GLOBAL FASHION 2018

Dress, shoes and heeled prosthetic legs: the paralympic bid to break fashion barriers

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INTRODUCTION

When Charles VII was asked to establish a ministry of fashion in the fifteenth century, it would have been hard to anticipate the global resonance that fashion would be making six centuries later.
Fashion is a social and cultural phenomenon which lies at the cross-roads of several interrelated fields, including collective and personal identity dynamics, production and consumption patterns, social distinction and imitation mechanisms (Aspers and Godart, 2013; Svendsen, 2006). It is simultaneously inclusive and exclusive, having the ability to celebrate but also to exacerbate the differences between people or inflict vulnerability on a group whose needs are not considered.

The current prevailing model of fashion can be accused of excluding various groups of people, as it focuses on certain categories in a hierarchical way, marginalizing others. In this rigid system, disabled people seldom get the chance to be valued as stylish and elegant and seem to be excluded from the fashion industry target markets. Although the fashion industry has made huge strides to becoming more inclusive, committing itself to represent a wide spectrum of genders, ethnicities and cultures, it is undeniable that the voices of the disabled community are often silenced.

In ensuring that *"no one will be left behind*", the UN Sustainable Development Goals recognise the importance of redressing inequalities experienced by vulnerable and marginalised groups and communities both in high

and low-income nations (SDGs Preamble, 2015). Although disability is not one of the agreed targets, it is for the first time mentioned in reference to five of the Goals: education; employment; reducing inequalities; sustainable cities and communities; and data collection (Kuper and Grech, 2017). But inclusion is not just about healthcare, housing, transport, education (Brown et al., 2012): it is equally about identity and self-worth and how you express it. This is why access to style is so important and also why changing the adaptive clothing production and marketing patterns would have a domino effect on many aspects of the lives of people with disabilities. A strong evidence base is thus needed to highlight if and when people with disabilities are being left behind, not included or persistently untargeted, and to work in informed and inclusive ways to develop strategies that may fill these gaps.

A. FASHION AND DISABILITY THEORIES: FUNCTIONALITY V. STYLE?

According to the World Health Organization, disability is an umbrella term, covering impairments, activity limitations, and participation restrictions. Impairments relate to deficits in body and mental function or structure; activity limitations refer to difficulties encountered by an individual in executing a task or action; participation restrictions defines obstacles in social engagement and community involvement (WHO, 2011).
Having a grasp on how disability is explained is vital, as fashion practice has been – and continues to be – shaped by historically entrenched social norms and theories that, either implicitly or explicitly, affect how design research is carried out, how impaired bodies are represented in fashion shows and the media, as well as the space that is devoted to them in the fashion production and retail systems.
Since the 1960s, many different models in scientific literature attempted to understand and explain disability, the most relevant ones being the medical and the social models (Bickenbach, 1992; Altmann, 2001; Shakespeare, 2006). With the adoption of the United Nations Convention on the Rights of Persons with Disability (UNCRPD) in 2006, a new model emerged, shifting the focus towards human rights.

i. The medical model

Dressing difficulties of disabled persons arose as a new concern for rehabilitation professionals after World War II and the therapeutic orientation was prominent in the first reports about adapted garments, which appeared in the medical literature (Gamwell and Joyce, 1966; Rusk and Taylor, 1959). The focus was on easy dressing and functionality. Although textiles and clothing scholars were already aware of the impact of apparel on self-esteem, health and social inclusion of the wearer, these issues were often overlooked when disabled people were at stake (Lamb, 2001).
The abovementioned attitude reveals an understanding of disability that follows the medical model, which has been dominant in the European and North American socio-political context until the 1980s. This model defines disability as a deviation from the normal health status that needs to be treated, cured, fixed or at least rehabilitated. The exclusion of disabled people from society is regarded as an individual problem, rooted in the impairment. Thus, if a person is blind or deaf, it is assumed that he or she cannot participate in political or cultural life (Dhanda, 2007; Altmann, 2001).

This narrow view, perpetuating a "normal / abnormal" binary, conceiving disabled people as deficient or lacking in comparison to "regular" human bodies and minds, affected the way society interacted with individuals with disabilities as well as the way the latter perceived their own roles in their communities, thereby generating overmedicalized, objectifying, and individualistic understandings of disability (Barton, 2001).
One of the most pernicious consequence of the medical model is the overdetermined role of the biological features of one's impairment, neglecting the extra-individual, sociopolitical factors – including aesthetics and the social meaning of clothing – that play a very significant role in disability experiences (Dirth and Branscombe, 2018; Kaiser et al., 1985).

ii. The social model

In the latter part of the twentieth century, disabled people organized themselves into a new social movement, inaugurating a struggle for emancipation that led to new politics of disablement. The intellectual expression of this movement is represented by the social model of disability, which succeeded in shifting debates about disability from biomedically dominated agendas to discourses about politics and citizenship (Hughes and Paterson, 1997). According to this view, people with disabilities are not restricted by their own (physical, sensory and intellectual) impairments but by the structural and attitudinal barriers society places in front of them, ranging from individual prejudice to institutional discrimination, from inaccessible public buildings to unusable transport systems, from segregated education to excluding work environments, and so on. Hence, enhancements in disabled people's lives are not possible without the development of social policies that facilitate full social inclusion. (Oliver, 1990, 1996 and 2013; Barnes, 2000).

This paradigm shift reversed the perspective on disability in the fashion industry too. Therefore, rather than assuming that disabled people cannot wear certain clothes because of their impairments, designers are required to conceive garments that consider mobility, sensory or cognitive challenges (Freeman Watson et al., 2010).
The social view of disability also retrieved the textiles and clothing scholarship on appearance and social realities, stressing that apparel decision making, both pre- and post-purchase, is not merely about practicability. On the contrary – and analogously to non-disabled consumers – the choice of clothing is subjective and can be linked to physiological, psychological, and philosophical, as well as social and cultural, aspects (Chang et al., 2013; Blau, 1999; Roach-Higgins and Eicher, 1992). In particular, garments influence disabled people's expressions of their social identity, and in turn the social world's relation with them. Clothing can facilitate interactions and socialization, improve appearance and self-presentation, as well as mark roles and status within society. Apparel is also key to demonstrate that they are not "charity cases" or "burdens" but profitable marketing targets with a disposable income (Coskuner and Sandikci, 2004; Prager, 1999). In addition, Chang et al. (2013) suggested that apparel may play a unique, and perhaps more significant, role for disabled consumers compared to nondisabled ones, as two additional meanings are embedded in their clothing choices: self-efficacy and symbols of victory. Indeed, they found that the selection of colors and styles often symbolizes positive life experiences and accomplishments, and is meant to value their capacity to manage their impairment and handle difficult life circumstances.

Alongside social identity, fashion is a means of establishing a wearer's personal distinctiveness. Kaiser et al. (1991) found that apparel can play a rehabilitative role but can also be a constant reminder of what disabled consumers can or cannot do. Thus, through their choices, people with disabilities strive to appear as normal as possible and accordingly use a variety of techniques: ingeniously adapted ready-to-wear apparel, clothing that conceal their disability, compensation through fashionable garments.

More recent researches put forward the concept of "*enclothed cognition*", highlighting that the physical experience of wearing a piece of clothing exerts an influence on the wearer's psychological processes, linked to the symbolic meaning that the apparel carries (Adam and Galinsky, 2012). As a consequence, garments can completely change the self-perception of people with disabilities, making them feel – on the one hand – independent and empowered or – on the other hand – uncomfortable and even sick. This implies that the lack of attractive, functional clothing can be detrimental to overall well-being if individuals are unable to present themselves according to personal standards (Pine, 2014).

iii. The human rights model and the right to adequate clothing

Building upon the social model, the passage of the 2006 Convention on the Rights of Persons with Disabilities (UNCRPD) shifted the meaning of disability globally by introducing a right-based approach to support inclusion and achieve substantive, rather than formal, equality (Harpur, 2012; Traustadottir, 2009).

The UNCRPD is the first instrument which acknowledges that all disabled persons are both right holders and human rights subjects, and that impairments may not be used as a justification for denial or restrictions of human rights. The new model embodied in the Convention not only demands anti-discrimination laws, but also clarifies how all categories of rights – encompassing civil and political as well as economic, social and cultural rights – shall apply to disabled people (Degener, 2016; Quinn and Degener, 2002).

