研究論文

持続可能なファッションに向けたデザイン実践
～日本のヘンプ物質文化の再発見～

Rediscovering Japanese Hemp Culture as a Design Practice for Sustainable Fashion

アラナ ノボア クラウディア ルチア
Claudia Lucía Arana Novoa

Abstract

Fashion designers are agents of social change who bridge the gap between the industry and the consumer. This article critically examines the indicators used to measure the economic development of the fashion industry and discusses the role of fashion designers in questioning the values associated with these indicators. Research suggests that technical improvements and new design methodologies such as circularity, zero-waste, and clothing recycling are not sufficient to achieve sustainable development, and that the inequality, labour exploitation, and natural resource depletion that are evident throughout the fashion industry need to be addressed on a systemic basis (Costanza, 2020; Dixon-Declève et al., 2020). By examining the values manifest in the artisanal practices of hemp producer communities in Iwashima, Tochigi, and Tsukigase in Japan, this article shows that concepts such as decentralised production, resilience, and cultural memory can provide alternative models for developing sustainable fashion practices (Fletcher, 2014; Williams, 2018). Furthermore, knowledge exchange between fashion designers and artisans can help to change the economic paradigm that is preventing us from achieving sustainable development. Fashion designers can also play a fundamental role in realising these goals by focusing on the intangible values manifest in the relations between producers, products, consumers, and the environment.

●キーワード：文化遺産（cultural heritage）／持続可能な社会（social sustainability）／
デザイン方法論（design methodology）

I. Introduction

During the past decade, fashion scholars and practitioners have acknowledged that the fashion industry is environmentally and socially unsustainable. In particular, the industry is marked by extractive and exploitative practices that drive all stages of the fashion supply chain, from the production of fibres and garment manufacturing to the marketing and sale of clothes. The fashion industry produces around 100 billion garments per year, about 40% of which end up in landfills (Gwilt et al., 2019, p. xxii). In turn, the massive quantities of natural fibres required to make a large proportion of these garments are the product of poor agricultural practices that are responsible for the ongoing loss of biodiversity, increased groundwater pollution due to the excessive use of pesticides and fertilisers, and significant greenhouse gas emissions. Moreover, the garment manufacturing industry is rife with social and gender inequities that mirror the ongoing drive to increase sales and lower prices. According to the United Nations Economic Commission, 80% of garment workers are women (UNFCCC, 2018). As the 2013 Rana Plaza tragedy highlighted, these workers typically work in dangerous conditions for piecemeal wages to produce clothes and accessories for international brands such as Prada, Gucci, Versace, Moncler, and Inditex. The Rana Plaza tragedy also exposed the long distances that these goods travel before they reach the consumer, in the process leading to increased CO_2 emissions and trapping many emerging economies in a race to the bottom to produce low-cost products and low-quality disposable clothes.

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However, this event and other incidents have also generated a growing awareness of the industry's unsustainable practices among consumers, activists, policymakers, and scholars. The tragedy also gave visibility to the unknown faces of those who produce today's fashion, the social and environmental impacts of the fashion industry, and the social concerns within the local communities. To address these issues, researchers and activists have highlighted the need to increase the transparency of the supply chain "from raw material to consumer, both globally and locally" (Papú Carrone, 2020, p.1). In addition, alternative practices and methodologies to the current profit and growth model are needed to enhance the sustainability of the fashion industry, mitigate its environmental impacts, and develop more equitable labour relations.

In 2018, the UN Economic Commission highlighted the need for the fashion industry to act towards achieving the UN Sustainable Development Goals (SDGs) by 2030, especially Goal 12: Responsible consumption and production, which is directly related to labour, materials, and services. Moreover, Target 12.8 states that efforts should be made to "ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature" (UN, 2020). As these goals suggest, transforming the fashion industry is a holistic process and necessitates practical and material changes throughout the supply chain, and a renewed understanding of the interrelations between industry, society, and the environment. Thus, SDG 12 and other sustainable goals cannot be tackled in isolation, as holistic change demands that we understand the interconnections between the different stakeholders in order to identify unsustainable practices and initiate a profound behavioural transformation. This article examines the role of the fashion designer in mediating the relationship between production systems and consumers, and explores how designers can serve as agents of social change. In particular, this article focuses on how designers can use the creative process as a means of questioning the current industry practices, disrupting the hierarchical relations between producers and consumers, and addressing issues relating to gender relations and ethical consumerism.

