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NEW/OLD PRODUCTION AND CONSUMPTION APPROACHES

Sustainability in the Prato Textile District: Vanguard and Tradition

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Abstract
The contribution takes part in the vast panorama of research and initiatives to investigate the way for a more sustainable, ethical, and democratic fashion system. The Prato District is acknowledged as “the textile district par excellence” (Becattini, 2000) thanks to its profound link to environmental sustainability throughout its history.
The district stands out since the Middle Ages for its ancient recycling techniques paired with its traditional figures, such as “cenciaioli”. Today the tradition has been reinterpreted in a modern key and strengthened by the birth of several new firms dedicated to the production or processing of recycled and regenerated fabrics.
The growing awareness of consumers on ethical and environmental issues offers this survey the possibility to suggest a development path for the circular textile industry to face the transition into the New Normal.

1. Detoxing Fashion in Prato: a Case Study

Sustainability in the fashion system is a broad field of study that has evolved from a vision focused on purely ecological aspects to a global meaning concerning how the social and economic dimensions of production and procurement processes can affect the territory and the value perceived by final customers.

In recent years, significant changes have emerged both in the competitive globalized fashion market and in consumer lifestyles (Bovone, 2015; Joergens, 2006), increasingly dedicated to the issues of environmental sustainability and circular economy, such as to push the development of new strategic and business models. Many studies have been addressing the environmental implications of the clothing industry (Claudio, 2007; Birtwistle & Moore, 2007), pointing at some interconnected factors as the most impacting ones: handling of raw materials, production processes, and disposal of products at the end of their very short life cycle, all fueled by a consumption model already recognized to be no longer sustainable (Fletcher & Grose, 2012). Since the first decade of the 2000s, when dramatic events such as the collapse of the Rana Plaza in 2013 gained visibility, fashion consumers increased their awareness of its risks to health and the environment, as well as of the impact on environmental and human resources caused by excessive clothing purchases (Kim et al., 2013). Scaling phenomena such as climate change, environmental pollution, and resource scarcity have thus intensified the need to take the path to sustainability in both products and production processes (Gazzola et al., 2018; Gazzola & Panova, 2019), as it is becoming increasingly relevant to the fashion industry.

Even before the COVID-19 crisis, it was possible to perceive a spark of fashion revolution (Greenpeace, 2011; WWF, 2017; Amed et al., 2020) driven by many activist initiatives promoted by NGOs. The Greenpeace campaign "Detox my Fashion" offers a great example since it pushes companies to focus on transparency and sustainability, addressing the entire production and distribution processes. However, the crisis induced by the pandemic has consolidated this process of change, demonstrating in a no longer negligible way the unsustainability of the globalized supply chain.

The starting goal of the Detox campaign was to reduce water pollution in the global textile industry, ensuring the commitment of some of the leading clothing brands – e.g., Levi's, Inditex, Benetton (Greenpeace, 2016). More recently, Greenpeace has shifted attention to "slowing down" fast fashion (Greenpeace, 2018).

Currently, among the 80 companies endorsing Detox My Fashion, 60 are Italian, with a large presence of small and medium-sized suppliers. In particular, the Detox consortium promoted by Confindustria Toscana-Nord is remarkable, recruiting today 36 companies, 32 of which locates in the province of Prato, which, spontaneously joining the campaign, are planting the seeds of a "textile revolution" for suppliers (*GreenItaly Rapporto 2017*, 2017).

Joining a global campaign like the one promoted by Greenpeace requires the meeting of specific criteria in terms of certifications, emissions, and chemical additives. Therefore, the reduced company size of the suppliers of the Detox consortium compared to the other participating giants suggests an intrinsic sustainable capacity of the district di Prato.

Figure 1. *The king is naked* (2014) Greenpeace campaign against toxic fashion.

The contribution intends to investigate the reasons and roots at the foundation of this capacity. The research material was accessed at the Datini archive, a historical resource of textile manufacturing inherited by Francesco Di Marco Datini. The historic survey comes along with the analysis of the current organizational and production models adopted in the district, which favored the birth of new strategies while preserving tradition.

The Prato textile district, therefore, represents a valid field of investigation for the development of new forward-looking business models, which could lead to a substantial paradigm shift, where the future takes into account human and planetary limits.