The first paragraph of Article 28 UNCRPD recognizes the right of persons with disabilities to an adequate clothing, seen as a precondition to guarantee satisfactory standards of living for themselves and their families and for the continuous improvement of their living conditions. Clothing is deemed so important that it is mentioned together with food and housing, recognizing its crucial role to ensure social and economic inclusion, as well as equal opportunities.

This provision can be understood by looking at recent researches revealing that personal appearance is a factor in employers' discrimination against disabled applicants. The lack of suitable apparel, including interview clothing as well as uniforms, professional outfits, lab coats, and so on, further complicates attempts to achieve and maintain employment and may contribute to the low level of income earned by disabled individuals due to limited job opportunities (Kabel et al., 2017, UNDESA, 2018).

Likewise, from a social perspective, people with disabilities are frequently or routinely prevented from engaging in activities they would like to undertake, due to the lack of garment and footwear options. Examples of declined or missed events included banquets, weddings, funerals, school dances, baseball games, gym classes, and graduation (Kabel, 2016; Watson et al., 2010). The failure to address these problems speaks to a persistent, deeply embedded cultural attitude around disability: that disabled people aren't quite like "normal

people" and are not interested in having a social life. For example, the fact that there aren't evening gowns designed for women in wheelchairs suggests that they do not – or do not want to – attend glamorous functions, which simply is not true (The Guardian, 2017). The inability to participate in relevant activities or life events can have long-lasting negative impacts on relationships, exposing them to the risk of a marginalized status, contributing to feelings of depression or isolation, and ultimately leading to further health complications.
In light of the above, it becomes clear that the right to adequate clothing still needs an innovative approach to help eliminating clothing-related barriers and reduce the social stigma associated to people with disabilities.

B. BEYOND THE "*ONE SIZE FITS ALL*"

Although mainstream garments have changed since functional clothing was introduced in the 1950s, disabled consumers keep facing challenges with available fashion options. They are restricted in the range of styles, colors, or materials available; sources of desired garments are limited and extra costs are often involved. Designers of mass fashion unwittingly create dressing difficulties for persons who cannot manipulate certain features and most adaptive clothing still means Velcro trousers, rain ponchos and mittens. Too often the phrase "function before fashion" springs to mind, recalling the (supposedly) discarded medical model.
The slow progress in disability fashion can be explained starting from two oversights: firstly, disability is not considered aspirational enough for fashion and disabled people's needs are not met as they are not seen as potential customers. This attitude reflects societal perceptions around disability, as demonstrated by a recent study by the Disability Charity Scope (2018), reporting that one in eight respondents in the UK hardly ever or never think of disabled people as the same as everyone else. Secondly, apparel for people with special needs is perceived as a niche market, disparate and fragmented, which attracts low levels of investment by major brands. As Watkins (1984) suggests, in addition to gender identities, ethnicities, backgrounds, languages, wants and preferences, designers of clothes for disabled people have to learn about body mechanics, material properties, basic psychology and aesthetics, in order to make these features compatible with the needs, potentialities and limitations of performance of all users, adding complexity to the product development process in many ways. Furthermore, creating affordable clothes requires producing them at scale, which is not often possible when designs have to be customized to accommodate different types of disabilities (Nakayama and Martins, 2019).

Nevertheless, these attitudes have begun to change, and so has the fashion industry.
The initiatives that will be described below are overcoming typical ready-to-wear design experience, based on a specific target market segment, to tackle different needs. These designers, within their differences, are linked by a common feature: they are not creating garments only for people with a disability, but rather they are making fashion lines that are inclusive, attractive and usable for anyone and everyone, regardless of whether or not they have an impairment, and they are working to make it possible for every person to feel comfortable and represented the clothing they wear, as well as involved in the design process.

After a general literature overview, based on successful experiences at international level, the following paragraphs will examine three case studies investigating how Italian fashion designers are targeting people with special needs. Fashion is the main ambassador of the Made in Italy around the world, as well as one of the main manufacturing activities, with the highest propensity towards foreign markets (Banca d'Italia, 2018). However, apparel for disabled people still seems an unexplored issue, and this is why we will focus our attention on this market segment and, in particular, on the way designers generate new products.

i. Global achievements: a virtue out of necessity

Currently, the market is populated by independent, small-scale companies, and the greatest advances have come from a grassroots level. Family members of people with some type of disability have provided smart and fashionable solutions producing small runs with the help of local manufacturers (Gwitt, 2014). Most of them declared that they initially had no intention of creating a business, but rather to solve a problem for someone they knew, and only realized later that their product might be welcomed by a larger number of people facing the same challenges. This is, for instance, the case with **MagnaReady** (https://www.magnaready.com/), a magnetic fastening system developed by a former designer to allow her husband to easily fasten his shirt regardless of Parkinson's symptoms. The innovation is now sourced all over the US by the world's largest apparel sourcing company, Li & Fung, and it has been recognised by significant players in the industry such as PVH, the largest shirt maker in the US, which incorporated the technology into its *Van Heusen* dress shirts (Fashion Network, 2016).

Classically trained designers are also engaging in creating well-fitting and stylish clothes for different body types or mental impairments, and a forerunner in this regard is the Toronto-based designer **Izzy Camilleri**. Best known for her work styling celebrities such as David Bowie, Angelina Jolie and Meryl Streep in *The Devil Wears Prada*, in 2009 she released the IZ Adaptive collection (https://izadaptive.com/), one of the world's first fashion lines created for wheelchair users. Following the brand's hiatus in 2016, IZ Adaptive has refreshed its business model, which now features a range of clothing that goes beyond the needs of wheelchair users to cater for those with a variety of disabilities, at a more accessible price point.

As far as mainstream brands are concerned, since 2016 **Tommy Hilfiger** has teamed up with Mindy Scheier, founder of the non-profit foundation *Runway of Dreams* (http://runwayofdreams.org/home/), to create a kids-wear collection of accessible garments that would allow them to dress independently, comfortably, and like their peers. Scheier and Hilfiger bonded over the needs of their loved ones, as two of Hilfiger's children are on the autism spectrum while Scheier's son has muscular dystrophy. In April 2018, Tommy Hilfiger launched its second full collection of adaptive clothing, an expanded range that also serves adults (https://usa.tommy.com/en/tommy-adaptive). Already available in the US and online, it will go on sale to UK shoppers in 2019.

Student designers and educational institutions also play an important role in innovating the fashion landscape. University projects are being used as platforms to launch collections devoted to people with different needs, obtaining wider recognition in the industry. This is the case, for instance, of **Lucy Jones**

(https://www.lucyjonesdesign.com/), who won Designer of the Year in 2014 at the Parsons School of Design in New York for her collection of minimal, sophisticated clothing for wheelchair users. Inspired from the needs of her younger cousin who suffered from hemiplegia, her "*seated design*" collection won Kering *Empowering Imagination 4.0* award and she was placed in the Forbes 30 Under 30 Class of 2016. Similarly, **Camila Chiriboga** (https://www.camichiriboga.com) created her own collection for visually impaired people and won the Parsons School of Design "*Disrupt Aging Design Challenge*". Every piece of clothing she designed is reversible and includes a QR code that enables a smartphone to describe the item via audio. In addition, she collaborated with the Ecuadorian shoe brand *Pancos* to develop smart footwear incorporating GPS technology, to prevent blind users from getting lost through a vibration system.

ii. *Diritto al Bello* – Right to Beauty – by BATNA

Designing innovative *and* adaptive clothing for people with disabilities. A fashionable product which reaches beyond the status quo. A piece of clothing which lays the foundations for a new approach enabling and promoting inclusion. A stylish outfit which recognizes and addresses people's diversity, their different needs and aspirations.

These are the ideas that inspired Monica Pinato and Manuela Conti, professional caregivers and educators at *Punto Rete Area Caselli* (*Consorzio dei Servizi Socio-Assistenziali del Chierese*) in Chieri, a small town near Turin, in the north of Italy, which is renowned for its long-standing textile tradition, dating back to the Middle Ages. The two-years long "*Right to Beauty*" project promotes the concept of universal and inclusive co-design, acknowledging that clothes are rarely made with disabled bodies in mind; and when they are, those individuals are often not consulted on what they actually want and need.