To effect change, fashion designers need to gain independence from the established systems of production. For instance, the current hierarchical distinctions between designers, artisans, and craftspeople prevent reciprocal collaboration and knowledge exchange. Traditional crafts resist mass production economies by focusing on the socio-cultural value of materials and working in collaboration with the environment. Similarly, artisanal practices are rooted in their local environments, and exemplify the possibilities for decentralised and egalitarian community based production. In this sense, artisanal production can be conceived as a form of activism. Moreover, craft and artisanal modes of production are inherently compatible with biological and cultural diversity, and manifest aesthetic and productive values that are greatly needed in fashion design and for achieving socially and environmentally sustainable practices. This article explores how fashion designers can use these values to develop sustainable practices. Focusing on the production of hemp and hemp products in the Gunma, Tochigi, and Nara prefectures in Japan, the article examines issues relating to community production and cultural development, and explores the history of hemp production and design. Possessing qualities such as fast and dense growth, low-water consumption, and pest resistance, hemp offers a sustainable alternative for fashion design. It is the oldest textile in Japan and was the most used fibre until the arrival of cotton in 1688. However, since the cannabis control law was introduced after World War II, Japanese hemp production has been in significant decline. Today, hemp farmers and craftspeople are having trouble finding successors for their businesses and fear that their culture and traditions will soon be forgotten. Thus, the plight of Japan's hemp industry exposes a number of issues that reflect the global concerns facing the fashion industry.

II. Unsustainable Fashion Practices

The relationships between producers and consumers resemble those between industry and nature in that

both are essentially hierarchical, with one side dominating the needs of the other. Thus, the causal interrelationships between, for example, agricultural production and environmental degradation can reveal the environmental consequences of seemingly unilateral relations. Nevertheless, these relations cannot be altered exclusively from a production perspective, as they reflect our actions toward others and the non-human environment. Therefore, as Guattari argues, we must develop a sense of responsibility toward all lifeforms on the planet, "for animal and vegetable species, likewise for incorporeal species such as music, the arts, cinema, the relation with time, love and compassion for others, the feeling of fusion at the heart of the Cosmos" (Guattari, 2014, p. 91). In line with this, the interrelationships that arise within fashion design can be seen to encompass numerous actors, and to be sustainable, designers need to develop a sense of responsibility and an awareness of the consequences of their actions. Importantly, understanding the relations between designers and consumers can enable both parties to adapt more quickly. For instance, designers can consider alternative production and creative processes, while consumers can demand transparency and to know the origins of their products.

At the political level, for the past 50 years or so, the United Nations has been making efforts toward counteracting environmental degradation, and has reached agreements with member countries to pursue sustainable development. In 1987, the World Commission on Environment and Development published the Brundtland Report, titled "Our common future", which pointed out that sustainable development must "take account of the interrelationships between people, resources, environment, and development" (WCED, 1987, p. 5). This report provided the foundation for what we know today as the SDGs, which succeeded the Millennium Development Goals in 2016. Over the past 30 years, our growing understanding of the concepts of environmental and social sustainability has led to social issues becoming more closely linked with economic targets, and has resulted in integrated concepts, such as traceability, cultural development, and non-human actors, being incorporated as essential elements of the current development goals. The SDGs comprise 17 interlinked goals and 169 targets that provide a framework for tackling global problems, which in Fritjof Capra's (2019) words represent "systemic problems — all interconnected and interdependent". Fashion is such an interconnected system in which all stakeholders, such as the textile and apparel industries, designers, dressmakers, educators, and consumers are systemically interconnected. As a consequence, to achieve sustainable development, all of the fashion industry stakeholders need to actively participate and cooperate in developing alternative, sustainable practices and outcomes.

However, these interrelations in the fashion system are also responsible for the unsustainable practices we face today and their consequences. For example, the marketing strategies of today's fast fashion brands continue to promote increased production and consumption. Many so-called fast fashion brands release up to 52 micro-seasons throughout the year, stimulating an over-consumption of clothes and increasing waste. As a result, about 21 billion tons of garments are discarded yearly, with most ending up in landfills (UNECE, 2018). Depending on high volumes of low price sales, these systems drive the ever growing mass-market retail sector. Moreover, today's low-cost production depends on low-wage workers from countries such as Bangladesh, Myanmar, and Ethiopia, and has led to increasing social inequity and labour exploitation. In the process, the fast fashion industry is demanding lower quality textiles and sewing finishes, and thus producing garments with increasingly short lifespans. This demand for garment production has, in turn, boosted the demand for raw materials and textiles, leading to increasingly exploitative agricultural practices that endanger biodiversity. Among the natural fibres, cotton has the greatest environmental impact, and accounts for almost 80% of the natural fibres used for clothing production (Henninger et al., 2017). Relying on the use of artificial pesticides and fertilisers, the production of cotton along with other natural fibres is polluting groundwater and potable water supplies, and thus harming human health and the environment.

