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Digital Fashion for Sustainable Cultural Diversity

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Abstract

This research examines the digitalization of the fashion industry, exploring how this emerging paradigm fosters sustainability and cultural diversity among designers. It highlights the democratizing potential of digital tools and technologies in fashion design while addressing the challenges and opportunities they introduce. The study investigates the potential for digital fashion to nurture authentic expressions of cultural diversity, countering the dominance of a few global fashion capitals by developing new local markets and individual fashion narratives within the digital space.

A key focus is how virtual fashion enables the exploration of cultural values from individual perspectives rather than generalized norms. This decentralized approach offers an alternative for those who resist conforming to traditional fashion systems. Digital fashion's implications for cultural identity, inclusiveness, and sustainability are examined, emphasizing its role as a medium for expressing and reimagining cultural identities. The research underscores the need for sustainable practices, advocating for fashion systems that embrace diversity and ecological responsibility.

Case studies of key players in digital fashion illustrate the intersection of cultural diversity, sustainability, and innovation. These examples, often outside the elite fashion establishment, demonstrate how digital fashion facilitates a transformation of the traditional system. Through qualitative research methods, the study analyzes the contributions of digital artists and cultural experts, offering empirical evidence of cultural exchange within digital creativity.

Given the nascent and often contested nature of digital fashion, the study emphasizes the importance of addressing complex issues such as cultural appropriation and digital representation. This deeper exploration aims to foster sustainable work patterns and new cultural systems, promoting inclusivity and authentic expression in contemporary fashion.

Key words: fashion design, digitalization, sustainability, cultural diversity.

Introduction to Fashion Design in the Digital Age

Starting some 150 years from the time of arguably the first fashion designer, C.F. Worth, fashion design as a discipline and as a business has become very fragmented and complex due to technological, social, and cultural changes initiated through the process of globalization of the world. Since the Second World War, the conceptualization and intellectualization of fashion have been noticed as a discipline that opposes the already developed industrial revolution, deviating from the trajectory of the already established conception, ensuring the valorization of cultural practices through fashion design (Särmäkari, 2001).

Although, today the fashion industry seems to be very advanced, taking into account the frequent cyclical changes and innovations that it brings, it was still quite conservative and impermeable in relation to other creative disciplines. Since the big scene is all about profit, the challenge to change the established principles is very big. However, the potential for real and deeper innovations is sought in the new generations that have developed systems for new requirements that will gradually change the market (Fletcher & Grose, 2014).

Dematerialization as an idea begins with the so-called 4th industrial revolution through digital 3D fashion designs (Särmäkari, 2001). A few years ago, digitalization in fashion design started to become more and more present, considering this moment as a kind of democratization in the world of digital tools and technology. Apart from enabling different approaches in this field, it has begun to open up many questions that are not only related to the field of design, among others, and the impact of digitalization on the sustainability of cultural diversity.

Digitalization and its Implications for Cultural Diversity

Although digitalization stands as a term, just like fashion, it is a broad field, an entity that is composed of different components that refer to different processes in the design and textile industry. (Sayem, A. S. M., 2023) Digitization, apart from the enthusiasm for novelties, also brought discussions about the value system beyond the established hierarchies in the current fashion paradigm (Brydges et al., 2021).

Bourdieu's concept of the "field of cultural production" describes how cultural industries, including fashion, are structured systems with their own rules and dynamics.

Within the cultural field, the positions of creators are shaped by their ability to navigate and negotiate these forces. Fashion designers must navigate different markets and aesthetic norms, which can affect their position in the industry (Brydges

et al., 2021). Overall, Bourdieu's framework helps to understand how economic, social and cultural factors intersect to shape the dynamics of cultural production that is the focus of this research.

Here, the question arises as to how far the fashion industry allowed the development of cultural diversity, considering that the world cities of fashion dictated the trajectories of aesthetics. This question implies the need for local or even small markets to carve out their own authentic trajectories on the global fashion terrain (Brydges et al., 2021).

