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Harris Tweed: A glocal case study.

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Abstract

Fast and effectively disposable fashion has seen clothing reduced to transient items, worn for a short period of time then discarded. This has pushed down prices, moving textile and clothing production to low-cost labour countries and decimating the traditional Scottish textile economy. Fast fashion drives consumer demand for newness and uses finite resources that are damaging to the environment. In 2019, the pressure to move towards a more sustainable fashion and textile industry is intense. Traditional textile manufacture using natural, renewable sources that are inherently long-lasting offers a slow fashion alternative, epitomized by the Harris Tweed handweaver community in Scotland. Fashion has embraced digital, with growing online sales and increasing focus on digital content. This presents an opportunity to redress the balance by using technology to shape a sustainable future for traditional textiles. Utilizing an interpretive paradigm and inductive approach, an Arts and Humanities Research Council (AHRC) funded networking grant is presented as a qualitative case study, investigating how immersive technologies can be used to safeguard the future of traditional textile products, to educate contemporary, global audiences on the provenance and human hand behind manufacturing processes and to encourage consumption of products with longevity. This explanatory case study finds that fashion brands are using immersive technologies for virtual changing rooms or creative customer experiences but are not exploiting the possibilities of immersive technologies in engendering a sense of place or people behind the product. Findings also reveal that the Harris Tweed Authority and Harris Tweed Hebrides brand successfully use landscape to convey a sense of place, but are under-utilizing the handwoven value and sustainable, slow fashion credentials of Harris Tweed. China is identified as a potential place for Harris Tweed to gain valuable market share, with increasingly wealthy Chinese Generation Z consumers seeking individual exclusivity and sustainability in their clothing purchases, criteria that embody Harris Tweed.

Keywords: sustainable consumption, slow fashion, augmented reality, virtual reality, immersive technology, traditional textiles

Introduction

Pedersen and Peach (2018) associate woven tweed cloth with Scotland, historically and in contemporary times. The term 'tweed' originated in Scotland in the 1830s, with perceptions of tweed transforming from purely utilitarian to a more romanticized view in the nineteenth century. Weaving is an ancient industry, described as 'a highly skilled craft that requires artistry' (Serdari 2018: 188). Artisan production techniques are described by Dormer (1994) as taciturn knowledge embedded within the makers' practices but lacking in wider visibility and recognition. Thus, there is a risk of losing intangible cultural heritage as fashion and textile processes are increasingly automated, moving away from techniques involving the human hand. However, Waytz (2019) suggests that demand for handmade products is increasing due to the dehumanization of the digital age, with consumers perceiving handmade as something special. This suggests that leveraging immersive technologies to bring people and place to the consumer, communicating the operational transparency, provenance and human hand behind the creation of artisan fashion and textile products, could lead to a revaluing of those products. Using the authenticity of people and place to create meaning and value could in turn drive interest and demand, ultimately preserving traditional textile cultural practices such as handwoven Harris Tweed and facilitating a new future for these in the minds of contemporary consumers. In a time when sustainability is increasingly sought after (Ahmed et al. 2019), the inherent sustainability of Harris Tweed's all-wool product, localized place of manufacture and short-run, handwoven production could also add value to the product in the eyes of the consumer.

Literature

A scoping literature review (Grant and Booth 2009) was undertaken to explore the key categories of sustainability and use of immersive technologies in fashion and textiles, and the Harris Tweed brand.

Sustainability

Crewe (2017: 69) notes the craft, skill and longevity of luxury fashion and argues for a return to 'considered consumption' of clothing as long-term investment pieces. Corner (2014) describes how craft is experiencing a resurgence due to a backlash against cheap mass production, stating the connection between creator and consumer can have commercial benefits, as well as ethical and environmental. Similarly, Lynas (2010) and Strauss and Fuad-Luke (2008) discuss slow design as a carefully considered holistic approach that can increase the bond between object and owner, based on practical, emotional and nostalgic connections people make with possessions. Lynas applies three main aspects of the more established slow food industry, good, clean and fair, to the fashion industry: bespoke fashion is good, offering longevity and attachment due to better design, transparency of process, and higher quality. This aligns with Strauss and Fuad-Luke's reveal, expand, engage and participate in slow design principles. Reducing clothing waste, utilizing cradle-to-cradle systems and local production can make fashion clean. Avoiding unethical practice and being fair can be applied to fashion industry

employment and manufacture, especially in the case of producers in countries like Scotland, with its associations of fairness and honesty (Stewart 2019). Strauss and Fuad-Luke's remaining slow design principles include reflect, encouraging an attitude of 'reflective consumption' (2008: 5) and evolve, encouraging a forward-thinking ethos and positing slow design as a behavioural change agent.

Overconsumption of clothing is prevalent in western societies, embodied by the temporality of fast fashion (Crewe 2017). Serdari (2018) notes that cheap fashion items have a lifespan of around just four weeks. Harper and McDougall attribute the demise of the Harris Tweed industry to this 'disposable fashion culture' (2012: 79). In 2019, the UK government's Environmental Audit Commission (EAC) published a damning report on fashion and sustainability. Textile production typically involves complex and disjointed global supply chains, contributes to climate change and environmental pollution and often involves unethical labour practices (EAC 2019). The lack of transparency in fashion and textile production is described as the invisibilization of workers, with the EAC noting that '[w]e do not see the faces of the people who make our clothes' (2019: 23). Arguably, clothing consumers rarely see the place of clothing manufacture either. In contrast, Harris Tweed's short, visible supply chain, local production and ethical labour processes (Serdari 2018), and the hard-wearing nature of Harris Tweed cloth (Young and Martin 2017) epitomize the slow fashion movement (Lynas 2010). Hills (cited in Platman 2011: 123) states that 'Harris Tweed has transcended fashion in terms of transient trend'. Serdari (2018) links the longevity of Harris Tweed with a redefinition of luxury: moving from ostentation and conspicuous consumption to valuing products that can be handed down from generation to generation. Thus, production of Harris Tweed aligns with the United Nations Sustainable Development Goal 12: Responsible production and consumption (United Nations 2015). However, Harris Tweed is an expensive lambswool product, priced much higher than its mass-produced rivals. Telling the stories of Harris Tweed handweavers and its local, island production is imperative to ensure its quality and value are understood and appreciated (Platman 2011), with Stewart (2019: n.pag.) confirming that 'captivating brand stories encourage consumers to enter the emotional realm and activate symbolic meaning of the brand'. Immersive technologies could be leveraged to tell the stories of the Harris Tweed industry, globally, sustainably and in a contemporary way.