2. Models in Comparison

The contribution assumes as its founding premise the given unsustainability of the globalized fashion system and the simultaneous possibility for small and medium-sized textile companies in Prato to join development programs based on responsible management of resources. In this framework, the research aims to suggest "flexible intelligence" (Micelli & Rullani, 2012) of Prato's micro-entrepreneurship as a study model for social and environmental sustainability. Prato's distinctive feature is found in its deep roots in the territory wherein circular production practices were introduced *ante litteram* and acted as featuring elements of its textile productions.

In particular, due to the globalization of markets and consumption supported by an increasingly fast production-sale-consumption model, many fashion companies have progressively outsourced their production processes, adopting global supply

and subcontracting networks. Many authors have recognized the core of new strategies for the fashion industry in a geographically fragmented production (Taplin & Winterton, 2004; Brun et al., 2008; Şen, 2008; Christopher et al., 2004).
Despite the recent internationalization and globalization phenomena, Italian SMEs have managed to preserve their distinctive and original knowledge, projecting it into a global logic that enhances their differences, mainly thanks to the deep-rooted manufacturing vocation and the peculiar connection among businesses.
The Italian manufacturing districts were the main drivers of the country's international opening (Brusco & Paba, 1997; Fortis, 1998), which are – and remain – strongly characterized by the set of small companies working in the same sector and by their territorial concentration, wherein the artisan tradition has never ceased (Micelli, 2011).
The articulation in productive districts also affects the fashion industry, structured as an archipelago of specialized territorial areas characterized by a strong fragmentation: these local systems specialize in textile manufacturing activities, clothing, or in both sectors. The companies working in these local systems collaborate enacting various practices of exchange, generation, and reproduction of intangible resources such as knowledge or trust (Becattini, 2015; Dei Ottati, 2005).
The survey focuses on the Prato textile district, which develops in several companies engaged in the production of textile fibers and products. It is a remarkably complex reality in which different sectors coexist, from spinning to packaging, passing through weaving, and finishing, including the actors supporting the entire supply chain. The Prato textile district,

therefore, retains an organizational design based on an articulated division of production into small and medium-sized enterprises, each specialized in a single activity. Third party proceeding or subcontracting is the most widespread form of relationship between companies, and today it is still widespread in the Prato cluster (Lazzaretti & Capone, 2014). Therefore, the paper aims to investigate the underlying reasons that lead the Prato district to be excellent in terms of circularity, recycling, and responsible use of resources: the results could inspire meaningful ideas about the development of renewal strategies for an excessively fast economy. The pandemic seems to have highlighted the flaws of this model so that renovation appears now urgent. New models could gain an advantage from the geographical proximity of the supply network to trigger the knowledge and relational potential offered by places.

3. A Territorial Heritage

The historic Marshallian Industrial District (MID) of Prato (Becattini, 1990) is a crucial productive reality in the Italian economic fabric, where territorial culture meets the need for competitiveness. The value of tradition and the adaptability of companies emerge in a commercial system that historically supported the development of crucial regional manufacturing areas, allowing Tuscan companies to acquire market share and reposition themselves in times of crisis, building up a specific economic model (Becattini, 2000).

The Prato textile district extends over a geographical area of 7,000 sq km. Currently, it counts 46166 total employees in Textile Clothing, 6805 companies, a full production value

estimated at 7,500 million euros over an export value at 2540 million euros (Confindustria Toscana Nord, 2020).
In this section, the paper will cover the characteristics of the Prato district, investigating its territorial heritage. Here it would be possible to trace the reasons for the Prato textile district to offer itself as a model of sustainability. The research follows two interconnected paths:

- the first one explains the geographical, economic, and organizational features of the Prato textile district, ranging from a brief survey on the history of the territory to the analysis of the ecosystem composition.
- the second one explores the cultural heritage that permeates the territory, such as the tradition of regenerated wool, which roots in a recycling culture that has strongly influenced the DNA of local production.

3.1. The Textile District

The industrial firms of Prato are located in a favorable geographical area, which has provided the material foundations for the prosperity of a prosperous commercial environment, fueled by a historically widespread entrepreneurial attitude (Melis, 1989; Scarpinato, 2008). Although the geographical conditions have been strengthened and enhanced over time with critical infrastructural interventions, such as the construction of a dedicated industrial aqueduct (Bassetti et al., 2010), the presence of water, the abundance of raw materials, and the road connections favored the birth of a flourishing wool business in Prato since the Middle Ages (Melis, 1989), leading to the birth of one of the most influential Corporations in the city.