Among other things, other cities can be singled out as examples that attract a lot of attention in the world of fashion, especially with their diversity from the already recognizable fashion centers. Amsterdam stands out among them, especially with the promotion of the capital of denim (Brydges et al., 2021).

Such examples leave room for hope that the rise of new authentic expressions is possible but with the possibility of keeping designers in local areas, as there are orders such as Toronto where designers move to New York in order to develop their careers which is natural process in a person's career progression. But here they face corporate players, so a natural gap is created between them and individuals (Brydges et al., 2021).

Amsterdam also continues to excel in the digital space where fully digital pieces are created. The leading figure in this story is The Fabricant brand, which we will discuss a little more when we analyze this case in more detail. Their story becomes visible after the sale of a digital dress for \$9,500 at the Blockchain Summit in New York. Today, the Amsterdam Fashion Institute (AMFI), where some of the protagonists in this new field operate, has developed and is constantly strengthening the digital fashion program (Brydges et al., 2021).

The Role of Digitalization in Fashion Performance

Fashion is one of the few industries that is subject to the foundation of craft, but its potential is not taken seriously due to mass production that largely unifies the different areas of the world under the baton of globalization (Inns, T., 2021) Its practice has undergone paradigmatic shifts coinciding with each industrial revolution, from the First to the Third, and now extending into the Fourth Industrial Revolution (Särmäkari, 2001). However, globalization, with the digitization of a large part of the processes, has the potential to decentralize the cultural segment in the image sent by fashion design.

The way of presentation also changes from the standard, which covers seasons and specific fashion centers (Särmäkari, 2001). In the realm of new fashion shows, fashion curation presents an opportunity to redefine the boundaries between museum and retail exhibition. By harnessing the power of fashion as a dynamic medium of communication, contemporary curation strives to transcend static displays and elitist narratives (Inns, T., 2021).

The integration of digital technologies has significantly affected the cultural and creative industries, including the fashion sector. There is the potential for these technologies to disrupt established hierarchies in the fashion system and global fashion centers. This transformation is evident at different scales and geographical contexts, reshaping the structure, power dynamics and spatial dynamics of the fashion industry. While major global fashion centers still attract significant investment and talent, digital technologies allow smaller, less prominent cities to assert their unique identities and networks, carving out niche positions in the global fashion space (Hracs et al., 2021).

With digitalization, this system changes in the direction that the interest is no longer directed towards the fashion establishment but towards consumers. As the size of the audience changes, the new platforms that can be used for presentation are of great importance (Hracs et al., 2021). Such as Decentraland, which is a place where digital fashion shows and fashion events take place (Duffey, 2023).

The moment we are in is a period of maturation of these cyber worlds. The whole story started at the beginning of the millennium when the first digital games and social platforms appeared. In these digital games, users like today use clothes as skins to change the characters of their avatars, allowing them all kinds of freedom, freedom without gravity, or a certain general opinion that they have to adhere to (Duffey, 2023).

When it comes to fashion in the digital world, it must be mentioned that it should not be neglected. And in everyday life in its natural form we are aware of the need for self-expression, normally as long as it does not threaten the space of others. But with various factors in different parts of the world looking at fashion freedom differently, the digital world is much more inclusive according to users, allowing users the desired freedom of aesthetic expression by choosing the look of their avatar (Duffey, 2023).

As digitalization continues to advance, new fashion shows have the potential to overcome physical limitations, immersing viewers in interactive and multi-layered narratives that redefine the traditional exhibition format (Inns, T., 2021).

Integrating Traditional Craftsmanship into Digital Design

One way to give greater cultural value as well as an individual stamp to design is to integrate practices from the trades into functional 3D design. Finding ways to transform source techniques into a digital file can offer tremendous opportunities to present an idea that will stand out from the rest.