Immersive technology

Digital technologies have transformed the dissemination and consumption of fashion, enabling consumers to interact with fashion culture irrespective of location. Crewe (2017: 130) notes this intersection of material and virtual fashion and connects it with the social realities of contemporary culture, describing a 'computer-consumer-commodity nexus'. Immersive technologies, including virtual reality (VR) and augmented reality (AR) represent the next stage in fashion's digital development (Bloom 2017). VR requires the use of dedicated immersive hardware such as goggles, limiting accessibility and providing isolated experiences; however, AR blends the real and the virtual, viewable via screen. People are more connected than ever to their screens,

with Boston Consulting Group describing the founder generation, born since 1997 and fully immersed in the use of AR via smartphone apps (Willersdorf et al. 2019). Bloom (2017: n.pag.) states that AR has significant implications for the fashion industry due to its accessibility via smartphones and anticipates that an 'AR view' will become an expected element of any digital shopping experience. With online sales continuing to grow and visual media including social media, fashion film, VR and AR increasingly being used to market designs and position brands, the paradigm shift from the offline retail place, to online places and now virtual places is evident. This is driven by technology manufacturers pushing the AR and VR concept, and by consumer demand, with 78 per cent of consumers who have tried VR expressing interest in trying it again (Rojahn 2019). However, Roberts-Islam (2019) suggests that luxury fashion brands have reservations about using AR experiences, linking luxurious experiences with flagship retail locations and in-store pampering, and disassociating traditional heritage and craft with digital. Grant (cited in Platman 2011: 22) notes, '[o]ur world is increasingly one devoid of reality and humanity' and posits that digital developments see consumers craving handcrafted and traditional products, aligning with Strauss and Fuad-Luke's (2008) slow design principles. Human interaction provides both social and economic value, with the human touch imbuing products with special significance, revealing (Strauss and Faud-Luke 2008) materials and processes, and increasing value. Research has shown that people will pay a premium for handmade products, and in this digital age, demand for handmade items, such as Harris Tweed, is increasing.

Harris Tweed

There is broad agreement as to Harris Tweed's iconic heritage (Pedersen and Peach 2018; Serdari 2018; Harper and McDougall 2012). Young and Martin (2017: 118) acknowledge Harris Tweed as 'one of the few traditional textiles to achieve cult status'. The Harris Tweed industry was the base of the Outer Hebrides of Scotland's economy (Serdari 2018); at its peak in the 1960s, it employed 900 people, almost half the island's population. However, as the North American export market declined in the 1980s (HTH/HWU 2015) and tweed cloth was mass-produced in low-cost labour countries, production of Harris Tweed declined, negatively impacting the island's employment. The demise of the industry and subsequent economic depression evidence the link between the local economy and the craft, which employed skilled labour and knowledge that evolved (Strauss and Faud-Luke 2008) through generations (Serdari 2018). Significant work was undertaken to modernize the equipment and protect the heritage and future of the cloth, resulting in Harris Tweed being uniquely protected by its own Act of Parliament, the 1993 Harris Tweed Act. As part of this act, the Harris Tweed Authority (HTA) was created, with the remit to promote and protect Harris Tweed across the world (Platman 2011; Hunter 2001). The HTA authenticates all Harris Tweed, stamping it with the Orb mark. Authentic Harris Tweed must be made from virgin Cheviot wool produced in Scotland, spun and dyed in the Outer Hebrides, and handwoven into cloth at the weaver's home on a non-motorized loom (Young and Martin 2017). Once woven, it is transported back to the mill for finishing. Thus, the

Harris Tweed industry is engaging (Strauss and Faud-Luke 2008) and collaborative in form: the HTA relies on the mills for funding, the mills rely on the HTA to promote and protect the brand, the home-weavers rely on the mills to provide yarn and finish the cloth, and the mills rely on the home-weavers to produce the cloth (Harper and McDougall 2012). For trade purposes, relationships with customers are business-to-business (B2B); however, the end-users (consumers of garments, accessories and interiors products) means business-to-consumer (B2C) relationships must be considered (Figure 1) to ensure the value of Harris Tweed is revealed (Strauss and Faud-Luke 2008) to end-users.

Serdari (2018) posits that the sustainability of the Harris Tweed industry demands forward thinking and updating of traditional practices; however, updating the traditional tends to invoke tensions, seen throughout the history of Harris Tweed (Hunter 2001). The Harris Tweed Act, in protecting the integrity of the cloth, may also limit innovation in terms of raw materials and how production processes evolve.

