

Bio-fashion

By Karla Shanley

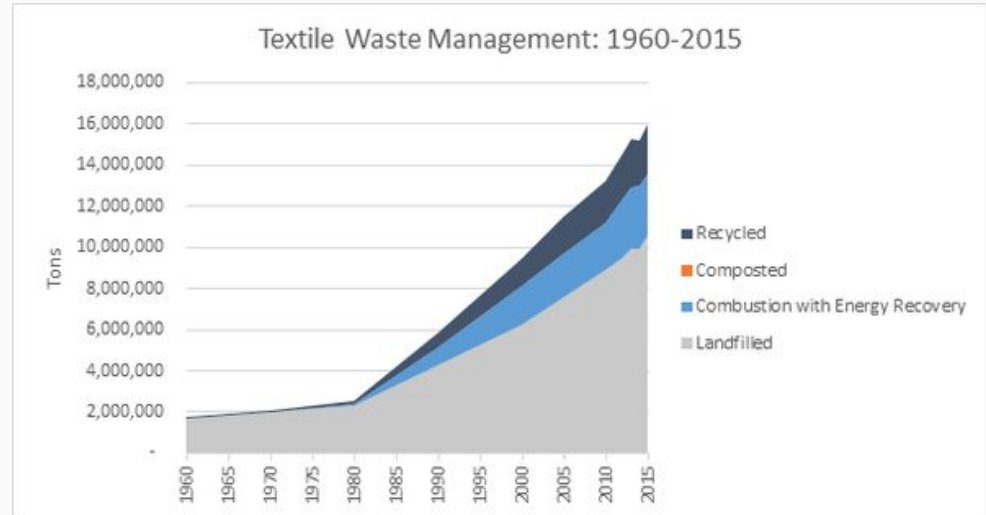




Research question:
How will Bio-fashion
impact the production
and excess of the
fashion industry?

The problem

- Boomed since the industrial revolution.
- Produces billions of tonnes of waste
- 95% of clothing in could be recycled or repurposed



Key terms: Production

Production:

-Harvesting to
manufacturing

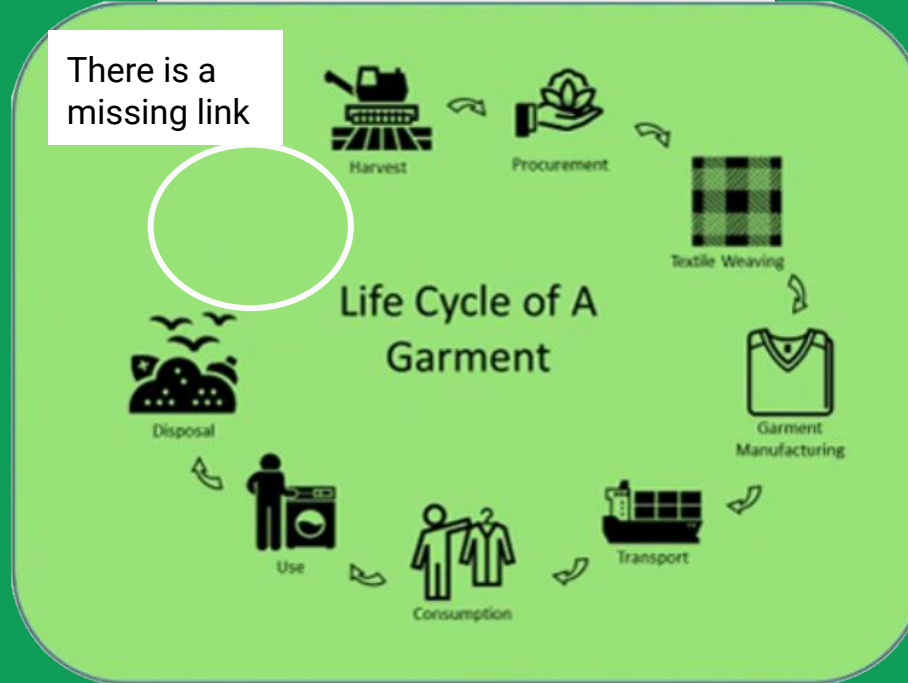
-Energy used to
**create a piece of
clothing.**

Key terms: Waste

Waste:

-Disposal

-Possible new step:
reuse, regrow, or
biodegrade





The solution? **Bio-fashion**

“Rather than using a plant
to grow a fiber, you could
use a microbe to
synthesize cellulose”

- Suzanne Lee (2015, Interview with
NextNature.Net)

Production and Waste

Four approaches to sustainable bioengineering

Production



Producing textiles

Producing lab engineered thread and material.

Producing clothes

Growing ready to wear clothes,
Dyeing material with bacteria.