Seventy per cent of the total freshwater drawn for human use is used in wet-treatment, textile finishing processes, and clothing production (Choudhury, 2017 in Arana et al., 2020).

To move toward sustainable development we need to be aware of the interrelationships that span the global supply chain whereby fashion brands increase their clothing production, retailers employ low-wage workers, fibre producers contribute to land degradation, and fashion designers produce lines solely to maintain the dynamics of the high turnover fast fashion industry. Thus, we must acknowledge that the industry as a whole is systematically contributing to the degradation of the biosphere and the global disparities in wealth. In the late nineteenth-century, during a time of accelerating industrial development, a number of design thinkers, such as Frank Lloyd Wright and Richard Buckminster Fuller, acknowledged the environmental decay associated with industrial growth and proposed strategies for ameliorating its negative effects on the biosphere (Chapman, 2015). Drawing on these sustainable design ideas, the architect William McDonough and chemist Michael Braungart developed alternative perspectives on factors such as the product life cycle. They argued that everything must be designed to ensure that the lifecycles of products revolve within an endless cycle of bioproduction and biodegradation, or recycling process. In line with this, contemporary researchers and designers such as Holly McQuillan, Timo Rissanen, Yeholee Teng, and Julian Roberts are developing zero-waste pattern-making techniques to avoid waste. Similarly, the outdoor clothing brand Patagonia is endeavouring to make all of its processes sustainable and maintain transparency with its customers by sharing information about its retailers and materials (Arana et al., 2020). The fashion designer Christopher Raeburn has started to work with surplus fabrics. Vivienne Westwood and Stella McCartney are also seeking to develop sustainable practices, and are advocates for the environment, fair labour conditions, animal welfare, and the use of alternative materials. Nevertheless, the vast majority of fashion brands and designers continue to operate within the fast fashion consumption cycle that dominates the fashion industry.

Fashion designs can also trigger different behaviours, as designers "can cast ideas about who we are and how we should behave into permanent and tangible forms" (Dilnot, 2011 quoted in Williams, 2019, p. 3), and thus increase our understanding of the interactions between incorporeal ideas and qualities, and the different forms of nature. As creators, fashion designers can observe patterns and interpret ideas, and shape them into tangible objects that can convey strong messages. As connecting nodes in the intricate fashion system, designers can use their observational skills to generate sensitivity to alternative creative processes and creators, such as artisans and community practices. Thus, the designer "represents a unique mixture of skills with a more profound expression of human values that transcend culture, time, and space" (Hawley and Frater, 2015, in Ospina and López. 2020, p. 124). These much needed values and fashion practices are necessary for the industry to achieve development the goals set by the United Nations.

III. Artisanal practices and their relations with the environment.

Creative processes such as artisanal handicraft generate relationships between people as producers and consumers, and relationships with their habitat and the environment. By extracting materials from local sources, and thus maintaining their continued availability, artisanal producers generate tight symbiotic relationships with the local environment and develop goods and practices that can span generations. Artisanal modes of production also generate intangible relationships between producers, consumers, and material society that are essential to the construction of cultural identity and its transmission through memory and manual work. This intangibility, which is often laden with religious and spiritual meanings, tends to be transmitted verbally, and materialised symbolically in objects that are loaded with meaning (Ospina and López, 2020). These relationships challenge binary hierarchies, such as intelligible over sensible, presence

over absence, man over woman, and human over nature, that are linked to ethnocentrism, sexism, and anthropocentrism (Fritsch et al., 2018) and are associated with the unsustainable practices evident in the fashion industry. In building a dialogue with the environment and its contents, artisanal handicrafts manifest a different logic to the exploitative and growth dependent practices of industrial producers (Kimmerer, 2018).