The Corporations themselves offer various points of argument, as they were associations permeated with a deep commercial culture combined with active participation in the political and social life of the medieval Italian cities (Melis, 1989). The figure of Francesco di Marco Datini, historical merchant of Prato, was a model of entrepreneurial spirit bound to inspire many generations to produce such wealth to lay the foundations of the upcoming Tuscan civilization of Renaissance.

Over time, a small and medium-sized "community of organizations" (Lazzeretti & Storai, 1999) arose, entirely dedicating to the Art of Wool, which represented the primary source of non-agricultural wealth: the wool cycle included several partial operations that eventually involved large groups of workers, allowing an extensive redistribution of incomes. For these reasons, the Wool Corporation grew in importance compared to other sectors of the economy, becoming the reason for critical future investments in infrastructure (Bassetti et al., 2010). The transition from artisan manufacturing to industrial production systems took place in the second half of the XIX century when the Fabbricone was founded: the industrialists from Prato took advantage of the innovations that shocked the textile industry by early-adopting spinners, gauze, trimmers, and mechanical calenders (Luganelli, 1992): hence the title of *Manchester of Italy* (Turi, 1992). Buying or renting those machines required a modest capital, resulting in the fast development of the district in the years between 1950-1980 (Lazzaretti & Storai, 1999). To differentiate from others and gain competitiveness, companies adopted different means of production: in this way, the district gradually hosted all the phases of the textile supply chain with-

in its reach, consolidating the ancient network of materials, processes, and knowledge.

Business-environment-territory relations strengthen thanks to the vital interactions between a wide variety of actors – technicians, experimenters, and entrepreneurs continuously. A crucial feature for the Prato district is the almost seamless integration between craftsmanship and research and development (R&D) capabilities: the "manual" dimension involved in the former ensures that there are moments of experimentation within the perimeter of the production system: in these "workshop" spaces innovation consists of the material and immaterial aspects of the product (Scarpinato, 2008), including its design and positioning, as well as quality certification and logistics services.

Subsequently, the challenges launched by the knowledge economy (Rullani, 2005) forced SMEs linked to the industrial district model to look for new paths of growth and development, suggesting the strengthening of the company's identity and the values stemming from the territory (Dei Ottati, 2005). SMEs in Prato responded to internationalization by rediscovering in their own geographical dimension the strategic skills required to survive: exploration, learning, and adaptation. If the outsourcing practice did not occur extensively in Prato is also due to the collaborative relationships that take place among the actors of the textile value chain, as the activities of strategic importance and the processing of the garments entrusted to subcontractors usually happen within the industrial territory of the district. As a result, the district positioned itself as an exemplary model of a circular economy, gaining even more attention in light of the paralysis inflicted by COVID-19 on fashion's globalized industry.

Figure 2. Storage of textile and finished products to be regenerated.

3.2. Genius Loci

The economy of Prato draws on an ancient cultural heritage, which has had a remarkable impact not only on the processing practices of raw materials and on the organizational models of its supply chain, but also and above all on the waste management practices.

Today recycling techniques are increasingly researched, but, in Prato, they correspond to a long tradition of care for the environment. The recycling attitudes of Pratesi is more of a vocation rather than a choice dictated by the tasks of the moment, as they are historically known to draw wealth even from scraps. Thanks to this attitude, Prato grew from a village to become the third-largest city in central Italy (Turi, 1992). The transformation of available resources has historically represented a significant development opportunity for

the Prato district, affirming its presence on global markets with its peculiar "regenerated" industry: a model capable of re-producing a yarn starting from waste from the textile supply chain, from packaging and, mainly, from "rags" which are available in larger quantities.