Disposal



Biodegradable

Can be put straight into the ground.

Reusable

“Feed” old garments to new batches of growing material.

Producing Textiles

- Growing material from bacteria
(Modern Meadows)
- Growing leather
(Bolt threads)
- Turning Algae into thread
(Studio Tjeerd Veenhoven)



Algae Threads about to be spun from Studio Tjeerd

Modern Meadows

By Suzanne Lee



Fermenting textiles



Bolt Threads' Lab grown leather

MYLO

The process begins with mycelium cells.



Billions of cells grow and form an interconnected 3D network.



We grow the cells on beds of renewable, organic matter.



We process the resulting network and tan and dye it to make Mylo™.



FALABELLA
PROTOTYPE
X STELLA
MCCARTNEY

MYLO DRIVER BAG




Manufacturing

Sustainable dyeing:

- Bacteria
(Living Colour)
(Faber Futures)
- Algae
(Algalife)



A photograph of a large warehouse filled with discarded clothing. The clothes are piled high, reaching up to the ceiling, and are of various colors including blue, yellow, pink, and white. A wooden ladder is leaning against the left side of the pile. The overall scene is dimly lit, emphasizing the vastness and disarray of the waste.

The end of use: Disposal

Biodegradable

Not changing fast fashion habits, just making products biodegradable

Spider silk sneakers from Adidas



AMSilk textiles



MycoTEX from NEFFA

Reuseable

AlgiKnit

“AlgiKnit creates textiles from biopolymers that can, when worn out, serve as nutrients for the next generation of AlgiKnit’s materials.”

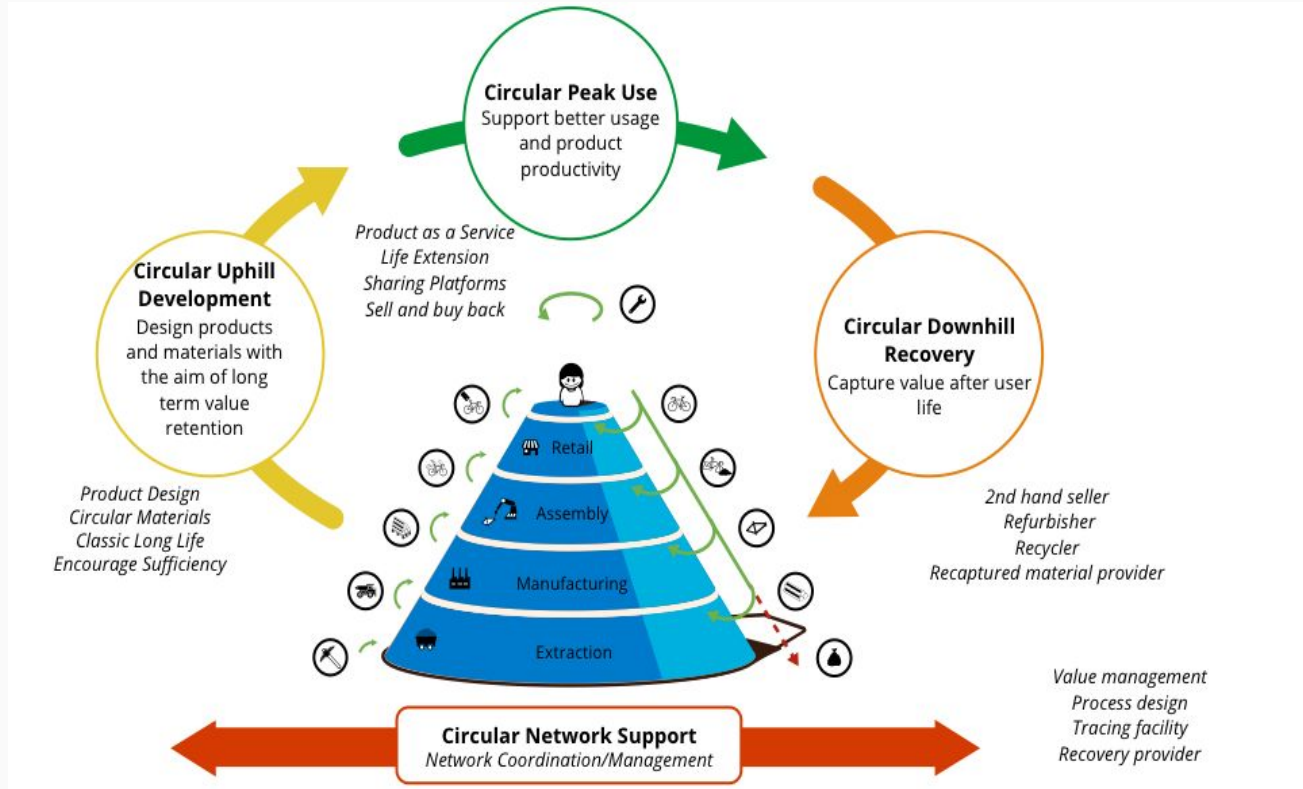
-NextNature.Net (Biotextiles, Meike Schipper 8/2/2019)

An interview with Tjeerd Veenhoven - Primary Research

Studio Tjeerd Veenhoven



Veenhoven with his first batch of processed Algae thread



How will Bio-fashion impact the fashion industry?