Artisanal handicrafts are entangled in the landscape, and by working with local materials, artisanal producers strengthen the relations that the community builds with nature. The concepts and worldviews associated with these practices can help to highlight the environmental problems we are now facing due to globalisation, and industrial society's estrangement from its historical roots and disconnection from the natural world. In contrast to artisanal handicrafts, the fashion industry is characterised by outsourced production processes, entrenched social inequality, and environmental degradation and considers the environment, workers, and consumers as mere means for economic growth. By positioning humans over nature, producers over consumers, and economic drivers over local needs, these industrial relations endanger cultural traditions and heritage, as well as the environment.

In contrast, artisanal communities are characterised by their decentralised structures, resilience, memory preservation, and resistance to consumer trends. These qualities also characterise the artisanal communities of hemp producers in Japan. In the following sections, these themes are explored in relation to the hemp fibre producers in Iwashima, Gunma prefecture and Tochigi prefecture and the hemp fabric weavers in Tsukugase, Nara prefecture. These artisanal communities provide examples of sustainable practices from which we can learn and which are highly relevant to the design practices of fashion designers. The research is based on interviews, observations, and fieldwork participation in the hemp fibre communities in these three sites during 2018 and 2019.

IV. Hemp artisanal practices in Japan

Actual hemp fibre production in Japan

Agriculture mediates human relationships with the environment. It provided the foundation for sedentary society more than 12,000 years ago, and is a significant driver of cultural development. Over time, indigenous communities developed centuries-old traditions of growing and manipulating fibres, which were subsequently transformed into spinning and textile production techniques. Agriculture is now acknowledged as a critical element in sustainable development (FAO, 2009). In the Jōmon Period in Japan, hemp fibre began to be used in woven clothing and baskets. Over several centuries, techniques for producing hemp clothing were refined into an established craft for producing fine textiles. Recent findings have shown that clothes made of hemp and ramie were widely available in Japan as early as 200 AD (Clark and Merlin, 2013). Cotton was not introduced in Japan until the Edo period, during the Genroku era between 1688 and 1704. Around this time, hemp clothing, which was mainly worn by the common people, began to be gradually replaced by cotton garments, while silk remained reserved for the wealthy classes. Cotton began to be grown in Japan during the Meiji period, with production increasing markedly between 1868 and 1912. Although hemp production decreased during this time, the artisanal production of hemp and hemp textiles was highly appreciated, and the handicrafts and clothing became highly esteemed among the prosperous classes (Tokutake, 2014).

Hemp has been intricately correlated with the socio-cultural development of Japan for millennia. Furthermore, hemp is an inherently environmentally friendly crop that grows quickly and densely, thrives with average rainfall, is pest-resistant, captures large quantities of carbon, and enriches the soil. Hemp fibres are also long and resistant, which makes them highly durable, are ultraviolet resistant, and have natural anti-bacterial properties. Moreover, textiles made of hemp provide warmth during winter and are cooling during summer. These characteristics make hemp one of the

most sustainable and practical fibres in the textile industry (Arana et al., 2020). The cultural and historical value of hemp also account for its relevance in preserving local traditional knowledge and the agricultural systems associated with hemp provide multiple sustainable alternatives to industrial agriculture. Overall, hemp farming plays an essential role in maintaining the heritage of the local cultures in Japan, and has enabled the communities to maintain close and respectful relationships with nature.

Iwashima: Decentralization

Every year, in early April a group of local farmers in Iwashima, Gunma prefecture, gather to plant hemp seeds in a fenced area near the Totto shrine. The community work on hemp production and fibre extraction continues until late August when the fibres are weighed and sent to Nara prefecture and shrines around Japan. From late July, the hemp harvest takes place. The stems are cut at approximately 190 cm and then immersed in hot water to strengthen the fibre and kill pests. During the hottest part of the summer, the stems are moistened and stored to start the fermentation process, which facilitates the peeling of the stems. After three weeks, the fibre extraction begins. In Iwashima, the steam peeling is usually carried out by women under the roof of the Totto shrine. While working, the women share their stories about hemp and childhood memories, and transmit their ancestral knowledge, coloured by popular tales and personal experiences. Parallel to this process, the peeled bark is cleaned by the men of the community in a process known as *asahiki* (麻引き). In this process, the bark is scraped to remove impurities, giving the fibre its characteristic golden colour. This task is laborious and requires great effort. After being dried for around three days, the fibres are sent to different places around the country for processing into fabric and religious items.

