CIRCULARITY WORKBOOK: GUIDING THE FUTURE OF DESIGN

CIR·CU·LAR·IT·Y

CREATING PRODUCTS THAT LAST LONGER AND ARE DESIGNED WITH THE END IN MIND.

JOHN HOKE,
CHEIF DESIGN OFFICER
NIKE

At Nike, we believe in the unlimited potential of athletes.

Our job is to unlock that potential. We do so by imagining breathtaking and groundbreaking product that solves for problems holistically—thinking about design culturally, emotionally, and structurally. Fully.

We have an obligation to consider the complete design solution, inclusive of how we source it, make it, use it, return it, and, ultimately, how we reimagine it.

Inspired by Global Fashion Agenda, we have created **Circularity: Guiding the Future of Design.** The guide and its related workbook share principles that support a universal call to action for our industry: We must all come together and have a more positive impact on our planet.

Design has the opportunity to take on a powerful role in making the world a better place. Circularity puts us on a journey that focuses on achieving progress hour by hour, day by day, week by week, year by year.

By focusing on progress and not perfection and by making better choices, we embrace the chance to reconsider our craft in hope that it forms a ground swell of change.

THE FUTURE OF DESIGN IS ONE OF OPPORTUNITY.

NEW MODELS

ESTABLISHING NEW SERVICE AND BUSINESS MODELS TO EXTEND PRODUCT LIFE CYCLE.

MATERIAL CHOICES

SELECTING LOW IMPACT MATERIALS THAT USE PRE- & POST-CONSUMER RECYCLED FEEDSTOCK.

CYCLABILITY

DESIGNING WITH THE END IN MIND; THINKING THROUGH HOW A PRODUCT WILL BE CYCLED AT END OF USE.

CIRCULAR PACKAGING

PURPOSEFUL PACKAGING, MADE OF MATERIALS THAT CAN BE REPURPOSED, RECYCLED, OR BIODEGRADE.

WASTE AVOIDANCE

MINIMIZING OR ELIMINATING WASTE IN THE PRODUCT CREATION PROCESS.

DURABILITY

PRODUCTS MADE STRONGER BY METHOD OF MAKE AND MATERIAL CHOICES.

DISASSEMBLY

PRODUCTS THAT CAN EASILY BE TAKEN APART; RECOGNIZING THE VALUE OF EACH COMPONENT.

VERSATILITY

PRODUCTS THAT EASILY ADAPT TO GROWTH, STYLE, TREND, GENDER ACTIVITY, AND PURPOSE.

REFURBISHMENT

PROLONGING THE USE OF A PRODUCT THROUGH REPAIR OF COMPONENT PARTS OR MATERIALS.

GREEN CHEMISTRY

CHEMICAL PRODUCTS & PROCESSES THAT REDUCE OR ELIMINATE THE USE OF HAZARDOUS SUBSTANCES.

ACHIEVING CIRCULARITY AND A MORE SUSTAINABLE WORLD IS A COLLECTIVE EFFORT, STRENGTHENED BY THE EXPERTISE AND COMMITMENT OF MANY, AND ALWAYS EVOLVING. THIS GUIDE IS NOT SO DIFFERENT.

Circularity: Guiding the Future of Design was created in collaboration with the students and staff of Central Saint Martins, University of the Arts London, and with inspiration from Global Fashion Agenda, and insights from the Ellen MacArthur Foundation. Collectively, their candor, and passion, shared through countless conversations and work sessions small and large, informed a resource with wide reaching application. We are also grateful to have drawn on the expertise of Nike product creators across categories.

Through multi-day workshops and individual interviews, they graciously offered their considerations and best practices to inform how we all might design and create for greater circularity.

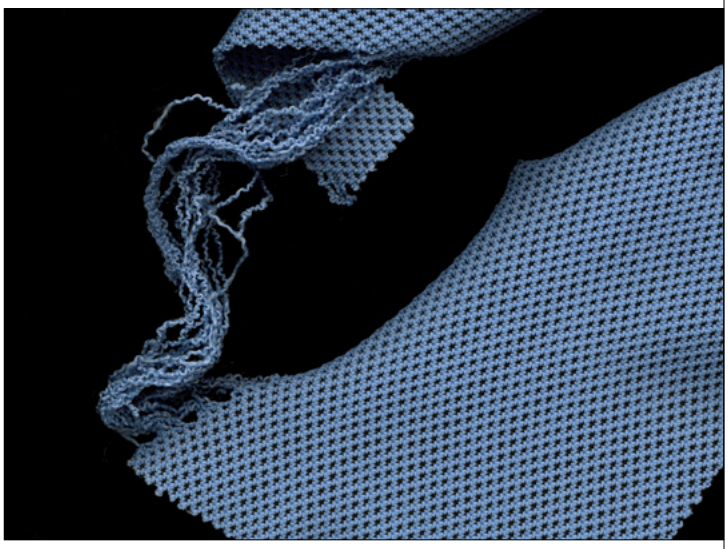
A special thanks to the industry leaders and innovators who generously allowed for their products, business models, and ideas to be featured in this guide as case studies.

MATERIAL CHOICES

SELECTING LOW IMPACT MATERIALS THAT USE PRE- & POST-CONSUMER RECYCLED FEEDSTOCK.

"Nobody has the golden answer. But our questions about our own processes and learning from others moves us all forward."

GOLNAZ ARMIN,
SENIOR DIRECTOR,
MATERIALS DESIGN
NIKE SPORTSWEAR



GOLNAZ ARMIN,
SENIOR DIRECTOR,
MATERIALS DESIGN
NIKE SPORTSWEAR

INTERVIEW WITH GOLNAZ ARMIN

What considerations go into your material choices?

"Materials often have the biggest impact on the environment. At a company like Nike, it's around 60% of our total impact when you consider chemistry, energy, and water. The way I see it we have no other choice. We have to make better material choices. It's complex, especially for footwear. To balance our aims of creating better products and more sustainable products, we have a lot of processes within our systems. We test every single material for restricted substances. We constantly update those restrictions to elevate standards. We innovate, such as changing the chemistry of airbags and figuring out waterless dye processes. Material choices is more than material selection. It's at a micro-level. It's about method of make. You might, for example, be using the same yarn but are you designing in a way that minimizes waste? There are manufacturing considerations. What kind of glues are you using? What kind of stitch are you using? Are you using heat to mold something or to add texture? As well, how can we recycle waste to create new materials? As designers, we can't always impact the brief as much as we'd like. But we can consider our material choices in a way that balances consumer insights with design goals with circular design goals. For example, if you don't have a choice of switching from leather to Flyleather, how can you be more precise about the amount of leather you'll need? Are you using leather from a factory that has a recycling water system, or are they using renewable energy? Can you think about your pattern cutting or aesthetic in a way that minimizes waste? Nobody has the golden answer. But our questions about our own processes and learning from others moves us all forward."

"The way I see it we have no other choice. We have to make better material choices."

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. WHAT ARE THE REQUIRED, BENCHMARK AND/OR IDEAL MATERIALS? WHAT ABOUT STANDARD TRIMS AND NOTIONS?

A.

B. BASED ON THE ENVIRONMENTAL IMPACT, HOW COULD MATERIAL CHOICES BE RECONSIDERED TO LESSEN THE PRODUCT'S IMPACT?

B.

C. IF YOUR DESIGN USES A NON-RENEWABLE RESOURCE (POLYESTERS, FOAMS, METALS), CAN THAT MATERIAL BE EASILY DISASSEMBLED AND RECYCLED?

C.

D. HOW COULD YOU USE RECYCLED CONTENT INSTEAD OF VIRGIN MATERIALS?

D.

E. HOW COULD YOUR DESIGN INCORPORATE NATURAL FIBERS (COTTON, FLAX, SILK, WOOL, ETC), BIOMATERIALS, OR LAB-GROWN MATERIALS (MUSHROOM LEATHER, SPIDER SILK, ETC.) THAT HAVE A LOWER CARBON, WATER, AND CHEMISTRY IMPACT THAN THE BENCHMARK COMPARISON MATERIAL?	E.
F. COULD YOU USE ALTERNATIVE TRIMS AND NOTIONS OR REDESIGN THE STANDARD OPTIONS TO LESSEN IMPACT?	F.

G. WHAT ANALOGS FROM OTHER INDUSTRIES OR NATURE COULD HELP FURTHER REFINE YOUR DESIGN?

G.

H. COULD THE USE OF MONO-FIBER MATERIALS LESSEN THE IMPACT OF YOUR DESIGN?	H.
I. DOES THE SELECTED BLEND OF MATERIALS LIMIT OR PREVENT RECYCLING WITH AVAILABLE TECHNOLOGY?	I.
J. HOW COULD YOU ELIMINATE OR MINIMIZE THE USE OF MATERIALS AND FINISHES THAT USE TOXIC OR HAZARDOUS CHEMICALS?	J.
K. WHICH DYE METHODS WILL YOUR DESIGN REQUIRE? HOW COULD YOU ADJUST YOUR DESIGN TO MINIMIZE THE IMPACT OF THE DYE PROCESS?	K.

L. IN WHAT WAYS DOES YOUR SUPPLY CHAIN (VENDORS, SUPPLIERS, INFRASTRUCTURE) ADHERE TO CIRCULAR AND SUSTAINABLE PRACTICES?	L.
M. HOW CAN YOUR MATERIAL CHOICE INCREASE THE LIFE CYCLE OR DURABILITY OF THE PRODUCT?	M.
N. HOW COULD YOUR MATERIAL CHOICE ALLOW A PRODUCT TO BE REFURBISHED?	N.
O. HOW COULD YOUR MATERIAL CHOICE INCREASE THE LIFE CYCLE OR DURABILITY OF THE PRODUCT?	O.

Circle Dress 1.0 from designer Bundgaard-Nielsen represents an advance towards circular economy. Namely in regards to the choice of material, as the dress is made from upcycled pre-consumer waste, re-introducing textile deadstock. The textile is locally sourced and aims to minimize the demand for new raw materials as well as diverting it from unnecessary incineration or disposal onto landfills as waste.

Additional life enhancing features of the dress are the adjustable size and fit-flexible seam allowance as well as the detachable underarm-pads, for increased versatility and less wear and tear due to hardship of washing.

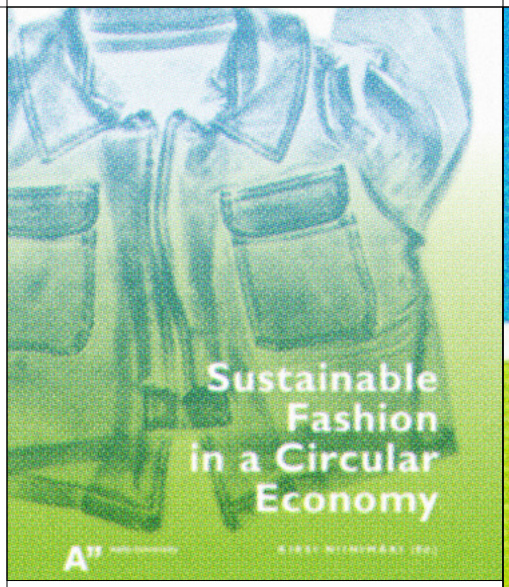
BUNDGAARD NIELSEN

A great challenge for the textile recycling industry is to separate fiber blends so the different fibers can be recycled in their different systems. By creating a product that consists of only one material, a mono-material product, Tierra facilitates and optimizes the recycling process. The Tierra Flon Jacket is an example of a circular economy as it is made of 100% recycled polyester from PET-bottles and is optimized for future recycling as well.

TIERRA

Flyleather is Nike's most sustainable engineered leather material ever, made from at least 50% leather fiber.
It's created using leather manufacturing scraps that would otherwise go to landfill.