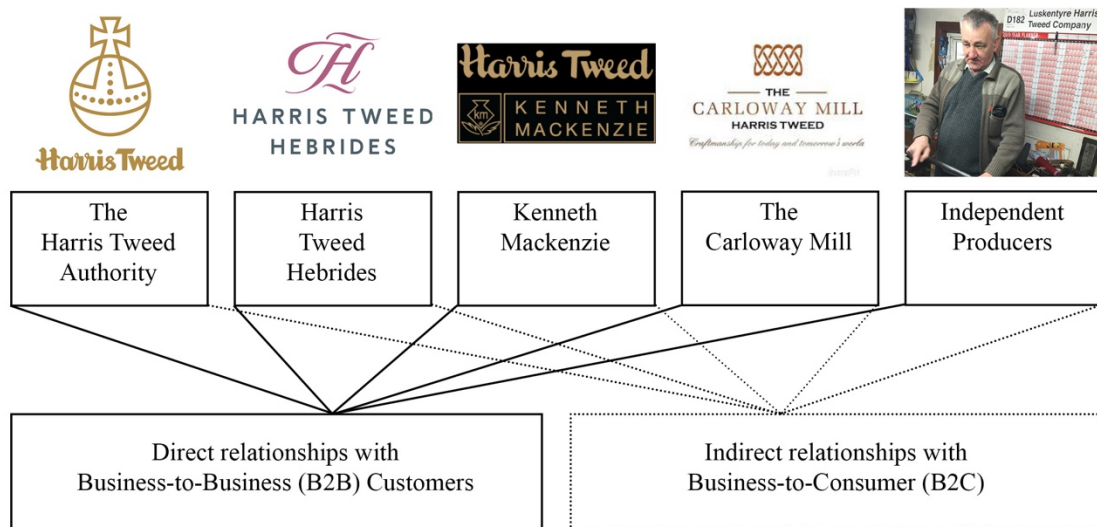


Figure 1: The Harris Tweed industry.

Methodology

Barnard (2014) argues that all fashion objects are the products of cultural values, concerning the understanding of meanings, rather than objectively explaining facts or observing repeatable phenomena. Jense (2016) similarly advises an interpretive approach, describing fashion research as an embodied practice, located in specific time(s) and place(s). Given fashion's 'transnational flows, ongoing change, diverse webs of meaning, and material consequences for people and the planet' (Kaiser and Green 2016: 161), it can be described epistemologically as a socially constructed phenomenon (Carson et al. 2001). Thus, an interpretivist ontological world-view was relevant to this research, exploring subjective meanings based on actors' individual perspectives and contexts through an inductive approach and qualitative methodology (Creswell 2014). Inductive research commences with data collection, aiming to develop

or build theory at a micro level, limited to small numbers of people, focusing on the individual and using qualitative research methods (Kawamura 2011). Thus, utilizing an interpretive paradigm and inductive approach, an AHRC-funded networking grant is presented as a qualitative case study. Thomas (2016) notes the tradition of the case study as a focus for sociological inquiry. Yin (2003: 1) describes case studies as the preferred option when 'the focus is on a contemporary phenomenon within some real-life context'. A case study looks at one thing, examining 'the particular rather than the general' (Thomas 2016: 3), focusing on the how and the why (Yin 2003). The case study examines the Harris Tweed Hebrides (HTH) brand to explore the relationship between traditional textile production, immersive technologies and sustainable consumption, with a view to maximizing the brand's potential in the Chinese market. HTH was founded in 2007, re-equipping an existing mill, and is now the largest producer of Harris Tweed. They currently employ 80 mill workers (HTH/HWU 2015), and approximately 140 home-weavers work with HTH and the other two mills (Serdari 2018). From the scoping literature review, the following research questions were identified:

- (1) How can immersive technologies be used to convey the human hand, provenance and authenticity of handcrafted textile products?
- (2) How can immersive technologies be used to encourage sustainable fashion consumption?

Case studies stimulate a 'critical, creative approach to problem-solving' (Thomas 2016: 6). This interpretive case study (Figure 2) utilizes unstructured accounts from the sales director of HTH, the chief executive from the HTA and the Chinese agents representing HTH in Shanghai, providing in-depth and multiple perspectives.

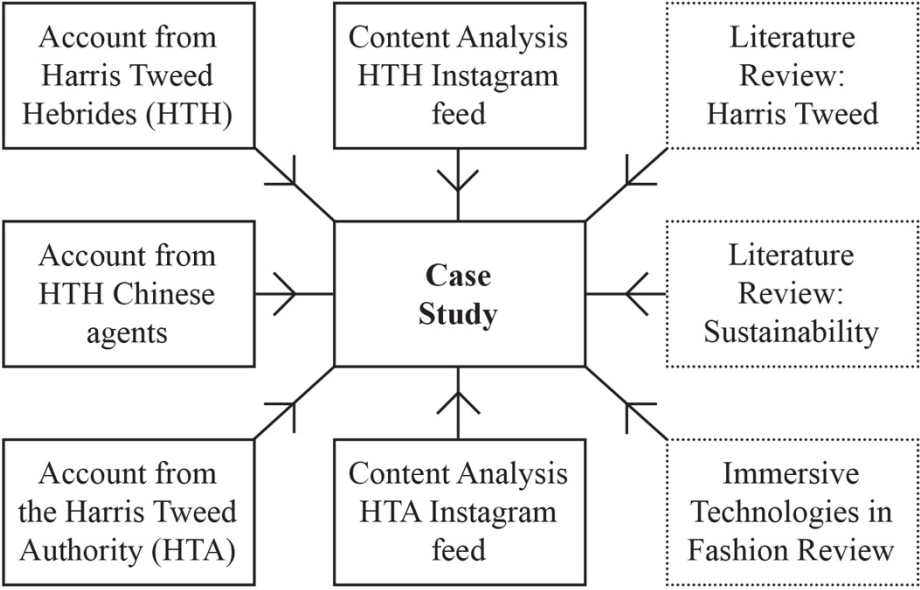


Figure 2: Case study.

Sequentially, content analyses on the Instagram feeds of HTH and the HTA were undertaken. Scotland lacks fashion media to disseminate the work of its textile and fashion industry (Marcella and Rowley 2015); however, Instagram

provides a platform for Scottish brands to present their story through easily accessible image and text. The Instagram feeds of HTH and the HTA were identified as a source of place-based data, with the 'visual vernacular' (Strauss and Fuad-Luke 2008: 6) format of Instagram being used by both to afford a rich sense of place. It should be noted that Instagram is blocked in China, meaning brands wishing to expand into this market need to embrace Chinese social media platforms and conventions, and limiting the applicability of this case study's findings.