The activities that take place each year in Iwashima exemplify the local autonomy, decentralisation, collective action, and community interrelations that are characteristic of artisanal producer communities. These activities unite all of the agents who participate in the process, both human and non-human, and can help clarify the global problems facing today's fashion system, in which the clothing and textile production chains are far from transparent. Today's consumers are highly ignorant of the origin of their clothes. One can buy a t-shirt in Japan that was manufactured in China and made of cotton from India. Although it is now mandatory for companies to include information about the manufacturing origin on the label, the origin of the raw materials is not shown in most cases. Therefore, designers, retailers, buyers, and consumers remain disconnected and lack the relevant information necessary to make responsible decisions. In contrast, the Iwashima hemp production process remains open and is well known among hemp producers in Japan, who are proud of their craft, its heritage, and the role it plays in preserving Japanese culture. In line with this, Mohajer va Pesaran argues that in contrast to the disconnection from the production sites and making processes in the fashion industry, Japanese traditional craft practices are entwined with the natural landscape. For example, she describes the production and consumption of washi as "an example of a decentralized, locally sourced material production system which is contingent on both the human and the nonhuman entities in the immediate landscape-a model of how to design when producer-consumer and human-nature hierarchies are blurred" (Mohajer va Pesaran, 2018, p.71).

Iwashima hemp production is characterised by its rich history and the participation of all members of the community. After extraction, hemp fibres have a golden hue, with the more proficient artisans producing softer and brighter fibres. This relationship between craft and quality is characteristic of artisanal practices. Different from what happens in the fashion supply chain, where workers are invisible to consumers and even designers, artisanal processes can be traced from the raw material to the consumer and garment disposal. This ability to gather information is known as traceability (Papú Carrone, 2020), which signifies the degree to which information about the history, origin, and distribution of

products, materials, and services is available to makers, distributers, and users. This information provides essential information for making decisions on sustainable production and consumption. Traceability is also recognised as a necessary tool for achieving the SDGs, especially SDG 12.8, which states people should have access to "the relevant information and awareness for sustainable development and lifestyles in harmony with nature" (UN, 2020). However, information itself does not ensure that brands, designers, and consumers will build connections with the people and places of origin and vice versa. To build such relations, it is essential to create emotional connections between people, products, and the environment. Iwashima is an example of such connections, as most of the artisanal handicraft works produced in the region transmit intangible values and express "creativity, high quality and production of exclusive and timeless pieces" (Ospina and López, 2020, p. 113). These qualities are much needed in the field of fashion design.

Establishing meaningful relations with sites of production and stakeholders requires an open, receptive, and outward-looking attitude that can enrich our view of nature. At the same time, it is necessary to establish exchange and co-learning processes between those involved in the production and consumption stages. This exchange can develop through the intangible values embedded in the finished materials and the artisans' practices, as is the case with the processed hemp fibres in Iwashima. However, this is not possible if the product lacks these connections or its craft is not appreciated. In an interview with Junichi Takayasu, the director of the Hemp Museum, Taira Mieko, a recognised artisan of the Japanese craft of making cloth from banana fibre called *Kijōka-bashōfu* (喜如嘉 芭蕉布), expressed her concern about the future of Japanese artisanal handicrafts:

> As today's society is based on economic efficiency and logic, it is a difficult time for us people who create traditional crafts or do handiwork. As Japan's labour costs are high, not only clothing, but multiple materials rely on import. What happened to the Japanese idea of "craftsmanship?" I pray that the need to reconsider the value of "craftsmanship" that the Japanese have cherished will increase greatly.[1)] (quoted in Takayasu, 2017, p. 50)

Just as artisanal workers produce objects that carry deep meanings that are conveyed through oral traditions and textile work, fashion designers should seek to foster an industry based on "ecological integrity, social quality and human flourishing through products, action, relationships and practices of use" (Fletcher, 2014, quoted in Henninger et al., 2017, p. 37).

Tochigi: Resilience, memory and identity

Kanuma city, in Tochigi prefecture, is the largest producer of hemp fibre in Japan. Nevertheless, the market for hemp is small and its laborious production has resulted in declining demand. The cannabis control law and hemp's correlation with marihuana have affected fibre production, and continue to threaten the industry. Although the varieties of hemp used for fibre in Japan contain minimal levels of THC, after 10 years of research, the Tochigi Agricultural Experimental Station managed to produce hemp plants with about 0.2% THC. In the following years, all the crops in the area were replaced with this variety, which is known as Tochigishiro (Hashimoto, 2016). Contrary to what was expected, this variety did not increase production, as the seeds are distributed annually by government supervisors and special permission is required for its cultivation. Nonetheless, Tochigi is an example of resilience.