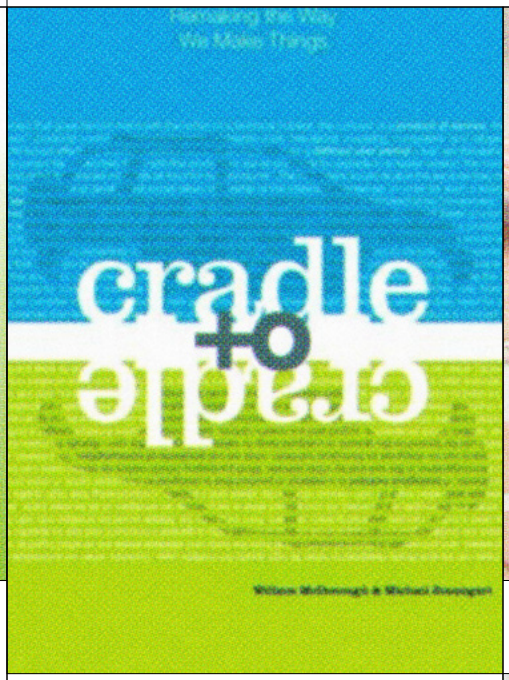
NIKE FLYLEATHER



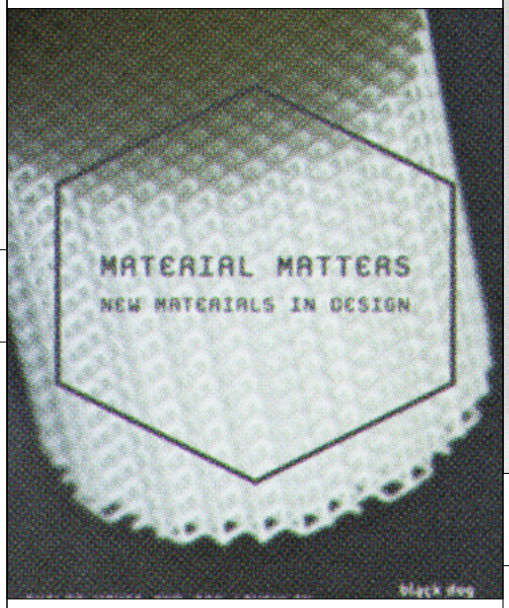
"Sustainable Fashion in a Circular Economy" by Kirsi Niinimäki

Milano Design Week

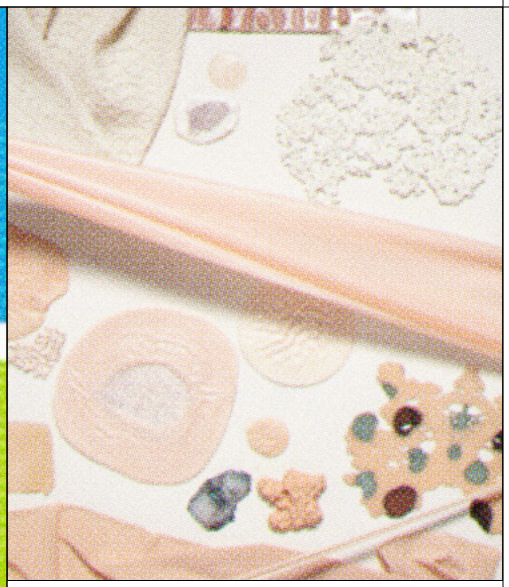
Milan Design Week



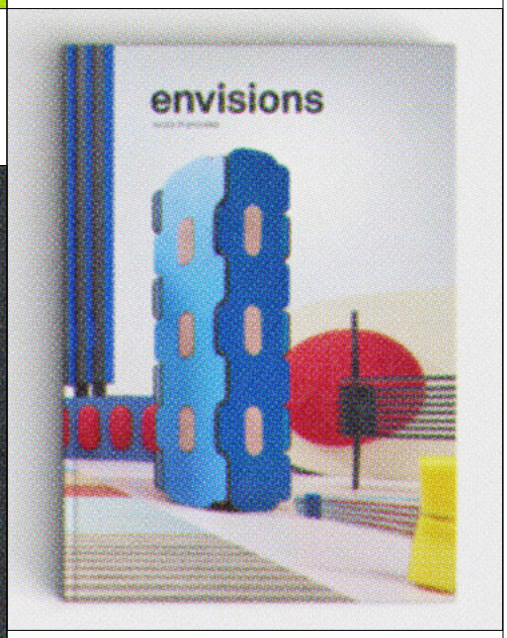
"Cradle to Cradle: Remaking the Way We Make Things" by William McDonough & Michael Braungart



"Material Matters: New Materials in Design" by Philip Howes & Zoe Laughlin

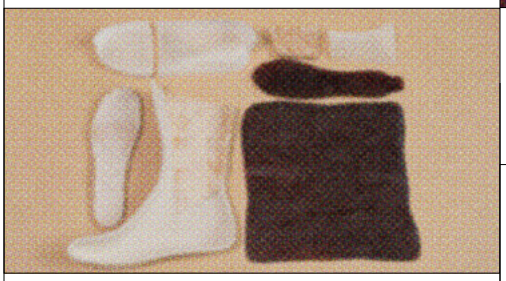


Franklin Till Studio

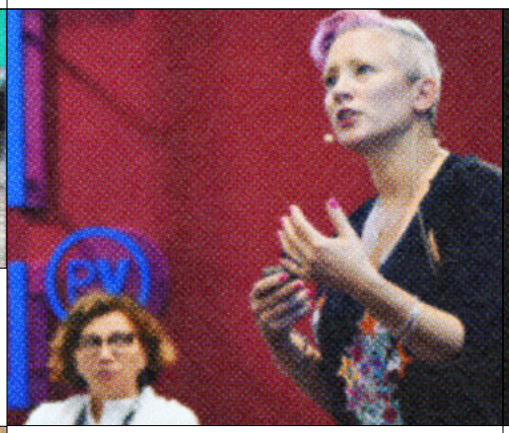


"Envisions: Wood in Process"

"Why Materials Matter: Responsible Design for a Better World" by Seetal Solanki and Liz Corbin



Maurizio Montalt - Officina Corpuscoli



Rebecca Earley
Designer, Researcher, Educator and Facilitator for Circular Textiles

TED Textiles

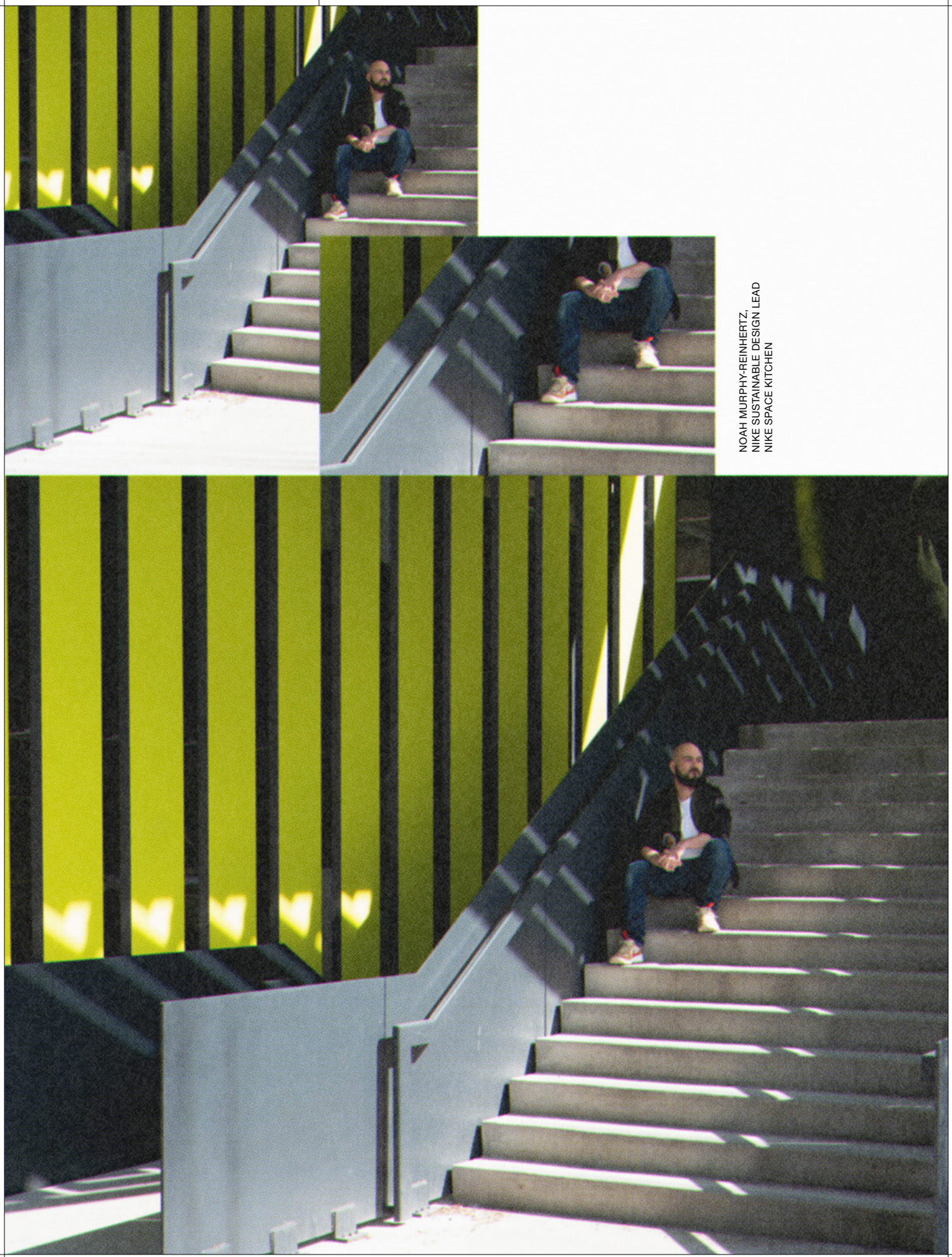
Plastic Pollution Coalition

CYCLABILITY

DESIGNING WITH THE END IN MIND; THINKING THROUGH HOW A PRODUCT WILL BE CYCLED AT END OF USE.

"Are there elements in this cycle that actually enhance the value of something? Can we design a product that increases in value with use?"

NOAH MURPHY-REINHERTZ,
NIKE SUSTAINABLE DESIGN LEAD
NIKE SPACE KITCHEN



NOAH MURPHY-REINHERTZ,
NIKE SUSTAINABLE DESIGN LEAD
NIKE SPACE KITCHEN

NOAH MURPHY-REINHERTZ

When did cyclabiltiy become a driver for your work?

"In consumer products you really start to see the impact of product life cycle. How long can any of these things that we're designing last given the rate of technological change or fashion cycles and material choices? As I got deeper in my career, I was seeing a one-way stream of materials and investment going off the cliff and wanted to figure out what to do about it. Circular design and Cyclability emerged as the farthest reaching approach. It allowed us to think about immediate and future impact of the design process, to pull a number of different levers from a design point of view, and to think beyond the initial material choice of the initial inputs. We asked questions like, "Are there elements in this cycle that actually enhance the value of something?" and "Can we design a product that increases in value with use?" We consider material value up front and what processing and recycling does to that performance. If a material won't last past one or two cycles, that's not ideal. We're also considering refurbishment potential and modularity—can we augment the design to increase the life cycle? Can additional services re-up the value, or even elevate it? What does disassembly look like? There's a lot to consider, and significant challenges, with cyclability. That's fun because, as a designer, you want more interesting challenges all the time."

"There's a lot to consider, and significant challenges, with cyclability. That's fun because, as a designer, you want more interesting challenges all the time."

LEVI'S

Levi Strauss & Co. makes garments that are built to last, and its commitment to sustainability does not end at the point of sale.

Through LS&Co.'s partnership with Cotton Incorporated's Blue Jeans Go Green™ denim recycling program, consumers in the US and Canada who bring used denim—of any brand, in any color and condition, as long as it is dry and clean—into stores get 20% off one full-priced item, and the denim is later transformed into insulation for community buildings and low-income housing.

The program complements other efforts to extend the life of denim and reduce textile waste, such as in-store tailor shops that repair and repurpose used garments; the Levi's® Authorized Vintage line; and the ongoing development of more circular design strategies.

NIKE GRIND

Twenty-five years ago, a revolutionary idea was born. To use the power of sport to create a zero waste future and healthier planet, demand that materials perform beyond a single use, and to do more with less. What began as a grassroots initiative that collected and recycled used shoes to create basketball courts is now a global sustainability innovation that spans the sport industry and beyond. Last year, Nike and Converse contract factories recycled over 3 million pounds of Grind rubber back into our footwear.

GLOBAL FASHION AGENDA

An essential part of creating a circular fashion system is to set up collection systems, integrate circular design, and consider how to manage end-of-use of garments. The GFA Textile Recycling Toolbox is a learning tool designed to support fashion brands and retailers who would like to increase the share of recycled post-consumer textile fibers in their production. Today, less than 1% of material used to produce clothing is recycled into new clothing. Check out/ Download this toolbox for more circularity actions, and steps brands can take towards improvement.

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. WHAT PROCESSES WILL BE REQUIRED TO RECYCLE THE MATERIALS, TRIMS, AND NOTIONS OF YOUR PRODUCT? HOW COULD YOU ADJUST THE DESIGN TO REQUIRE FEWER RECYCLING PROCESSES AND MINIMAL ENERGY?

A.

