Beyond Fashion: Posthumanism as a Sustainable Business Model (2000 – 2025)

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Contents

1. Chapter 1: Introduction

1.1 Abstract

This thesis investigates whether posthumanist values can inform viable business models in the fashion industry. Against the backdrop of intensifying environmental and social critiques of fashion, the research examines how posthumanism, a framework that reconsiders value, agency, and responsibility across human and nonhuman actors, can move beyond theory into applied practice. The analysis is structured around five key posthuman principles: distributed agency, relationality, material agency, becoming, and undoing dualisms.

A comparative case study method was used, drawing on expert interviews, internship-based fieldwork, other primary sources and secondary sources. The study focuses on Die Kees, a Dutch brand rooted in posthuman philosophy, and Allbirds, a global fashion sustainability-oriented company. Die Kees demonstrates strong material ethics and design integrity, but faces constraints in visibility, capacity, revenues and scale. Allbirds, while embedded in the dominant market system, offers insights into how aspects of communication, framing, and growth might inform posthuman-aligned models, supporting the broader aim of exploring whether posthumanism can function within the very system it critiques.

Situated within the historical evolution of sustainable fashion, following the rise of fast fashion in the early 2000s and shaped by shifts from ethical to circular, regenerative, and now posthuman design approaches, this research positions posthumanism as a distinct framework for fashion business innovation. The findings suggest that although posthuman values are difficult to sustain under current economic pressures, they can nonetheless shape viable business models when supported by narrative clarity, strategic compromises, and financial adaptability. At the same time, scalable brands like Allbirds offer practical insights into how visibility and framing might be adapted, while also revealing the tensions and trade-offs that come with aligning ethical values to market expectations.

1.2 Context and Research Problem

The fashion industry today is facing heightened scrutiny over its environmental and social impacts. From rising textile waste and chemical pollution to exploitative labor structures, the sector is increasingly seen as a major contributor to global ecological and ethical challenges. In response, sustainability has become a central theme across both academic and industry conversations. While these developments have led to meaningful shifts, such as the rise of circular fashion, digital material innovation, and growing awareness of supply chain practices, many of the proposed solutions still operate within frameworks that prioritize human control, consumer demand, and economic growth. These responses, while important, raise questions about whether deeper, more structural rethinking is also necessary.

This thesis explores that possibility by turning to posthumanism, a theoretical perspective that challenges anthropocentric assumptions and instead foregrounds the relationships between humans and nonhumans. I was inspired to explore posthumanism in this research because it

offered a way to question, rather than adjust to, the existing system. Posthumanism is not just another sustainable approach; it is distinctive because it challenges the very system in which sustainability is currently defined. Rather than optimizing existing practices, it rethinks value, responsibility, and relationality across human and nonhuman actors, offering a fundamentally different understanding of what sustainability could mean for fashion. Rather than viewing garments as static products made for human use, posthumanism invites us to see fashion as an ongoing, relational process shaped by a wide range of actors, including environments, technologies, and biological materials. This shift reframes how design, authorship, and value are understood, offering a more expansive and less hierarchical view of how fashion is made and who or what participates in that process.

Although posthumanist thinking has gained traction in design theory and speculative fashion projects, its application within the realities of business and entrepreneurship remains underexplored. Most existing literature approaches posthumanism from an artistic, aesthetic, or philosophical angle, often without addressing how its core values might translate into the operational structures of a business. The theoretical foundations of posthumanism, its key principles, intellectual context, and relevance to fashion, are explored in detail in Chapter 1. Building on that foundation, this thesis moves into a different space by asking: Can posthumanist values inform viable business strategies in fashion, and if so, what might those strategies look like in practice?

To investigate this question, the research focuses on the period 2000 to 2025, a timespan that captures key shifts in the fashion industry, including the rise and critique of fast fashion, the mainstreaming of sustainability discourse, and the emergence of experimental business models. This 25-year frame provides both a historical lens and a contemporary grounding to examine how new approaches have developed, what tensions they face, and how posthumanist ideas might reshape business models going forward.

