



10 PRINCIPLES OF CIRCULAR DESIGN

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

NEW MODELS

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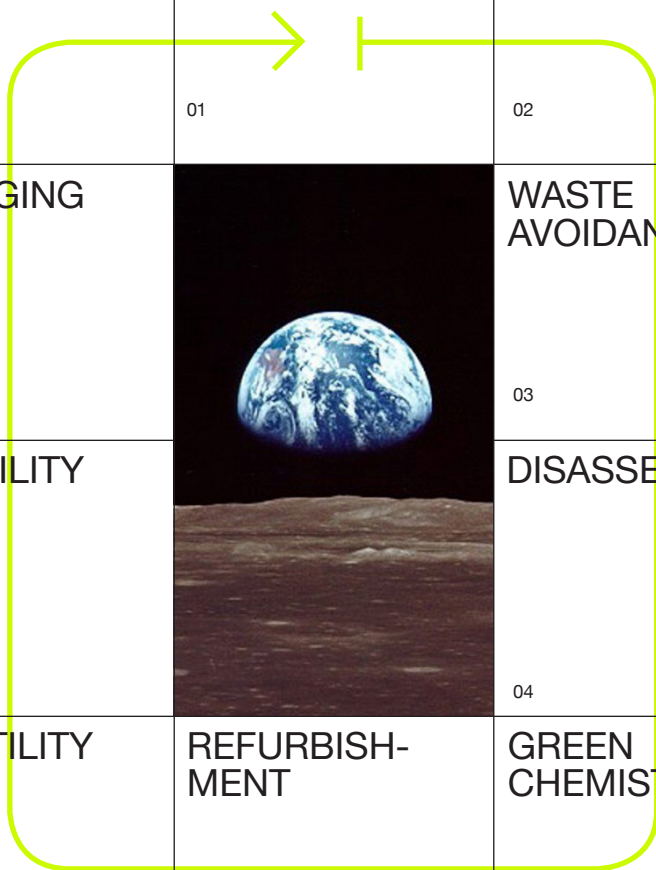
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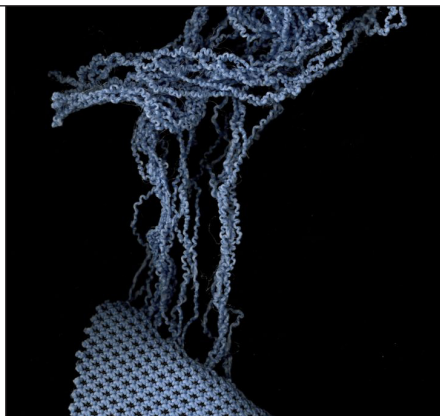
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SELECTING LOW-IMPACT MATERIALS THAT USE PRE & POST-CONSUMER RECYCLED FEEDSTOCK.

"We need to be more conscious about the materials that we use, how they're impacting the planet and how they're impacting us. They may not directly be affecting us right now but they will affect the generations to come."

KAMINE KOLANEN,
BA FASHION STUDENT,
CENTRAL SAINT MARTINS, UAL



THOUGHT STARTERS

_Consider your brief or project aims. What are the required, benchmark and / or ideal materials? What about standard trims and notions?

_Based on the environmental impact, how could material choices be reconsidered to lessen the product's impact?

_How could you use recycled content instead of virgin materials?

_If your design uses a non-renewable resource (polyesters, foams, metals), can that material be easily **disassembled** and **recycled**?

_Could you use alternative trims and notions or redesign the standard options to lessen impact?

_Could the use of mono-fiber materials lessen the impact of your design?

_Which dye methods will your design require? How could you adjust your design to minimize the impact of the dye process?

_Does the selected blend of materials limit or prevent recycling with available technology?

_What analogs from other industries or nature could help you further refine your design?

_In what ways does your supply chain (vendors, suppliers, infrastructure) adhere to circular and sustainable practices?

_How could your material choice increase the **life cycle** or **durability** of the product?

_How could your material choice allow a product to be refurbished?

_How could you eliminate or minimize the use of materials and finishes that use toxic or hazardous chemicals?

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



"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."

NOAH MURPHY-REINHERTZ,
SUSTAINABLE DESIGN LEAD
NIKE SPACE KITCHEN

THOUGHT STARTERS

_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?

_How can you clearly represent all materials and trims on labels or online?