Production:

- Less water usage
- Less land needed
- Organic Dyeing
- Decrease demand for animal leather
- Custom grown clothing

Waste:

- Compostable
- Reusable



Bio-fashion can and will make the fashion industry more sustainable.

A photograph of a clothing store interior. In the foreground, there are several racks of clothes. On the left, a white knit top and a patterned jacket are visible. In the center, there are various shirts and sweaters in neutral tones. On the right, a colorful patterned shirt is hanging. The background shows more racks and a warm, yellowish light source, possibly a chandelier, creating a cozy atmosphere. The text "Thank You" is overlaid in a large, green, sans-serif font on a white rectangular background.

Thank You

(Bibliography on the next slides)

Name	Date updated	Title	Author	URL	Access date	Notes
Sew Dynamic Fibers	N/A copyrighted 2020	Textile pollution	Unknown	https://www.sewdynamic.com/pages/polyester-industry	10/8/2020	Pollution Graph
Edge Fashion Intelligence	N/A	Fashion Industry Waste Statistics	Unknown	https://edgexpo.com/fashion-industry-waste-statistics/	10/8/2020	Recyclable fashion stat
Next Nature . Net		Interview: Suzanne Lee, a fashion innovator who grows clothing in the laboratory	Alessia Andreotti	https://nextnature.net/2015/06/interview-suzanne-lee	21/6/2015	Inventor of the term biofashion
TedEx	July 2019	Why “biofabrication” is the next industrial revolution	Suzanne Lee	12:20Suzanne Lee: Why "biofabrication" is the next industrial ...	12/8/2020	Ted talk about bio fashion
Biofabricate	2019	Learn	n/A	https://www.biofabricate.co/learn	12/8/2020	How they make lab grown fashion
Modern Meadows	2020			http://www.modernmeadow.com/our-technology/	12/8/2020	
Bolt Threads		Meet Mylo		https://boltthreads.com/technology/mylo	12/8/2020	Mushroom leather
AlgiKnit	2020			https://www.algiknit.com	12/8/2020	
NEFFA	2020	MycoTEX		https://neffa.nl	12/8/202	The famous bio shirt
Living Colour				https://livingcolour.eu	12/8/2020	
Faber Futures	2020			https://faberfutures.com	12/8/202	

Name	Date updated	Title	Author	URL	Access date	Notes
Next Nature.Net (NNN)	8/2/2019	Bio Textiles: meet six designers changing the future of fashion	Meike Schipper	https://nextnature.net/2019/02/bio-textiles	5/8/202	<p>“Let’s celebrate the strong qualities of synthetic materials in an industry of slow fashion, and use biodegradable textiles to cater our wishes of fast fashion.”</p> <p>-LOTS of good things to look into</p> <p>-not very in depth</p> <p>-good reference point when stuck</p>
Labiotech.eu	25/2/202	How Biotechnology Is Changing the Way We Make Clothes	Clara Rodríguez Fernández	https://www.labiotech.eu/industrial/biofabrication-fashion-industry/	5/8/202	<p><i>“The fashion industry, like many others, is struggling to satisfy competing demands for performance and sustainability,”</i> explained Klein. <i>“On the one hand, consumers want products with better performance properties, and on the other, they are demanding more sustainable materials and production methods. Traditional materials cannot meet both demands, but biofabricated materials can.”</i></p> <p><i>-many designers and tech to check out</i></p>
Next Nature . Net	18/11/2016	These spider silk sneakers from adidas are biodegradable	Clara Rodríguez Fernández	https://www.labiotech.eu/industrial/adidas-amsilk-biodegradable-sneakers/	12/8/2020	Spider sneakers
AMSilk				https://www.amsilk.com/home/	12/8/2020	Adidas silk sneakers bioreactors
Algalife				https://www.algalife.com	12/8/2020	Pretty cool
Studio Tjeerd Veenhoven	2016	Algae fabrics	Tjeerd Veenhoven	https://www.tjeerdveenhoven.com/portfolio_page/algaefabrics/	12/8/202	Interview research