This research is socially relevant not because it proposes a solution to the fashion industry's well-documented environmental and ethical crises, but because it investigates whether posthuman theory can inform an alternative way of doing business within the industry. As outlined in Chapter 2, the fashion system has seen growing interest in innovation and sustainability over the past two decades, but many interventions remain locked within a human-centered and economically extractive logic. Rather than focusing on how to fix fashion's current challenges directly, this thesis critically explores whether posthumanism can be translated into a viable business approach that operates differently from existing models. By foregrounding its key principles, the research opens up a different set of questions around sustainability: not how fashion can be optimized, but how it might be reimagined as a shared practice between humans and nonhumans.

The academic relevance of the project lies in its application of posthuman theory to fashion business models, a context in which these ideas have rarely been tested. While posthumanism has been influential in design theory and speculative practices, its operational implications, particularly in relation to economic feasibility, remain underexplored. This thesis addresses that gap by analyzing how posthuman principles are being taken up in an emerging business, Die Kees, and by examining what can be learned from more market-integrated models like Allbirds,

which will further be explored in Chapter 3. Through this dual approach, the research contributes to academic conversations not only in posthumanist and design studies, but also in sustainability research and business innovation.

Methodologically, the thesis offers a grounded framework for evaluating how theoretical principles can be applied in business contexts without being reduced to branding or metaphor. As outlined in the methodology section, the research relies on qualitative tools like case studies, interviews, and participant observation in order to build a picture of how posthuman values are practiced, negotiated, or compromised in real-world settings. This contributes to a broader methodological conversation about how critical theory and empirical business research can be combined to examine emerging forms of enterprise that seek to challenge dominant norms.

To address the main research question, this thesis is structured around three sub-questions, each corresponding to a chapter. These sub-questions guide the progression of the research, moving from theoretical framing to historical context and finally to empirical analysis.

The thesis is structured across six chapters. Chapter 1 introduces the research question, outlines its social and academic relevance, and explains the choice of posthumanism as the guiding framework. It also presents the methodology, literature gaps, and limitations that shape the scope of the study. Chapter 2 introduces the theoretical framework of posthumanism, outlining its philosophical foundations and five key principles. Chapter 3 traces the recent history of the fashion industry from 2000 to 2025, beginning with the global expansion of fast fashion and the growing awareness of its environmental and social consequences. It explores how various sustainability-oriented responses have developed in reaction, and also includes Allbirds as a relevant example of a brand that has integrated sustainability within the market system, offering a useful point of contrast for later analysis. Chapter 4 presents the central comparative case study, focusing on Die Kees and Allbirds to assess how posthuman principles are interpreted and what tensions arise when translating them into practice. Chapter 5 synthesizes findings from the case studies, identifying key tensions and practical lessons on viability, compromise, and ethical trade-offs in applying posthuman values to business within the fashion industry. Finally, I conclude the thesis by summarizing, reflecting on its broader contributions and limitations, and pointing to directions for future research.

1.3 Methodology

This study adopts a qualitative, exploratory research design, where I use case study as my chosen methodology, in which I also conduct expert interviews to examine whether and how posthumanist values can be translated into fashion businesses that are both ethical and economically viable. This approach is especially appropriate for research that aims to understand how meaning, ethics, and material relations unfold within real-world systems. The case study method is particularly well-suited to this goal, as it is defined as "an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident."[1]

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[1] Robert K. Yin, *Case Study Research and Applications: Design and Methods*, 6th ed. (Thousand Oaks, CA: SAGE Publications, 2018), 15.

Rather than isolating variables, the study focuses on understanding how posthuman values are expressed through the operations, materials, and business structures of fashion-related initiatives. The analytical framework for this research draws from the five posthuman principles introduced in Chapter 1: distributed agency, relationality, material agency, becoming, and undoing dualisms. These principles guide the interpretation of both case studies and inform the structure of Chapter 3.

