

# THE EVOLUTION OF THE PRODUCTION PROCESS FOR CLOTHING

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## ABSTRACT

The vesture manufacturing process has evolved significantly over the times. originally, it was a primer and labour- ferocious craft, but with technological advancements, it has come more automated and effective. Handcrafting (Pre-Industrial Revolution crafters. This process was slow, precious, and limited in terms of product volume. Industrial Revolution (18th- 19th centuries) The preface of mechanized cloth product marked a significant shift. Manufactories surfaced, powered by brume machines, leading to mass product. This period saw the rise of assembly- line processes, adding effectiveness and lowering costs. Mass Production (20th century) Assembly lines came more refined, incorporating conveyor belts and technical ministry. This period introduced standardized sizing and exchangeable corridor, making product briskly and more invariant. Computer- backed Design (CAD) and Computer- backed Manufacturing (CAM) (Late 20th century) The integration of computers in design and manufacturing allowed for precise pattern making, grading, and slice. This enhanced delicacy and reduced waste. Globalization (Late 20th century) vesture manufacturing came more globalized, with companies outsourcing product to regions with lower labour costs. This led to complex force chains and increased competition. spare Manufacturing and Fast Fashion (Late 20th century onward) spare principles, fastening on minimizing waste and maximizing efficiency, gained fashion ability. Fast fashion surfaced, emphasizing quick reversal times and frequent product releases to meet consumer demand. Robotization and Robotics (21st century) ultramodern vesture manufacturing decreasingly relies on robotization and robotics for tasks similar as slice, sewing, and quality control. This improves effectiveness, reduces labour costs, and enhances perfection. Sustainable Practices (21st century) There is a growing emphasis on sustainable and ethical manufacturing practices. Companies are incorporating eco-friendly accoutrements, reducing waste, and addressing social responsibility in response to consumer demand for environmentally conscious products. Overall, the elaboration of the vesture manufacturing process reflects a combination of technological advancements, globalization, and changing consumer preferences. The assiduity continues to acclimatize to new technologies and sustainability enterprises.

**KEY WORDS:** Apparel manufacturing process – handcraft – industrial revolution – mass manufacturing – globalization – spare manufacturing – fast fashion – robotics – sustainability – slow fashion

## INTRODUCTION:

Humankind has been wearing apparel since the Stone Age, according to Britannica. Beforehand apparel, generally of leather and beast skins, was sutured together and latterly handwoven, occasionally with bone needles. By the Middle periods, the preface of iron sewing needles made embroidery and other complex designs and styles possible. With the rise of industrialization in the 19th century, and with the patented invention of the sewing machine, the world of apparel manufacturing unnaturally shifted. The plant product of fabrics and fabrics made apparel more affordable and accessible, which meant numerous could stop making their clothes from home — a task that was both precious and time- consuming. In the 20th century, garment making largely came a marketable affair in the United States, with the assiduity creating a wide variety of jobs and income sources for all those trying to survive during WWII. In the 1960s, advances in global manufacturing and the spread of media brought a rise in fashionability of global fashions, and the demand for mass product has

continued to grow through the decades. Garment product is an involved process with colourful way, each more important than the last. Over a rich 200- time history, garment product has evolved into a streamlined, systematized process. Before the arrival of artificial garment manufacturing, all apparel was custom- made, generally hand- darned at home or by a knitter. In fact, ready- made apparel was unheard of in the United States until the late 19th century, when manufacturers began taking a one- size- fits- all approach to styles and sizing. As garment product has progressed, manufacturers have expanded their immolations to include a wide range of styles and sizes.

### HANDCRAFT:

A handcraft, occasionally more precisely expressed as artisanal handcraft or handwrought, is any of a wide variety of types of work where useful and ornamental objects are made fully by one's hand or by using only simple, non-automated affiliated tools like scissors, sculpturing tools, or hooks. Its design conditioning that are related to making effects with one's hands and skill, including work with fabrics, malleable and rigid accoutrements, paper, factory filaments, complexion, etc. One of the oldest handcraft is Dhokra, this is a kind of essence casting that has been used in India for over 4,000 times and is still used. Generally, the term is applied to traditional ways of creating particulars (whether for particular use or as products) that are both practical and aesthetic. handcraft diligence are those that produce effects with hands to meet the requirements of the people in their position without using machines.