B. HOW CAN YOU CLEARLY REPRESENT ALL MATERIALS AND TRIMS ON LABELS OR ONLINE?

B.

C. HOW COULD YOUR MATERIAL CHOICES BE ADJUSTED TO MAKE RECYCLING EASIER? (MONO-FIBER AND/OR MONO-MATERIAL CHOICES, NON-TOXIC FINISHES, ETC.)	C.
D. CAN COMPONENTS SAFELY DECOMPOSE WITHOUT ADDITIVES OR OXO-DEGRADABILITY? IF NOT, ARE THE ADDITIVES NEEDED CAUSING UNNECESSARY HARM?	D.
E. HOW COULD YOUR DESIGN INTEGRATE RECYCLED MATERIALS AND COMPONENTS TO DRIVE THEIR MARKET VALUE?	E.
F. HOW CAN THE PRODUCT BE COLLECTED FROM THE CONSUMER AT THE END OF USE? IS THE METHOD EASY (I.E. WOULD YOU PRIORITIZE IT IN YOUR SCHEDULE)? HOW COULD IT BE MADE EASIER OR MORE EFFICIENT?	F.

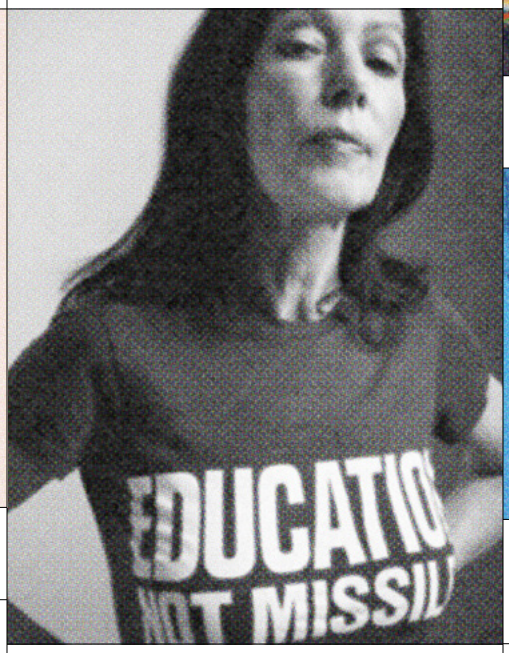
G. HOW COULD YOU ADJUST YOUR DESIGN SO THE PRODUCT INCREASES IN VALUE WITH USE?	G.
H. HOW COULD VALUABLE MATERIALS BE REINTEGRATED WITHIN YOUR COMPANY, THE FASHION INDUSTRY, OR ANOTHER INDUSTRY?	H.
I. WHICH PARTNERS, RESOURCES, OR BUSINESS MODELS CAN BE LEVERAGED OR CREATED TO FACILITATE CYCLABILITY?	I.

DiscoMake (Fashion Revolution)

Fashion Transparency Index
(Fashion Revolution)

Fashion Revolution

Bethany Williams



Katharine Hamnett

Helen Kirkum

Priya Ahluwalia

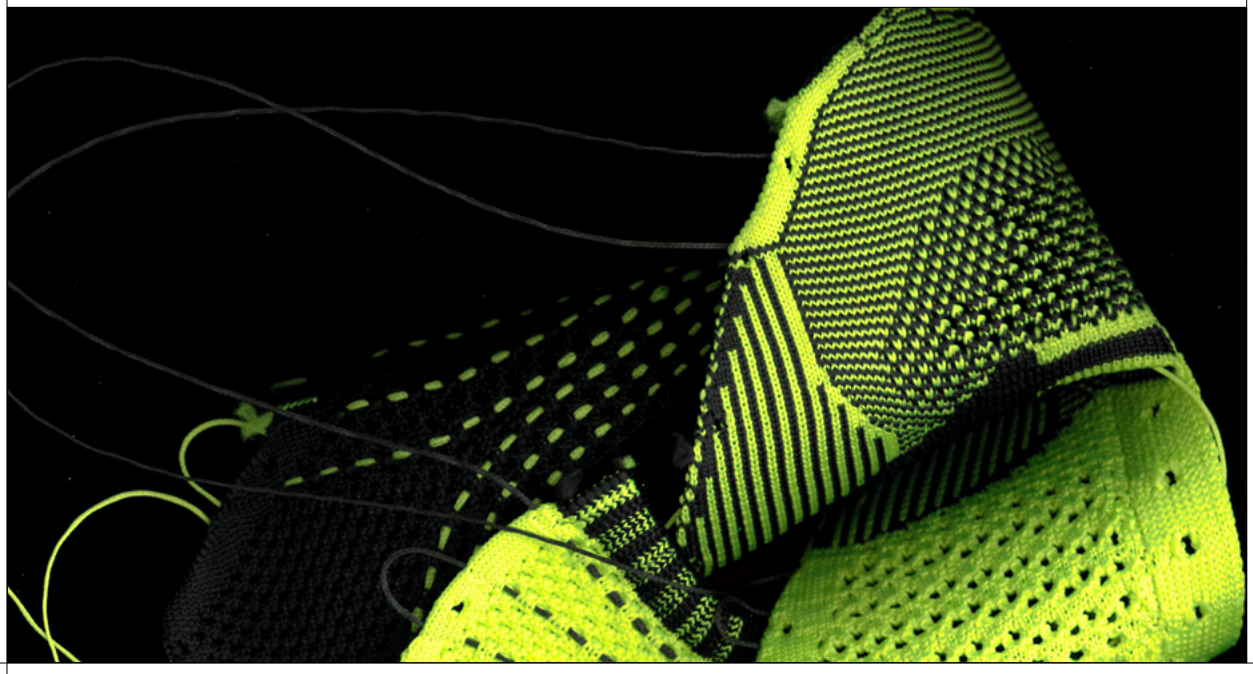
Textile Exchange Preferred
Materials Report

WASTE AVOIDANCE

MINIMIZING OR ELIMINATING WASTE IN THE PRODUCT CREATION PROCESS.

"It's really exciting and compelling that so many circularity principles interweave: waste avoidance, new business models, repair, durability, and versatility."

JOANNE JØRGENSEN,
DIRECTOR MATERIALS DESIGN
NIKE KNIT



JOANNE JØRGENSEN,
DIRECTOR MATERIALS DESIGN
NIKE KNIT

INTERVIEW WITH JOANNE JØRGENSEN

How do you combine your passion for knit with circular design practices?

"I've been exploring uses for knit my entire career. It never appealed to me to cut shapes out of flat materials. I was looking at knits for shoe design and performance sports but it was the 90s and nobody was doing it. I was very excited when Flyknit launched in 2012. Eighteen years later, someone was doing what I wanted to do.

Flyknit disrupts the traditional "cut-and-sew" method. Footwear uppers are made directly from yarns to the precise specifications of the shoe. Because we're only making what we need, a shoe made with Flyknit creates 60% less scrap waste than a typical shoe upper. To date, NIKE has transformed more than 6 billion plastic bottles into recycled polyester footwear and apparel. That's from waste reduction in the creation process and from recycling plastic bottles to make some of the yarns.

The whole framework for it was a massive "How might we…" question. We refurbished machines, thought through supply chains, and expanded our understanding of the expertise required. With Flyknit, we are bridging the gap between design and advanced manufacturing. Our team is diverse and specialized. It's more specialized than I think most people would assume is required to make a shoe.

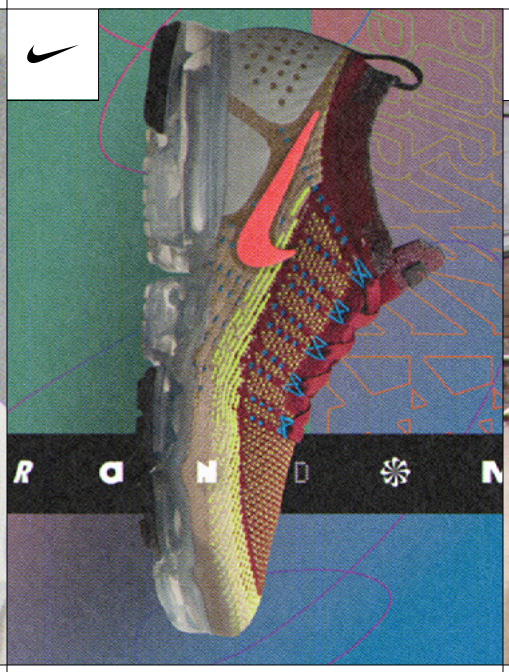
But that's a key to circular design—we have to think about everything, and relentlessly ask questions. We see the waste that we create. What do we do with that waste? We're always investigating what's new. Can we make yarns that are more sustainable? More performant to support more categories? It requires us to design with modularity in mind. And to think about new business models.

It's really exciting and compelling that so many circularity principles interweave: waste avoidance, new business models, repair, durability, and versatility. The piece I'm really excited to sort out is refurbishment. Flyknit is challenging because once the yarns start to unravel, it's easy to assume the product is useless. You can't darn it like a sweater. But what if you could? We're thinking about wear points, durability, and new yarns that could solve for a longer life cycle to prolong the shoe's story and journey with the consumer."

> "I think only by understanding that the current system isn't sustainable, can you really think about designing the future of it."

A collaborative, creative fashion studio where daily design meets responsible production, alongside monthly events, discussions and workshops. Christopher and his team have pioneered the reworking of surplus fabrics and garments to create distinctive and functional pieces, bringing responsible design to a main-stream fashion audience and presenting a new definition of luxury with integrity.

CHRISTOPHER RAEBURN



Nike Flyknit disrupts the traditional shoe making “cut-and-sew” method where material pieces were cut into shapes, leaving behind a lot of waste. Instead, it creates footwear uppers directly from yarn to the precise specifications of the shoe.

NIKE FLYKNIT

EILEEN FISHER is taking responsibility for what it makes, starting by designing clothes that last. When customers no longer need them, the brand takes its clothing back—1.2 million pieces since 2009—to be reworn, remade, or felted into something new. It’s how they’re designing a future without waste.

EILEEN FISHER

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. HOW COULD YOU CONCEPT AND DESIGN TO INCREASE PATTERN EFFICIENCY (NESTED, SQUARE/ GEOMETRIC) AND MINIMIZE PATTERN PRINTING?

A.

B. WHAT PROTOTYPE APPROACHES ARE YOU PLANNING TO USE? CAN YOU USE ALTERNATIVE APPROACHES THAT AVOID WASTE (E.G. DIGITAL SAMPLES, REDUCING/REPURPOSING SAMPLES AND PROTOTYPES)?

B.

C. HOW COULD YOU LEVERAGE ADDITIVE MANUFACTURING (3D PRINTING) TO REDUCE PROTOTYPE WASTE?

C.

D. HOW COULD POST- INDUSTRIAL SCRAP BE INTEGRATED (ALIGNED WITH BRIEF, AESTHETIC AND CONSUMER NEEDS/ DESIRES)?

D.

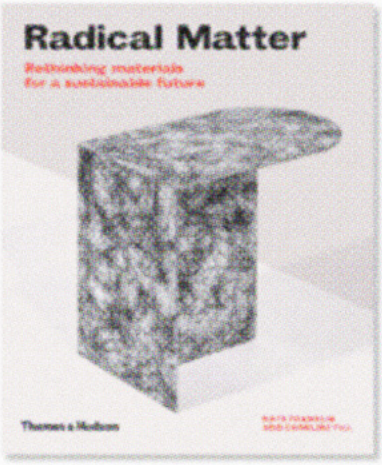
E. HOW COULD YOU ADJUST YOUR BUSINESS MODEL TO AVOID WASTE (E.G. MADE TO ORDER QUANTITIES)?	E.
F. HOW WILL YOUR SELECTED PATTERN METHOD ALIGN WITH THE MANUFACTURER'S METHOD OF MAKE?	F.