1.3.1 Case Study: Die Kees

The primary case study is Die Kees, a startup founded by Minne Zeijdner in 2024 as a continuation of her master's project *Keeping Warm*.[23] Die Kees embraces a posthuman way of thinking, operating, and doing business, informed by values such as relationality, distributed agency, and ecological care. Through the use of local waste wool and plant-based materials, the project treats matter not as extractable resource but as a co-actor in an interdependent system, challenging dominant assumptions about authorship, ownership, and value creation.

Die Kees was selected as the central case study because it provides a situated, real-world context in which posthumanist theory can be critically explored. It offers a unique opportunity to examine whether and how the five posthuman principles can be applied to analyze a fashion business model that seeks to be both ethically aligned and economically viable within the current market system.

1.3.2 Comparative Case: Allbirds

As a secondary case, this research includes an analysis of Allbirds, a globally recognized footwear and apparel company founded in 2016 and widely celebrated for its sustainability-focused business model. Allbirds gained prominence through its use of natural materials, especially merino wool, and minimalist product design, paired with transparent branding and a strong commitment to carbon reduction.[4] By positioning itself as both environmentally conscious and commercially scalable, Allbirds quickly became a reference point for what ethical innovation can look like in today's competitive fashion market.

Allbirds is not a posthuman business. However, its clear emphasis on material responsibility, systemic innovation and rejection of fast fashion aesthetics makes it a relevant case to include. It offers an example of a business that has managed to gain global traction while pursuing values-led strategies, providing a critical reference point for comparison.

Unlike Die Kees, which openly embraces posthuman thinking in its operations and design ethos, Allbirds operates fully within a market logic of efficiency, growth, and brand scalability. Still, both businesses share certain thematic overlaps: the use of wool as a key material, a focus on environmental impact, and a desire to disrupt traditional fashion systems.

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[2] Die Kees, accessed April 1, 2025, https://diekees.nl/.

[3] Minne Zeijdner, *Keeping Warm* (Master's thesis, Eindhoven University of Technology, 2023).

[4] Kathryn Pavlovich et al., *Allbirds: Sustainable Innovation Disrupting the Casual Shoe Industry*, SAGE Business Cases Originals (SAGE Publications, 2020), p.10, https://doi.org/10.4135/9781529713206.

The five posthuman principles will be used as analytical tools to assess whether, and to what extent, aspects of Allbirds' approach align with or diverge from posthuman thinking. The aim is not to force-fit Allbirds into a posthuman framework, but to reflect critically on the lessons, tensions, or points of convergence that may emerge when comparing its model to Die Kees. This inquiry will also help determine whether elements of Allbirds' success within the current market system offer insight into how posthuman-aligned businesses might navigate similar systemic pressures without losing their core values.

In this sense, Allbirds is included not as a model to emulate, but as a market-aware, contrastive case, one that reveals what is possible, what may be compromised, and what still remains unimagined when ethical innovation meets economic scalability.

1.3.3   Semi-Structured Interviews

To enrich the analysis, this research includes three semi-structured interviews, a method well-suited to qualitative, exploratory research. Semi-structured interviews offer a flexible structure that ensures key topics are addressed while still allowing participants to shape the direction of the conversation. This balance makes them especially effective for uncovering insights that may not emerge through more rigid formats. Semi-structured interviews are especially appropriate when researchers already have some background in the topic and aim to investigate it in more depth, particularly in relation to its context-specific characteristics.[5] The first interviewee is Minne Zeijdner, founder of Die Kees, who reflects on how posthuman values inform her design decisions, business structure, and engagement with material and ecological collaborators. The second interviewee is Pauline Vaandrager, a master's student in Industrial Design at TU/e, whose work centers on posthuman philosophy and explores its application through a clay-based design practice. A third interview was conducted with Marina Toeters, fashion-tech designer and founder of Fashion Tech Farm, who offers an industry-facing perspective on the systemic and financial challenges of applying posthuman values within fashion business contexts. Her insights provide a broader view on the tensions between innovation, ethics, and economic feasibility in real-world fashion development.