The content analysis sought to identify the presence of criteria identified in the unstructured accounts as important to the Chinese luxury consumer, and the presence of sustainability criteria identified in the literature reviewed. Firm-generated content (images, text) and user-generated content (likes, comments) were analysed (Laroche et al. 2012). In addition to the accounts and content analyses, desk-based research was conducted on the use of immersive technologies by fashion brands, revealing a gap in available academic literature. The research was conducted over a six-month period (March–August 2019), ensuring currency.

HTH is the subject of the case study, identified as a 'special case' (Thomas 2016: 98) due to the unique nature of authentic Harris Tweed production. This is placed in the context of immersive technologies, the backlash against fast fashion (EAC 2019), and increasing interest in issues of sustainability in fashion and textiles (Ahmed et al. 2019). The purpose of the study is explanatory, unravelling connections and addressing how questions (Yin 2003). The case study is also a tool to provide insight into the value proposition of Harris Tweed as a brand.

Harris Tweed discussion

Sustaining year-round employment for the island community is a key priority for HTH, along with preserving the intangible cultural heritage of the Harris Tweed story (HTH/HWU 2015). HTH has identified growth in the Chinese luxury market as having potential to safeguard their workforce. Langer (2019) confirms the importance of the Chinese luxury market, explaining young Chinese consumers seek unique experiences and assurance that their purchases are the best available, criteria that Harris Tweed can meet. However, growth in China has proved elusive for HTH.

HTH's Chinese agents provided useful culture-specific information. Chinese customers like the colours of Harris Tweed; HTH's depth and variety of colour is something that Chinese mass production cannot replicate. Given the influence of the Outer Hebrides' landscape on the design of Harris Tweed, the colours, as a representation of place, are a unique feature. However, Chinese consumers love red and are cautious of camel, which often does not work with their skin tone. The haptic qualities (Mida and Kim 2015) of Harris Tweed are an issue, as the Chinese prefer a softer hand-feel. This presents a barrier for the high price of Harris Tweed, as Chinese consumers would expect the luxury feel of cashmere or silk at that price point. The Chinese market does not fully understand the handcrafted nature of Harris Tweed, seeing differences between small batches or the presence of white fibres in dark-coloured cloth as quality issues rather than handcrafted exclusivity. Thus, the value

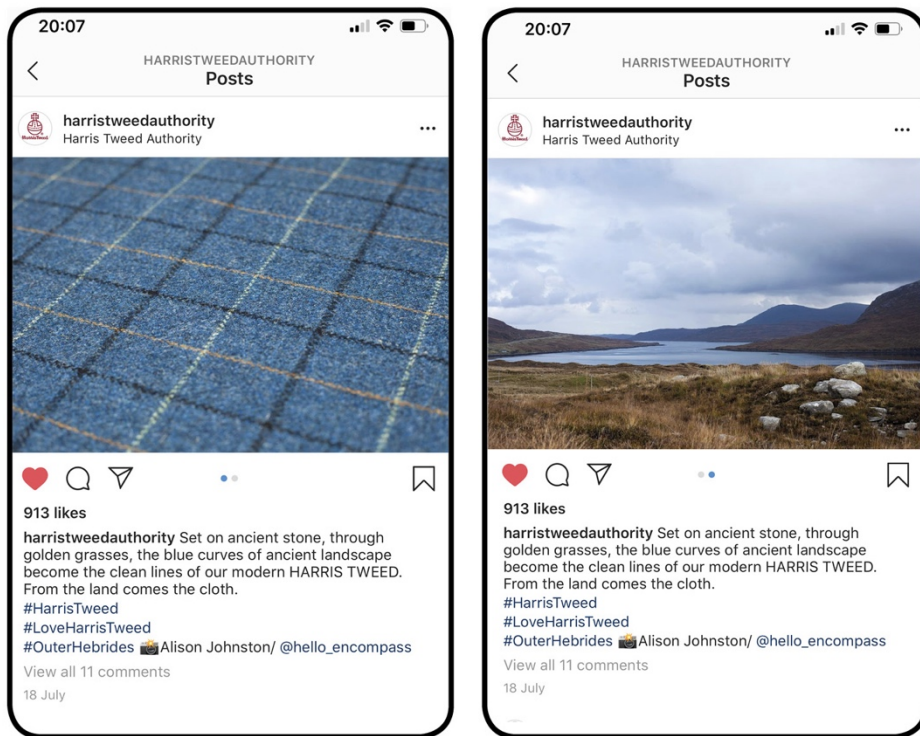
proposition of Harris Tweed cloth is not currently understood in China. However, brand story is important for the luxury Chinese consumer, and once customers understand the history and handcrafted element of Harris Tweed, they appreciate it more, confirming the importance of Strauss and Fuad-Luke's (2008) reveal and engage slow design principles.

Langer (2019) describes Chinese luxury consumers as young digital natives seeking instant gratification. The Chinese selling platform Alibaba lists thousands of products labelled as Harris Tweed, some of which are offered at low prices and may not be genuine, devaluing the brand. Serdari (2018) confirms the existence of cheap Chinese replicas. To protect the Harris Tweed brand and Orb certification, the HTA is developing new label technology to protect its intellectual property (Figure 3).



Figure 3: Labels.

The inclusion of a very specific Country of Origin (COO) on these labels (Outer Hebrides of Scotland) evokes a sense of place and provenance. The provenance of Harris Tweed cloth is one of its unique selling points (HTH/HWU 2015); Harper and McDougall describe Harris Tweed as 'the landscape of the Outer Hebrides rendered in cloth' (2012: 83). The HTA's from the land comes from the cloth brand imagery embodies this, linking the stunning island scenery with the cloth's colours (Figure 4).