“Manufacturing Processes for Design Professionals” by Rob Thompson

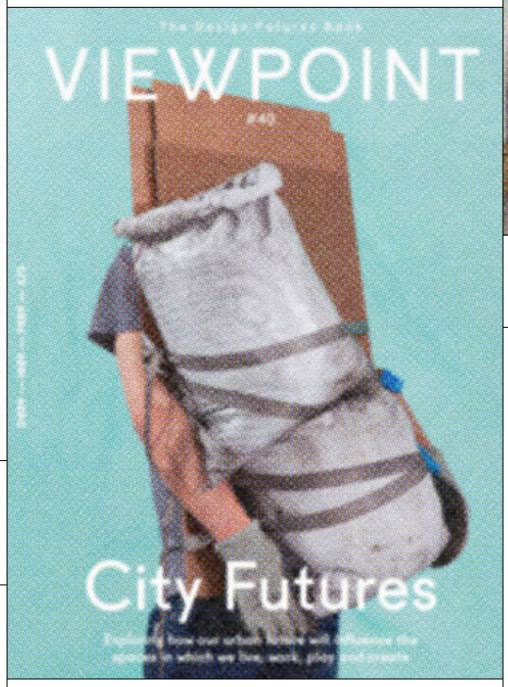
“The Vulgar: Fashion Redefined” by Jane Allison

Fashion East

Stitched Recycled Fabrics



“Radical Matter: Rethinking Materials for a Sustainable Future” by Kate Franklin

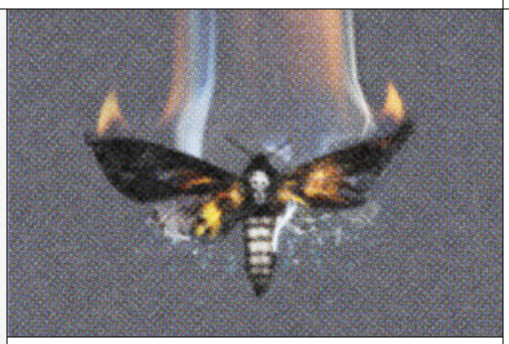


Viewpoint

SMHR +

CLASH

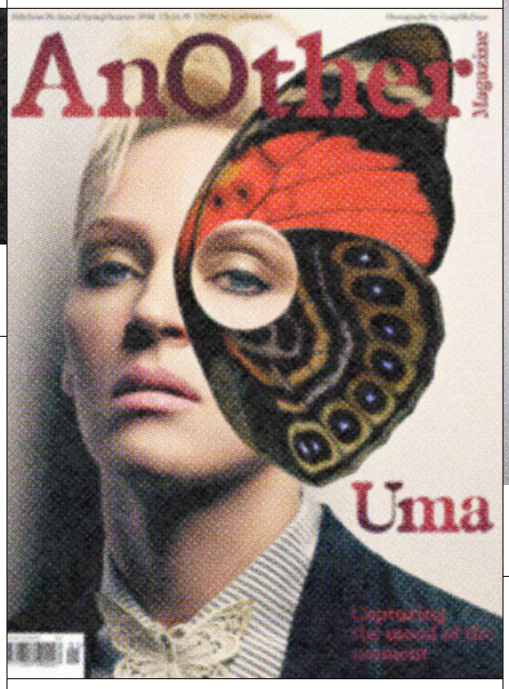
Clash



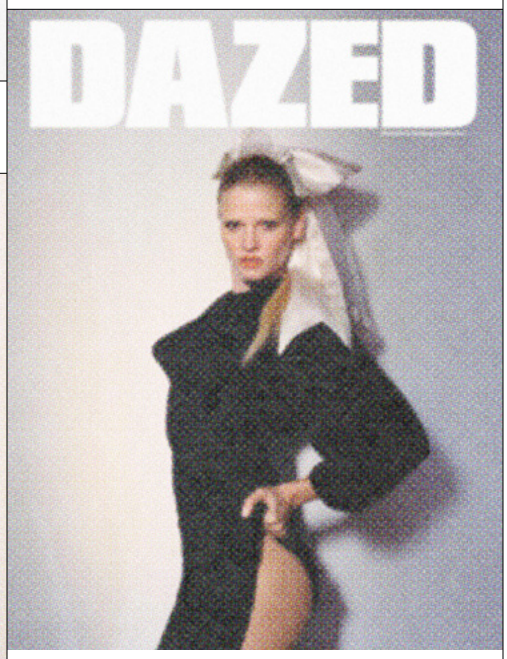
Sarabande Foundation

1 GRANARY

1 Granary



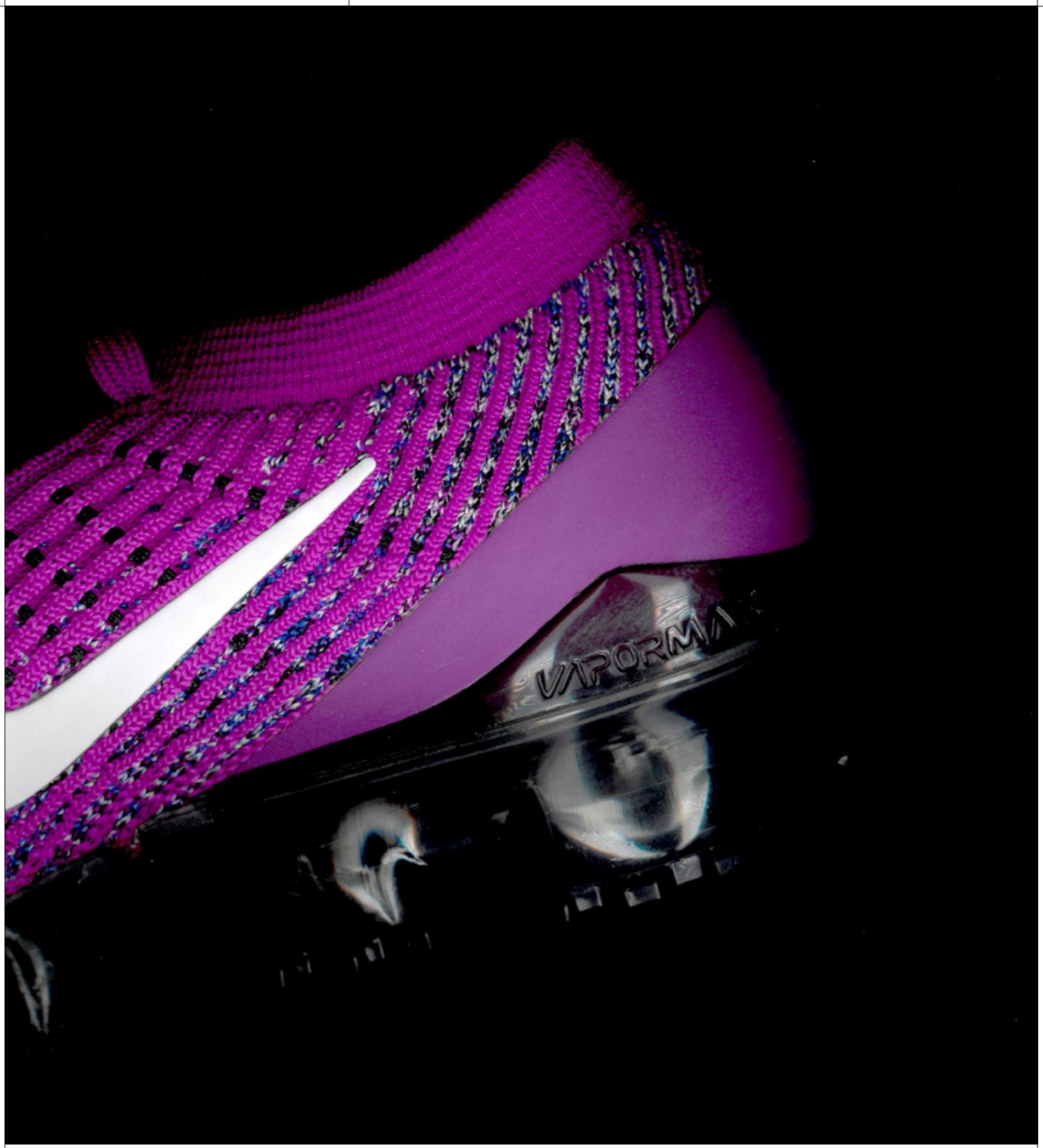
Another Mag



Dazed Fashion

DISASSEMBLY

PRODUCTS THAT CAN EASILY BE TAKEN APART; RECOGNIZING THE VALUE OF EACH COMPONENT.



We're used to the idea that a shoe is a shoe. But, it's actually a treasure trove. The sole morphs into a playground surface, a yoga mat, a therapeutic vest, and countless other forms. Trims and seams accent a jacket. A component is removed and the whole is just as performant.

Every product Niche makes generates zero-waste in manufacturing and all components are recyclable at the end of life. In traditional ski and snowboard manufacturing, 5-40% of raw input materials are wasted, ending up in a landfill. Recyclamine® curing agents are the only epoxy hardeners available that enable full recyclability of thermosetting epoxy resins. The resins within the snowboard can be dissolved and broken apart using a chemically benign solution, enabling us to harvest all structural components and materials. These materials can then be recycled, repurposed, or upcycled to create other new products.

NICHE

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. WHAT ARE THE REQUIRED, BENCHMARK AND/OR IDEAL THREADS, ADHESIVES, EYELETS, JOINERY, AND CLOSURES?

A.

B. HOW COULD YOU DESIGN FOR PERSONALIZATION VIA CHANGEABLE/MODULAR COMPONENT OPTIONS?

B.

C. HOW EASILY CAN THESE COMPONENTS BE DISASSEMBLED? WHAT IS THE IMPACT OF THEIR DISASSEMBLY? (CONSIDER TOOLS, TECHNOLOGY, AND CHEMISTRY NEEDS.)

C.

D. HOW COULD MATERIAL CHOICES THAT EASILY DISASSEMBLE AFFECT DURABILITY?

D.

E. CAN A COMPONENT BE REMOVED AND THE PRODUCT STILL PERFORM TO EXPECTATIONS?

E.

F. HOW COULD THE WHOLE PRODUCT BE GIVEN A SECOND LIFE?	F.
G. HOW COULD EACH COMPONENT BE UPCYCLED, RECYCLED OR DOWNCYCLED AT THE END OF THE PRODUCT LIFE CYCLE? DOES EACH COMPONENT HAVE VALUE APART FROM THE WHOLE PRODUCT?	G.

H. WILL A CONSUMER BE ABLE TO DISASSEMBLE THE PRODUCT? IF NOT, ARE THERE EASY (I.E. WOULD YOU PRIORITIZE IT IN YOUR SCHEDULE) METHODS TO RETURN THE PRODUCT TO THE BRAND OR A THIRD-PARTY FOR DISASSEMBLY AND RECYCLING?

H.

I. HOW COULD YOUR DESIGN INTEGRATE RECYCLED MATERIALS AND COMPONENTS TO DRIVE THEIR MARKET VALUE?

I.

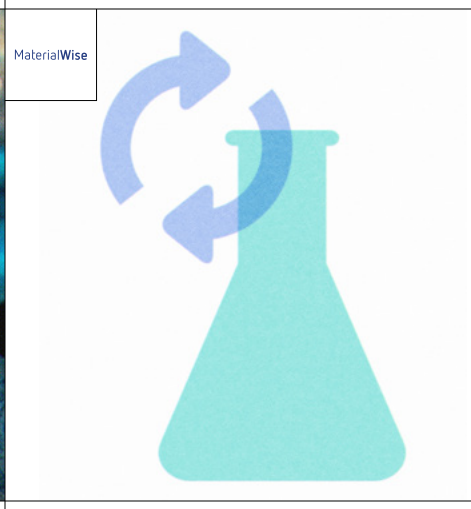
GREEN CHEM— ISTRY

CHEMICAL PRODUCTS & PROCESSES THAT REDUCE OR ELIMINATE THE USE OF HAZARDOUS SUBSTANCES.

Before pen goes to sketch pad or a stitch is sewn, they are checking the Restricted Substances List (RSL), researching advancements in finishes and materials. Their design will be aesthetically stunning and also highly sustainable. Green Chemistry is not a “nice to have” in their studio. It’s a professional ethic.

NIKE CHEMISTRY PLAYBOOK

Chemistry is essential to product innovation and manufacturing, but can affect the sustainability of our product creation process. Our target is to achieve zero discharge of hazardous chemicals (ZDHC).



MATERIAL-WISE

Better chemistry is key to unlocking the economic potential of the circular economy.

MaterialWise offers free access to the most extensive database of known hazards so that you can proactively eliminate ingredients that can contaminate future recycled feedstocks.

Knowing what not to use is a good start, but wondering what to use instead? MaterialWise helps industry participants identify and evaluate safer alternatives with an innovative cost-sharing model that will ensure the value of material feedstocks being put into the market and avoid regrettable substitutions.

MaterialWise can help you create essential building blocks for a safe and circular economy.

CRADLE TO CRADLE

Cradle to Cradle Certified™ is a globally recognized measure of safe and sustainable products for the circular economy. The standard serves as a transformative pathway for designing and making products that positively impact humans and the environment, beginning with a material health requirement that helps designers and product developers start with the greenest material chemistries—resulting in products that are both safe and circular.