The nickname "capital of rags" has its roots in ancient times, when in 1512, Cosimo I Medici prohibited the manufacture of fine fabrics in Prato to protect the Florentine pannilans. The Pratesi families then specialized in the production of "rags," less precious short-fiber fabrics on which they soon based an entire industry. In 1824 Giovan Battista Mazzoni developed the first machine for carding and spinning, starting the rags industry wherein "cenciaioli" started working (Luganelli, 1992). "Cenciaioli" are figures of enormous importance for the history of Prato, whose mastery is also cited by Baudelaire in his poems (1821-1867): their skills are the result of a sophisticated tactile experience, as the "cenciaiolo" knows how to identify the composition of the reusable rags with just a touch while testing the heaps of rags arriving in the city. Curzio Malaparte (1982) describes it well: "Prato, where everything comes in the end: the glory, the honor, the mercy, the pride, the vanity of the world." Especially with the end of the Second World War, when Europe was in great poverty, Prato became the most critical and specialized center for the collection of rags on an international scale: vast volumes of rags from foreign exporters invaded the warehouses; the job of the "cenciaioli" was to sort them by color and material, which were subsequently used to create new yarn; after the sorting processes, more than half of the rags were then classified, packaged and shipped back abroad.

Figure 3. Prato's "cenciaioli" sorting rags by color and material.

In the past, the mastery of cenciaioli gained little appreciation and was often addressed with derogatory words because of the contact with dirt and waste. However, today the ability in recycling fabrics and knitwear scraps is being rediscovered as the successful path to apply a more sustainable economic model to an industry like the textile one, generally renowned for being one of the highest polluting industries (Claudio, 2007; Birtwistle & Moore, 2007).

4. Prato, a Circular City

The XXI century and its global events seem to demand even more urgently for alternative production models. In this framework, circular economy arose as a sustainable and feasible model compared to the linear one: the concept of regeneration envelopes its theoretical and operational processes, focusing on relying less and less on raw materials while generating better outcomes on both environments, economy, and society than the current development path (Remy et al., 2016). The textile district of Prato proves to be a successful case study as:

- it was one of the first Italian districts to adopt the circular economy model, implementing sustainable strategies in its business model;
- its specialization in the textile industry - one of the most polluting and resource-demanding in the world - is managed in a virtuous way, such as receiving several awards and recognitions over time.

The Prato textile district stands out thanks to a peculiar feature, being it the application of a circular model at a meso level: here the district's industries weave a complex network of interactions and exchanges of resources – matter, energy, by-products – enacting an "industrial symbiosis" (Ghisellini et al., 2016), triggering several economic and environmental benefits. This symbiosis in Prato takes place in one of the most wasteful industries, revealing itself capable of introducing "sustainable practices and circular economy-related eco-innovations, especially linked to wastewater management

and recycling" (Mazzoni, 2020). The district is supported by an industrial aqueduct built on a systemic scale, recycling about 4 million m3 / yr of water, a mass equal to about 1/3 of the industrial system's needs (Bassetti et al., 2010): it is the first implant in Europe by extension and recycled water capacity (Confindustria Toscana Nord, 2016).

A virtuous circle of eco-innovation has been triggered and consolidated over time thanks to the availability of infrastructures, the reuse, and network culture, and the geographical proximity: this same circle is thus strengthened by a series of initiatives infused with a deeper meaning in the current context of growing sensitivity towards the global and interconnected nature of contemporary challenges, which cannot be managed without collaboration. The Italian Recycled Textile Association (ASTRI) brings together about 160 companies in the sector – from textile workers to old "cenciaioli," from raw material traders to finishing products traders, clothing artisans, and wool millers – and proposes to "defend the past by trusting the future", undertaking a circular approach with time and environment thinking about next generations: any wasted resource represents a cost to the economy, whether it is physical, or abstract, with repercussions on the environment and society. The different forms of pre-COVID activism today acquire an even stronger momentum, starting a virtuous circle of bottom-up and top-down practices to trigger and encourage consumption education, greater awareness, and behavioral shifts.