Harris Tweed Authority *from the land comes the cloth* post (18 July)

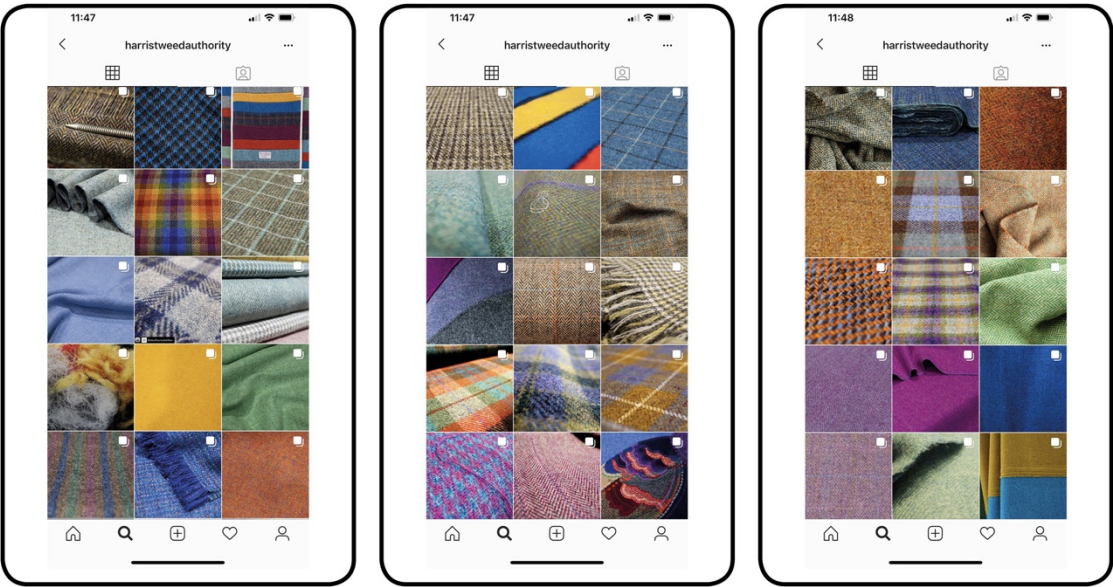
Figure 4: From the land comes the cloth.

Hamilton (2010: 361) describes COO as of 'supreme importance' to Scottish premium brands, and Stewart (2019: n.pag.) confirms that 'Scotland signifies quality and authenticity [...] synonymous with premium/luxury brand taxonomy'. Labels are important to Chinese consumers; however, HTH's Chinese agents note the Chinese luxury consumer's limited, London-centric knowledge. A lack of awareness of Scotland as a place restricts opportunity for Harris Tweed to benefit from the halo effect; a cognitive process whereby product or brand perceptions are formed based on the transferable qualities the consumer associates with a certain country (Stewart 2019). Marcella-Hood (2019: n.pag.) confirms that 'heritage, history, craftsmanship and a strong sense of place' are important to Scottish fashion, linking these with the entrenched icons of tartanry and Highland myth. Thus, Scotland enjoys positive provenance in many countries worldwide (Stewart 2019), but not yet in China.

Another issue for the HTA and HTH is that the end-product is cloth; HTH's Chinese agents stress the importance of showing garments and accessories. The content analysis of the HTA and HTH Instagram feeds reveals that most posts focus on cloth, rather than end-products (Figures 5 and 6).

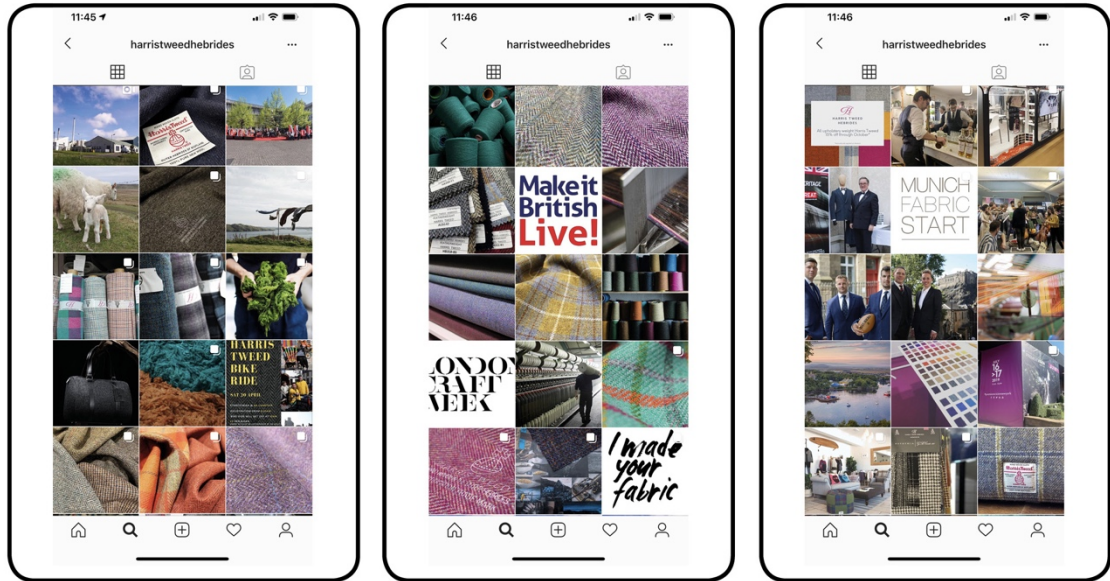
Figure 5 illustrates the HTA's focus on the beauty of Harris Tweed cloth. Of the 40 posts reviewed, over half featured landscape shots behind the first image (from the land comes the cloth campaign). Landscape images with elements hinting at the human including sheds (1551 likes), crofts, and the Callandish

standing stones (1395 likes) were the most popular. Posts featuring animals were reasonably popular. Posts with multiple images were less popular, apart from one featuring a family of weavers (1276 likes). The least popular post was very bright and non-traditional. Virtually no garment shots were featured. Similarly, Figure 6 focuses on cloth. Of the 51 posts reviewed, those featuring close-up photography of the Harris Tweed cloth were most popular, receiving 695–889 likes. Provenance is also addressed, with an image of the Cheviot sheep from which the wool used for Harris Tweed is produced, a few images of the island landscapes, and some showing the people and hands that make the products. One post features a waulking song, traditionally sung when the cloth was being hand finished, reflecting Harris Tweed’s rich heritage.