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. WHAT IS THE IDEAL PRODUCT PURPOSE AND FUNCTIONAL VALUE? WHAT ARE YOUR RESOURCES, OR WHAT TYPES OF PARTNERSHIPS/ EXPERTISE DO YOU NEED TO FIND GREEN CHEMISTRY SOLUTIONS TO IDENTIFIED ISSUES? HOW COULD YOU FURTHER BALANCE THESE PRIORITIES IN THE CONCEPT AND DESIGN PHASE?

A.

B. WHAT ARE THE CHEMICAL PROS AND CONS TO POSSIBLE MATERIALS AND FINISHES? WHAT ARE THE LONG-TERM REPERCUSSIONS?

B.

C. WHAT PART(S) OF THE PRODUCT WILL GENERATE OR USE THE MOST HAZARDOUS SUBSTANCES? (KEEP IN MIND IT MAY NOT BE THE MOST OBVIOUS.)

C.

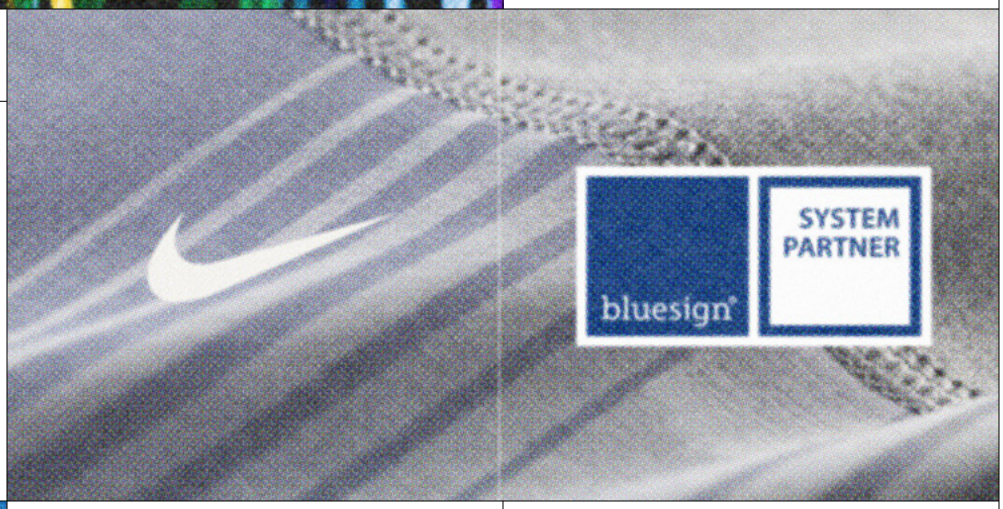
D. HOW COULD YOU ELIMINATE OR MINIMIZE HARMFUL SUBSTANCES OR PRACTICES THROUGH YOUR MATERIAL CHOICES?

D.

E. HOW COULD GREEN CHEMISTRY BE USED AS A DESIGN TOOL?	E.
F. HOW COULD PLANT-BASED MATERIALS OR FINISHES ACHIEVE THE SAME PERFORMANCE OR AESTHETIC AIMS AS SYNTHETIC OPTIONS?	F.

G. HOW COULD YOU INTEGRATE CHECK POINTS IN YOUR PROCESS TO ENSURE ADHERENCE TO GREEN CHEMISTRY BEST PRACTICES (E.G. RESTRICTED SUBSTANCES LISTS, ETC.)?	G.
H. WHAT OUTSIDE RESOURCES COULD YOU LEVERAGE TO ADHERE TO GREEN CHEMISTRY STANDARDS?	H.
I. WHAT IS THE IMPACT OF RECYCLING A PRODUCT? CAN IT BE REDUCED THROUGH DIFFERENT DESIGN AND MATERIAL CHOICES?	I.

Zero Discharge of Hazardous Materials



Bluesign

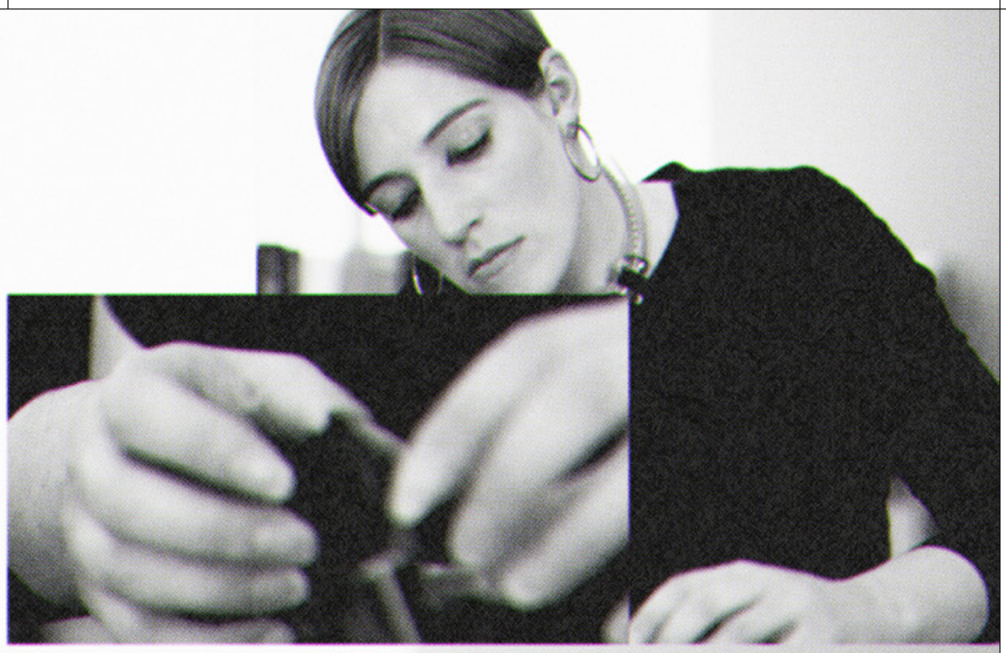
AFIRM Group

REFURB-ISHMENT

"I think designing for refurbishment is critical in returning to an attitude of retaining and coveting products with stories, and looking to extend those stories."

PROLONGING THE USE OF A PRODUCT THROUGH REPAIR OF COMPONENT PARTS OR MATERIALS.

MARIE CROW,
DIRECTOR MATERIALS DESIGN
NIKE WOMEN'S SPORTSWEAR



MARIE CROW,
DIRECTOR MATERIALS DESIGN
NIKE WOMEN'S SPORTSWEAR

INTERVIEW WITH MARIE CROW

What influences your appreciation of refurbishment?

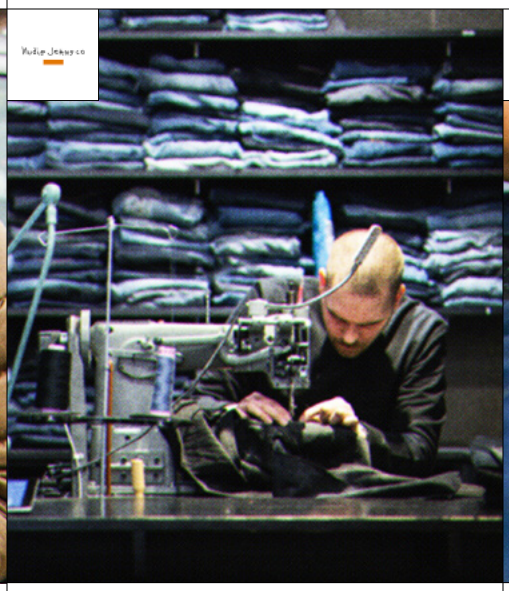
"As professional designers, now more than ever, we're working through a colossal materials waste challenge. It would be irresponsible to be working in the field of design and not be challenging myself to consider how to extend the life of what I make or the life of what already exists. My mum and grandmother came from the post-World War II era of the "make, do and mend" initiative. That was a significant influence on my own ideas about refurbishment, what it can look like to be resourceful, respectful, and creative with materials. If a jacket tore, you patched it. If shoes wore down, the cobbler could re-sole them. We've moved away from this mindset in current culture but I think designing for refurbishment is critical in returning to an attitude of retaining and coveting products with stories, and looking to extend those stories. It directly impacts a cultural shift to purchasing product that we want to retain. We can encourage that shift by designing for customer insights and needs, making progressive and desirable products so there is value in repairing and refurbishing them and the wearer feels invested.

We also get there by thinking through the details of the product. Where will it wear out first? Can we push our wear-test norms to better understand that detail? How can high-use areas be re-designed? Can we resource the consumer with education, repair kits, how tos, etc.? What about pop-up shops dedicated to refurbishing or customizing a loved piece? That's a particularly fun idea: how do we resource the consumer to become the designer and director of their product's next life?"

"It would be irresponsible to be working in the field of design and not be challenging myself to consider how to extend the life of what I make or the life of what already exists."

PATAGONIA

Since 2005, Patagonia's Worn Wear program has been encouraging its customers to keep their gear in use by recycling, repairing, and reusing their garments. In 2015, Worn Wear hit the road to repair clothing out of their truck and trailer around the U.S., and now, Worn Wear tours are on the road in Europe, Japan, and South America to repair any brand of clothing (not just Patagonia) for free. Then, in 2017, Worn Wear began buying back functional, used Patagonia gear from its customers and launched its own re-commerce business, where consumers can buy quality used Patagonia gear on WornWear.com for a fraction of the new garment price.



NUDIE JEANS

Every pair of Nudie Jeans comes with a promise of free repairs. The free repair service is deeply rooted in Nudie Jeans effort to take responsibility for the product's lifecycle. Nudie Jeans philosophy of break-in, repair, reuse, and recycle is all about closing the loop.

In 2018, Nudie Jeans repaired a total of 55,173 pairs of jeans, prolonging the life of the garments and saving a lot of water and energy.

ATELIER & REPAIRS

Waste Less. Reimagine More.

Atelier & Repairs is an initiative - leading with design and creativity to drive social and environmental change towards a circular economy. Inspired by the principle of refurbishment we re-imagine what already exists through intentional design by transforming the found and leftover into well-made and long-lasting pieces.

0% Production. 100% Transformation.

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. WHAT COMPONENTS MAKE UP THE GARMENT OR SHOE? WHAT IS THE COST OF EACH PIECE?	A.
B. CAN YOUR PRODUCT BE REPAIRED/ REFURBISHED BY A REPAIR PROFESSIONAL (TAILOR, COBBLER, ETC.)? IF NOT, IS THE BARRIER A MATERIALS CHOICE THAT COULD BE RECONSIDERED?	B.
C. WHICH COMPONENTS ARE PRONE TO BREAK OR WEAR OUT? WHY? HOW COULD THEY BE DESIGNED/BUILT WITH GREATER DURABILITY?	C.
D. ARE COMPONENTS EASY TO DISASSEMBLE AND REPLACE?	D.
E. WHAT EQUIPMENT OR MATERIALS WILL A REPAIR REQUIRE?	E.

F. CAN THE FINISHES BE EASILY REFURBISHED? (EXAMPLES: WATER REPELLENCY, REFLECTIVE MATERIAL)	F.
G. ARE SPECIFIC PRODUCTS OR CATEGORIES IN YOUR PRODUCT LINE OR COMPANY IDEAL FOR REPAIR AND/OR REFURBISHMENT? HOW COULD YOU HIGHLIGHT THOSE PRODUCTS?	G.
H. COULD SOMEONE WITH NO FORMAL REPAIR TRAINING REPAIR YOUR PRODUCT? WHAT INFORMATION OR RESOURCE COULD YOU PROVIDE TO INCREASE THEIR CONFIDENCE TO REPAIR OR REFURBISH?	H.

I. HOW COULD YOU BUILD REPAIR KITS, INCLUDING INSTRUCTIONS, INTO THE GARMENT, OR PROVIDE THEM WITH PURCHASE?

I.

J. WHAT WOULD IT TAKE TO HOST AN IN-STORE REPAIR AND REFURBISHMENT POP-UP?

J.

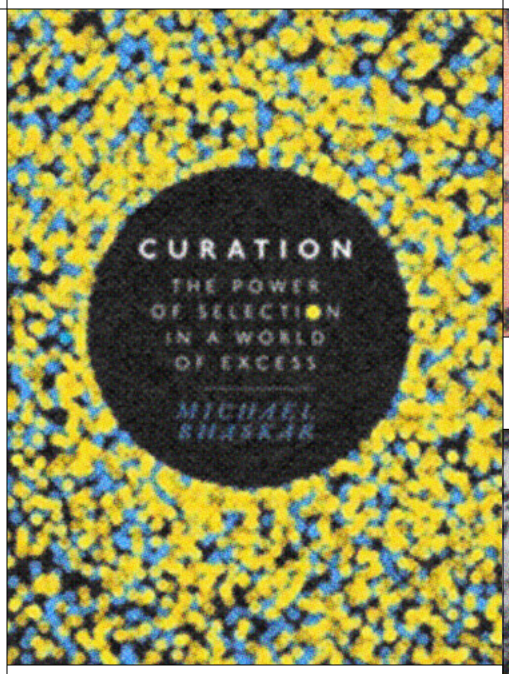
K. WHAT DIGITAL RESOURCES COULD BE CREATED?