In a sustainable context, resilience refers to the capacity to overcome and recover from challenges, especially those that compromise sustainability. The development of the non-toxic Tochigishiro variety of hemp is illustrative of the struggle to maintain the centuries-old hemp industry in Japan. Learning from the environment and experimenting with different solutions to deal with difficulties are characteristics of resilience. In Tochigi, this capacity to adapt and protect the industry from external changes that impact the community has played an essential role in ensuring the

future production of hemp. In this regard, rather than preservation and conservation, resilience signifies the capacity to adapt to changes that can threaten fragile environments and small communities. Nonetheless, by maintaining hemp production through the development of Tochigishiro, the Tochigi hemp producers demonstrated how resilience can safeguard such agricultural traditions. As hemp farming in Japan is hampered by its association with marihuana, the development of the Tochigishiro variety has helped improve the image of hemp in Japan. Thus, although the new variety has not improved the characteristics of the fibre, by helping restore the traditional view of hemp as an important material in the cultural history of Japan, it has indirectly maintained its environmental benefits.

Hemp and ramie are native to Japan and their relations with Japanese culture date back centuries. Hemp is used in Shinto rituals, for torches in *Obon* festivals,[2] in Yokozuna ropes,[3] for traditional shoes called geta, in Taiko drum strings, and as bowstrings, among many other uses. Hemp ropes, called *Shimenawa* (注連縄), are believed to provide protection against evil. Furthermore, due to its protective symbolism, spiritual power, and purity, many of the clothes worn by the emperor in his possession ceremony are made of hemp (Tokutake, 2014; Takayasu, 2017). All of these uses and views of hemp are opposed to the prevailing Western views and the association with drugs, which is an imported idea that slowly changed the way hemp was viewed in Japan. This change of image was largely due to the cannabis regulations that were first introduced in 1912 and ultimately led to the enactment of the 1948 cannabis control law. The growing popularity of marihuana in the 1960s and its association with the hippy movement in the US, and the increasing use of synthetic fabrics were also significant factors leading to the decline in hemp production in Japan.

Cannabis was first targeted as an illicit drug at the first International Opium Conference in 1912 due to the concerns relating to its production in India. In 1925, Indian cannabis was added to the list of drugs controlled by international regulations. In 1930, Japan declared Indian cannabis, along with cocaine and other drugs, a narcotic. However, domestic cannabis in Japan was not regulated at that time. However, when the Second World War ended in Japan in 1945, the government followed the Potsdam Declaration and included Cannabis sativa in the list of plants banned for production regardless of their use. In 1947, to save the hemp industry and protect farmers, the Japanese government negotiated with General Headquarters, or GHQ,[4] and gained permission to grow cannabis for fibre purposes (Tokutake, 2014; Takayasu, 2017). When the cannabis control law was finally enacted on July 10, 1948, provision was made for cannabis to be grown for fibre, thereby enabling the cultivation of hemp to continue in Japan. Although the cannabis control law ostensibly protected fibre production and its associated cultural practices, the damage that that the image of hemp suffered in being perceived as a drug had a negative impact on the popular perception of hemp, especially among the new generations.

The case of hemp in Japan is an example of how conflicts between countries and the political situation can compromise social sustainability. Despite the long history of hemp cultivation in Japan, today the terms hemp, cannabis, and marihuana are all denoted by the word taima (大麻). Unfortunately, the association with marihuana and drugs has been stronger than the history and culture of hemp production. Hemp (ヘンプ) is a foreign word that was only relatively recently incorporated into the Japanese language. Nonetheless, when visiting Tochigi in 1947, Emperor Shōwa stated, "There is no grass that is called weed. Every plant has its own name, and they all live wherever they want. It is wrong for humans to decide that they are weeds, based on a one-sided way of thinking"[5] (Takayasu, 2017, p. 96). To build relations with the environment and the people and things that populate it, it is necessary to restore such views to develop strength through identity. Memory and identity are intangible values, and like culture, are connected with the physical value of the material goods we exchange in our interactions and which convey our understanding of the world. The Tochigi community is a resilient producer of hemp,

with the local farmers managing to increase their yields and maintain their agricultural practices. Moreover, working in conjunction with local farmers, local scientists developed the Tochigishiro variety of hemp, which is slowly changing the way hemp is perceived and enabling the traditional practices associated with artisanal hemp production to adapt to the changing times.