HTA Instagram feed March-April HTA Instagram feed May-June HTA Instagram feed July-August

Figure 5: The Harris Tweed Authority’s (HTA) Instagram feed.



HTH Instagram feed March-April HTH Instagram feed May-June HTH Instagram feed July-August

Figure 6: Harris Tweed Hebrides' (HTH) Instagram feed.

None of the posts reviewed specifically mentioned sustainability, indicating a significant missed opportunity for adding brand value via Harris Tweed's inherent slow fashion (Lynas 2010) credentials. Four videos showing the dyeing, spinning, weaving and finishing of Harris Tweed cloth, created for #fashionrevolution week were well-received, gaining 807–1262 views. The videos were introduced with the statement, 'lots of hands are involved in producing Harris Tweed and our series of films shows only some of them'. Comments from followers show positive interest in the production process, as shown in Figure 7.

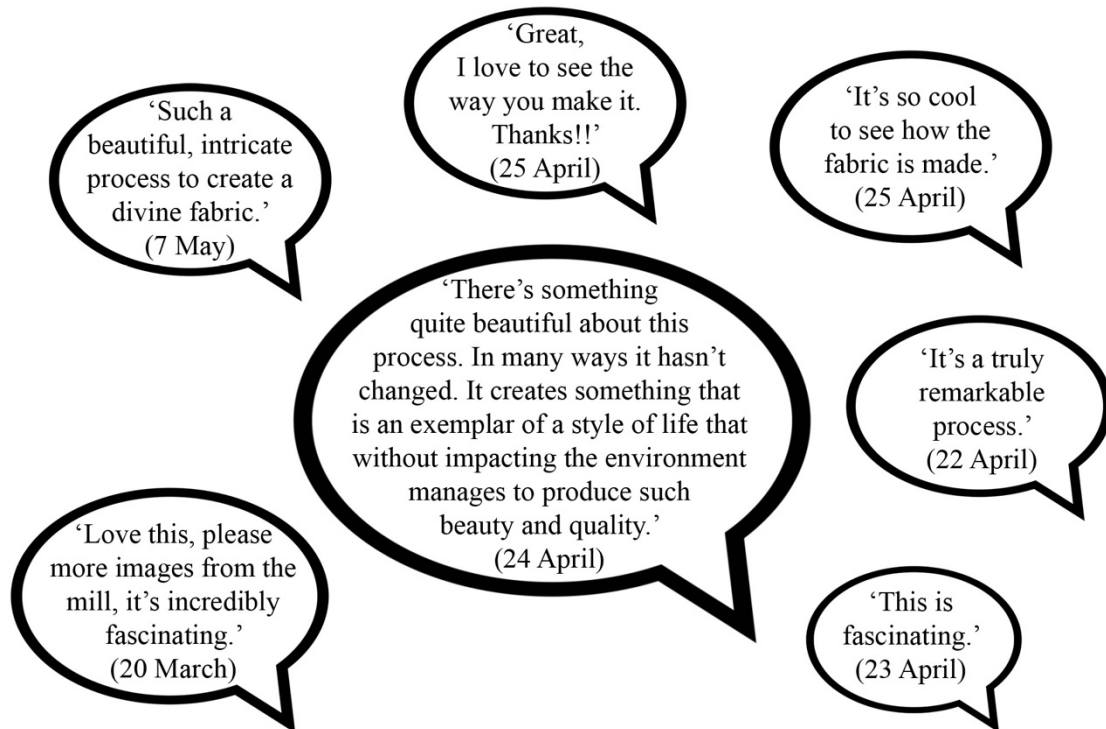


Figure 7: User-generated comments.

However, only seven posts mentioned the handweaving process, with some followers showing surprise that the cloth is handwoven. This suggests that handmade is taken for granted by the Harris Tweed community, but is less widely understood and could be further revealed (Strauss and Fuad-Luke 2008) in both HTH and HTA posts. Grant (cited in Platman 2011: 23) describes Harris Tweed as 'imbued with something personal and humane', suggesting that showing the human effort behind handwoven textiles and the place of the home-weaver's loom shed could engage (Strauss and Fuad-Luke 2008) the Chinese consumer, mitigating perceptions of high price for Harris Tweed. Just four of the posts reviewed showed the HTA Orb; given this is a stamp of authenticity, this could be emphasized more, in line with Rogazy's (2019) assertions that human dimensions, such as integrity, are important in building a timeless brand and Langer's (2019) description of Chinese consumers seeking assurance that their purchases are the best available. Only seven posts featured the product. Thus, the Instagram feeds are not a source of inspiration to the Harris Tweed customer (whether B2B or B2C) in terms of versatile product range. This lack of product suggests that more varied content, showing items made from Harris Tweed could be beneficial in digital communications targeting the Chinese market. Immersive technologies could facilitate realistic representations of product and bring a stronger sense of people and place, engaging the digitally orientated contemporary Chinese luxury consumer.

Immersive technologies discussion

Desk-based research, completed as part of the AHRC-funded From Augmented to Authentic networking grant, revealed that fashion brands at various market levels use VR and AR in three ways: engagement in social life, showing product and creating virtual changing room try-on experiences.

Engagement in social life

Brands can use immersive technologies to create brand awareness. For example, Burberry's 2017 AR app interacted with users' smartphones, enabling embellishment of existing photographs with Burberry-inspired graffiti doodles by artist Danny Sangra. These could be shared via social media in a Burberry frame, facilitating individual participation and a place for social sharing, to drive engagement and brand awareness without trying to push product (Figure 8).