_How could your **material choices** be adjusted to make recycling easier? (mono-fiber and/or mono-material choices, non-toxic finishes, etc.)

_Can components safely decompose without additives or oxo-degradability? If not, are the additives needed causing unnecessary harm?

_How could your design integrate recycled materials and components to drive their market value?

_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?

_How could you adjust your design so the product increases in value with use?

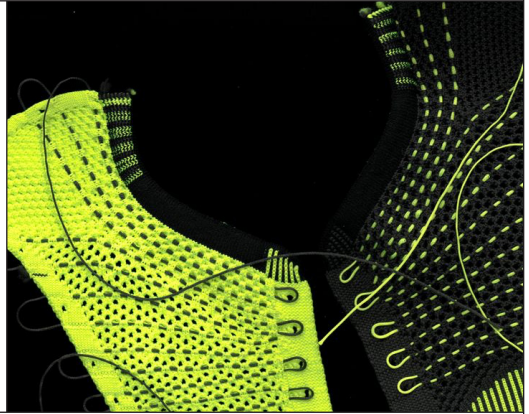
_How could valuable materials be reintegrated within your company, the fashion industry, or another industry?

_Which partners, resources, or **business models** can be leveraged or created to facilitate cyclability?

MINIMIZING OR ELIMINATING WASTE IN THE PRODUCT CREATION PROCESS.

"Waste avoidance is often a mindset of not wanting to throw anything out, but actually it's an opportunity to rethink the method of make."

ARIANNE SCOTT,
BA FASHION STUDENT,
CENTRAL SAINT MARTINS, UAL



THOUGHT STARTERS

_Consider your brief or project aims.
How could you concept and design
to increase pattern efficiency (nested,
square/geometric) and minimize pattern
printing?

_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)?

_How could you leverage additive
manufacturing (3D printing) to reduce
prototype waste?

_How could post-industrial scrap be
integrated (aligned with brief, aesthetic
and consumer needs/ desires)?

_How could you adjust your **business
model** to avoid waste (e.g. Made to Order
quantities)?

_How will your selected pattern
method align with the manufacturer's
method of make?

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

DISASSEMBLY



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.

THOUGHT STARTERS

_Consider your brief or project aims. What are the required, benchmark and/or ideal threads, adhesives, eyelets, joinery, and closures?

_How could you design for personalization via changeable/modular component options?

_How easily can these components be disassembled? What is the impact of their disassembly? (Consider tools, technology, and chemistry needs.)

_How could material choices that easily disassemble affect **durability**?

_Can a component be removed and the product still perform to expectations?

_How could the whole product be given a second life?

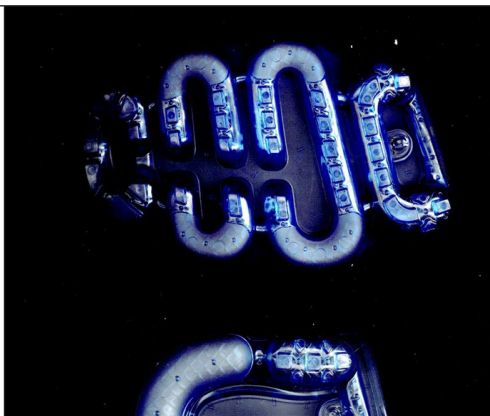
_How could each component be **upcycled**, **recycled** or **downcycled** at the end of the product life cycle? Does each component have value apart from the whole product?

_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**?

_How could your design integrate recycled materials and components to drive their market value?

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.



THOUGHT STARTERS

_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?

_What are the chemical pros and cons to possible materials and finishes? What are the long-term repercussions?

_What part(s) of the product will generate or use the most hazardous substances? (Keep in mind it may not be the most obvious.)

_How could you eliminate or minimize harmful substances or practices through your **material choices**?

_How could green chemistry be used as a design tool?

_How could plant-based materials or finishes achieve the same performance or aesthetic aims as synthetic options?

_How could you integrate check points in your process to ensure adherence to green chemistry best practices (E.g. Restricted Substances lists, etc.)?

_What outside resources could you leverage to adhere to green chemistry standards?

_What is the impact of **recycling** a product? Can it be reduced through different design and material choices?

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



"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"

MARIE CROW,
DIRECTOR MATERIALS DESIGN
NIKE WOMEN'S SPORTSWEAR

THOUGHT STARTERS

_Consider your brief or project aims. What components make up the garment or shoe? What is the cost of each piece?