Bringing together eight diversely skilled people with different disabilities (physical, cognitive, neurological) and body shapes, this initiative aimed to put their wearable experience on the spotlight. Thanks to the collaboration with two talented and internationally renowned designers, Arianna Merlo and Giulia Nota, who founded the fashion brand BATNA (*Best Alternative To Nude Attitude*, https://www.batna.it/), and the creative atelier "*Scarto Matto*", the eight participants were given the opportunity to be directly involved in the creation of their fashion garments, following the very same steps which mark the fashion design development process at BATNA studio – from iconographic research to the design and toile modelling process, from the fabric and trim selection to the final getup of the clothes.

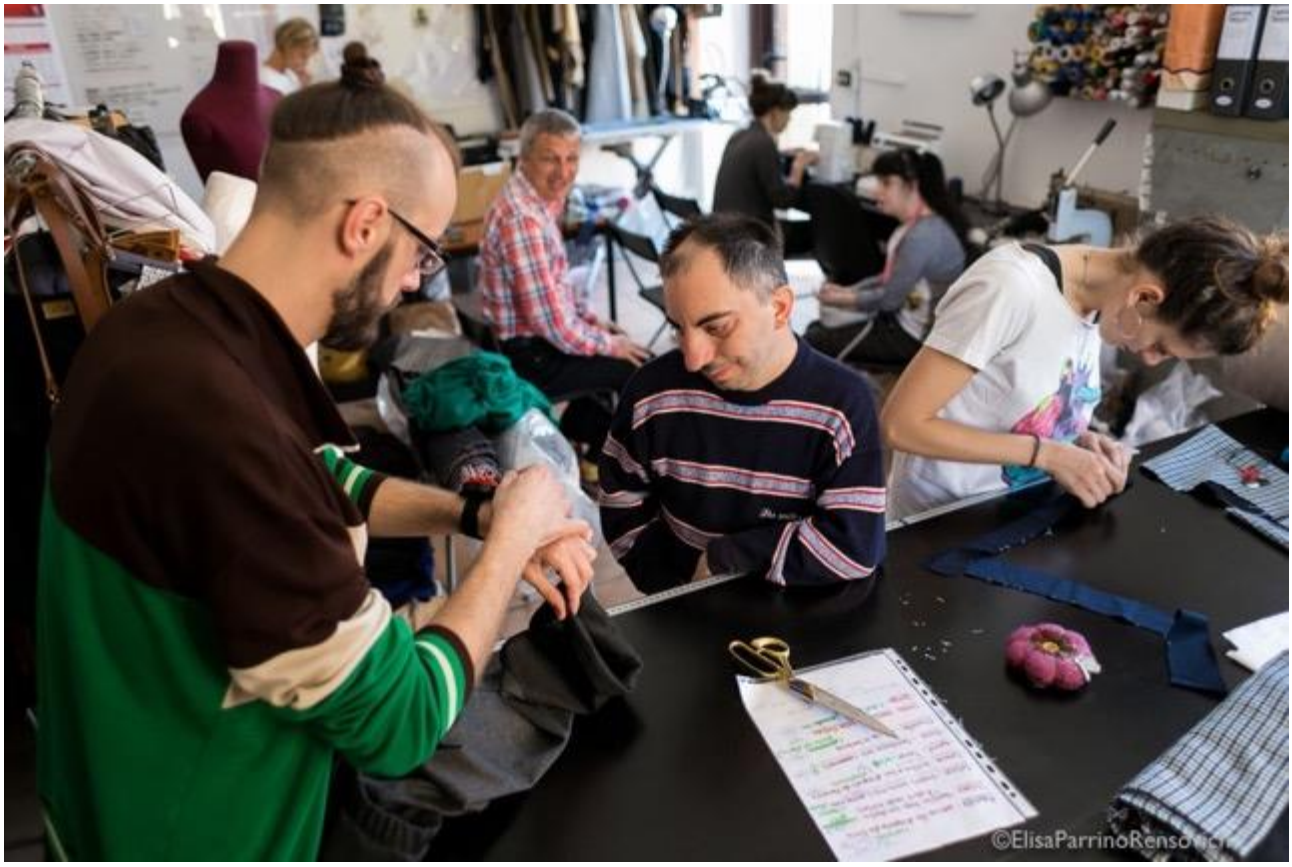

Figure 1 – Diritto al Bello, The creative process

As none of the participants had had previous experience in fashion design or creation, the designers and educators used diverse interaction techniques and adaptive strategies, with the overarching goal of creating garments that really fit with the needs and tastes of the disabled people involved, with surprising results. Many of them really "let their personalities shine though," as the saying goes, revealing unconventional, unpredictable and sophisticated tastes – despite mainly wearing tracksuits in their daily lives.

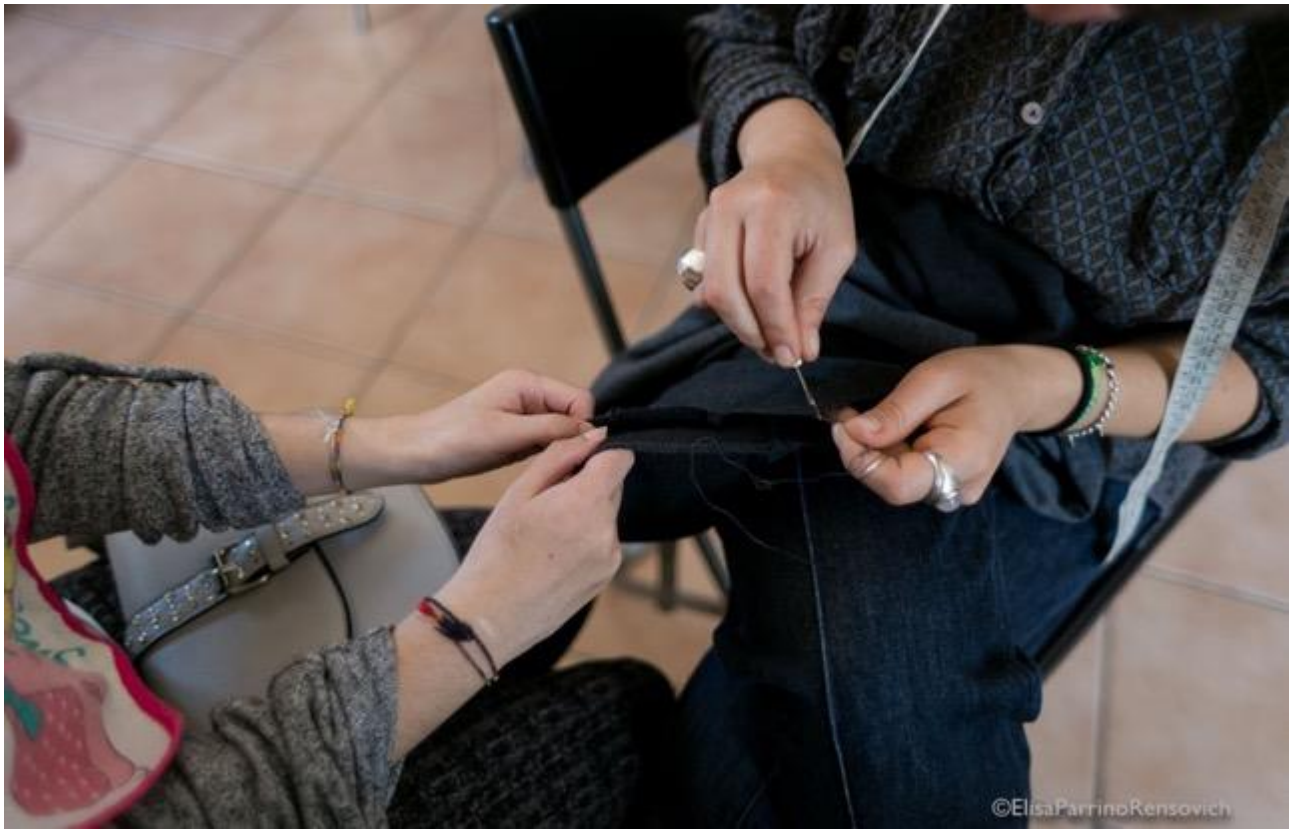

Figure 2 – Diritto al Bello, Realizing the garment

As far as the choice of materials is concerned, the project promoted the use of KM 0 deadstock fabrics and haberdashery, which was donated by four textile companies in the nearby areas of Biella, Chieri and Alba (*Corte di Chieri, Tessitura Rivese, Trivero spinning in Gaglianico, Miroglio*). In line with the future trends of fashion, which lead to highly customized, on demand items, the designers created eight tailor-made outfits, conceived and adapted to the different sensitivities, body shapes, mental and physical abilities of the wearers. In their handmade and exclusive outfits, the eight participants captured the look of the high fashion beauty in the shoots by Elisa Parrino Rensovich, then showcasing their creations at the dedicated exhibition at the Textile Museum in Chieri. Photography turned out as a valuable medium to deal with self-esteem and disability, capturing the emotions driven by the fashion items, which made the wearers feel beautiful and unique.