Figure 8: Burberry's AR app. ©<https://medium.com/@amitrawal/burberrys-new-ar-experiment-with-apple-a-fad-or-a-signpost-for-the-future-c6767505913e>.

Similarly, Gucci collaborated with Spanish artist Ignasi Monreal. Customers making a purchase at selected Gucci stores were given access to VR devices to experience a 360-degree panorama of Monreal's Gucci campaign artwork. In addition, scannable advertisements featured in print allowed consumers to discover the campaign in AR via the Gucci app. Dior created Dior Eyes, a 3D VR headset in selected stores to immerse customers in behind-the-scenes footage of a ready-to-wear show (Allwood 2016), providing a revealing experience. In 2014, UK high-street brand Topshop provided in-store VR headsets, enabling customers to see a hybrid of live catwalk show and behind-the-scenes action. Global high-street brand Zara introduced AR window displays in 2018. Shoppers could hold their smartphones in front of the shop

window to see models wearing outfits from the latest collection, blending real with virtual (Mileva 2019). A pattern emerges of brands using VR and AR to expand in-store experience, driving traffic into bricks-and-mortar stores and seeing the physical store as a place of entertainment rather than purely for purchase.

Showing product

In 2009, Alexander McQueen partnered with SHOWstudio to livestream a fashion show to a consumer audience. At spring/summer 2016 New York Fashion Week, Misha Nonoo became the first designer to present her collection exclusively on Instagram. These Insta Shoots utilize the sideways scroll function to form a virtual smartphone runway, where everyone has a front-row view. Thus, this virtual place removes seating restrictions, timing conflicts, and geographical limitations (Sykes 2015). Also, in a time when sustainability and climate change are making headlines, this democratized virtual show format cuts carbon footprints. Balenciaga live streamed their autumn/winter 2016 show via an app, in 360-degree VR footage. Similarly, Dior created a 360-degree post-show video, showing viewers different aspects of the runway (Allwood 2016). In 2019, London College of Fashion's Innovation Agency (FIA), collaborated with AR company HoloMe, to present a graduate fashion show. Viewers around the world accessed the show via a smartphone app in real time. The pioneering element of this involved models walking in front of a green screen, so that viewers saw the model superimposed onto their own immediate place (Figure 9), a live AR experience rather than a pre-recorded one (Roberts-Islam 2019).



Figure 9: Live AR catwalk.

©<https://www.forbes.com/sites/brookerobertsislam/2019/03/05/groundbreaking-augmented-reality-fashion-show-streamed-to-global-audience/#4060d83745b6>.

For experiential e-commerce, the Obsess VR app provides a place for viewers to virtually visit luxurious stores, exploring the architecture, ambience and individual products, with detailed descriptions, price and brand information appearing when focusing on a specific product (Meyer 2017). Scottish whisky brands have developed similar experiences, providing VR portals that enable

viewers to jump from Scottish scenery, for example, a flowing river, into the distillery to see how the water is used in the whiskey's production. These immersive experiences reveal product while democratizing place by removing barriers to participation.

Virtual try-on

Virtual try-before-buy seeks to close the gap between online and offline, providing a customer-first experience. For example, Gap's Dressing Room AR app allows users to select a body-customized avatar to try-on items of clothing and view the look from different angles (Mileva 2019). If viewers like what they see, they can buy the product directly from the app, and hopefully not have to return it, having gained a better understanding of how it fits. Gap describes this as an effortless customer experience, adding value and enhancing consumer trust in the brand (Nunan 2017). Wannaby is the developer of Wanna Kicks, an AR app that enables customers to virtually try-on 3D model sneakers by pointing their smartphone camera at their feet (Mileva 2019), bringing fashion to the place the customer currently stands. The app tracks movement, meaning customers can walk around wearing the sneakers, just as they would do in-store. Similar technology has been used by Lacoste, Converse and Gucci. These try-on apps also expand the brand's online presence, preparing the customer for what to expect if they visit a bricks-and-mortar store. When Californian hat brand Tenth Street Hats offered an AR try-on experience on their website, online engagement levels increased by 33 per cent, demonstrating the potential of the virtual place in the experience economy.

More recent developments expand the concept of fashion and clothing, by allowing consumers to buy digital clothing using photo-real 3D fashion design and animation, meaning clothing no longer needs to be physical to exist (The Fabricant 2019). Developers of digital clothing posit it as inclusive, avoiding sizing issues and a sustainable alternative to physical clothing, avoiding production waste, over-consumption of resources, and damage to the environment (McDowell 2019); supporting reflective consumption (Strauss and Fuad-Luke 2008). Digital clothing evolves Instagram as a place for fashion; users can avoid being photographed in the same outfit twice without indulging in throwaway fashion culture. Thus, participation in fashion is expanded through a sustainability ethos, rather than restricted.

Encouraging sustainable clothing consumption requires a change in culture, involving consumers and businesses (Cartner-Morley 2019). The development of immersive technologies could provide an engaging method of disseminating sustainability stories.

Conclusion

This case study employed an interpretive paradigm and inductive approach to explain how immersive experiences such as AR can be used to evolve the future of traditional textile products, reveal to consumers the provenance and human hand behind manufacturing processes, and encourage reflective consumption of products with longevity (Strauss and Fuad-Luke 2008). In doing so, insight into the value proposition of the Harris Tweed brand for

expansion into the Chinese market is presented, as a means of ensuring sustainable employment for its handweaver community.

Research question 1 sought to explain how immersive technologies can be used to convey authenticity and provenance of handcrafted textile products. At the luxury fashion brand level, immersive technologies are being used to enhance the high-culture credentials of those brands through brand-artist collaborations and immersive consumer experiences. However, there was no evidence of fashion and textile brands using immersive technologies to convey provenance, craftsmanship or heritage, suggesting a missed opportunity in using human-computer interactions to communicate culture and place and in re-humanizing the making of clothing in the minds of contemporary consumers. Immersive technologies could emotionally connect maker and consumer, by revealing operational transparency that overcomes the invisibilization of the textile producer and place of production.