_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?

_Which components are prone to break or wear out? Why? How could they be designed/built with greater **durability**?

_Are components easy to **disassemble** and replace?

_What equipment or materials will a repair require?

_Can the finishes be easily refurbished? (Examples: water repellency, reflective material)

_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?

_How could you build repair kits, including instructions, into the garment, or provide them with purchase?

_What would it take to host an in-store repair and refurbishment pop-up?

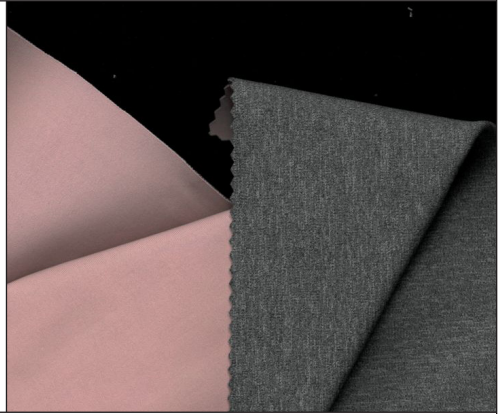
_What digital resources could be created? (Repair "How Tos" provided within brand site, or link to resources; Virtual map of local repair facilities, crafts people and professionals (tailors, cobblers, etc.); Recommended vendor list for purchasing standard component parts.)

_Are specific products or categories in your product line or company ideal for repair and/or refurbishment? How could you highlight those products?

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

“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.”

RAJ MISTRY,
APPAREL DESIGNER II
NIKE MEN'S SPORTSWEAR



THOUGHT STARTERS

_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?

_How could your product morph as a person's physical size changes? What **durability** or **material choice** considerations are necessary to achieve that aim?

_How could you source and use human insights to inform the versatility of the product?

_When designing for athletic activities, what are different applications within a sport (E.g. different plates for different pitches in soccer)?

_How could your design incorporate timeless silhouettes and colors to outlive and integrate with trends?

_How could you adjust or break the boundaries of use established by society or culture (based on gender, etc.)?

_How could you use a new business model to educate people about the product's versatility, or versatile uses in general?

PRODUCTS MADE STRONGER BY METHOD OF MAKE AND DURABLE MATERIAL CHOICES.

DURABILITY



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

SHELBY STEINER,
APPAREL DESIGNER II
NIKE LAB

THOUGHT STARTERS

_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?

_How could the structure of the product increase durability? (use of molded supports, patches, resilient stitch methods, etc.)

_How could you more rigorously test your product to withstand wear and tear? (fit model feedback, personally testing prototypes, etc.)

_How could safety-impacting components be designed more durably to prolong the life cycle?

_How could your silhouettes and color choices **remain relevant** for multiple seasons?

_How could you more clearly explain product care to encourage longer use?

_How could you pair **versatility** with durability to create a product that will adjust and last as the user grows?

_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?

_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.)

_How could you design a product people can connect to emotionally and/or find value in for a longer life cycle?

_How could the story of material attributes and method of make be given substantial importance in the product narrative?

_How could you communicate the value of a worn garment/shoe?

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.



THOUGHT STARTERS

_Consider your brief or project aims.
Is packaging needed for this product?
If so, why?

_How could the package be a part
of the product?

_How could the package teach the
consumer something about the product?

_How could the packaging **material** fit
into scalable recycling or composting
systems?

_How could the packaging be used for
repair/**refurbishment** of product?

_What other purpose could the
packaging serve?

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

NEW MODELS



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

DEBORAH CASTEL,
MATERIALS DESIGN
MANAGER
NIKE KIDS

THOUGHT STARTERS

_Consider your brief or project aims. How could you leverage a new business model (existing or potential) to increase the circularity of your design?

_How could your product have value in a secondary market?

_How could you leverage technology to educate the consumer about valuable product attributes (**material choices**, method of make considerations, etc.)?

_What products or categories in your business are ideal candidates for resale and/or service vs. ownership models?

_What kind of "Take Back" programs would make sense for your consumer (incentives, etc.)?

_How could your business model be adjusted to add value to how you receive, use, and return product?

_How else could your business model deliver value to your customer using principles of circularity (e.g. repair, resell, etc.)

_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?

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

JOHN HOKE, CHIEF DESIGN OFFICER, NIKE