However, what is important for a 3D designer to avoid superficiality and uniformity in the technical representation of manual skills in the digital space is to first experience the physical/analog process of the technique before transforming it into a digital one. That is, it must initially go through a process of hand-crafting, acquiring skills that later, through learning the tools of digital software, will form the closest approach to the technique and even have the opportunity to upgrade it with more combinations of techniques (Nimkulrat et al., 2016).

When digital technologies are integrated into the preservation of cultural heritage or, in the case of highlighting the individuality of the designer, they raise a range of issues that extend beyond mere technological durability and maintenance to encompass the preservation of heritage practices in digital formats. Although the importance of continuity in heritage practices is widely acknowledged, there remains a need to explore how technology contributes to the sustainable design of digital cultural heritage. An appropriate analogy can be drawn from the aforementioned domain of craftsmanship, where artisans' expertise in working with materials and tools illustrates the need to address concerns of durability, maintenance, and continuity when translating traditional crafts into digital realms (Giaccardi, 2012).

Theoretical Perspectives on Digital Fashion

In Baudrillard's "The Consumer Society," he explores how objects are not only functional but also have social, cultural, and symbolic meanings. This Baudrillard perspective collides with consumerism and capitalist ideologies, shaping different perceptions of value that can go in a parallel direction with the ideas that digital fashion is a kind of step forward in controlling the industrial implications of the existing fashion paradigm but also that it transcends its physical form to become a medium for self-expression, cultural representation, and identity construction in the digital realm (Baudrillard, 1998).

In the literature in general, but mostly in the literature of developing countries, this kind of discourse regarding the relationship between fashion and culture does not exist or is given very little focus due to the fact that scientists and sociologists

doubt the legitimacy of the topic or the necessity of analysis because they consider this field to be ephemeral and without an intellectual basis. (Kawamura, 2023).

Digital transformation has changed the fashion world in many ways. One way is by approaching consumers in a very immediate way. Apropos of which, in that immediate interaction, the roles of producers, consumers, and sometimes cultural mediators also change. Consumers are also becoming “producers” as they are actively engaged in creating the look of their clothing through personalization capabilities, which is imperative in the digital transformation of the fashion business (Massi, et al., 2020). With social media platforms like Facebook, Instagram, Tumblr, and Twitter, the roles of fashion audience and consumer are more fluid than ever, where the lines between production and consumption are blurred, transforming audiences into proactive media producers and content creators (Parkins & Dever, 2020).

Digital transformation processes are now occurring more frequently, allowing on-line art entrepreneurs to create value by connecting producers directly to consumers through digital networks (Massi et al., 2020). These values are created through the interpretation of “visual goods,” and we ourselves are aware that the fashion industry largely relies on illustrations, that is visual representations. (Särmäkari, 2001).

In the following, we will explore the cases of several fashion companies, such as The Fabricant, DressX, and Dematerialized that are fully involved in digitized clothing (Duffey, 2023). They create simulated fashion shows and catwalks to showcase their creations. Their styles more or less shaped the look of digital magic, and we’ll look at that when analyzing the impact that digital fashion has had on physical runways and new generations of fashionistas.

Case study - The Rise of Digital Fashion Brands

That 3D fashion has the potential to thrive in the NFT space, offering new opportunities for designers to showcase their work and engage with audiences in innovative ways is discussed in an article on the Vogue Business page. The article discusses how platforms are encouraging creators to normalize NFTs, which could revolutionize the way digital fashion is created, shared, and monetized. By embracing 3D fashion and exploring its possibilities in the NFT realm, creators can unlock new revenue streams, reach a wider audience, and contribute to the growth and acceptance of digital fashion as a legitimate form of artistic expression and commerce (Schulz, 2022).

On certain occasions, such designers are called “digital immigrants” who successfully navigate the boundless landscape of digital transformation in art.

As a map in the direction of this transition to the digital world by the arts and cultural organizations was the acquisition of computers and software. With the increase in the number of these so-called “digital immigrants” the digital transformation becomes more deeply embedded in the wider culture. (Massi, et al., 2020).