The findings evidenced the combination of immersive technologies and in-store experience, evolving the physical store as a place of entertainment. This has potential for the HTA and HTH in promoting Harris Tweed; collaboration with retailers stocking Harris Tweed products could involve AR window displays showing the home-weaver at work, the sheep on the crofts, and the scenic journeys between the mill and home-weaver on the isles, immersing the consumer in the 'sound ecology' and 'visual vernacular' (Strauss and Fuad-Luke 2008: 6) of this unique place of production.

Similarly, VR immersive experiences that reveal products could be applicable to HTH, where a flowing river could be a portal into dyeing activities in the mill, or a scenic cycle through the isles of Harris and Lewis could take viewers into a home-weaver's loom shed to see them at work. This reveals the human behind the cloth and the place of production, exposing the 'life of the products, from where materials are sourced to the labour conditions of those who manufacture them' (Strauss and Fuad-Luke 2008: 5).

The use of live AR apps has potential for HTH to collaborate with fashion design students or an established design brand to show finished products using Harris Tweed cloth in a new, technology-enabled way, without the costs, logistics, time and geographical limitations associated with a traditional catwalk show. This expands Harris Tweed into the consumer's own place, bringing the product directly to them wherever they are, blending seamlessly with their immediate environment and democratizing place by removing barriers to participation.

Virtual try-on apps have little applicability to the HTA and HTH as promoters and producers of cloth. They could instead rely on key B2B customers using Harris Tweed cloth within their designs and producing their own try-on app. Given the seasonality of garment and accessory production, any feature of Harris Tweed in a try-on app would be time-limited unless by a B2B customer with a slow design product range that did not change frequently.

The development of 3D digital garments and accessories has potential as marketing collateral for the HTA and HTH, enabling them to show products appropriate to new markets without the developmental and logistical considerations associated with traditional garment or accessory manufacture. It could also engender useful feedback on fabric colours and designs from new markets, such as the Chinese consumer, encouraging engagement and

participation. HTH has found that online is a place of limited value in selling Harris Tweed cloth from a B2B perspective. However, 3D digital clothing could help end-users understand the brand value through an engaging B2C brand experience.

Research question 2 sought to explain how immersive technologies can encourage sustainable fashion consumption. Strauss and Fuad-Luke's slow design principles were applied to the case study findings, to identify opportunities for Harris Tweed to leverage AR and VR in support of sustainability. *Reveal* exposes the processes and materials involved in the creation of fashion and textile products, as 'acknowledging the origins of a product is the first step towards making more informed and ethical choices' (2008: 3). Scotland was confirmed as a place of ethical production in the literature review and the Harris Tweed cloth has inherent sustainability in terms of raw fibre (locally produced wool) and production process (handwoven on non-motorized looms). However, the content analysis of the HTA and HTH Instagram feeds evidenced little attempt to promote sustainability. Sustainability was similarly absent in the review of immersive technology use by fashion brands. Thus, opportunity for VR and AR to authentically engage consumers with the operational transparency of Harris Tweed production and elucidate Scotland's place-based values, confirming it as a place of ethical production should be explored.

Expand considers product and environment as interactions, beyond physical form. Using immersive technologies to highlight the place and space occupied by sheep wandering loose on the island and the home-weavers' loom sheds in the grounds of their crofts engenders intimacy, gained through experience of product through people and place. In terms of materiality, Harris Tweed is a fabric of longevity; its temporal form transcends short-term fashion trends. Living with a Harris Tweed item for a substantial period offers the opportunity for further intimacy, for a relationship to build based on memory and meaning gained over time. Immersive technologies could facilitate intimate interactions with products that make them more desirable than the fast-fashion culture of newness. Linked to this, *reflect* encourages careful and considered consumption, with AR and VR offering the consumer the opportunity to understand the true value of their purchase through emotional and sensory immersive experiences that highlight the impact of production on place and people, in terms of both environment and community. Investing in a Harris Tweed item supports meaningful work in a remote location, enabling communities to thrive in that place, adding a layer of meaning 'beyond the materialised object' (Strauss and Fuad-Luke 2008: 10).

Participate 'encourages users to become active participants in the design process' (Strauss and Fuad-Luke 2008: 6). 3D modelling, virtual fashion and virtual fashion shows emerged from the review as immersive technology developments that addressed issues related to sustainability. These technologies facilitate participation, providing a means of introducing new Harris Tweed products and testing consumer reaction without the financial and resource-intensive costs of product manufacture. This could enable the HTA and HTH to show virtual garments to inspire businesses to use Harris Tweed and end-users to seek it as a preferred brand. This could be especially useful

in showing non-traditional product use of Harris Tweed, helping to expand market opportunities for the cloth. Using 3D models could bring Harris Tweed to the attention of the contemporary, digitally native Chinese audience, modernizing this heritage brand and educating end-users to evolve cultural and mindset change towards more sustainable clothing consumption.

In summary, this case study finds that immersive technology places fashion and textile products on real and virtual bodies and into the consumer's immediate environment. It democratizes both the fashion show and the luxury store and has the yet untapped potential to immerse consumers in places they may never be able to physically visit and encourage sustainable business and consumption practices. VR and AR offer a forward-thinking approach that could place Harris Tweed in the mind of the young, digital native Chinese luxury consumer. While current digital communications address the provenance of Harris Tweed, both the HTA and HTH could further embed the human, handmade nature of the cloth, linking person and place, and using VR and AR to make the viewer's experience of handweaving as personal and immersive as possible. Based on the HTA's from the land comes the cloth campaign, a from the hand comes the cloth campaign is suggested, utilizing accessible AR technology to create value 'beyond the materialised object' (Strauss and Fuad-Luke 2008: 10). Revealing locality, the island community and the handwoven production process is important to the Harris Tweed story as it seeks to move into new markets, and to its continuity in a world of fast fashion.

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