Nara: Preserving incorporeal species

Artisanal handicrafts constitute an important part of the cultural heritage of a nation. These living practices manifest ways of thinking and narratives that express material, cultural, and historical transformations. The practices are also transparent and inclusive, are respectful of people and the environment, and often serve to convey the memories, oral traditions, and experiences of the community. In the village of Tsukigase in Nara prefecture a group of women are dedicated to weaving hemp fabric and to maintaining the handmade hemp fabric techniques of Nara. For many years, Nara served as a production site for azabu (麻布), a cloth made of hemp used by the wealthy classes and samurai (Tokutake, 2014). Although the weaving tradition in Tsukugase started with ramie, in 1984, Masachi Inooka founded the Tsukigase Nara Sarashi Preservation Society to maintain the azabu weaving tradition of weaving hemp fibres from Iwashima. In Tsukigase, the spinning and weaving process begins during winter. The hemp is first soaked to remove impurities and after drying, the fibres are separated to maintain the same thickness when spinning. The loom is prepared with the hemp yarn comprising the weft and warp, and the weaving process begins. A 12 meter roll of this fabric, between 42 to 35 centimetres wide, can take eight months to finish. None of the fabrics are produced for sale or have any commercial purpose. They are solely exhibited at cultural events and exhibitions.

The women of Tsukigase aim to preserve the historical and cultural values associated with weaving that are at risk of vanishing due to the declining younger generation. Their activities resist the influence of contemporary ways of living and consuming, and seek to preserve intangible things or in Guattari's words, incorporeal species, such as memory and traditional knowledge. Their practices manifest a different temporality in building and valuing strong bonds with objects and materials. We need to consider the future of such artisanal handicrafts and how they build values that we need to take more seriously. The economic parameters that are typically used to measure value, wealth, and development, such as GDP,[6] fail to capture the environmental costs of economic development and prioritise economic growth regardless of its social and environmental impacts (Costanza, 2020). To counter the negative social and environmental costs of the fashion industry, fashion designers need to resist these wholly economic imperatives and instead learn from artisanal crafts that the community and the environment provide the resources that support human activities. The values represented in artisanal works provide opportunities to establish dialogues on the nature of material production, creativity, and design techniques and technologies and to take into account the "intellectual, emotional, environmental, social, and economic values" of fashion design (Ospina and López, 2020, p. 114).

The Rana Plaza disaster revealed how the fashion industry values profits over human wellbeing and production over environmental sustainability. In response, activists, designers, and consumers, among others, began to expose the new slavery[7] that continues to support this multibillion-dollar industry. For example, in 2013, Carry Somers and Orsola de Castro founded the Fashion Revolution movement. In 2014, they launched the #WhoMadeMyClothes campaign to promote transparency in the supply chain by encouraging consumers to question brands to reveal the origins of their garments. This movement has generated greater awareness of clothing makers and their working conditions, and the environmental impacts of the fashion industry. In addition to engaging in this movement, some fashion designers are seeking to create a new set of values and to show that design can promote social change (Fletcher, 2014). Importantly,

these designers are seeking to prioritize these values in a similar manner to the hemp weavers in Tsukigase. As sources of knowledge and values, artisanal communities such as these can serve as models for this new generation of fashion designers.

V. Fashion designers' agency: Restoring values for the sustainable development of all species.

The global crisis we are facing today due to the COVID-19 pandemic has "revealed the dependence of the global economy on long supply chains and high demand for services" (Costanza, 2020). The inequities we are currently witnessing in terms of access to healthcare, education, working conditions, and welfare also reflect a system that prioritises economic growth over societal wellbeing. The UN World Social Report 2020 states that in 2018, the wealthiest 10 per cent owned 85 per cent of all global wealth, while the poorest 50 per cent owned only one per cent of all wealth (UNDESA, 2020). As an alternative, Buckminster Fuller proposed that we "make the world work for one hundred per cent of the humanity, in the shortest possible time, through spontaneous cooperation, without ecological offence, or the disadvantage of anyone" (Fuller, 1961 quoted in Keats, 2016, p. 22). This view expresses one of the principles of what Buckminster Fuller called comprehensive anticipatory design science. From this perspective, the economic models that favour GDP growth over wellbeing and encourage resource depletion and social inequity can be seen as systemic problems (Costanza, 2020; Capra, 2019) that increase the gaps between human and nature, producer and consumer, and designer and craftsperson. It is these hierarchical relations that the fashion industry needs to overcome in order to reposition itself as a sustainable and equitable sector.