These interviews support a richer understanding of how posthumanism is practiced, embodied, and negotiated by individuals operating within creative and entrepreneurial contexts.

1.3.4 Participant Observation: Fashion Tech Farm

The research is also informed by participant observation at Fashion Tech Farm, where I am currently completing an internship focused on business development and research. Fashion Tech Farm is an innovation hub/incubator in Eindhoven dedicated to sustainable fashion, wearable technology, and experimental design practices. During my time here, I have engaged closely with projects, practitioners, and systems that both align with and challenge posthuman values in fashion. It is also through this environment that I encountered my interviewees, Marina, Minne

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[5] Hanna Kallio, Anna-Maija Pietilä, Martin Johnson, and Mari Kangasniemi, "Systematic Methodological Review: Developing a Framework for a Qualitative Semi-Structured Interview Guide," *Journal of Advanced Nursing* 72, no. 12 (2016): 2959, https://doi.org/10.1111/jan.13031.

and Pauline, and several other individuals whose work and research actively engage with posthuman design.

While these observations are not systematically coded, they offer valuable experiential insight into the day-to-day realities of values-driven fashion enterprises, particularly around themes such as funding constraints, material experimentation, collaborative authorship, and navigating market demands. This immersion has provided a grounded, real-world perspective that complements and enriches the theoretical and empirical components of the thesis.

1.3.5 Data Sources and Analytical Framework

The analysis draws from both primary and secondary sources. Primary data consists of semi-structured interviews; reports from the *Keeping Warm* project and Die Kees; personal field notes from Fashion Tech Farm, industry reports; company documentation and published analyses of Allbirds. The secondary sources used in this thesis include mainly scholarly books and journal articles that provide theoretical interpretations of posthumanism and its core concepts, forming the conceptual basis for the analysis.

The analysis unfolds in two phases. First, it's the descriptive analysis, mapping each case's materials, values, business structure, and practices. Second, it is the interpretive analysis, where I apply the five posthuman principles to assess how each case engages with key themes.

This dual-layered method allows the thesis to move beyond surface-level evaluation and offer a theoretically grounded, practice-sensitive analysis of whether posthumanist values can support sustainable and economically feasible fashion business models today.

1.4 Theoretical Framework: Posthumanism

This research is grounded in posthumanism as its central theoretical framework. While often associated with speculative or conceptual design, posthumanism is used here as a critical and practical lens to investigate how fashion business models might reconfigure relationships between humans, materials, and systems of value.

Posthuman theory challenges the anthropocentric logic that underpins much of fashion and business practice, including assumptions around authorship, ownership, control, and extractive production. It encourages a shift toward thinking with rather than about materials, and toward business models that are relational, responsive, and ecologically situated.

In this thesis, posthumanism is applied not as an ideal to be achieved but as an evaluative framework through which to examine real-world efforts to enact these values in practice. The analysis is structured around five key principles: distributed agency, relationality, material agency, becoming, and undoing dualisms, which serve as interpretive tools for assessing the case studies. These principles are introduced and discussed in detail in Chapter 1.

Crucially, this research does not approach posthumanism as a purely ethical or philosophical stance divorced from operational realities. Any fashion business, regardless of its theoretical

commitments, must still function within economic systems that demand some level of financial feasibility and organizational stability. For that reason, the framework is used to assess not only how posthuman values are expressed, but also whether they can be sustained in a model that seeks to survive and support livelihoods. This includes examining how businesses like Die Kees navigate tensions between maintaining posthuman commitments and meeting basic financial or operational requirements.

The use of posthumanism in this context is therefore both critical and pragmatic. It allows the thesis to engage seriously with the values and practices of businesses that attempt to do things differently, without assuming that difference alone guarantees viability or impact. Instead, the framework enables a closer look at what posthumanism offers in practice, where it holds up under pressure, and where it might fall short when translated into the language of business.