The Fabricant

The Fabricant is a Dutch fashion startup that gained significant attention for its innovative approach by blurring the borders between fashion and technology. They made a name for itself by participating in an auction at the Iridescence Ethereal Summit blockchain event. In this auction, The Fabricant took part with a dress worth 9500 dollars converted into cryptocurrencies (Särmäkari, 2001). They define for themselves that they represent the first “Digital Fashion House” that “consumes only data and uses only imagination.” This revolutionary philosophy, they believe, will achieve the necessary reduction in the unnecessary production of clothing, and they will eliminate these issues by creating fashion that exists only in virtual space.

It was founded by Kerry Murphy with co-founder Amber J. Sloten. Amber, as part of the team, has a traditional fashion school background. That means that she has learned how to cut, design, sew, and drape. However, the traditional fashion background is not crucial, and this will be reviewed in further examples from other cases. With their work and intentions, they challenge traditional paradigms, offering a profound potential to reshape the fashion industry and contribute to sustainable cultural diversity.

The Fabricant are a small team startup, in which there are people in charge of creative production, commercial direction, technical fashion production, content creators, etc. Clients approach them with a concept or request in the form of a brief that is sent to the team. Based on that, an avatar, technical flats, technical packages, photos, etc. are designed.

The Fabricant suggests that virtual clothing can fulfill the desire for sartorial self-expression, aligning with Baudrillard’s notion of a postmodern “simulation society.” In this society, cultural representations in the media, cyberspace, and virtual reality simulate reality, and identities are constructed by appropriating images rather than tangible objects. This shift enables individuals to fulfill their desire for sartorial self-expression without the environmental cost associated with the production and disposal of physical clothing (Särmäkari, 2001).

The company, which was founded in 2019 after several years, has become a studio for digital fashion and NFT creation, whose technology is available to other

creatives working with virtual fashion. The name of the studio is “The Fabricant Studio.” it is very simple for anyone to become a digital fashion designer, the way YouTube allows anyone to become a video creator. This accessibility allows a broader range of voices and perspectives to contribute to the fashion industry and cultural field.

Amber, believes that experimenting with non-textile materials, non-human bodies is more profitable than dealing with the physical realm, where each trial would entail additional use of resources. She believes that the excessive and exclusive fashion culture does not conform to the reality of the 21st century.

Fashion designers for the needs of the digital world design, among other things, for fluid identities, identities that are not absolutely with human characteristics, such as, for example, cyborgs that are dynamic, co-evolving, and heterogeneous with real and virtual upgraded bodies but also exist in one interspace of the real and the virtual. Traditional fashion often adheres to standardized sizes, materials, and designs, which can be limiting, but digital fashion allows for limitless experimentation that embraces a dynamic and inclusive approach that reflects the heterogeneous nature of contemporary society (Särmäkari, 2001).

DressX

The creators of DressX, Daria Shapovalova, and Natalia Modenova. are guided by the principle of the other major 3D fashion actors, which is to regulate the amount of clothing that is produced. However, they do not think that fashion is futile; on the contrary, they are aware of the beauty and excitement that physical fashion causes, but their opinion is to encourage and support fashion designers in finding more sustainable practices in the work cycle. Their slogan is “Don’t buy less, buy digital fashion (DressX, n.d.).

DressX was the first fashion brand to launch its first collection in the Roblox game in 2022, which was created through Roblox’s “Layered Clothing” technology. The collection enabled users to wear the items on themselves in the virtual world with AR through the app. The first collection consisted of 12 Roblox outfits, and they sold 26,000 of the items (with prices from 50 cents to \$2). At that moment of the initial collaboration, it was realized that the best-selling clothes are similar to the clothes that people wear in everyday life, and in a way, they adapted the avatar here. However, it is predicted that greater freedom of creation will be created thanks to Layered Clothing on Roblox, which will allow greater personalization to users and freedom that they cannot have in everyday life (Braun, 2022).

