The Ecological Turn

Design, Architecture and Aesthetics
beyond "Anthropocene"

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'Making Kin' in Fashion Design.
From Agri-food Waste to Sustainable
Materials in Italy

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This contribution explores the unique combinations and interdependencies that emerge in current fashion design in Italy. The paper focuses on the encounter between technology and biology to experiment with textiles and materials for the fashion industry.

The theoretical framework draws on Donna Haraway's concepts of making kin as generating new collaborations and staying with the trouble. It brings these concepts together with Tony Fry's definition of futuring and Alice Payne's fashion futuring. We applied these ideas to the analysis of four Italian case studies illustrating how four companies use agri-food waste: Orange Fiber from citrus, Grado Zero Innovation from fungi, Frumat from apples, the latter used by Womsh for the production of sneakers. Building new relationships between humans and nonhumans, in this case between companies, agri-food processing waste, new materials, and con-

sumers represent a possibility to work towards a more sustainable future starting from the dynamics of the present.

The paper presents findings on redirective practices as a way to stay with the trouble from initial research on fashion, and reports on new alliances and collaborations between people, business, waste, territory, technology and biology.

Staying with the trouble

Donna Haraway, writing about possible responses to the Anthropocene, invites us to "stay with the trouble". With this, she means "learning to be truly present, not as a vanishing pivot between awful or edenic pasts and apocalyptic or salvific futures, but as mortal critters entwined in myriad unfinished configurations of places, times, matters, meanings".[1] This position of radical present plays out as an alternative to an imaginary of "technofixes" and its opposite, which Haraway calls a "game-over" imaginary. With technofixes, she writes, technology comes to the rescue of the world. On the contrary, the game-over imaginary does not envisage any possibility of intervention in the world shaped by the Anthropocene and Capitalocene. Staying with the trouble, instead, invites us to generate new collaborations, configurations in the present.[2]

The paper explores the unique combinations and interdependencies that emerge in current fashion design in Italy, focusing mainly on the encounter between technology and biology in the experimentation of textiles and materials for the fashion industry. From the industrial revolution of the eighteenth century onwards, the textile industry has been a mainly symbolic area of how technology has shaped the face of the modern world. This heritage makes it an ideal environment to explore and understand new research in biomaterials and the use of

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1 Donna Haraway, *Staying With the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016), 1.

2 Haraway, *Staying With the Trouble*, 3-4.

these biomaterials in design from a historical, cultural, and social perspective.

To investigate these experimental possibilities, we rely on the concept of futuring developed by design theorist Tony Fry. Futuring, unlike the futurism described by Haraway, does not sit in either the hope or the despair in the future camp. Instead, it requires interventions in design practices to facilitate knowledge exchange; politically contest the unsustainable status quo; promote the transformation of knowledge into action, and shape communities of change working towards a common goal. As Fry emphasised, redirective practices break away from established ways of thinking, working and making, creating new designed objects, and unique design cultures, practices, and designers.[3]

"Futuring" is becoming an essential concept in fashion, thanks to the sustainability scholar Alice Payne.[4] Payne recognises futuring as a dynamic process able to traverse and mediate two contrasting interpretations of sustainability. The first interpretation sees futuring as an optimistic and gradual technological evolution towards a cleaner industry. The second endorses a more prudent approach to freeing fashion from the imperative of unsustainable growth of capitalism. Payne argues that "fashion's future in the Anthropocene cannot rely solely on the emergence of new and better technology, but rather requires a paradigm shift to transform conventional fashion production and consumption to new cultures of using, making and remaking", and she defines this paradigm's shift "a 'rewilding' of fashion".[5]

In our view, the concept of "fashion futuring" allows overcoming the exclusivity of some of the proposed sustainable solutions

3   Tony Fry, "Redirective Practice: An Elaboration", *Design Philosophy Papers* 5, no. 1 (2007): 5-20. Tony Fry, Design Futuring: Sustainability, Ethics and New Practice (London: Bloomsbury, 2014).

4   Alice Payne, "Fashion Futuring in the Anthropocene: Sustainable Fashion as 'Timing' and 'Rewilding'", *Fashion Theory* 23, no. 1 (2019): 5-23.

5   Ivi: 14.

to fashion.[6] These positions include, for instance, "eco-fashion" beyond environmental sustainability;[7] "slow fashion" as a critique of the acceleration of fashion production and consumption;[8] and the ancient Greek philosophical concept of "beautiful and good",[9] which combines ethics and aesthetics. These approaches reaffirm fashion as an elitist concept that exclusively entails the linkage between slow and expensive, innovation and luxury. On the contrary, fashion futuring is a new approach to sustainable fashion that emphasises initiatives ranging from the creation of circular economies[10] to participatory design models[11] and open design.[12] All these initiatives have in common the quest for a more holistic approach to fashion design, manufacture and consumption in which slow entails, for instance, DIY practices and innovation supported by the free circulation of ideas and skills.

The paper presents findings on redirective practices as a way to stay with the trouble from initial research on fashion, and reports on new alliances and collaborations between people, business, waste, territory, technology and biology.