1.5 Limitations

This research takes an exploratory, qualitative approach to examine how posthuman theory might inform the development of fashion business models. While this method is well-suited to unpacking complex, value-driven practices in depth, certain limitations arise from both the emerging nature of the topic and the structure of the study itself.

The focus on a single primary case, Die Kees, provides rich, situated insight into how posthuman values can be interpreted and enacted in a real-world business context. However, the specificity of this case means that the findings are not intended to be broadly generalizable. Rather than offering universal conclusions, the study aims to develop conceptual clarity and identify patterns that may be relevant for similar initiatives.

Posthumanism, as a framework, offers a powerful critique of anthropocentric and extractive systems, but it also brings analytical challenges. Its open-ended and often fluid concepts make it difficult to apply in standardized ways. This research does not seek to define a fixed model of what a posthuman fashion business should look like, but instead examines how key ideas, such as distributed agency and relationality, emerge in specific practices and relationships. The lack of precedent in the industry also means that empirical evidence on financially sustainable posthuman businesses remains limited, making any conclusions necessarily tentative.

The thesis also includes a comparative case study of Allbirds, chosen not for its philosophical alignment but for its relevance as a values-driven company operating at scale. This case provides useful contrast but is analyzed using publicly available materials and is not triangulated with internal or longitudinal data. As such, its role is illustrative rather than representative.

Finally, the empirical component is based on three semi-structured interviews, which allow for in-depth reflection but capture only a small slice of the broader field. The inclusion of participant observation at Fashion Tech Farm adds contextual richness, yet these insights remain informal and are not systematically coded. The interpretive nature of the research, while appropriate to the topic, also introduces subjectivity, which has been addressed through critical reflexivity and supervision but cannot be entirely removed.

These limitations reflect the exploratory and context-sensitive nature of the study. Rather than undermining its contribution, they emphasize the need for further inquiry, particularly longitudinal studies and expanded case analyses, to better understand the tensions and potential of posthuman approaches in fashion entrepreneurship.

1.6 Literature Review

My thesis begins by tracing how posthuman theory emerged in response to foundational critiques of the human subject in Western thought. Eva Cybulska's reading of Nietzsche's *Übermensch* (2015) frames early challenges to fixed human nature, while Martin Heidegger's *The Question Concerning Technology* (1954) shows how technology shapes and mediates human-world relations.[67] These thinkers are introduced in Chapter 1 to signal the philosophical shift away from human exceptionalism that posthuman theory later builds on.

Michel Foucault's *The Order of Things* (1970) and Jacques Derrida's *Of Grammatology* (1976) offer tools to critically examine binary logics and universal subjecthood, ideas that inform the posthuman principle of *undoing dualisms*, which I later use to assess how businesses maintain or disrupt distinctions such as nature/culture and profit/sustainability.[89] Donna Haraway's *A Cyborg Manifesto* (1991) complements this by reframing identity and agency as hybrid and co-produced.[10] Her work introduces nonhuman actors as legitimate participants in design systems, which becomes foundational for evaluating material co-agency in my analysis of Die Kees.

Karen Barad's *Meeting the Universe Halfway* (2007) is central to my definition of *distributed agency*.[11] I use her theory of intra-action to explore whether businesses like Die Kees can move beyond hierarchical authorship and toward systems where materials and environments help shape decisions. Jane Bennett's *Vibrant Matter: A Political Ecology of Things* (2010) supports my application of *material agency*, particularly in reading how Die Kees allows the properties of Dutch wool, such as its decay, variation, and physical attributes, to guide product form and lifecycle, even when that challenges consumer expectations.[12]

Rosi Braidotti's *The Posthuman* (2013) grounds the principle of *relationality*, especially her critique of the liberal subject and her call for ecological ethics.[13] Francesca Ferrando's *The*

[6] Eva Cybulska, "Nietzsche's Übermensch: A Glance Behind the Mask of Hardness," *Indo-Pacific Journal of Phenomenology* 15, no. 1 (2015): 1–13, https://doi.org/10.1080/20797222.2015.1049895.