The first clothes were made from natural rudiments beast skin and furs, meadows and leaves, and bones and shells. Clothing was frequently draped or tied; still, simple needles made out of beast bone give substantiation of darned leather and fur garments from at least 30,000 times ago. One of the most important Cro-Magnon inventions was the needle (Monalisa Das on February 14, 2019). (1)

### FABRICS AND THE INDUSTRIAL REVOLUTION:

Industrial Revolutions [IR] (1st- 2nd- 3rd- 4th- 5th)

1st IR – use of essence, not just gravestone and wood – Citation Age/ Iron Age;

2nd IR – use of “brume” energy, not just beast/ wind/ water;

3rd IR – use of electricity;

4th IR – use of information technology.

Assiduity5.0 – May not be another revolution, but A complement or correction.

The four artificial revolutions are coal, gas, electronics, nuclear, and the internet and renewable energy. Beginning from 1765 through the present day, we ’ve seen an amazing elaboration. As we discovered different energy sources and later, digital technologies, the entire landscape of the modern world has been transformed over and over. (April 24, 2022 by Mazharul Islam Kiron) (2). Then’s a brief manual on the four artificial revolutions.



First Industrial Revolution Coal in 1765

The original artificial revolution converted our frugality from husbandry to assiduity.

Processes came mechanized and products were manufactured for the first time. During this period, the discovery of coal and its

mass birth, as well as the development of the brume machine and essence forging.

It fully changed the way goods were produced and changed. Inventions similar as spinning machines and looms to make fabric were making their appearance. Canal transportation began replacing cart and mules for moving around these goods.

Alternate Industrial Revolution Gas in 1870

As the first artificial revolution was driven by coal, the alternate revolved around the discovery of electricity, gas and oil. The invention of the combustion machine went hand- in- hand with these energy sources.

Third Industrial Revolution Electronics and Nuclear in 1969

After another hundred times, nuclear energy and electronics enter the geography. Nuclear power began in Europe, grew in both Great Britain and the United States, went into absolution for times, and grew in Asia.

Fourth Industrial Revolution and Renewable Energy in 2000

As we continue moving through the fourth artificial revolution, we see a shift to renewable energy similar as solar, wind and geothermal.

### **MASS MANUFACTURING:**

Utmost people wore apparel made at home, while those who could go it dressed in clothes made by a knitter or a needle woman. A government report issued in 1811 found that “two-thirds of all garments worn by inhabitants of the United States” were homemade. (Sofi Thanhauser January 27, 2022)

During the course of the 19th century, apparel was to come mass- manufactured. These changes came in slow supplements. As we've seen, undershirts and pantaloons made by impoverished pieceworkers were the first mass- produced garments after the rise of cloth manufactories, followed by corsets at mid-century. Before the Civil War, the only ready- to- wear external garments available were made for mariners, and slaves. The veritably first off- the- rack apparel was vended at “slop-shops,” which sprang up on the thoroughfares adjoining docks in the early 19th century in Boston, New York, Philadelphia, Baltimore, and lower metropolises with whaling or fishing trades. This apparel was produced in only one size, to be modified by a seaman heading out to ocean as stylish he could.

Mass- manufactured garments for enslaved peoples developed as an assiduity in 1840- 60. By buying cheap, mass- produced clothes, agronomists discovered, they could avoid using precious slave labour in stitching. Trade routes between New York and other eastern metropolises and the harborage of New Orleans were established to transport ready- made apparel of cheap, coarse fabric to large colonies. The New Orleans dealer Folger and Blake Company claimed in one announcement that agronomists would “find it greatly to their advantage to buy their apparel ready- made” for slaves, while multitudinous New York enterprises specialized in what was known as “Negro apparel” Seamsters in northern metropolises were a provident option, with occasion costs of labour lower than those of slaves. Commonly, the apparel enterprises demanded high productivity from home or plant workers, in rough conditions, for low pay.



### **GLOBALIZATION:**

Globalization by text description refers to a network of trade and commerce between different husbandry of the world brought together with sharing of goods, culture, services, investment, labour, and technology.

Globalization has strained into husbandry, cutting across borders and all artificial walls as well. It enables a



person in the cold and desolate corridor of Russia to get goods from Brazil along with client care from a joe in India through an American shopping platform. This is a true illustration of the implicit and power of globalization. The world is taking way towards inclusive growth and development, making way for a global vill-suchlike script. No sectors of a nation's frugality have been let off by this growing change, including the cloth assiduity.