The exhibition also filled a representation gap, given that disabled people are still left out of most campaign ads and runway shows, with the implication that their bodies are perceived as invisible – or, even worse, ugly and unworthy.

"Being able to design inclusively means establishing a collaborative process, as no two people are alike, regardless of their disabilities. We have designed *with* each other, not for" reported the designers Giulia and Arianna during their interview. Designing for disabilities requires you to be more creative and develop a product that is not only more inclusive but also more innovative. "Clothing can provide an opportunity for greater independence, for fostering quality of life and empowering disabled individuals, so there is a need to work harder to raise awareness, reduce garments' costs, and increase options".

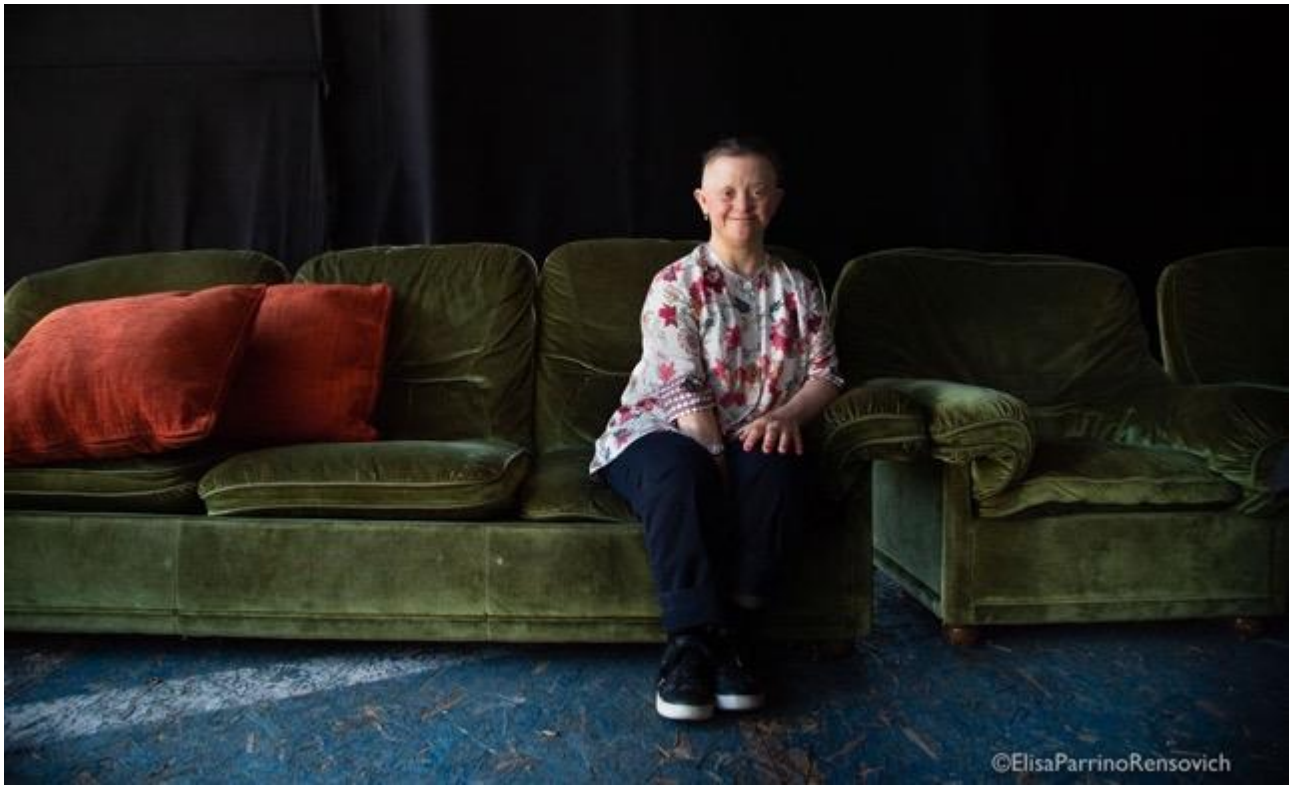

Figure 3 – Diritto al Bello, The photoshooting

iii. Terrena by Azzurra Amoruso

Breaking down social barriers through art and work is the goal of Terrena (https://www.terrenadesign.com/), a jewelry *maison* born in Bari, in southern Italy, with a local scale and international ambitions.

Azzurra Amoruso, founder of the project, has always had an attraction to jewelry and an innate love of working with her hands. During her time in Middle East, few years ago, she collaborated with a Palestinian NGO, Moire (named after the Greek goddesses of human destinies), to ensure full inclusion of disabled people, including employment, in an area where they have to contend with discrimination at every level of society.

Back to Italy, she understood she would be ready to start her signature line of handmade jewelry, putting together her passion and skills with social goals. As a start-up which aims to foster economic development rather than merely increasing growth, Terrena is focusing on the community and on improving the quality of life of its employees, who are chosen amongst people with disabilities.

During a three-months vocational training, hold in collaboration with the Apulia Region and the Apulian Parkinson Association, Azzurra illustrated to seven disabled people (two with Down syndrome and five affected by Parkinson) the main techniques of jewelry craft and started a progressive integration in the corporate production system, with the support of a team of psychologists. Two of the trainees, with different professional background, were directly hired by the company after the course.