REPAIR “HOW TOS” PROVIDED WITHIN BRAND SITE, OR LINK TO RESOURCES.

VIRTUAL MAP OF LOCAL REPAIR FACILITIES, CRAFTS PEOPLE AND PROFESSIONALS (TAILORS, COBBLERS, ETC.).

RECOMMENDED VENDOR LIST FOR PURCHASING STANDARD COMPONENT PARTS.

K.



"Curation: The power of selection in a world of excess" by Michael Bhaskar

Make Do & Mend Movement

Faye Toogood

Less Plastic UK

A Cold Wall

materiom

Materiom

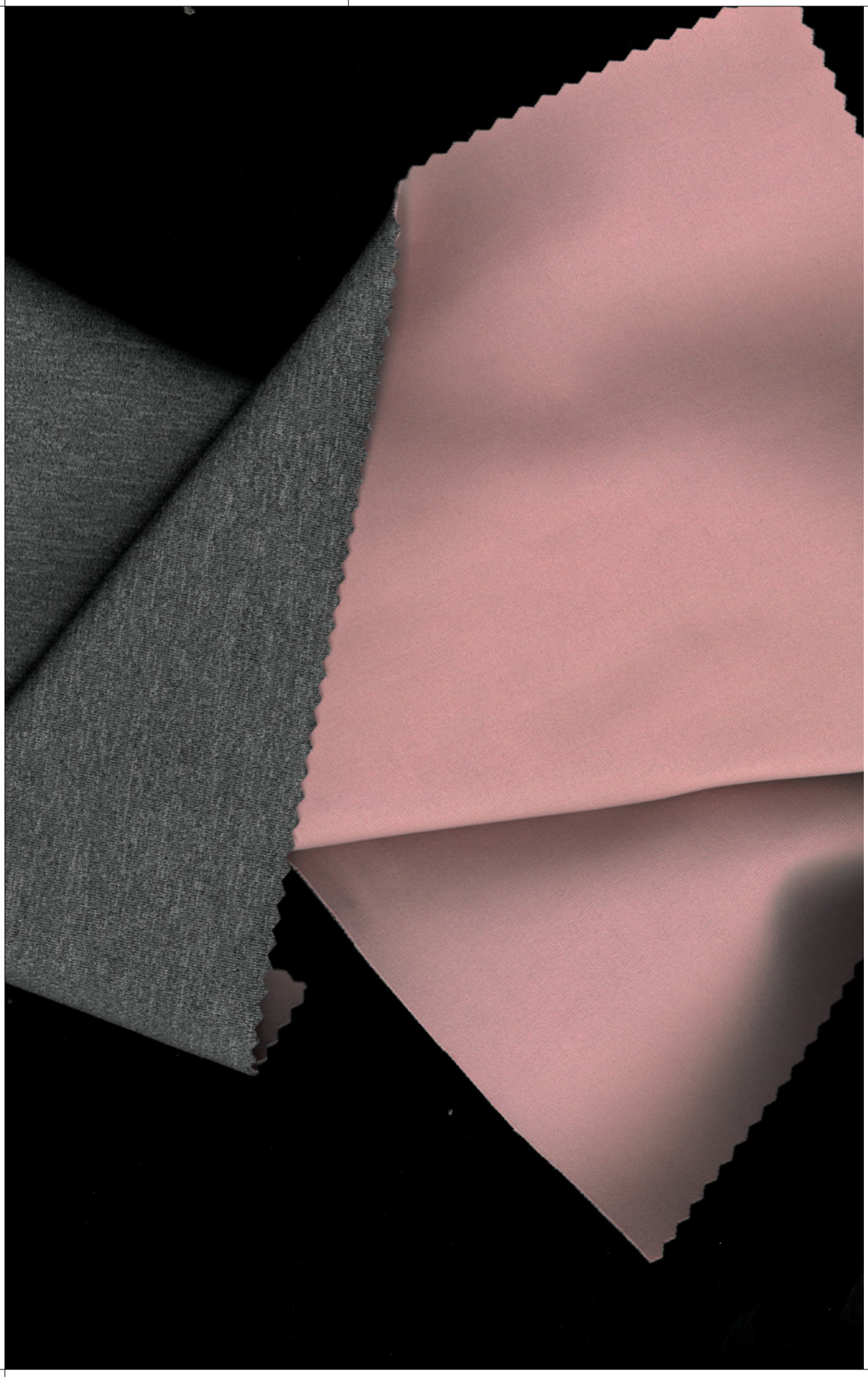
Riposte

Apartamento

Disegno
The Quarterly Journal of Design

Disegno

INSPIRATION



VERSATILITY

RAJ MISTRY,
APPAREL DESIGNER II
NIKE MEN'S SPORTSWEAR

PRODUCTS THAT EASILY ADAPT TO GROWTH, STYLE, TREND, GENDER, ACTIVITY, AND PURPOSE.

"As designers, we get to build versatility in from the beginning. Can this garment transition from running to a night on the town? Can I design it in a way that is gender-fluid?"

RAJ MISTRY,
APPAREL DESIGNER II
NIKE MEN'S SPORTSWEAR

INTERVIEW WITH RAJ MISTRY

> “When we create with a curious, “what if” ethos, we pass that same ethos on to our consumers through products that encourage their own exploration.”

What things do you consider when designing for versatility?

“As designers, we get to build versatility in from the beginning. Can this garment transition from running to a night on the town? Can I design it in a way that is gender-fluid? To get there, gentle briefs, good guidelines not mandates, are what spark ideas and encourage creators to explore. We can think outside the status quo or consider history to inform our current designs. For example, the kimono is a highly versatile silhouette, minimizes waste, and can be adapted and customized. When we create with a curious, “what if” ethos, we pass that same ethos on to our consumers through products that encourage their own exploration. We can show the versatility of a product, script it and the way it can be used, and showcase that on social media and in our digital and retail experiences. But in reality, we’re not there to tell the consumer ‘this does this and that’. They decide, ‘Oh this looks good, I’m going to do this.’ But we can join in that journey through our designs. And when we create versatile products, we create greater opportunity for consumers to emotionally connect and value them, effectively prolonging the life and use of those products.”

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. WHAT IS THE PURPOSE OF THE PRODUCT? HOW COULD YOUR DESIGN ALLOW IT SERVE OTHER PURPOSES (E.G. WORKING OUT TO A NIGHT OUT) OR BE USED IN A WIDER RANGE OF ENVIRONMENTS?

A.

B. HOW COULD YOUR PRODUCT MORPH AS A PERSON'S PHYSICAL SIZE CHANGES? WHAT DURABILITY OR MATERIAL CHOICE CONSIDERATIONS ARE NECESSARY TO ACHIEVE THAT AIM?

B.

C. HOW COULD YOU SOURCE AND USE HUMAN INSIGHTS TO INFORM THE VERSATILITY OF THE PRODUCT?

C.

D. WHEN DESIGNING FOR ATHLETIC ACTIVITIES, WHAT ARE DIFFERENT APPLICATIONS WITHIN A SPORT (E.G. DIFFERENT PLATES FOR DIFFERENT PITCHES IN SOCCER)?

D.

E. HOW COULD YOUR DESIGN INCORPORATE TIMELESS SILHOUETTES AND COLORS TO OUTLIVE AND INTEGRATE WITH TRENDS?

E.

F. HOW COULD YOU ADJUST OR BREAK THE BOUNDARIES OF USE ESTABLISHED BY SOCIETY OR CULTURE (BASED ON GENDER, ETC.)?

F.

G. HOW COULD YOU USE A NEW BUSINESS MODEL TO EDUCATE PEOPLE ABOUT THE PRODUCT'S VERSATILITY, OR VERSATILE USES IN GENERAL?

G.

Designing out waste across entire value chains is critical to the global uptake of circular systems. London-based Petit Pli designs out waste by engineering versatile garments that grow.

Petit Pli garments are embedded with an auxetic structure that expands bi-directionally to mimic the growth of children aged 9 months to 4 years—that's 7 discrete sizes.

The result is a design that streamlines the manufacturing process, drastically reducing waste and emissions at production, transportation, and end of use, whilst encouraging slow consumption in the next generation.

PETIT PLI

DURABILITY

"There isn't a one-size-fits-all metric for durability. It is an exercise in balancing priorities for creators and consumers."

PRODUCTS MADE STRONGER BY METHOD OF MAKE AND MATERIAL CHOICES.

SHELBY STEINER,
APPAREL DESIGNER II
NIKE LAB

How do you consider durability as you design?

"There isn't a one-size-fits-all metric for durability. It is an exercise in balancing priorities for creators and consumers. For example, in performance wear, there is a desire and need to use lightweight materials. Too lightweight, however, could compromise tear strength. And none of us want to buy something we think is going to fall apart but we might determine that a t-shirt lasting a year is blue-sky but a piece of outerwear should last a decade.

As a designer, I start with research and my briefs. And then, as I sketch, I'm thinking about how I can imbue durability while staying true to the aesthetic of the output. Can I use a flat-lock seam? It's an extra step but it is more secure and aesthetically it looks beautiful. Can I reinforce points I know will wear quicker? And can I do that by using excess material from my pattern cutting to avoid waste? I try to remind myself that while my final product has to meet expectations, the concept and design phase is where I can have a bit more of a "perfectly imperfect" mindset, test, prototype, and try new ideas to improve the product. I think that goes a long way in allowing me to focus on the possibilities, think through my approach and make confident decisions in my approach and how I use my resources."

INTERVIEW WITH SHELBY STEINER

"As a designer, I start with research and my briefs. And then, as I sketch, I'm thinking about how I can imbue durability while staying true to the aesthetic of the output."

SHELBY STEINER,
APPAREL DESIGNER II
NIKE LAB

“Everything we make has an impact, so the most important sustainability priority for us is to ensure that our products are durable and can be worn and loved for as long as possible. This means both withstanding the test of time, but also having a timeless design to create the emotional longevity that makes you want to use the garment for years. The durable G-1000 material, coupled with designing for reparability and providing the Greenland Wax for you to care for and prolong your product’s lifetime, are at the core of our sustainability efforts.”

FJALLRAVEN

“Durability is a standard of ours, not a claim. Our Lifetime Guarantee is great for our customers, but to be real, it keeps us accountable. We don’t want to see socks come back. So we scrutinize what is returned to make them even more durable. We believe in the age-old principle of making a legacy product. As a result, we limit the draw we have on finite resources by creating a more durable sock. And we’re thankful for that. It sets a tone and a culture we build on every day.”

DARN TOUGH VERMONT®

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. WHAT ARE THE ABRASION SCORES, TENACITY AND TEAR STRENGTH OF EACH COMPONENT? WHICH COMPONENTS ARE MOST LIKELY TO WEAR OUT FIRST? CAN A WORN OUT COMPONENT BE REMOVED AND THE PRODUCT STILL PERFORM TO EXPECTATIONS?

A.

B. HOW COULD THE STRUCTURE OF THE PRODUCT INCREASE DURABILITY? (USE OF MOLDED SUPPORTS, PATCHES, RESILIENT STITCH METHODS, ETC.)

B.

C. HOW COULD YOU MORE RIGOROUSLY TEST YOUR PRODUCT TO WITHSTAND WEAR AND TEAR? (FIT MODEL FEEDBACK, PERSONALLY TESTING PROTOTYPES, ETC.)

C.

D. HOW COULD SAFETY-IMPACTING COMPONENTS BE DESIGNED MORE DURABLY TO PROLONG THE LIFE CYCLE?

D.

E. HOW COULD YOUR SILHOUETTES AND COLOR CHOICES REMAIN RELEVANT FOR MULTIPLE SEASONS?

E.

F. HOW COULD YOU MORE CLEARLY EXPLAIN PRODUCT CARE TO ENCOURAGE LONGER USE?	F.
G. HOW COULD YOU PAIR VERSATILITY WITH DURABILITY TO CREATE A PRODUCT THAT WILL ADJUST AND LAST AS THE USER GROWS?	G.
H. CAN A CONSUMER EASILY REPAIR, REFURBISH OR RETURN A DURABLE PRODUCT THAT IS DAMAGED OR BROKEN? IF NOT, WOULD A NEW BUSINESS MODEL ACHIEVE THAT AIM?	H.
I. HOW COULD BLENDED MATERIALS INCREASE DURABILITY? (KEEP IN MIND BALANCING THAT WIN WITH THE REALITIES OF TECHNOLOGY AND ADDITIONAL ENERGY REQUIRED TO RECYCLE BLENDED MATERIALS.)	I.