Rifò, a Prato startup founded by Niccolò Cipriani and Clarissa Cecchi in 2017, ranks among the initiatives with the most sig-

nificant resonance: specialized in the production of cashmere and regenerated wool garments, Rifò records substantial reductions in the use of resources in its production processes: 90% of water, 77% of energy, 90% use of chemicals, 100% of dyes and 95% of CO2 emissions. Skilled craftsmen from Prato produce the final garments thanks to the "calata" artisan method. Moreover, the Chamber of Commerce of Prato promotes the registration of labels such as "Cardato Recycled" and "Cardato" to certify products of excellence, assessing the commitment to pursue high quality in products resulting from the recycling of textile materials or virgin fibers: particular attention is paid to products' life cycle since the earliest designing stages. Both labels require the satisfaction of specific criteria, such as production within the district, output realization with at least 60-65% of carded resources, and the monitoring of the environmental impact in terms of water, energy, and CO2 consumption. Moreover, Prato hosts numerous events of national resonance, such as Recò Festival, an annual event that gathers three Tuscan districts to promote an even more circular economy.
This activism is part of a larger project, Prato Circular City, promoted by the European partnership of the Urban Agenda on the Circular Economy: a homogeneous production district strongly characterizes Prato, making it particularly suitable for a complete transition to circularity.

5. Conclusions

Even in times of crisis, Italian local production systems have "invented" their own way of producing and competing on international markets based on a convergence of constituent elements (Micelli & Rullani, 2012).

Figure 4. *Rifò*, regenerated wool result before spinning.

The peculiar Italian production model makes use of "the flexible intelligence of micro-entrepreneurship" (Micelli & Rullani, 2012) based on the proactive and innovative use of cultural resources and local know-how.

The crisis enacted by the global pandemic has exacerbated previous markets rules and pushed a meaningful momentum for districts and businesses, which are now starting a phase of experimental reactivity, giving a sign of an exploratory strategic and vitality (Rullani, 2005; Corò & Micelli, 2009). What kind of economies and businesses will the New Normal bring? If all the models adopted so far seem to be strongly questioned, what will it take for companies, people and territories challenged globally to gain their presence in the post-crisis world?
Italy provides several reasons to question these issues, first of all its "anomalous" capitalism made of small business working in traditional sectors strongly anchored to the territory, which seems to offer the basis for some "driving ideas", stemming from those "immutable features" (Cianfanelli et.al, 2018) that Italian districts prove to possess: the recovery and enhancement of quality artisan traditions and their deep connection with the territory once again seem to help coping with the radical changes suggested by the New Normal.
Such change can be framed in the renewal of the local-global dialogue that should not be limited to Made in Italy, but whose analysis appeared relevant to the contribution as it suggests some good practices for alternative production approaches. Here, in fact, the flexible intelligence of micro-entrepreneurship manages to embrace change by outlining a

space in which the global and the local merge by the networking of specific knowledge deeply connected with the territorial context and the collective intelligence (Micelli & Rullani, 2012) held by the community of making.
In this moment of profound transformation, it is therefore even more significant to carry out case-by-case analysis for the fashion industry (Caniato et al., 2012) presenting the case of Prato as an exemplary case of circularity in textile production, achieved by re-inventing its own traditional production processes resulting in what Aldo Bonomi (2012, p. 86) addresses as “re-made in Italy”.

In conclusion, the analysis offered by the contribution might constitute an important starting point for the replication of these circular economy-related eco-innovations in other industrial clusters, especially in textile ones, characterized by similar resource consumption patterns.