[7] Martin Heidegger, *The Question Concerning Technology and Other Essays*, trans. William Lovitt (New York: Harper & Row, 1977).

[8] Foucault, Michel, Paul Rabinow, and Nikolas S. Rose. *The Essential Foucault: Selections from Essential Works of Foucault, 1954-1984*. Vol. 4;4.;. New York, NY: New Press, 2003.

[9] Derrida, Jacques. *Of Grammatology*. 1st American ed. London;Baltimore, Md;: Johns Hopkins University Press, 1976

[10] Donna Haraway, *"A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,"* in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), https://www.sfu.ca/~decaste/OISE/page2/files/HarawayCyborg.pdf.

[11] S. S. Schweber, review of *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, by Karen Barad, *Isis* 99, no. 4 (2008).

[12] Bennett, Jane. Vibrant Matter: A Political Ecology of Things. Durham, North Carolina: Duke University Press, 2010. doi:10.1515/9780822391623, 1-26.

[13] Rosi Braidotti, *The Posthuman* (Cambridge, UK: Polity Press, 2013).

Posthuman: Philosophical Posthumanism and Its Others (2013) supports my use of both *becoming* and *undoing dualisms*, particularly when examining how fashion can function as a co-constituted process among humans, materials, and systems.[14] These ideas are critical in assessing whether Die Kees's model, while values-led, can remain legible and functional within current market systems.

Ron Wakkary's *Things We Could Design: For More Than Human-Centered Worlds* (2021) informs my discussion of *distributed agency* and *designing-with*, particularly in relation to values-driven creative practice.[15] I draw on his work to support my reading of how designers like Pauline Vaandrager and Minne Zeijdner interact with materials not as tools to control, but as collaborators that shape both process and outcome. His approach helps articulate how posthuman ethics are embedded not just in what is produced, but in how making unfolds, an idea I carry forward into the analysis of Die Kees's relational design and production model.

Together, these thinkers shape the five posthuman principles, distributed agency, relationality, material agency, becoming, and undoing dualisms, that I use to evaluate whether businesses, particularly in the fashion industry, can enact posthuman values while remaining economically viable. These principles carry forward into the historical and empirical analyses in Chapters 2 and 3.

The literature in Chapter 2 consists of a wide range of industry, policy, and environmental sources to construct a chronological overview of how the fashion industry evolved in response to social and ecological pressures between 2000 and 2025. These sources are used to document key events, market shifts, and industry reforms, offering a factual basis for understanding how sustainability practices emerged and developed over time. The literature in this chapter serves to describe what happened in the industry; when, how, and through which mechanisms. This historical grounding helps situate the conditions under which alternative models like Die Kees now operate, and provides the context for the more analytical discussion of business models in Chapter 3.

The first set of sources supports the chapter's account of how fast fashion redefined global production and consumption in the early 2000s. Industry reports (e.g., McKinsey) are cited to outline how rapid turnover, low prices, and international outsourcing became standard practice. Additionally, reports on 2013 Rana Plaza disaster push fashion's public accountability discourse further.

Subsequent sources focus on how the industry adapted. Policy documents such as those from the European Environment Agency are used to introduce frameworks like Extended Producer Responsibility and digital product passports, which formalized expectations around transparency

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[14] Francesca Ferrando, The Posthuman: Philosophical Posthumanism and Its Others (PhD diss., Università di Roma Tre, 2013), 23, https://arcadia.sba.uniroma3.it/bitstream/2307/4356/1/TESI_Ferrando_DEF.pdf.