J. HOW COULD YOU DESIGN A PRODUCT PEOPLE CAN CONNECT TO EMOTIONALLY AND/OR FIND VALUE IN FOR A LONGER LIFE CYCLE?

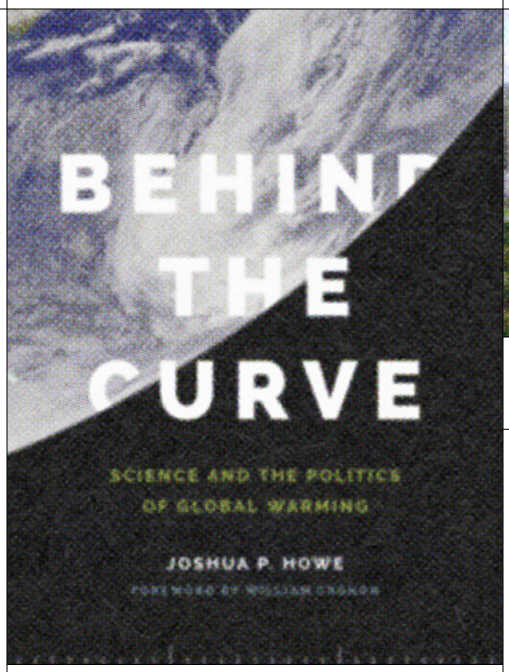
J.

K. HOW COULD THE STORY OF MATERIAL ATTRIBUTES AND METHOD OF MAKE BE GIVEN SUBSTANTIAL IMPORTANCE IN THE PRODUCT NARRATIVE?

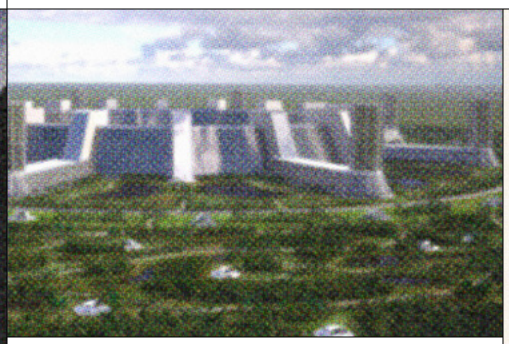
K.

L. HOW COULD YOU COMMUNICATE THE VALUE OF A WORN GARMENT/SHOE?

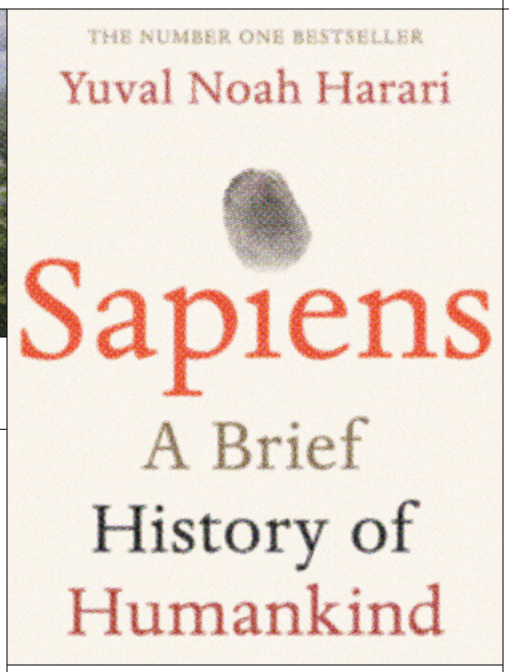
L.



"Behind The Curve: Science and the Politics of Global Warming"
by Joshua P. Howe

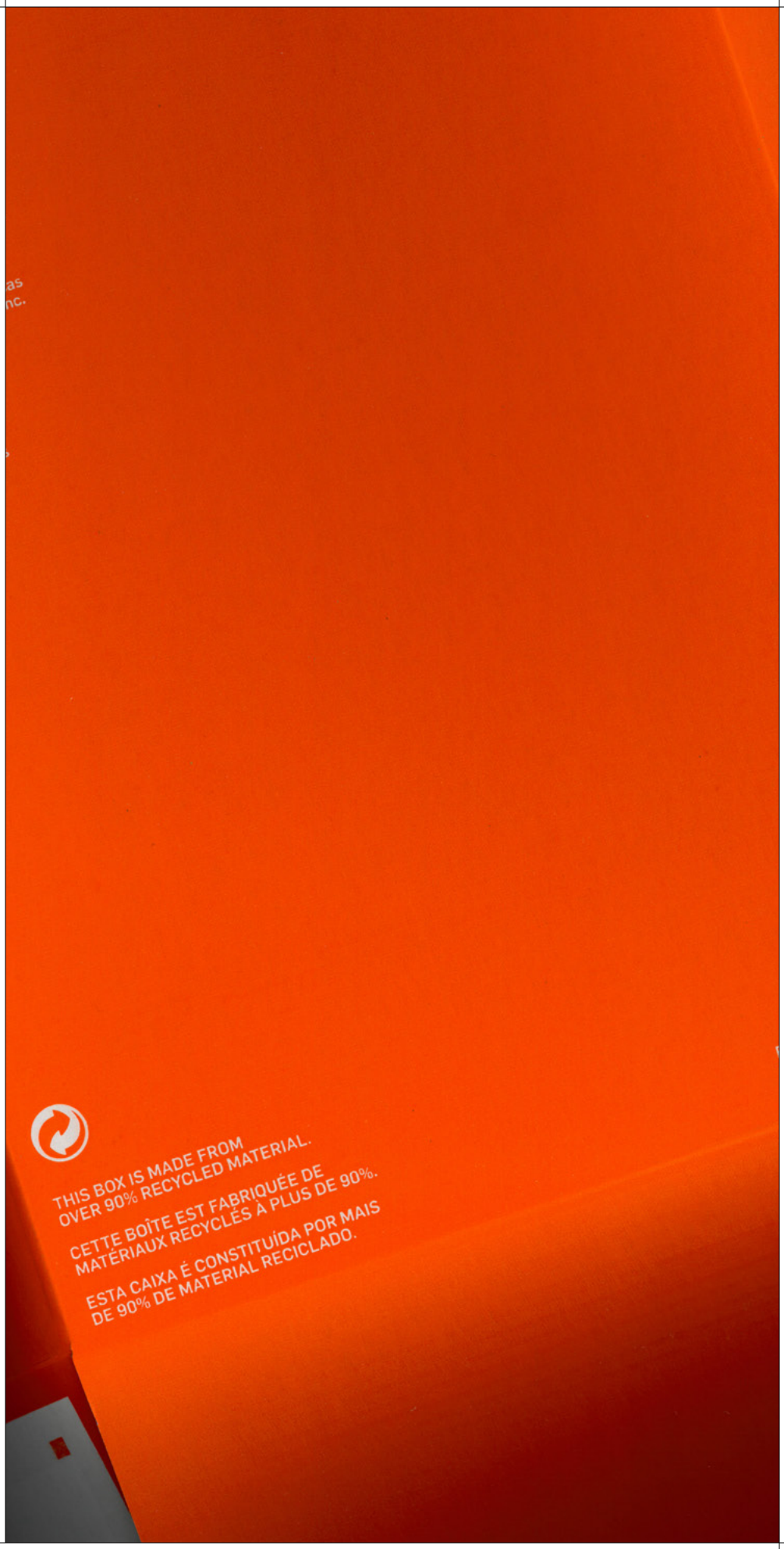


Venus Project



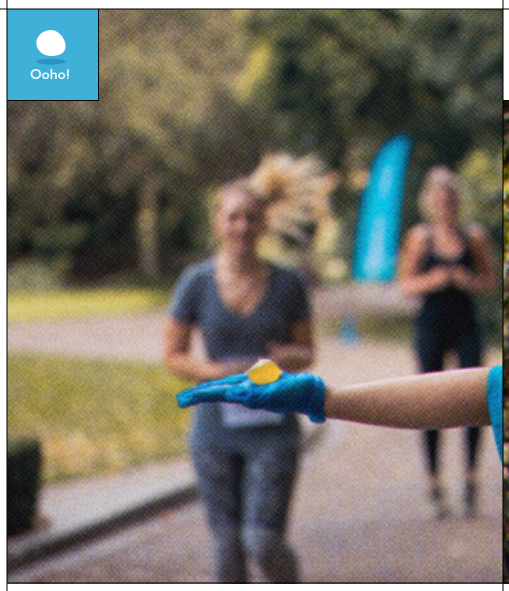
"Sapiens: A Brief History of Humankind"
by Yuval Noah Harari

CIRCULAR PACKAGING



PURPOSEFUL PACKAGING, MADE OF MATERIALS THAT CAN BE REPURPOSED, RECYCLED, OR BIODEGRADE.

Packaging has always had many lives. The shoe box becomes a storage container, a toy box, and the shield in the costume bin. The shipping box becomes a boat, a fort, and the aid in moving to a new space. When recycled, packaging lives on in new forms. The team is dreaming up more uses and new versions to create a more sustainable world.



Skipping Rocks Lab is an innovative sustainable packaging start-up based in London. They are pioneering the use of natural materials extracted from plants and seaweed, to create packaging with low environmental impact. Ooho is a naturally biodegradable, even edible packaging for liquids contained in a biodegradable material made from seaweed. Ooho is an alternative to single-use plastic packaging.

OOHO

Doing away with single-use plastic bags has been a hot topic for Outerknown since before they had a name. Since their inception they have used Green PE poly bags by Avery Denison that are made from renewable Brazilian sugarcane. OuterKnown's poly bags can be returned to standard recycling streams and the sugar cane is a non-GMO, non-food source and has a low impact in regard to land use conversion.

OUTERKNOWN

Ecovative developed the MycoComposite™ platform, a bio-based technology that uses mycelium (the root structure of mushrooms) and the agricultural byproduct of hemp, to grow 100% home compostable packaging. The product, Mushroom® Packaging, offers a high-performance packaging solution that is also certified Cradle 2 Cradle (C2C Gold), the highest certification for sustainable goods. Ecovative's mission is to grow better materials that are compatible with Earth.

ECOVATIVE

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. IS PACKAGING NEEDED FOR THIS PRODUCT? IF SO, WHY?

A.

B. HOW COULD THE PACKAGE BE A PART OF THE PRODUCT?

B.

C. HOW COULD THE PACKAGE TEACH THE CONSUMER SOMETHING ABOUT THE PRODUCT?

C.

D. HOW COULD THE PACKAGING MATERIAL FIT INTO SCALABLE RECYCLING OR COMPOSTING SYSTEMS?

D.

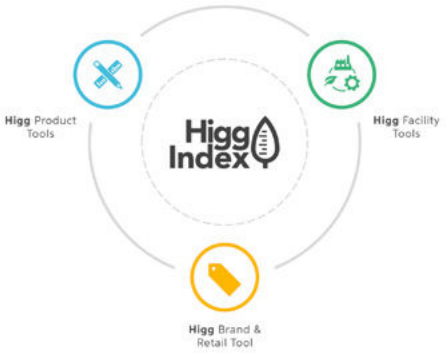
E. HOW COULD THE PACKAGING BE USED FOR REPAIR/ REFURBISHMENT OF PRODUCT?

E.

F. WHAT OTHER PURPOSE COULD THE PACKAGING SERVE?

F.