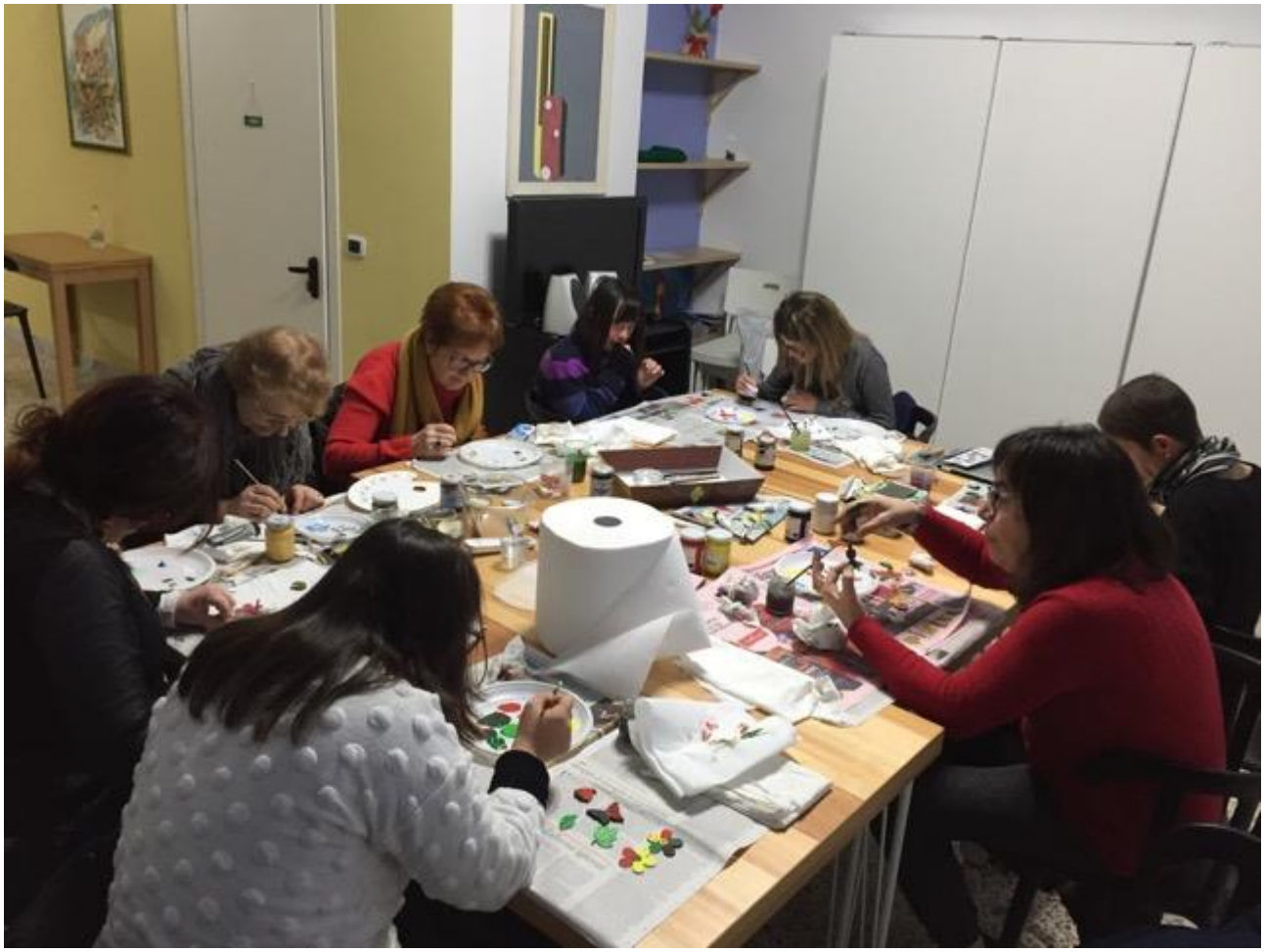

Figure 4 – Terrena, The workshop

Besides representing a reliable work opportunity in a region which accounts for a large number of emigrants, following the financial crisis, this job also helps slowing down – or even reversing – the course of their syndrome, thanks to their commitment to an artistic and very high precision craft. On the other hand, the company can benefit from disabled people's unique experience of the world, which can help inform innovative solutions.

The designs and crafts are an integration of Azzurra and her employees' experiences. They are deeply informed by her Region, her travels, her love of nature and water. Necklaces, rings and earrings, as well as luxury design furniture are entirely handcrafted and characterized by exclusive designs, care and quality of materials (silver, zirconia, topaz, emeralds and rubies, but also traditional ones as wood and paper-mache) and workmanship. Every single piece of jewelry connects the designer to the hands that made it and to the persons who see it, wear it and make it their own, handing down the story incorporated into the object.

Terrena won the competition "*Giovani Pugliesi Innovativi*" (Young Innovative Apulians), held in 2017 by Apulia Region, in cooperation with the Minister of Economic Development and the European Union. The brand is gathering global recognition and clients from all over the world. The website has been translated in English, French and Arabic and in less than a year Terrena's jewels are being sold in three shops in Paris (Montmartre), Trani and Bari. And Azzurra ensures that this is just the beginning of the adventure.

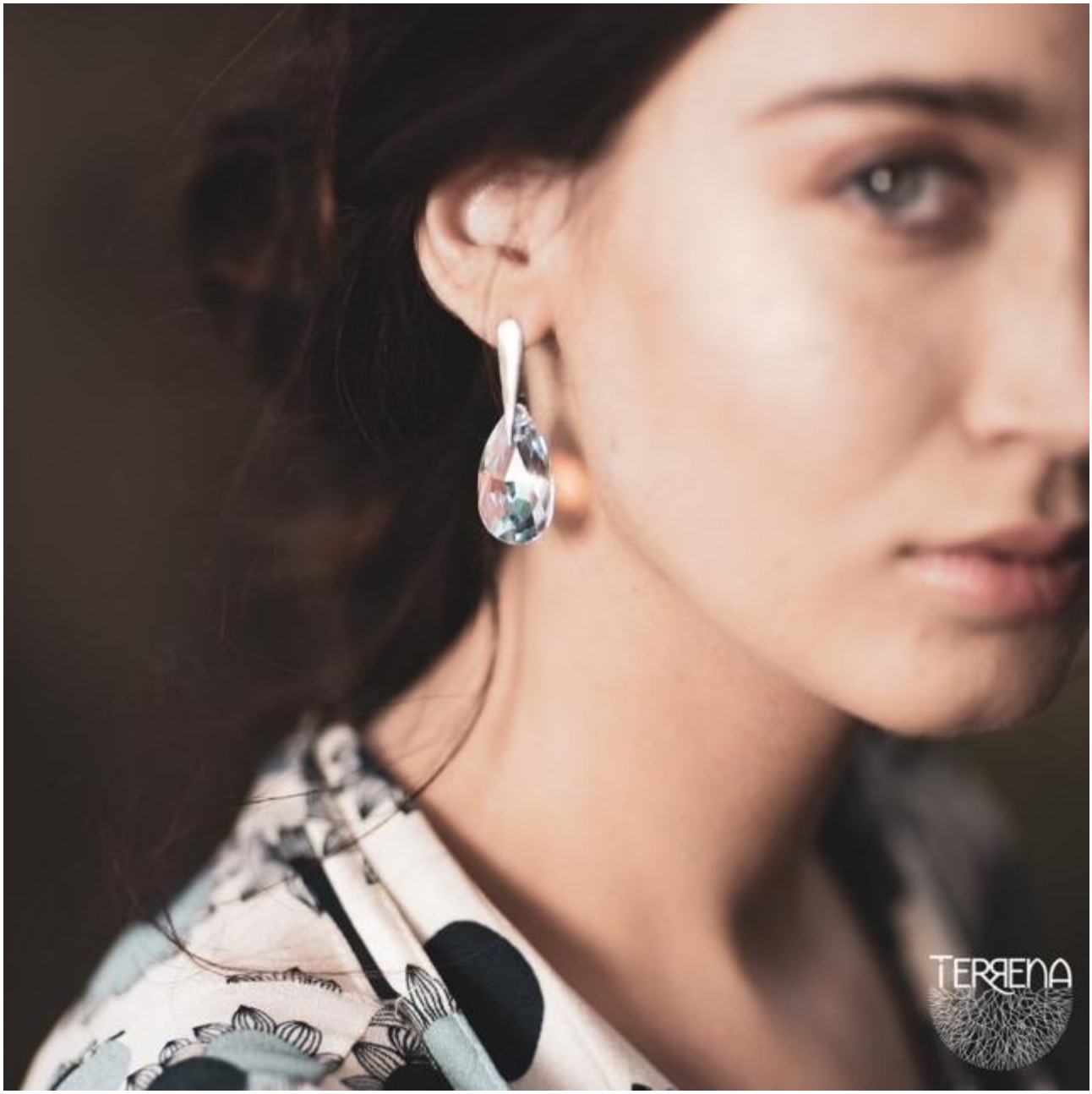

Figure 5 – Terrena, Acqua Earrings

In the words of Elise Roy (TEDxMidAtlantic, 2016): “The energy it takes to accommodate someone with a disability can be leveraged, molded and played with as a force for creativity and innovation. An opportunity to stimulate creativity, highlighting people's skills so well that we forget about their impairments”.

iv. Touch the Sound by Cristiana Navarra

“*The only thing worse than being blind is having sight but no vision*” wrote the American author Helen Keller. What if the decorative texture of Braille were designed with sighted people in mind as well, even if it remained illegible and abstract to them? This project adopts new visual languages that involve Braille with both a functional and a decorative meaning.