[15] Wakkary, Ron. 2021. *Things We Could Design: For More Than Human-Centered Worlds.*Cambridge, MA: MIT Press. https://direct.mit.edu/books/monograph/5175/Things-We-Could-DesignFor-More-Than-Human-Centered

and impact monitoring.[16][17] These sources are not treated as evidence of transformation, but as illustrations of how sustainability entered institutional and operational vocabularies. Business and industry commentary further support the chapter's analysis of how circularity, certification, and material innovation became tools for managing reputational risk and aligning with shifting consumer expectations.

Within this context, Allbirds is introduced as a major case study. My thesis draws directly from the company's own sustainability reports, investor briefings, and environmental communications, using them to reconstruct the brand's strategy and values framing. These are complemented also by business cases, academic journals and financial reports, which help critically assess the company's positioning, growth trajectory, and operational decisions. These sources are used not only to understand Allbirds' innovations, but also to examine the compromises that arose through expansion, promotional pricing, and global distribution.

The literature on Allbirds functions as both documentation and critique. It helps define the contours of a values-based business operating within a system still structured around performance, efficiency, and anthropocentric comfort. This becomes the contrast point for Chapter 3, where Die Kees is examined as a posthuman alternative. The sources on Allbirds thus serve a dual purpose: they reveal what has already been achieved within market-based sustainability, and they help clarify the terrain on which more radical, posthuman models must operate.

Altogether, the literature in Chapter 2 builds a timeline of key developments that brought fashion to its current crossroads. These sources provide both quantitative and narrative evidence to show how the system responded to critique, through metrics, messaging, and controlled innovation. This historical mapping frames the central question that follows: whether it is possible to create a fashion business that doesn't just respond to critique, but emerges from a different set of values entirely.

Further in Chapter 3, I use Minne Zeijdner's *Keeping Warm* (2023) as a practical reference point for this research, illustrating how posthumanist design values can be applied in materially grounded and socially responsive ways.[18] Drawing from Ron Wakkary's (2021) concept of "designing-with," the project treated wool not as a resource but as a co-actor, allowing its behaviors to shape garment outcomes. Rather than seeking full control, the design process unfolded through relational negotiation with materials, tools, and participants. While not a business per se, the project also tested economic structures through workshops and alternative models, revealing systemic challenges around funding, authorship, and value creation. As a precursor to Die Kees, *Keeping Warm* helps ground this thesis's theoretical approach in real-world experimentation with posthuman ethics and design.

[16]European Environment Agency, "Management of Used and Waste Textiles in Europe's Circular Economy," *EEA*, June 10, 2024, https://www.eea.europa.eu/publications/management-of-used-and-waste-textiles.
[17] European Environment Agency, "Management of Used and Waste Textiles."
[18] Minne Zeijdner, *Keeping Warm* (Master's thesis, Eindhoven University of Technology, 2023).

2. Chapter 2: What Is Post-Humanism Theory, and What Are Its Core Principles?

To understand posthumanism as both a critical theory and a design framework, it's important to trace its philosophical lineage. Posthumanism didn't appear out of nowhere; it evolved from centuries of thinking about the human condition, identity, and our relationship with the nonhuman world.

One of the earliest philosophical challenges to human centrality came from Friedrich Nietzsche, who questioned the portrayal of the human as a rational, autonomous subject. Nietzsche's idea of the *Übermensch* hinted at a future form of the human that transcends moral absolutes and traditional values, a precursor, some argue, to the posthuman figure.[19] However, Nietzsche's vision was still largely rooted in individual transcendence rather than relational interdependence, which is core to posthumanism today.

Fast forward to the 20th century, and we see thinkers like Martin Heidegger building on this by questioning technology and its impact on human identity. In *The Question Concerning Technology* (1954), Heidegger warned against viewing technology merely as a neutral tool, suggesting instead that it shapes how we see the world and ourselves.[20] This line of thinking laid the groundwork for posthumanist critiques of the human-machine relationship.

In the 1970s and 1980s, postmodern and post-structuralist theorists like Michel Foucault, Jacques Derrida, and Donna Haraway pushed further. Foucault's critique of the "universal subject" revealed how concepts of the human were historically constructed through systems of power and knowledge.[21] Derrida's deconstruction of binary thinking, especially mind/body, human/animal,[22] opened philosophical space for more fluid identities.