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V

BIOGRAPHIES

Ana Margarita Ávila Ochoa
Industrial Designer specialized in the textile area. Master in History of Urban Art. Full-time Professor and Researcher at Facultad del Hábitat, Universidad Autónoma de San Luis Potosí, and a member of the research group Design & complex thinking, where he develops design research oriented towards Evolution of thoughts, theories and concepts of Design.
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Michela Carlomagno
PhD student in Environment, Design and Innovation at University of Campania Luigi Vanvitelli.
Before she studied Design and Communication at University of Campania Luigi Vanvitelli - Department of Architecture and Industrial Design (DADI) and successively she finished her studies with a Master's degree in Design for Innovation at Department of Civil Engineering Design Construction and Environment (DICDEA) in March 2018.
She is interested in the investigation of innovative approaches to the conceptualization of new vision of design, especially on food design, cosmetic product and communication.
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Elisabetta Cianfanelli
Architect and Industrial Design Specialist, is Full Professor at DIDA (Architecture Department) of University of Florence (Italy), Design Campus section. President of the CdLM in Fashion System Design, and scientific director of the DIDA Lab REI (Reverse Engineering & Interaction Design).
Her research interests are related to the world of Small and Medium Enterprises concerning the development of new products and technologies applied to design and production.
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Maria Claudia Coppola
PhD student in Design at University of Florence, DIDA (Department of Architecture), Design Campus section. Her research combines design approaches, future studies and digital media to foster deeper civic engagement and inclusion.
In addition to her studies, she supports Professors at DIDA in managing educational and training activities, communicating with students and tutors.
Outside of the academic environment, she is a designer enjoying philosophy and politics readings from all over the world, with a strong attention to their related languages, be they carved in stone or posted on social media.
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José Luis González Cabrero
Mexican Industrial Designer, master in Product Design from Politecnico di Milano. He is currently a Design Researcher and Professor at Facultad del Hábitat, Universidad Autónoma de San Luis Potosí, and a member of the research group Design & complex thinking, where he develops design research oriented towards territory & aesthetics.
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Gina Nadal Fernandez
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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Debora Giorgi
PhD, Architect, she is a Design Researcher at the Dipartimento di Architettura DIDA of the University of Florence. Since 1991 she works on Sustainable Local Development and the social implications of the project starting from the Cultural Heritage. For over 20 years she worked in projects in Ethiopia, Algeria, Tunisia, Morocco, Yemen, Jordan, Haiti, with the most important national and international donors as WHC - UNESCO, UNCCD, European Commission.
Since 2011 she has been collaborating with the DIDA UNIFI especially in projects around Maghreb countries and in the social field promoting Social Design projects and workshops using co-design methodologies. She is professor of Service Design at DIDA UNIFI, professor of Design for Cultural Heritage in the License Course in DesignS at Ecole Euro-Méditerranéen d'Architecture Design et Urbanisme de l'Université Euro-Méditerranéene de Fès EMADU – UEMF in Morocco and visiting professor in some universities in Mediterranean countries.
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Beata Hamalwa
Beata Hamalwa founded Fashion Design Diploma at College of the Arts, Windhoek, Namibia, and Fashion Design Certificate at City Varsity, Cape Town, South Africa, and co-founded the Heroes Primary School - all became imperative in employment creation. Her versatile educational background from Poland, Namibia and South Africa in arts and fashion design has provided a valuable foundation for her career in several art training programmes.
She holds a Master of Technology in Design. Her Master's thesis, titled 'Beadwork and its impact on contemporary fashion in South Africa,' investigates the cultural wealth contribution to decolonizing fashion. She believes that modern arts and trends do not imply the demise of indigenous culture. Her latest endeavour is to investigate the possibility of sustainability in the current fashion industry in Namibia, which led me to PhD research at the Cape Peninsula University of Technology.
As an artist, Hamalwa has showcased at premier fashion events in Namibia, Portugal, Germany, France, Poland, the United Kingdom, South Africa, Botswana, and Reunion Island.
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Francesco Izzo
Full Professor of Strategic Management of Innovation at the University of Campania Luigi Vanvitelli, where he teaches also Strategic Analysis. He has been Dean of Department of Economics from 2017 to 2020. He is member of the Entrepreneurship and Innovation Ph. D. teaching board. He has been visiting professor of Innovation Management at the University of Naples Federico II. His research interests include innovation strategy, international strategy of SMEs, innovation in creative industry, cultural entrepreneurship. He is author of a large number of scholarly publications on these topics.
He is member of Valuation Committee of University L'Orientale. He has been head of Valuation Committee of the Stazione Zoologica Anton Dohrn, a public research organization in the fields of marine biology and ecology, from 2010 to 2016.
He served as a consultant to Ministry of Innovation, collaborating at programs about regional innovation systems, academic spin-off and venture capital, and member of the Steering Committee of Council of Ministers for the program High-Tech for Southern Italy.
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Regina Aparecida Sanches