Braille is fundamental to ensure visually impaired people a real understanding of what they are wearing. But if it is treated as a separate accessibility measure, not linked to the design, it may become unappealing for the sighted, marking by default an item as special needs product, thus bringing stigmatization with it.
For her graduate show, Cristiana Navarra, a young designer from the Accademia Costume e Moda in Rome displayed an accessories collection featuring Braille both as a decoration and as a self-description of the item, giving greater autonomy to sightless people when choosing their accessories, so that the user can get an idea of what the design looks like before wearing it, but also valuing its aesthetic appeal. According to the principles of universal design, she developed a product which can be usable by all people, to the greatest extent possible, without the need for adaptation.

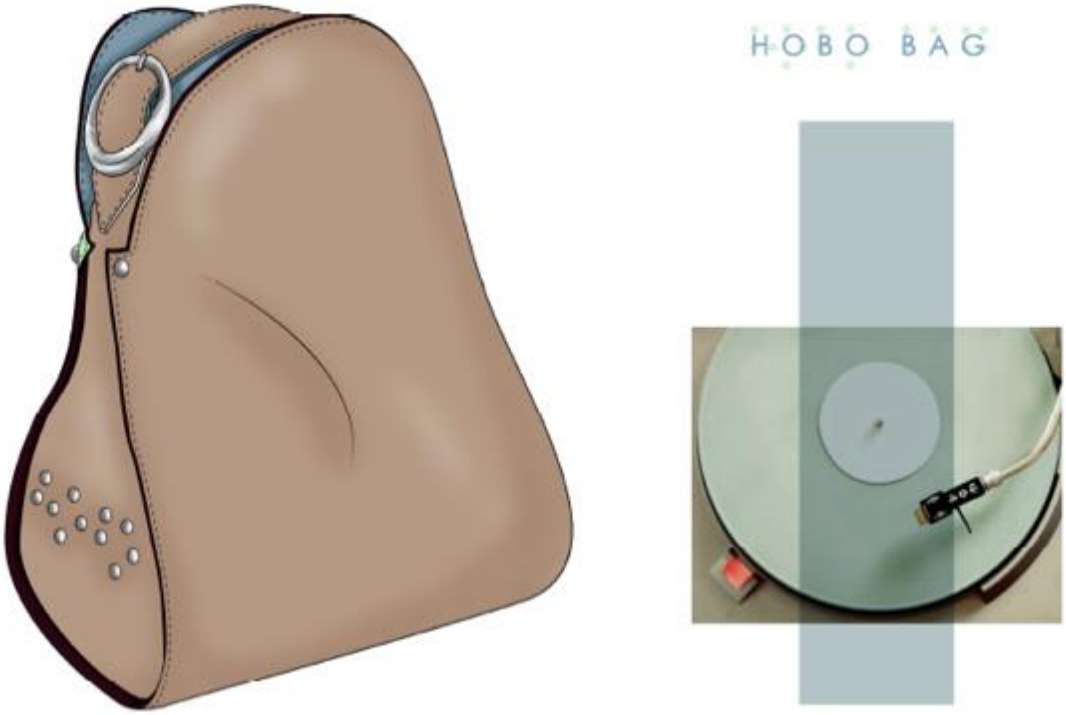

Figure 6 – Cristiana Navarra, Touch the sound, Hobo Bag

Her "*Touch the Sound*" collection (https://www.accademiacostumeemoda.it/talents2018/portfolio/cristiana-navarra/), supervised by Professor Santo Costanzo and Luigi Mulas Debois, invites us to reflect on the reductively simple way in which many of us, with our five senses intact, perceive fashion.
"*Touch the sound, hear the color, observe the scent of the leather*". Fashion is not only about what we see, but also what we feel or what we hear when we stroke the item. Our clothes and accessories can transmit emotions in many ways, if we learn to perceive them.

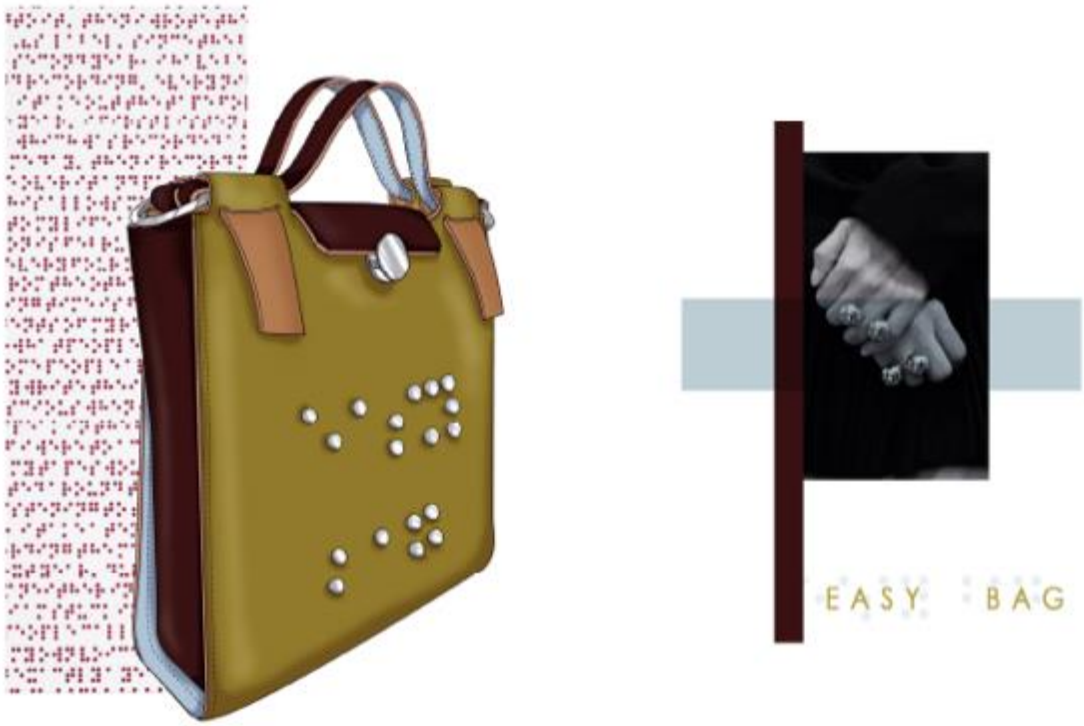

Figure 7 – Cristiana Navarra, Touch the sound, Easy Bag

C. THE ERA OF PARALYMPIC CHIC

Fashion is not only a tool to create function and beauty. Fashion greatly impacts upon people's lives, all lives, but especially those of people having a disability. It is a way in which we can feel included in the world, as well as a means to uphold a person's dignity and human rights, playing a crucial role in ensuring equal opportunities and eliminating barriers.

These values widely match with the vision enshrined in the Preamble of the Paralympic Charter, which aims "*to enable athletes to achieve sporting excellence and to inspire and excite the world. To create the conditions for empowerment through self-determination*" (IPC, 2003).

The word "Paralympic" derives from the Greek preposition "para" (beside or alongside) and refers to a movement that exists in parallel with the Olympic Games (IPC, 2013). In line with Article 30(5) of the UNCRPD, the Paralympics embrace sport's role in contributing to inclusive societies, reduce the stigma and discrimination associated with disability, improve physical and mental health, while also promoting human dignity by focusing on ability rather than disability (OHCHR, 2016; SDP IWG, 2008).

As well as for clothing, the UNCRPD establishes the right to sport, recreation, and play as international human rights law (UNDESA, 2015; IDISWG, 2001).

Not differently from fashion targeting people with special needs, sportswear and performance apparel fill a specific niche market, subject to unique demands and problems. First of all, sportwear must address functional concerns: fit, mobility, comfort, protection. In addition, the aesthetic appeal of the athletes' outfit must be

satisfied, taking into consideration aspirational values connected with active lives, such as individualism, relaxation, spontaneity, informality, freedom, autonomy and independence, but also more "elitist" desires such as denoting roles, status and self-esteem, stylishness and fashionableness, dynamism, sophistication, smart image, personal style (Bruun and Langkjær, 2016). Several design innovations for people with disabilities, such as lightweight wheelchairs, have elements of their origins in sport. Many of the ideas forged for track and field events have filtered through and made an impact in everyday life of people with disabilities. Moreover, globally-recognized events such as the Paralympics have increased public awareness of disability issues, influencing the availability of specialist equipment, which found its way into the design of mobility and other aids for daily living (Torrens and Black, 2011).

