suppliers.
17 PARTNERSHIP FOR THE GOALS	La Sportiva creates employment opportunities at the local level, contributing to the economic growth of the Val di Fiemme, both through recruitment and through the selection of suppliers.

Figure 9. La Sportiva, *Sustainability Report*, December 2019.



Figure 10. La Sportiva, production plant in Ziano di Fiemme, 2018.

In 2003, La Sportiva was the first company in the outdoor footwear industry to achieve a certification UNI ISO 14001-9001, by demonstrating not only the compliance with the requirements of a quality management system, but also the respect of the environment. For some time now, La Sportiva has been using the hashtag #foryourmountain in social media and institutional communication, emphasizing the strong commitment towards sustainability, trying to engage stakeholder into environmental issues, aiming at rebuilding the relationship between human and ecosystem. Inside the Sustainability Report 2019, the meaning of the hashtag is explained as follows: “Our passion is the mountain: respecting the environment in which we operate is at the base of our activity, it is what we want to transfer to the users through our product” (La Sportiva S.p.A., 2019, p. 12).

Sustainability is for La Sportiva a fundamental driving force at the base of innovation that pushes it to look for solutions with low environmental impact and that extends the life cycle of products. The company localization and the target market contributed to develop both a social and environmental responsibility. Being far from industrial districts, with its factory literally at the foot of the mountains, and above all having among both customers and employees a lot of mountain lovers have given to the company a natural attitude to build a “green” strategy that covers the whole value chain, from product design to raw material procurement, from supplier selection to production process, from marketing to after-sales services. An eco-friendly philosophy inspires the process of new product development as well as the brand communication strategy.

The search for innovative technology, new techniques and materials is driven by sustainability principles, in order to devote ever more attention to environmental impact and find viable solutions to reduce material waste and CO2 emissions.

3. Conclusions

In-depth analysis of a company that has been among the first in Italy to explore innovative models and practices design-oriented to environmental sustainability. Its headquarters is in the foothills of the Dolomites makes it possible to observe in vivo the evolutionary process of entire ecological strategies: from the constant dialogue with the local community to eco-design practices, from the research and development process inspired to reduce environmental impact, from the selection of raw materials inspired by the circular economy to the application of the waste management tools, from the procedure of ethical and environmental assessment of suppliers until the launch of communication campaigns focused on green marketing, supporting responsible consumption behavior.

Is it possible to identify four pillars of a corporate strategy based on a holistic approach to sustainability:

- Developing new product by designing a circular value chain;
- Applying environmental management system;
- Engaging the local community.

The company invests a large share of its profits in R&D, in search for efficient solutions and for eco-compatible or recycled raw materials that combine quality and durability, with low environmental impact at the same time.

The company has introduced innovative techniques to manage environmental impact, through a risk assessment system that prevent them and react effectively if damage occurs. Moreover, La Sportiva struggles to use renewable or low impact energy sources. The heating is provided by a biomass plant.

“La Sportiva creates mountain shoes in the mountains (and respecting the mountains). The bond with the territory is not only a moral obligation but it is a real and added value opportunity” (La Sportiva S.p.A., 2019, p.28).

Social responsibility has led the family to maintain the production plant of boots and shoes in Trentino, making great effort to remain competitive despite localization at 1.000 meters above sea level, in the heart of Dolomites. La Sportiva supports many initiatives for the development and well-being of the community. Despite having achieved an international standing, La Sportiva maintains deep and embedded roots in the territory: the local economy fall-outs are among the prime aims of its work, challenging the logistical and space difficulties that such a choice may determine.

Credits

The paper is written by the authors sharing the theoretical approach and the articulation of the contents. “Abstract” and “Conclusion” are edited by F. Izzo, R. Veneziano, M. Carlomagno; “Sustainable Productive Phenomenon in Fashion System” paragraph is edited by R. Veneziano; “Signals of a Value Chain Reconfiguration: Actions, Products and Storytelling” paragraph is edited by M. Carlomagno; “Company’s Overview” and “An Integrate Strategic Approach to Sustainability” paragraphs are edited by F. Izzo.

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V

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Gina Nadal Fernandez is a final year PhD student in the Design Department at Manchester School of Art, Manchester Metropolitan University. Her doctoral research is by practice, and investigates how emotional experience can be designed into digital jacquard woven textiles during a co-design process by using digital coding.

She takes a multidisciplinary approach that embraces design theory, textiles, digital coding, consumer behaviour and mass customisation in her weaving practice using a TC-1 loom and natural yarns.

Gina has presented her research at the PhD by Design workshop at the Design Research Society Conference 2018, at the Global Fashion Conference 2018 and 2020. She is also a member of the Textile Society and Design Research Society. She holds a master's degree in Fashion Graphics from Manchester School of Art, Manchester Metropolitan University that looked at the relationship between digital jacquard textile practice and emotional value using digital coding.

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Member of the Board of Directors of AGC - Association for Contemporary Jewellery, she taught jewellery design at IED Moda in Milan and at the Academy of Fine Arts in Naples.

In 2018 she has published the monograph "Multipli Singolari. Contemporary jewellery beyond digital" with ListLab, Barcellona, in double edition (ita/eng), and in 2020 "Oggetti pensiero. Storie di design, organismi e nature plurali" with Lettera Ventidue, Siracusa. Her theoretical research is characterized by a speculative hybridization between digital technologies and manufacturing excellence linked to contemporary design and fashion.

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Renato Stasi has been involved in the creation of clothing and accessories collections for the fashion segment for almost thirty years, as a designer and responsible for the development of the collection, he has worked for several companies including the LVMH Group, Redwall, Hettabretz. He is an adjunct professor at the DIDA - UNIFI Department of Architecture, in the CDL in Industrial Design and CDLM Fashion System Design. Lecturer at IED, where he is the coordinator of two three-year courses. He has carried out supplementary teaching activities at the Politecnico di Milano for several years.

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She teaches from 2013 to now Social Design and Design for Cosmetic - Design for Innovation Degree Course at University of Campania 'Luigi Vanvitelli'.

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