Vanni, Vaccari, Franzo

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6   Alessandra Vaccari and Ilaria Vanni, "Un modello di produzione sostenibile nella moda", in *Remanufacturing Italy: l'Italia nell'epoca della postproduzione*, ed. Maria Antonia Barucco, Fiorella Bulegato and Alessandra Vaccari (Milan-Venice: Mimesis-dCP, 2020): 44-57.

7   Sarah Scaturro, "Eco-tech fashion", Fashion Theory 12, no. 4 (2008): 469-488. Sass Brown, *Eco Fashion* (London: Laurence King, 2010).

8   Kate Fletcher, *Sustainable Fashion and Textiles: Design Journeys* (London: Earthscan, 2008). Kate Fletcher, "Slow Fashion: An Invitation for Systems Change", *Fashion Practice 2*, no. 2 (2010): 259-265. Hazel Clark, "Slow + Fashion - an Oxymoron - or a Promise for the Future...?", *Fashion Theory* 12, no. 4 (2008): 427-446.

9   Maria Luisa Frisa and Marco Ricchetti (edited by), *Il bello e il buono. Le ragioni della moda sostenibile* (Florence: Centro di Firenze per la moda italiana, 2011).

10   Paul Smith, Jen Baille and Lynn-Sayers McHattie, "Sustainable Design Futures: An open design vision for the circular economy in fashion and textiles", *The Design Journal* 20, no. 1 (2017): 938-947.

11   Anja-Lisa Hirscher and Alastair Fuad-Luke, "Open Participatory Designing for an Alternative Fashion Economy", in *Sustainable Fashion*, ed. Kirsi Niinimäki (Helsinki: Aalto ARTS Books, 2013), 174-182.

12   Zoe Romano, "Openwear Collaborative Clothing", in *Agents of Alternatives: Re-designing Our Realities*, ed. Alastair Fuad-Luke et al. (Berlin: AoA, 2015), 220-228.

The case studies

We applied this theoretical framework to the analysis of four Italian case studies. These are three companies that produce sustainable materials from agri-food waste - Orange Fiber, Frumat and Grado Zero Innovation – and Womsh, a company that produces sneakers using one of these innovative materials.

Alessandra Vaccari organised a round table on reusing and re-cycling food waste (titled *Alimentare la moda*, to feed fashion) with these companies on 2 October 2020 as part of the 2020 Sustainable Development Festival.[13] The roundtable aimed at documenting the participating companies' practices, innovation and aspirations about fashion sustainability. Their founders represented the four companies: Enrica Arena from Orange Fiber, Gianni Dalla Mora from Womsh, Giada Dammacco from Grado Zero Innovation and Hannes Parth from Frumat. Although all four companies are committed to the shared project of waste management towards a more sustainable fashion, each concentrates on particular produce.

Orange Fiber, founded in Catania in 2014, has patented a system for extracting cellulose suitable for spinning from citrus pulp, that is, from the waste from the agri-food production of juices, concentrates, perfumes and essential oils.[14] As Arena explained, the yarn, classified as human-made cellulose fibre, is used to make fabrics ready for printing. Grado Zero Innovation is a company in the province of Florence that has researched, acted as a consultant and prototyped innovative materials derived from Tuscan agricultural products since 2001. Their experimentation includes Muskin, a leather substitute obtained from the *Phellinus ellipsoideus* fungus.[15] The company is currently researching how to scale up Muskin to industrial production and

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13   http://www.iuav.it/Ateneo1/IUAV-SOSTE/NEWS/ARCHIVIO/2020/--online-i/index.htm#alimentare.

14   www.orangefiber.it

15   www.gzinnovation.eu

a more standardised manufacturing process. Finally, Womsh is a fashion brand founded in 2014 in the province of Padua that produces vegan footwear using Apple Skin, a material similar to leather made by Frumat from apple processing waste.[16]

All four companies are compelling because they have experimented with sustainable materials from the agri-food industry's waste by-products for several years. They are also interesting for their geographical location since they are distributed from the north to the south of Italy, in areas - especially in the case of Frumat and Orange Fiber - traditionally disconnected from the fashion industry. Finally, these companies are part of a network of shared values, and alliances of humans and nonhumans, bearing witness to Haraway's invitation to generate new collaborations and configurations in the present by staying with the trouble.

Making kins

More importantly for this paper, these four case studies are significant examples of "making kin" because they create new connections between disparate elements; produce alliances between biology, technology and design; and generate new configurations of materials from waste. Building new relationships between humans and nonhumans, in this case between companies, agri-food processing waste, new materials, and consumers represent a possibility to plan a sustainable future starting from the dynamics of the present. The four case studies create a glitch in the textile and fashion industry's production chain. From fruit pulp to mushrooms, the four companies recover waste materials from local agri-food industries, transforming waste into assets, and putting them back into the production chain through new alliances and configurations. Findings from the round table suggest that "making kins" happens on different levels.

