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1 Fashion and Environmental Sustainability

Abstract: This chapter provides a short overview of the history of the textile and garment industry. It concisely traces moments of the evolution of relevant technology and briefly discusses materials.

Keywords: environmental sustainability, fashion, history, materials, technology

As explained by Strand, "A textile is not simply a binary system of spun, twisted, or spliced fibres, but first and foremost a result of complex interactions between resources, technology, and society (2010, p. 150)." It is, indeed, essential to not ignore interaction with society. Sustainability includes fulfilling the needs of society today, without compromising the life of society in the future – while ensuring a socially acceptable balance between economic growth, the environment and the well-being of society.

In former times, Indigenous societies wore clothes that had little if any negative impacts on the environment. In 1742, a new era began as cotton mills were established in England; by 1773, the industrial revolution had begun and all-cotton textiles were being produced in factories. By the mid-nineteenth century, practical sewing machines were being manufactured for small-scale garment-makers. In the United States, Singer was issued a patent in 1851 and became a prominent manufacturer of sewing machines (see Figure 1.1). In Sweden, Husqvarna began producing sewing machines in 1872 (see Figure 1.2).

With the industrial revolution, automation (see Figures 1.3 and 1.4) and the assembly line were introduced to the garment industry, with opportunities for employment but also social changes (see Figure 1.5); volume and profits became priorities while the environment was neglected. In today's society, sustainability[1] is becoming increasingly important after many decades of carelessness.

During the 1970s, the American textile producer Malden Mills[2] experimented with polyester. In 1981, the company introduced fleece to the sportswear market. This innovation – a vegan alternative to wool – was very successful, and the technology is improving; today, plastic bottles can be recycled into fleece yarn as fine as cashmere. A drawback, however, is that fleece is made from non-renewable resources; another is that fleece needs much chemical coating to make it windproof or water resistant.

1 In 1987, the *Brundtland Report* – named for Gro Harlem Brundtland – developed guiding principles for sustainable development.

2 This firm is now known as Polartec.

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Figure 1.1: Classic Singer sewing machine (photo: Léo-Paul Dana**).**

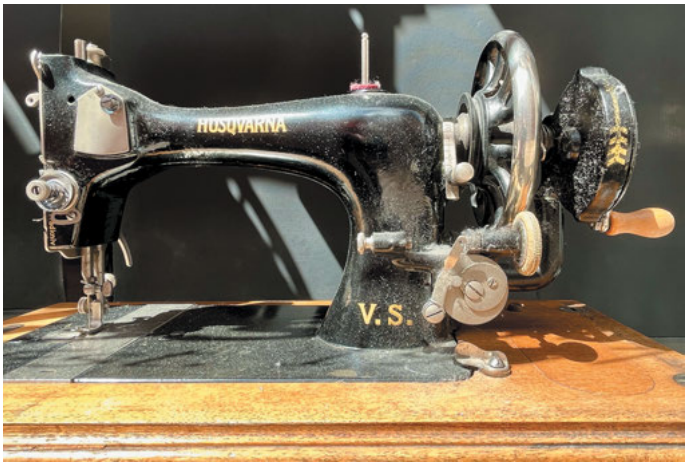

Figure 1.2: Husqvarna sewing machine (photo: Léo-Paul Dana**).**

Figure 1.3: Carding machine to clean and disentangle wool to produce a continuous web for subsequent processing (photo Léo-Paul Dana).

Figure 1.4: Wool spinner (photo: Léo-Paul Dana).

Each time they are washed, synthetic fleece jackets release as many as 250,000 synthetic fibres, some of which can end up in the oceans where their size allows them to be ingested by fish, eventually going up the food chain and reaching humans. Fleece has a short life span, needing to be frequently replaced. Like other synthetic fibres,

Figure 1.5: Dormitory built for employees of a textile factory at Gutle, Austria (photo: Léo-Paul Dana).

fleece does not biodegrade; instead, it binds with harmful chemical pollutants – such as pesticides – found in wastewater.