Figure 2.

DressX first collection for Roblox. (Braun, 2022)



Dressx works on the principle of creating digital clothing and emailing files to customers by producing physical clothing. Considering that the digital creation of clothing reduces carbon dioxide (CO₂) emissions by 97% and saves 3,300 liters of water, the company's environmental and economic awareness of sustainability is elevated (Casciani et al., 2022).

The founders of this brand come from areas where traditional fashion is practiced; one of the girls works in fashion journalism, and one in publishing fashion magazines. In the first season, when they were breaking through, their goal was to give young designers a space to shine, especially designers from Ukraine who found themselves in a period of war and who perhaps needed this kind of support the most. Their idea is related to the basic reason for fashion, which is to create an image, a style. It is all related to the visual representation that we understand pictorially. Their justification lies in the fact that the creation of new images should not necessarily be related to the constant production of a physical product, but rather can be constant with a digital product as well. They believe that cooperation with people and companies is limitless and that you can dress absolutely anyone, in any part of the world and at any time (Burke, n.d.).

On their site, there are instructions on how to make a photo base that they can edit with digital designs that you have purchased from the platform. (DressX, n.d.).

Stephy Fung

One of the most prominent successful examples of practicing 3D fashion, as well as a person who as a freelance designer has successfully monetized this way of working, is Stephy Fung, who says in her biography when you enter her official website that she is a fashion artist, educator, and content creator (Fung, n.d.). Stephy Fung provides a significant case study. As one of the leading practitioners of 3D fashion design, she successfully navigates through traditional Chinese clothing motifs and modern design aesthetics. Her ability to blend these diverse influences reflects a commitment to cultural exchange and innovation in the fashion industry. Fung's freelance career exemplifies the potential for digital fashion to democratize creativity and empower individual designers through different platforms to engage with those individuals.

Figure 3.

Stephy Fung and her 3d design



In her Domestica course, named “Digital Streetwear Design in CLO 3D and Cinema 4D”, she talks about her inspiration, mentioning in the videos that she is mostly guided by traditional Chinese clothing, the motifs from it, blended with cuts that associate modern clothing which is very obvious when you met her designs at first (Fung, n.d.).

Perhaps its British-Chinese connection is to blame for this aesthetic form of representing a whole created through eclectic individual references. Her work as a freelancer offers her the freedom to create, which she promotes through social networks and platforms for sharing knowledge with followers. Her dedication and innovation in her work brought her to Forbes' 30 under 30 list (Forbes, n.d.), highlighting the transformative potential of digital fashion in promoting cultural diversity.

Her collaborations take place with brands such as Gucci, Vogue Business, Dell, and others, which further opens the doors to talented contemporary designers for collaborations that, as designers of a physical piece of clothing presented locally, the chances of making such a collaboration are minimal, almost impossible.

From the reviewed cases it can be noted that digital fashion platforms like The Fabricant Studio and DressX make it easier for a broader range of designers, regardless of their geographical location or financial means, to enter the fashion industry. This democratization fosters cultural diversity by providing a platform for under-represented voices to showcase their work.

Challenges for the Integration of Digitization in Cultural Policies

Digitization has revolutionized the cultural segment by offering new ways to access, produce and disseminate cultural content across any creative discipline. The integration of digitization into cultural policies brings with it significant challenges that must be addressed in order to use the full potential it brings with it (Hylland & Primorac, 2023). This chapter summarizes these challenges, focusing on the context of digital fashion and its implications for sustainable cultural diversity, according to the analysis of the cases discussed in the previous chapter.

Digital cultural policies require an in-depth analysis of such successful examples to examine how it is framed and implemented in different areas of cultural policy. One of the first challenges to be addressed is an analysis of how digitization changes the ways in which cultural products, including digital fashion, are created, distributed, and consumed by the human factor, which is essentially the original goal of this topic, which is to perceive the possibility of sustainable cultural diversity within digital spaces. This includes examining the role of digital platforms in increasing or limiting access to cultural activities and participation of diverse communities.