16   www.womsh.it

What follows are examples of collaborations and configurations among multiple actors:

- Among the fashion industry, individuals, companies and projects. For instance, Arena argued that the fashion industry supports research on new materials because it provides the most straightforward path towards sustainability since it implies only a few adaptations to the supply chain. She also pointed out that both individuals and companies contribute to developing ideas and business through crowd-funding campaigns.

- With the resources of the territory where companies are located. Companies identify and enhance resources through innovative business ideas. For instance, Orange Fibre recovers waste from oranges produced in Sicily, and Frumat processes waste from apples in Trentino.

- Between companies and fashion brands that share an interest in a less wasteful fashion and give visibility to projects, such as Orange Fibre's collaboration with Salvatore Ferragamo in 2017.

- With the components of the production chain that share the same values and visions of the future, such as the meeting between Frumat and Womsh which allowed to develop experimentation on Apple Skin and to find rapid application in sneaker collections.

- With research institutions and universities, as emerges from the twenty-year-long experience of Grado Zero Innovation, which experiments on technical textiles and innovative materials by turning academic research outputs into market-oriented sustainable and innovative products.

- With wholesalers, retailers and consumers who can be educated to become an active part of the change process. Womsh, for example, trains its retailers, involving them in the process of spreading values, and its customers, asking

them to bring their shoes back to the store at the end of the life cycle to be recycled, as opposed to contributing to landfills. Arena also explained that Orange Fiber educates consumers on the correct disposal of products, to enable them to put these materials back into circulation and give them a new life.

- With companies along the supply chain. Arena stressed the importance of networks:

> In our experience, the accelerators, as I told you before, both at the Italian and international level have been fundamental for us. Both to understand where we were and where we were going, and because sometimes you risk - coming from this sector - being a little self-referential; so being networked with other innovators who are doing something similar allows us to understand the field better.

The significance of being part of a network (in Italian *fare rete*) is also emphasised by Dalla Morra, who while recognising the lack of historical precedents in building networks, states that:

> The networks are fundamental to make the movement grow, to spread good practices with less difficulty and above all, to have a more insightful impact on the social fabric with projects of change.

The findings from the case studies provide models of futuring, and redirective practices, that is in Fry's definition: "dealing with 'what already is' and turning it towards the future with sustaining ability".[17] Fry presents examples of what in practical terms turning towards the future with sustaining ability entails. Fry makes the case that redirective practices materialise particular ideologies, create political imaginaries, shape how people

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17   Tony Fry, *Design as Politics* (Oxford and New York: Berg, 2011), 77.

interact, prefigure material cultures and economies, and model alternative systems.[18]

The same points were made in the round table by all partici-pants. For instance, all companies stressed that the material production of textiles and designs made from these textiles from agri-food waste substantiates shared beliefs in a less wasteful and more sustainable fashion design system. Orange Fiber, Frumat, Muskin, and Womsh also invest in communicating val-ues and educating the public, contributing to creating a political imaginary. The four case studies also show how by creating new alliances the research, development and production of biomate-rials shape new interactions among researchers, producers and consumers. In this sense, the four companies' work can also be understood as modelling alternative supply chains and prefigur-ing different material cultures [Fig. 1].

Fig. 1

Lucile Garrault, *Biomaterials Poster*, 2019. In: Garrault, L., 2019, *Biofashion Manifest. The nas-cent phase of bio-materials in the new concept of fashion*, MA thesis, Master's Degree Programme in Fashion and Visual Arts, Università Iuav di Venezia. Image by the author.

18   Fry, *Design as Politics*.

Conclusion

In the current climate breakdown, as design researchers we must consider which kind of fashion futures we are going to advocate for, and how we can collaborate with designers to facilitate these futures. In this paper, we analyse one of such collaborations, a round table with four companies engaged in the research, production and design of biomaterials derived from agri-food waste. This effort might seem small. However, we see it as a way to participate in the configurations and alliances that shape new interactions, create a new political imaginary, prefigure innovative material cultures and materialise shared beliefs in "sustainability".[19]

We have been interested in testing Donna Haraway's invitation to stay with the trouble, starting from the here and now to generate new alliances able to redress both the techno-utopian and game-over imaginary of the Anthropocene and Capitalocene, in relation to fashion design. In this process we have created new theoretical relations, bringing the idea of staying with the trouble together with Tony Fry's exhortation to see design as a redirective practice, and Alice Payne's call to shape new cultures of using, making and remaking.[20] We also brought together four companies in the Fashion Futuring round table.

Reflecting on the round table discussion, we want to highlight the importance of "making kin" for all the participants, to establish new alliances between people, companies, resources, waste, design and technology to change how the fashion production chain works towards more sustainable processes. Some significant elements emerged in the round table discussion: first, the importance of working with local resources, such as waste from oranges in Sicily or apples in Trentino. Second, the relevance of networks: with other companies, industries, fashion designers

19   Fry, *Design as Politics*, 77.
20   Payne, "Fashion Futuring in the Anthropocene".

and researchers. Third, the necessity to create new alliances with consumers through communication and education.

We hope that the work we started will make these alliances more visible, interconnected, and more robust.

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