Degree in Textile Engineering at University Center of FEI (1987), Master in Mechanical Engineering at State University of Campinas (2001), Ph.D in Mechanical Engineering at State University of Campinas (2006) and Postdoctorate in Design at University of Lisbon (2016).
She started her academic career in 1995, was the coordinator of the undergraduation course in Textile Engineering at University Center of FEI (2001 to 2006), was the coordinator of the undergraduation course in Textile and Fashion at University of Sao Paulo (2010 to 2012), was the coordinator of the Master's Degree in Textile and Fashion at University of Sao Paulo (2012 to 2016).
She has been a professor at the School of Arts, Sciences and Humanities since 2006 and has been an associate professor at the University of São Paulo since 2011. She researches in the areas of textile materials, knitting technology and textile design.
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Rayana Santiago de Queiroz
PhD student in the Textile Engineering course at the University of Minho (Portugal), master (2013) and graduated (2009) by the Textile and Fashion course at the University of São Paulo.
Since 2012 acts as a researcher at the Technical Textiles and Protection Products Laboratory of the Institute for Technological Research, where has been working especially on the following topics: vegetable textile fibers, natural dyes, comfort, characterization and performance evaluation of technical textiles.
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Adriana Yumi Sato Duarte
Undergraduate (2009) in Bachelor of Textiles and Fashion from the University of São Paulo, Master (2013) and PhD (2017) in Mechanical Engineering from the State University of Campinas (Unicamp). Conducted a period of Internship of Doctorate Sandwich Abroad (SWE) - Science without Borders Program (2015-2016) at Fachgebiet Datenverarbeitung in der Konstruktion (Dik), Technical University of Darmstadt, Germany.
She has experience in Mechanical Engineering with an emphasis on Mechanical Design and in Textiles and Fashion with an emphasis on product design methodology, sustainable product development, Brazilian natural fibers, knitting technology and Industry 4.0. She is currently Assistant Professor II at Nossa Senhora do Patrocinio University and Coordinator of the Fashion Design Course.
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Chiara Scarpitti
Chiara Scarpitti, designer and PhD, is Researcher at the Department of Architecture and Industrial Design of the University of Campania "Luigi Vanvitelli". Since 2006 she has been working in the field of design and jewellery at an international level, obtaining numerous awards and exhibiting her works in museums and galleries including Triennale Design Museum in Milan, MAD Museum of Art and Design in New York and HOW Design Center in Shanghai.
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, Barcelona, 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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Fernando Soares de Lima
Degree in chemistry from the University of Mogi das Cruzes (2004), Master in Industrial Processes from the Technological Research Institute of the State of São Paulo (2013) and Chemical Production Engineer from Faculdades Oswaldo Cruz (2017). He is currently responsible for the Technical Textiles and Protective Products Laboratory and for the Shoes and Protective Products Laboratory of the Technological Research Institute of the State of São Paulo.
He mainly works on the following topics: technical fabrics, characterization tests and performance evaluation of textiles and PPE's, weathering and microencapsulation applied to textiles.
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Renato Stasi
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. He has held seminars and workshops in various universities. Stasi is Coordinator of the Steering Committee of the Master's Degree Course in Fashion System Design of the University of Florence - School of Architecture - DIDA.
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Margherita Tufarelli
Designer, PhD in Design. Currently a research fellow at DIDA (Department of Architecture) of the University of Florence (Italy), Design Campus section. The PhD thesis, with the title "future heritage and heritage futures. An exploration on meanings of the digitized Cultural Heritage" aimed at investigating the role that the digital archives of Cultural Heritage can have in the contamination between the culture of the past and contemporary creativity. Her research interests concern the heritage/creativity sphere within the digital evolution; thus, the application, impact and opportunities that lie in the relationship between digital technologies and cultural heritage. She is currently working on a research project titled "Living archive. Disseminating and reusing the Fashion cultural heritage" founded by Regione Toscana.
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Rosanna Veneziano
Architect, Ph.D. in Industrial, Environmental and Urban Design, Assistant Professor of Industrial Design at the University of Campania Luigi Vanvitelli - Department of Architecture and Industrial Design (DADI). Since 2002 she carries out an research activity on design oriented strategies for the local production development.
Since 2008 she coordinates (with P. Ranzo e M.A. Sbordone) the Design for Peace Lab activities. The creative lab was established following the draft agreement signed by the Province of Naples - Councilorship to Peace and International Cooperation - and the Department with the purpose of sharing experiences and best practices in the field of international cooperation and the management of humanitarian emergencies.
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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AIAP CDPG, the Graphic Design Documentation Centre. Working to collect, catalogue, archive, enhance and promote any documents related to graphic design and visual communication. These documents (originals as well as layouts of projects, books, posters, prints, catalogues, correspondence, photographs) help to rewrite the history of graphic design in Italy and to support research and educational activities, as it is the CDGP's intention to make these documents widely available.

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