The idea that people can have full ownership of natural resources and dominance over other beings is laden with "anthropocentric, speciesist, and sexist connotations" (Henninger et al., 2017, p. 42). Social practices such as the new slavery that underpins the massive output of the fashion industry encourage the production of disposable clothing by disposable people, who are considered easily replaceable and willing to work for anything that the market has to offer (Bales, 2012). This idea of ownership extends to the environment and the non-human and incorporeal species that embody intangible values that are not considered in the economic indicators, and therefore, are not included in the cost of production. Along with biodiversity loss, the current economic model is threatening many incorporeal species with extinction. As the products of artisanal practices, these species are closely entwined with the landscape and human relationships that characterise place, and foster interconnections within and between communities and with the environment. Given their importance in maintaining the wellbeing of people and the environment, these incorporeal species need to be incorporated into a new system of measuring wealth, especially in the fashion industry.

Recycling strategies, the development of new materials, circularity, and technological improvements are necessary to achieve sustainable development. Nevertheless, to understand "the actual drivers that underpin our wasteful consumption crisis" (Chapman, 2015, p.169), we need to identify the source of the current environmental crisis. Moreover, we need to foster an economy that values natural and social dimensions as fundamental elements in determining wellbeing. These values form the basis of SDG 12, target 12.8, which aims to "ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyle in harmony with nature". The artisanal handicraft hemp communities in Iwashima, Tochigi, and Nara in Japan are predicated on preserving incorporeal species and maintaining collaborative relations with nature. Simply by practicing resilience and maintaining their practices and cultures, these artisanal communities resist the industrialised production process, globalisation, and the degradation of local and cultural ecosystems.

In 2002, the Food and Agriculture Organisation defined a Globally Important Agricultural Heritage System (GIAHS) as "a living, evolving system of human communities in an intricate relationship with their

territory, cultural or agricultural landscape or biophysical and wider social environment" (FAO, 2019). Hemp production in Japan is an example of such a GIAHS, as the communities play an essential role in maintaining the heritage of the local cultures and their close relationship with nature. However, the hemp industry in Japan has not been accorded GIAHS status due to its low economic viability as a result of the associations with cannabis. Moreover, hemp production in Japan is decreasing rapidly despite the efforts of conservation societies and the development of Tochigishiro. Thus, to preserve these practices, there needs to be a radical change in how hemp is perceived. Fashion designers can help change these views by incorporating artisanal values in their fashion practices, and highlighting the value of such traditional and sustainable practices.

Achieving sustainable development requires agents to bring about the necessary changes. Williams (2018) argues that designers have the capacity to problem-solve and develop alternative means and strategies. Irwin (2018) proposes a form of transition design that is in tune with the natural environment, and place-based design practices that advocate the re-conception of entire lifestyles. Moreover, design practitioners can develop strategies for generating methodologies of inclusion and egalitarian interrelationships between the social, economic, cultural, and environmental realms (Williams, 2018; Young, 2010). Designers also need to consider how we communicate with others, how things mediate our interactions with the environment, and how our surroundings alter our sense of time. The need for sustainability requires us to question the prevailing social values and expose incidents of environmental destruction, human rights violations, racism, and other behaviours that threaten living and non-living beings. Movements such as Katherine Hamnett's CHOOSE LIFE t-shirt logo, the concept of *slow fashion*, and the #WhoMadeMyClothes campaign are bringing together designers, policymakers, activists, and consumers. As a result of movements such as these, we are gradually witnessing a lifestyle shift toward sustainable development and a growing willingness to achieve policies such as the SDGs to ensure the wellbeing of our planet.

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注

1) Translation in English from Japanese by Dr Saskia Thoelen.
2) Obon（お盆）is a three-day annual festival marking the Japanese Buddhist custom of honoring one's ancestors.
3) Rope worn by Sumo wrestlers.
4) Following World War II, during the occupation of Japan, General Douglas MacArthur, Supreme Commander of the Allied Powers, was referred to as GHQ in Japan.
5) Translation in English from Japanese by Dr Saskia Thoelen.
6) Goss domestic product (GDP) expresses the monetary value of the production of goods and services of a country or region in a specific period.
7) Term coined by Kevin Bales in Disposable People: New Slavery in the Global Economy. 2012.