The influence of sport in fashion is nothing new: within the last half-century, sportswear has become a driving force for new trends and for textile innovation. Sportwear was introduced onto the catwalks of the leading fashion brands in the 1920s, starting from Chanel's sailor pants. The growing relation between fashion and sportwear has spanned the entire post-war era, when new synthetic stretch materials such as Nylon, acrylic, Lycra, polyester and neoprene, originally invented for sportswear, were relaunched to be used extensively by both fashion and sportswear designers in the early 1980s (Holm-Jensen, 2016; Bruun and Langkjær, 2016).

Tracksuits moved from the gymnastic arena to high fashion after the Wimbledon tennis final between Björn Borg and John McEnroe in 1980. Today we see designers at Chloé, Gucci, Bottega Veneta, and Maison Margiela having all cleverly appropriated the tracksuit (Thompson, 2016). Dad sneakers, which appeared in the Fall 2018 Fashion Week shows of designers such as Burberry, Miu Miu, Balenciaga, McQueen and McCartney, were defined the coolest Fall 2018 runway trend by Vogue (Teen Vogue, 2018).

The boundaries between fashion and sportswear are increasing blurred, and it seems that fashion for people with special needs could grab hold of sportswear functionality with an eye on style. Accordingly, we argue that the advances experienced within the Paralympic Movement can drive the fashion industry to actively seek for solutions that are targeted to heretofore marginalized consumer groups, taking advantage of the high visibility of athletes and their roles in society, which could boost brands' awareness and engagement.

i. Challenging stereotypes: Paralympic stars hit the runways

The Disability Charity Scope survey (2018) claims that nearly half the British public believes that the number of disabled people in society is half of the actual one. According to Thomas, such misconception, rather than a conscious bid to exclude disabled customers, lies at the basis of the scarce engagement of the fashion industry too, which does not see consumers with different needs as a viable demographic (Bustle, 2017). This issue is strictly related to the (in)visibility of disabled people in the media. For instance, the much-praised May 2018 cover of British Vogue – pegged as celebrating "diversity across the board" – featured no disabled models. Fashion is predicated on a traditional sense of ability as well as on bodies that are considered to be aspirational, and the industry has been reluctant to include and show a full range of diverse figures.

Scholars highlighted that the idea of beauty and socially acceptable or even celebrated bodies is bound to cultural values and dominant power discourses (Pedwell and Whitehead, 2012). The community's knowledge,

experiences, information and narratives, which include media discourse, play a key role in creating new sensitivities to body shapes. The repetition of images showing different bodies can help to re-articulate emotional reactions and corporeal perceptions to figures that generate ambivalent feelings, eventually normalizing them. In this regard, the observation of photographic and moving images of a Paralympian's body with impairments is inducing dramatic changes in common awareness and a new aesthetic sensitivity (Tamari, 2017; Bartsch et al., 2016).

In terms of public awareness of disabled athletes on the global stage, the London 2012 Paralympics proved to be a significant turning-point as it attracted the biggest ever global audience, setting new records in terms of ticket sales and media coverage, with a cumulative global television audience of 3.4 billion and a 37% increase on the successful 2008 Games in Beijing (IPC, 2013). Paralympic athletes were given unexpected levels of media coverage and attracted great public attention. A prominent example is **Oscar Pistorius**, an Australian athlete with biomechanical carbon fibre prosthetic limbs dubbed '*Blade Runner*', who became the first double amputee to compete against able-bodied counterparts (Smith, 2015).

This surge in media coverage provides unique opportunities not only for raising public awareness about the sporting excellence of disabled athletes, but also for bringing forward broader issues about social inclusion, equality, and participation, as well as for fighting collective discomfort, promote de-stigmatization and a new positive aesthetics of disabled bodies. Paralympians are portrayed in a positive light, as people who have physical strength, prowess to overcome adversities and determination to achieve success (Fletcher and Sarkar, 2012; Le Clair, 2011). They are becoming role models not only for other aspiring athletes, but also for the society as a whole, which sees their impairment as one characteristic among many – neither the most nor least important (Kim et al., 2018). This, in turn, can help society moving past the idea that disability is not aspirational enough for fashion and that it is the one area of diversity that can still be excluded.

A real icon, and one of the fifty most beautiful people in the world in 1999 according to People, **Aimee Mullins** is undoubtedly the first and most influential Paralympian athlete in the fashion world. After setting the record in 1996 running on her sprinting cheetah legs, the double amputee became a world-renowned actress and model, the face of L'Oreal as well as the muse of Alexander McQueen. She appeared in a variety of ways to represent her body with differently designed artificial limbs, challenging the "traditional" canons of beauty and promoting a new type of attractiveness (Vainshtein, 2012). Her most provocative and seductive image dates back to the early stages of her career, when she was portrayed by Nick Knight in the September 1998 issue of the fashion magazine *Dazed and Confused*. Guest edited by McQueen, this special issue was entitled "*Fashion-able*", fashion made to face disability, and was aimed at questioning whether the fashion industry might accommodate deviant body images. The following year, Aimee made her runway debut in London at the invitation of McQueen, opening the show walking on a pair of intricately carved wooden legs made from solid ash conceived by the designer himself. At the time, disabled models were rarely seen in the world of fashion, and the acceptance of her beauty with prostheses brought about a new idea of the body and new bodily aesthetic sensibility.

Another Paralympic athlete who attracted the attention of high fashion brands in more recent times is the Italian **Bebe (Beatrice) Vio**, the world's first fencer with no arms or legs. Her popularity soared after Rio 2016, when she won a gold medal and bore the flag for the Italian delegation at the Paralympic Games' closing ceremony. Her story stroke Maria Grazia Chiuri, Dior's first female creative director, whose ready-to-wear Spring 2017 collection was inspired by the fencing outfit. Chiuri wanted her and two other fencers (Arianna Errigo and Rossella Fiamingo) to be present for her Dior debut in the Musée Rodin in October 2016, to represent fighting women who are also elegant (Vogue Italia, 2018). Few months later Bebe was invited on an official Italy-US visit to the White House and took a selfie with American President Barack Obama wearing a Dior evening gown (HuffPost, 2017). Chiuri also designed the dress that the fencer wore at the Italian premiere of the fantasy movie "*Miss Peregrine's Home for Peculiar Children*", when she walked on the red carpet with the director Tim Burton, who chose her as a testimonial (Elle, 2016).

ii. The future of fashion with sporting supercrips

Inter-disciplinary research to spur inclusive design and technology for disability seems to be the trend of the future: in 2014 the Massachusetts Institute of Technology launched the **Open Style Lab** (http://www.openstylelab.com/) to bring together students in design, engineering and occupational therapy with disabled people to push "the boundaries of universal design to be inclusive of disability and aging". According to the executive director, Grace Jun, adaptable clothes created by Open Style Lab do not just have to serve people with disabilities, but can lead to better products for everyone. This is the case, for instance, of the *VersaCoat*, a waterproof jacket adapted for those using a wheelchair, which could be useful for anyone shielding electronics from a rainstorm (Boston Magazine, 2016). Similar goals are also pursued by the **Global Disability Innovation Hub**, launched by Mayor of London Sadiq Khan in September 2016 (https://www.disabilityinnovation.com/).

These research institutions could benefit from innovations and technological advances experienced in the Paralympics, to better equip mainstream fashion designers in their thinking of clothing for disabled people, with a view to share multiple perspectives, expertise and know-how.