It is also necessary to take into account inequalities in access to digital tools and the Internet, which can contribute to unequal opportunities for individuals to stand out and the inability to participate in that intercultural digital competitive environment, which can deepen existing cultural differences (Albornoz & Leiva, 2019). More work is needed on how digital fashion can serve as a platform for underrepresented communities to express their cultural identities by promoting sustainable cultural practices, reducing waste, and supporting environmental sustainability.

As seen in the case studies of The Fabricant, DressX, and Stephy Fung, digitization offers new and undiscovered avenues for creative expression and cultural participation, but it also requires new regulatory frameworks, ethical guidelines, and strategies for inclusivity, which indeed at least for a long time and the focus of experts on the basis of this issue. By addressing regulatory, ethical, and access challenges and fostering an environment that supports diverse and sustainable cultural expressions, digitization can significantly contribute to preserving and promoting cultural diversity in the digital age (Council of Europe, 2016).

Conclusion

The metaverse becomes a dynamic and inclusive space where users can explore, engage with different cultural identities, act outside of centralized frameworks, and interact with virtual objects or other users in real-time. Decentralization ensures that creations that persist across platforms remain accessible to users worldwide. It transcends geographical boundaries and cultural gaps between two or more different communities. This democratic formation serves to hear and value the voices of underrepresented regions and communities in the digital world.

Art, design and should be part of the dialogue about cultural diversity in digital transformation. Fashion theory often examines how fashion reflects and shapes cultural identities. As digital fashion becomes more prominent, it serves as a medium for expressing and exploring cultural identities in new and innovative ways. By examining how digital fashion interacts with cultural identities, valuable insights can be provided into how designers can create culturally resonant and inclusive digital fashion experiences.

Within contemporary fashion theory, sustainability is a key theme. This research was concerned with considering the possibility of creating sustainable identities in the digital space. We have seen several examples of individual designers, startup

companies that successfully function in establishing personal and brand identities as well as maintaining them.

Dangers that can be considered in the future in relation to digital transformation is the danger of homogenization in relation to digital aesthetics because often trends and aesthetics are promoted on digital platforms that quickly gain popularity and spread globally in such a way that certain styles or attitudes become dominant in different regions and cultures. This can lead to a lack of diversity in fashion, with designers and consumers alike gravitating towards similar trends that are filtered as the most popular through the platforms' algorithms.

Another problem that may arise is the standardization of design processes, which also leads to standardization in fashion design practices. This can also result in a convergence of design approaches and aesthetics as designers adopt similar digital tools and techniques.

These obstacles can serve as an additional field for consideration, but some of the options that can effectively avoid any homogenization and standardization in the digital space are promoting diversity and inclusiveness, supporting new voices that will offer alternative aesthetics, encouraging designers from different areas for mutual cooperation, as well as finding collaborations between designers and sectors that are from different fields to collaborate on the same projects, the possibility of personalizing the end products that would allow the customer a sense of involvement in the design process and mutual action towards the cause of the brand.

Digital fashion, especially in growing areas of digitization, is an emerging sub-field that must establish professional conventions and ethical codes of practice while developing strategies of jurisdiction and legitimation. As the boundaries between the physical and digital worlds become increasingly fluid, enabling new work systems, fashion designers and industry participants must actively engage with this evolving system. There is a need for further studies on the way digitization is framed in cultural policies and for deeper and critically exploring and analyzing the framing of digitization in current cultural public policy. This includes improving sociotechnical capabilities and raising the dignity of digital fashion in scientific and cultural frameworks by differentiating ethical approaches, forming new creative concepts, and advancing arts and crafts in the digital realm due to retaining the human footprint in digital environments. By gradually and consciously addressing these challenges, the transformation of the traditional role of a fashion designer will be deeper and more fundamental.

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