### SAPRE MANUFACTURING:

spare manufacturing is a product system aimed primarily at reducing times within the product system as well as response times from suppliers and to guests. It's nearly related to another conception called just- by- time manufacturing (JIT manufacturing in short). Just- by- time manufacturing tries to match product to demand by only supplying goods which have been ordered and focuses on effectiveness, productivity (with a commitment to nonstop enhancement), and reduction of " wastes" for the patron and supplier of goods. spare manufacturing adopts the just- by- time approach and also focuses on reducing cycle, inflow, and outturn times by farther barring conditioning which don't add any value for the client.

### Fast fashion

Fast fashion is the business model of replicating recent catwalk trends and high- fashion designs, mass-producing them at a low cost, and bringing them to vend snappily while demand is at its loftiest. The term fast fashion is also used generically to describe the products of this business model. Retailers who employ the fast fashion strategy include Primark, H&M, Shein, and Zara, all of which have come large chains by driving high



development of affordable seasonal and trendy apparel that appeals to fashion-conscious consumers.

Fast fashion grew during the late 20th century as manufacturing of apparel came less precious — the result of more effective force chains and new quick response manufacturing styles and lesser reliance on low- cost labour from the vesture manufacturing diligence of South,

Southeast, and East Asia, where women make up 85- 90 of the garment pool. Labor practices in fast fashion are frequently exploitative, and due to the gender attention of the garment assiduity, women are more vulnerable.

### ROBOTICS AND AUTOMATION:

Operation of robotics and robotization in the cloth assiduity had begun over two centuries ago when John Kay's constructed the flying shuttle. The flying shuttle machine was not only enabled an increase in production but also brought down the number of people required to operate the weaving loom, from two to one. (Dr N Gokarneshan, April 24,2023) (5). The geographical distribution in the cloth assiduity has seen a dramatic shift in the once 50 times. In the recent times, the operation of robotics has increased, coupled with the fleetly rising stipend in Asia, has seen some manufacturers made interested in the robotics product- grounded business model. It's clear that cloth manufacturers are shifting precedences to robotization to increase productivity and boost effectiveness.

To achieve this, cloth assiduity needs to borrow robotics robotization, manipulation systems need to some artificial intelligence (AI). robotization and robotics are two nearly analogous technologies. principally, robotics is a form of artificial robotization. This composition will describe a wide range of robotization in cloth process by using robots which is eventually adding the both introductory demand of cloth assiduity both productivity and effectiveness.

### SUSTAINABLE:

Sustainable is a well- known word currently. Global associations like the United Nations extensively use it to reflect their drive to produce ways of doing, across different areas of society, which can be rehearsed long term. Living sustainably means reducing consumption, reusing papers constantly to produce a longer lifetime and recycling products or accoutrements to



repurpose them. In short, this enables us to use being accoutrements to produce particulars rather of using new accoutrements taken from the earth's coffers.

Sustainable garment manufacturing is a step towards making the fashion industry one of the world's most significant contributors to reducing waste and global emissions. (Visionise Pvt limited) (5).

### **Sustainable garment manufacturing**

Background to Sustainable Fashion Contrivers Development

Sustainable garment manufacturing is a gospel that encourages environmental and social responsibility. To stylish answer the question 'What is sustainable fashion?', and understand its pretensions and background, it's essential to understand the structure blocks of the gospel

### **Ethical fashion**

Ethical fashion refers to how generators handle the processes in the sustainable fashion assiduity in Australia and worldwide. The processes involved are product, in which garments are made, the working conditions of the individualities making the garments, and shipping.

### **Fairtrade**

Fairtrade focuses on garments produced according to ethical norms. All workers should earn a living pay envelope, enjoy safe and healthy working conditions, and access support structures similar as motherliness leave, periodic leave, and lunch breaks.

### **Indirect fashion**

indirect fashion is the alternate structure block of sustainable fashion. It entails recovering accoutrements, up-cycling particulars for repeated use, and thrifting.

### **Slow fashion**

Slow fashion is linked as quality- grounded rather than time- grounded. Some characteristics of Slow Fashion is that the garments are made from high quality, sustainable accoutrements. It allows for slower product, unifies sustainability with ethics and eventually invites consumers to invest in well- made and lasting clothes.

### **CONCLUSION:**

Thus, the evolution of apparel industry has come a long way. clothing became mass-produced, demand around the world skyrocketed. This led to new trade routes, colonies, and even wars over raw materials. As different cultures mixed, fashion and trends started to blend. Everything from women's liberation to manufacturing in developing countries all involved the apparel industry.

The industry continues to evolve, driven by consumer demands, innovation, and global trends. As we look to the future, it is crucial to balance profitability with ethical practices, sustainability, and responsiveness to changing consumer preference but more on that in part three!

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