The best example of a sport innovation that has become a fashionable item is undoubtedly the blade with the heel. Usually designed to substitute the absent body part, prosthetics have become smart accessories, distinctive additions to a person's identity and looks. In 2003, the designer **Damian O'Sullivan**, currently Creative Director Gifting at Louis Vuitton, coined the term "*proAesthetics*" thus giving the name to this new trend (https://www.damianosullivan.com/). The aesthetic prosthetics often play on the dual idea of visibility/invisibility. Contrary to traditional designs, which are supposed to blend with the human body without being conspicuous, the current discourse of fashion places prosthetic devices in the field of vision (Tamari, 2017; Finch et al., 2012). Additionally, they seem to be more sophisticated and aesthetically attractive than conventional cosmetic prostheses. This can be explained with the principle of the "uncanny valley", which delineates the tendency for negative emotional responses and uneasy feelings towards almost exact human-like appearances and movements (Sansoni et al., 2015). Put forward by the Japanese roboticist Mori in 1970

and based on Freud's concept of the uncanny, this theory entails that prostheses should deliberately appear as artificial and non-human looking, to avoid falling into the uncanny. Recognizing the creative, self-expressive possibilities that artificial limbs hold, the **Alternative Limb Project** produces bespoke, design-focused prosthetics from materials such as wood, glass and metal that reflect the wearer's imagination, personality and interests. Some of the most out-of-the-box creations include a leg with an embedded stereo, another with removable muscles, and a third one that houses mini-drawers (http://www.thealternativelimbproject.com/). As fashionable legs demand fashionable embellishments, another emerging problem is related to accessorizing prosthetic legs. The Canadian company **Alleles Design** endeavour to influence the world of leg prosthetics covers by transforming something mechanical into something "*mechani-chic*", producing hand-made covers, with an inspired style and a fashionable silhouette (https://alleles.ca/).

Besides prosthetics, advancements in smart-textile know-how, meant to meet the specific functional needs of athletes with a disability, can be introduced into mainstream clothing manufacturing processes. In the last years, companies have put great efforts on wearable devices to appeal to more fashion-oriented consumers (Wipo Magazine, 2012). This aesthetic revolution could potentially inaugurate a new trend of stylish and high-tech mainstream garments, inspired by sportwear. Examples include **Hexoskin Smart Garments**, a line of cutting-edge smart apparel that incorporate body sensors into comfortable clothing for precise health monitoring (https://www.hexoskin.com/). Similarly, **Haydale**, an advanced materials group, is collaborating with the Welsh Centre for Printing and Coating, Swansea University, for the development of cutting-edge wearable technologies for athletes training for the 2020 Olympic and Paralympic Games. The goal is to produce progressively smaller hardware components to embed into apparel, quicker and cheaper printing techniques to be introduced into clothing manufacturing processes, and to spur commercial applications of wearable technology, printed sensors and thermal management systems (Innovation in Textile, 2018).

On-going progressions of Information Technology and wearable devices are increasing the scope for accessories which allow for computer vision-based interventions in sport. Such innovations, which could potentially be exploited on a larger scale, include Toyota **Project BLAID**, a wearable technology device based on GPS, meant to help people with visual impairments have greater awareness of their surroundings when they play sport (https://www.toyotatoday.com/news/project-blaid.htm). Likewise, the **EyeVista** project aims to develop a lightweight, easy-to-use, customizable and low-cost wearable jacket based on computer vision techniques. Born to facilitate visually impaired sprint athletes and overcome the need of a human guide, such system can introduce an alternative to the current practice of having a guide for blind people, by easing their mobility and enhance the independence, safety, and overall quality of life (Peiris et al., 2016). Finally, one of the winners of the UK Sports Innovation Challenge 2015, **Rainbow Touch** is creating textures based on dots and lines in variable sizes and thicknesses to represent colors. Its goal is to establish a new universal color-to-texture translation system, that enables athletes to recognize the color of their team stripes, and which could be used more widely in the future (UK, Sports Innovation, 2015).

iii. Inclusion starts from the uniforms

Fashionable brands have long dominated the sportswear market, but few have specifically targeted disability sports. However, this attitude has been changing in the last years, with many high brands becoming more involved as the glamour of the Paralympic rises and athletes are no longer being patronised.

The catalyst for the recent growth is to be found in the joint agreement signed in 2001 by the International Paralympic Committee and its counterpart, the International Olympic Committee, which secures the practice of "one bid, one city," meaning that the city hosting the Olympics is bound to host the Paralympic Games as well (IPC Handbook, 2013). Moreover, from humble beginnings as a form of physical therapy for injured war veterans at Stoke Mandeville Hospital in 1948, the Games have grown into the second biggest sporting event in the world (IPC, 2012). Hence, the attraction of the Paralympics lies on the potentialities of a big and growing market, as well as on the positive image related to the metaphor of the struggle to overcome ones' limitations. As a "challenger brand" – a smaller but potentially nimbler player in the marketplace – the Paralympic Games have attracted many high-end and mainstream fashion brands. Designers are engaging in the creation of the outfits for the opening and closing ceremonies, as well as an extensive wardrobe for athletes to wear around the Olympic and Paralympic villages. The lines of clothes have to be the same for both the Olympic and Paralympic competitors, to emphasise their cohesion as one team and to symbolically highlight that the achievements of people with disabilities deserve to be recognised just as much as those of their able-bodied peers.

The increasing pressure to present the most memorable, and wearable, uniform can also translate into a potential commercial success, as shown by the sold-out *H&M x Sweden* collection for 2016 Rio Olympics (Forbes, 2018; H&M, 2014). Other brands which are sponsoring national Olympic and Paralympic teams include Armani, which has designed the Italian uniforms since the London Olympic Games in 2012; Lacoste for France; Polo Ralph Lauren, whose line to be worn by Team USA in Pyeongyang was embedded with an advanced wearable heating technology. Team Canada is being outfitted by Hudson's Bay, while Adidas created a minimal and confident look for the German athletes for the last Games. The UK was outfitted in suits by uniform supplier Simon Jersey; since the Rio 2016 Games, the British e-tailer ASOS teamed with the British Paralympic Association to create a line of formal and ceremony outfits, while Adidas, the official Team GB sportswear partner, appointed the British fashion designer Stella McCartney as creative director.

The rise of health and tech-conscious millennial has contributed to the popularity of athletic wear and this moment in sporting history provides an opportunity for brands to capitalize on the Paralympic movement, going far beyond the usual clichés of sports marketing.

CONCLUSION

Although disability has been dubbed fashion's "last frontier" by publications like the Wall Street Journal for the last ten years (1999), we still have more clothing for pets than for disabled people (Thomas, TEDx YYC,

2016). However, in more recent times the fashion industry has shown a more positive attitude to niche markets, including adaptive and plus-size designs, being increasingly invested in empowering the underrepresented.

Fashion brands are in a unique position to make large and lasting changes because of their role as cultural institutions. Being more inclusive would not be a "worthy cause" for them, but rather a smart economic move. Indeed, disabled customers are far from a niche market: the EU Agency for Fundamental Rights revealed that around 80 million EU citizens have a disability, while the percentage of disabled people in the US is 26%, namely one in 4 adults, amounting to 61 million people (CDC, 2018). Overall, according to the World Bank, more than one billion people lives with a disability, approximately 15% of the world's population.

The market for adaptive clothing is predicted to expand further in the years ahead as disabled people are the fastest-growing minority group in the world. The category includes people facing temporary or permanent mobility, sensory or cognitive impairments, individuals experiencing health challenges due to aging or medical treatments, wounded soldiers or veterans, people who need sensory-processing adjustments such as tag-less clothing or extra-soft materials. These consumers, the driving force behind innovations in disability fashion, crave new features, designs, and increased safety, and are quite prepared to spend fair amounts of money on apparel, as they are already doing to find tailored clothing. Consequently, the economic interests are huge and the drive towards innovation is impressive.

FashionUnited estimates that the total apparel market is worth approximately $3 trillion globally, and currently adaptive clothing represents just about 1% of that total market (Forbes, 2018). Coresight Research (2018) envisioned that the global adaptive clothing market will reach $278.2 billion in 2018 and increase to $325.8 billion in 2022. The "purple pound" – the spending power of disabled people – is thought to be worth about £249 billions to the UK economy alone (BBC, 2017). Thus, it is undeniable that designers and retailers that address this market could not only generate a positive social and economic impact, but gain first-mover advantage by becoming the "go to" provider of certain adaptive clothing styles.

Within this process, the Paralympics can play a positive role, helping to set a more globally aware, diverse and accepting environment.

The motto of the Paralympic movement is "*Spirit in Motion*". This slogan does not mention the body, as if it was a taboo. But what we see now is that the Paralympics have the ability to challenge and redefine the system of perception and representation of disabled people. And this redefined concept of the disabled body undoubtedly requires more fashionable garments.

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