In contrast, sustainable materials include wool (Figure 1.6), worn since approximately 3000 BC or possibly earlier; organic cotton, cultivated since 3000 BC (Figure 1.7) and later central to the garment industry, both large-scale (Figure 1.8) and small-scale (Figure 1.9); and leather (Figure 1.10), used by man since at least 1300 BC.

Wool, being an animal fibre, consists mostly of protein, while cotton consists mostly of cellulose. Although wool and leather are environmentally sustainable, we acknowledge the concern of vegans, members of animal-rights groups and other people who have ethical concerns about the quality of life of livestock involved.

In addition to ethical concerns, we also recognise religious perspectives. The Bible introduced the concept of not wearing a garment made of blended materials: "Thou shalt not let thy cattle gender with a diverse kind; thou shalt not sow thy field with two kinds of seed; neither shall there come upon thee a garment of two kinds of stuff mingled together" (Leviticus 19:19). Deuteronomy recapitulates, "Thou shalt not wear a mingled stuff, wool and linen together" (Deuteronomy 22:11). The next three chapters discuss wool (Chapter 2), cotton (Chapter 3) and leather (Chapter 4); this will conclude Section I of the book.

In Section II, we have international perspectives from the fashion industry. Readers gain insights from Bangladesh, Ethiopia, India and beyond. Section III of the book

Figure 1.6: Shaving the wool off of a sheep is called shearing (photo: Léo-Paul Dana).

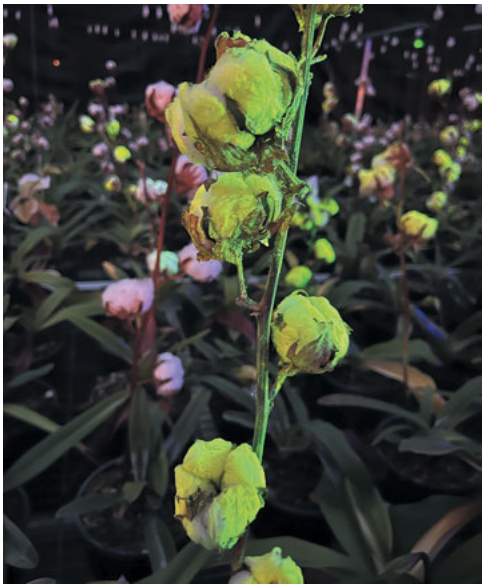

Figure 1.7: Cotton plant (photo: Léo-Paul Dana).

Figure 1.8: Cotton used in large-scale manufacturing (photo: Léo-Paul Dana).

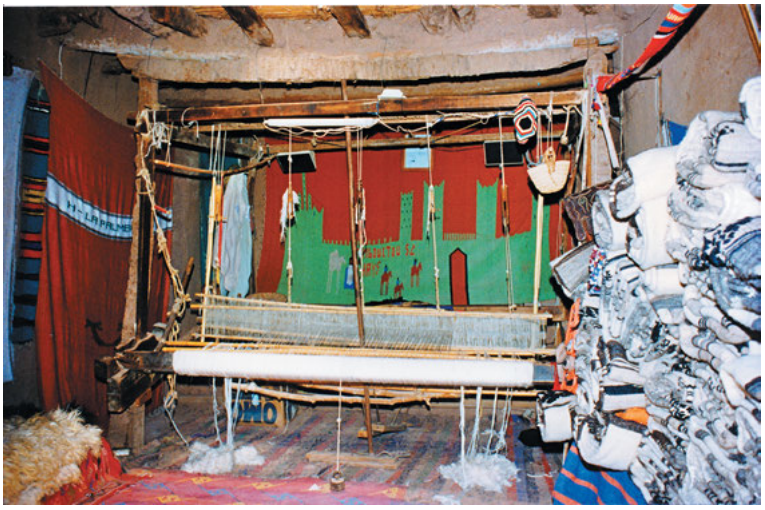

Figure 1.9: Artisanal loom (photo: Léo-Paul Dana).

Figure 1.10: Rababa made of goat leather (photo: Allan Degen).

focuses on innovations in the industry, followed by Section IV, the chapters of which examine circular initiatives as sustainable alternatives for end of life. Section V concludes the book looking toward a sustainable future with sustainable business models for fashion.

References

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