Sustainable Packaging Coalition



MSI HIGG Index

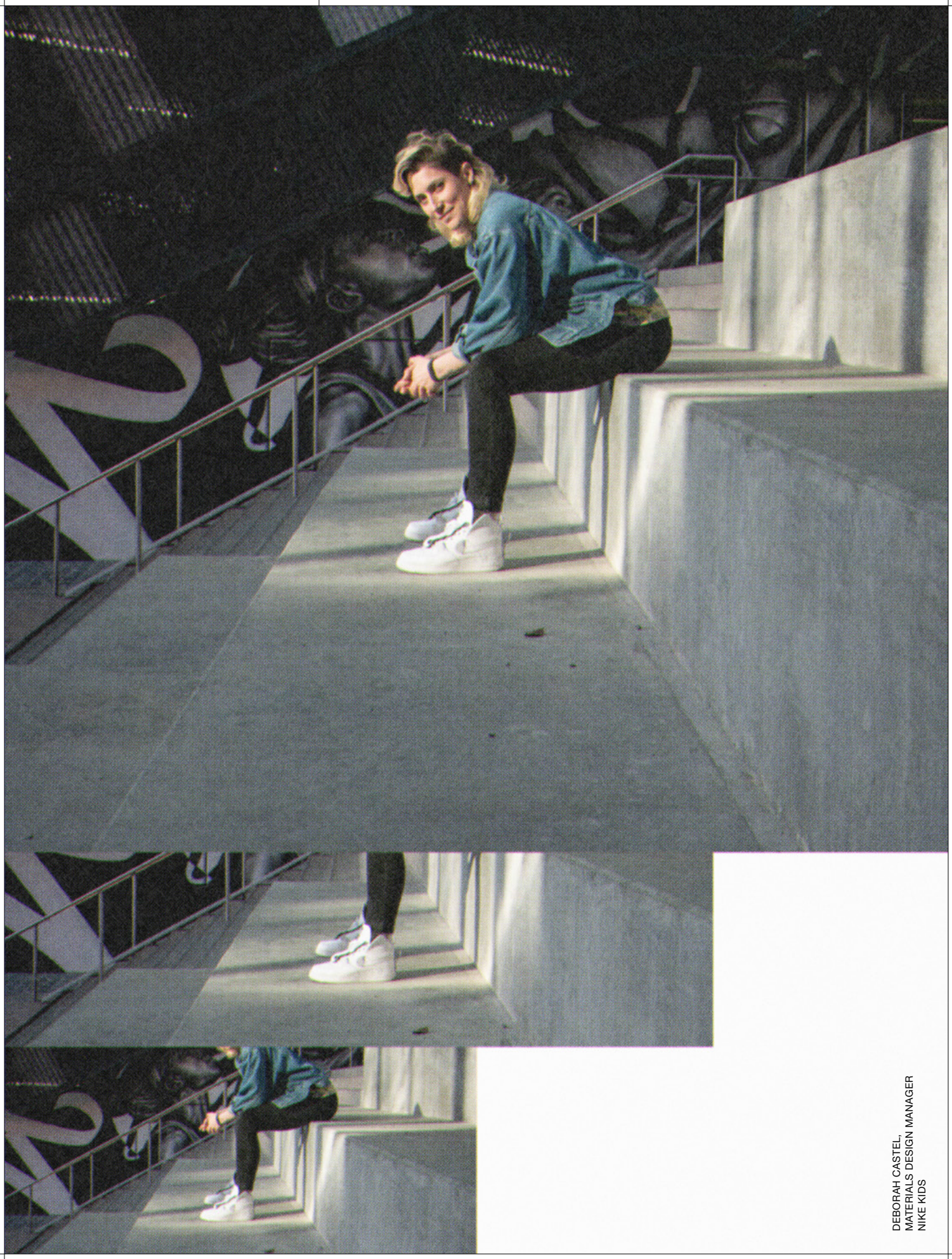
Piquet Life Cycle Analysis Tool

NEW MODELS

"The next generation of consumers will be making very well thought out, smart, and fluid decisions. We're generating innovative business models to meet their needs and ideals, to spark their curiosity about the make, and encourage connection."

ESTABLISHING NEW SERVICE AND BUSINESS MODELS TO EXTEND PRODUCT LIFE CYCLE.

DEBORAH CASTEL,
MATERIALS DESIGN MANAGER
NIKE KIDS



DEBORAH CASTEL,
MATERIALS DESIGN MANAGER
NIKE KIDS

INTERVIEW WITH DEBORAH CASTEL

How do you integrate new business models into your work?

"When you say sustainability, everyone kind of sparks. They're interested in it. They don't always know how to really be the cause and effect. They just know that they want to make a difference. There are a lot of people looking for something new and there are a lot of people with really great ideas doing something new. Longterm it's not about Nike simply making product. It's going to be about how we create a product and an experience to connect with the entire lifecycle of that product, whether it's subscription, customization, or simply a long term emotional connection. The next generation of consumers will be making very well thought out, smart, and fluid decisions. We're generating innovative business models to meet their needs and ideals, to spark their curiosity about the make, and encourage connection. AR. VR. Material choices. Packaging as storytelling. It all can be considered in a way that puts a new idea in the market and generates trust with consumers."

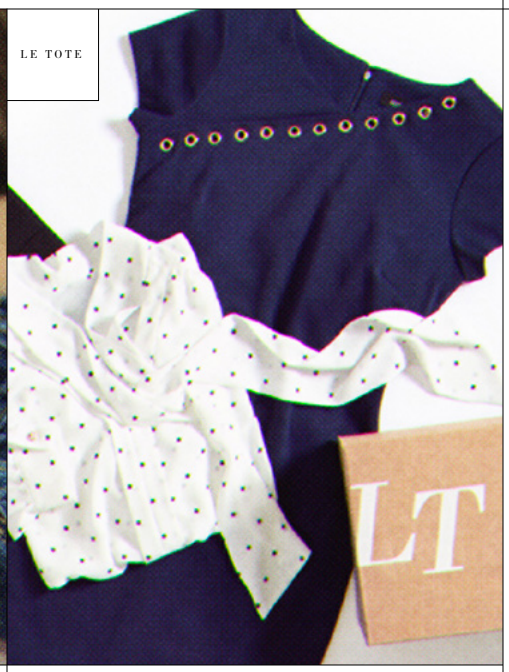
"There are a lot of people looking for something new and there are a lot of people with really great ideas doing something new."

For Days aims to free people from burden of closet clutter and clothing waste. Their closed loop, access model changes ownership for apparel we wear every day. When you join, your tees come with a membership which means when you are ready for a new shirt, you can swap the old one out for just $8, anytime, forever. For Days upcycles all the returned materials and you collect impact points rather than junk.

FOR DAYS

The Renewal Workshop (TRW) is one of the leading providers of circular solutions for apparel and textile brands. TRW helps brands reduce their negative environmental impacts and expand their businesses by adopting circular practices. For example, they work with leading companies to repair and refurbish inventory to ensure it lives up to its full potential. Their proprietary Renewal System takes discarded apparel and textiles and turns them into Renewed Products, upcycling materials or feedstock for recycling.

THE RENEWAL WORKSHOP



Le Tote is a fashion rental service that allows members to borrow clothing and accessories for a flat monthly fee. On average, women do not utilize 80% of their wardrobe, resulting in millions of dollars wasted each year on items that never leave the back of the closet. In addition, the average American throws away 65 pounds of clothing per year, 85% of which ends up in landfills. Le Tote's wear-return-repeat model gives women the access they want, without the wasteful spending and environmental impact that accompanies traditional retail.

LE TOTE

A. CONSIDER YOUR BRIEF OR PROJECT AIMS. HOW COULD YOU LEVERAGE A NEW BUSINESS MODEL (EXISTING OR POTENTIAL) TO INCREASE THE CIRCULARITY OF YOUR DESIGN?

A.

B. HOW COULD YOUR PRODUCT HAVE VALUE IN A SECONDARY MARKET?

B.

C. HOW COULD YOU LEVERAGE TECHNOLOGY TO EDUCATE THE CONSUMER ABOUT VALUABLE PRODUCT ATTRIBUTES (MATERIAL CHOICES, METHOD OF MAKE CONSIDERATIONS, ETC.)?

C.

D. WHAT PRODUCTS OR CATEGORIES IN YOUR BUSINESS ARE IDEAL CANDIDATES FOR RESALE AND/OR SERVICE VS. OWNERSHIP MODELS?

D.

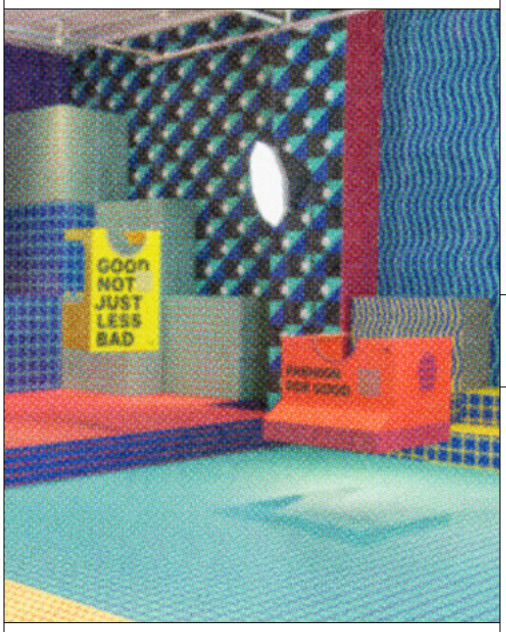
E. WHAT KIND OF “TAKE BACK” PROGRAMS WOULD MAKE SENSE FOR YOUR CONSUMER (INCENTIVES, ETC.)?

E.

F. HOW COULD YOUR BUSINESS MODEL BE ADJUSTED TO ADD VALUE TO HOW YOU RECEIVE, USE, AND RETURN PRODUCT?	F.
G. HOW ELSE COULD YOUR BUSINESS MODEL DELIVER VALUE TO YOUR CUSTOMER USING PRINCIPLES OF CIRCULARITY (E.G. REPAIR, RESELL, ETC?)	G.
H. HOW COULD YOU DEVELOP EDUCATIONAL AND INSPIRATIONAL CALLS TO ACTION AND OTHER TRIGGERS TO DISTRIBUTE THROUGHOUT KEY COMMUNICATION CHANNELS (EMAIL, SOCIAL, ETC.)? WHAT MESSAGES OR PROMPTS WILL YOUR CONSUMER CONNECT WITH?	H.

The BOF Podcast

Business of Fashion

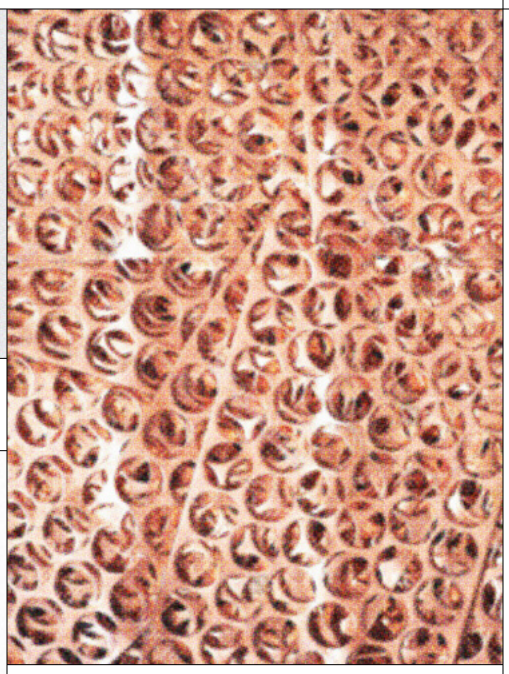


Fashion For Good

WTVOX

WTVox

FashNerd



Excess Material Exchange

Fab Scrap

GLOSSARY OF TERMS

01

CIRCULAR DESIGN

The creation of products with the intent to design out waste, avoid negative environmental impact, and the use of material components that extend the products life and can be returned to the fashion system as valuable feedstock.

02

WASTE

Resources or energy left over from the creation of process of a product as unusable excess or byproduct.

03

RECYCLABLE

Product or material that can be collected and reprocessed/restored or regenerated through an established recycling program.

04

RECYCLED CONTENTS

Contents of a new material or product in the form of recycled raw material, well used, reconditioned, and re-manufactured components that would have otherwise entered the waste stream.

05

DOWNCYCLE

The recycling of a waste material or product where the resulting product is of lesser value or quality than the original.

06

UPCYCLE

Interception of products and materials destined for the landfill and using them in the design of a product of increased value and purpose from the original.

07

REPURPOSE

The use of waste, excess material, or product in the design of a new product.

08

POST-CONSUMER

A product or material that has served its intended consumer use and has been intercepted from a waste stream as a recovered material.

09

PRE-CONSUMER/POST-INDUSTRIAL

A product or material intercepted as a recovered material after the manufacturing process that has been deemed as waste, unfit or was never used for its original consumer purpose/intent.

10

BIO-BASED MATERIAL

Materials synthesized from renewable, plant-based ingredients with the intent of avoiding environmental degradation and pollution. Most, but not all, bio-based materials are compostable or biodegradable.

11

BIO-DEGRADABLE/BIODEGRADABILITY

A material or product that will break down into elements found in nature within a reasonably short amount of time (1 year) when exposed to air, moisture, and microbes. Biodegradable does not specify level of toxicity, thus, for safe biodegradation the entire composition of a product or material must be non-toxic.

12

COMPOSTABLE

A material or product that will break down into elements found in nature within 180 days at an industrial composting facility releasing no toxic substances.

Send your ideas, resources, best practices, and ideas to **circulardesign@nike.com**