Perhaps the most significant shift came with Haraway's *Cyborg Manifesto* (1985), which proposed the *cyborg* as a new kind of being that blurs the lines between human, animal, and machine. She wrote, "A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction."[23] Haraway's work introduced the possibility of embracing hybrid identities without nostalgia for a 'pure' human essence, an idea foundational to posthumanist perspective today.

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[19] Eva Cybulska, "Nietzsche's Übermensch: A Glance Behind the Mask of Hardness," *Indo-Pacific Journal of Phenomenology* 15, no. 1 (2015): 1–13, https://doi.org/10.1080/20797222.2015.1049895.

[20] Martin Heidegger, *The Question Concerning Technology and Other Essays*, trans. William Lovitt (New York: Harper & Row, 1977).

[21] Foucault, Michel, Paul Rabinow, and Nikolas S. Rose. *The Essential Foucault: Selections from Essential Works of Foucault, 1954-1984*. Vol. 4;4.;. New York, NY: New Press, 2003.

[22] Derrida, Jacques. *Of Grammatology*. 1st American ed. London;Baltimore, Md;: Johns Hopkins University Press, 1976

[23] Donna Haraway, *"A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,"* in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 1, https://www.sfu.ca/~decaste/OISE/page2/files/HarawayCyborg.pdf.

Philosophical posthumanism, as further theorized by Francesca Ferrando, builds on these legacies while asking more existential questions: What counts as life? Who gets to be considered a subject? Ferrando argues that posthumanism critically examines not just the end of "Man" as a universal figure, but the conditions that made that figure possible, including colonialism, patriarchy, and species hierarchy. As she puts it, posthumanism offers "a philosophy of mediation which discharges any confrontational dualisms, as well as any hierarchical legacies."[24]

Unlike transhumanism, which focuses on enhancing the human through technology, posthumanism questions *why* the human has been seen as central or superior in the first place. It doesn't seek to perfect the human body or consciousness through tech; instead, it rethinks what it means to be human in relation to everything else: animals, materials, the environment, even algorithms.

Additionally, scholars like Rosi Braidotti argue that the human is not a fixed entity but a process, always becoming, always entangled. She explains that the posthuman is not a rejection of the human, but a navigation beyond it, adding that posthuman theory starts with an acknowledgment of how we are embedded in complex, multilayered relations with non-human others.[25]

In short, posthumanism's roots span centuries, but its contemporary form emerges from a convergence of philosophy, feminism, postmodernism, and critical technology studies. What they all share is a deep critique of the idea that humans stand apart from or above the rest of the world. And that's the mindset this thesis will explore, especially in relation to fashion, an industry historically obsessed with the human form but now beginning to stretch toward more-than-human possibilities.

The following table outlines key philosophers whose work laid the foundations for posthumanist theory, highlighting their main contributions and how these ideas connect to core posthumanist principles (mentioned above):

Timeframe	Thinker	Key Contribution	Link to Posthumanism
Late 19th century	Friedrich Nietzsche	Introduced the idea of the *Übermensch*, challenging fixed notions of human nature.	Human becoming / fluid identity.
Early to mid-20th century	Martin Heidegger	Critiqued how technology frames human identity in *The Question Concerning Technology*.	Technological mediation of subjectivity.
Mid to late 20th century	Michel Foucault	Deconstructed the human subject as historically	Historicity of "the human"

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[24] Francesca Ferrando, The Posthuman: Philosophical Posthumanism and Its Others (PhD diss., Università di Roma Tre, 2013), 23, https://arcadia.sba.uniroma3.it/bitstream/2307/4356/1/TESI_Ferrando_DEF.pdf.

[25] Rosi Braidotti, *The Posthuman* (Cambridge, UK: Polity Press, 2013).

		constructed (e.g., *The Order of Things*).	
1980s onward	Donna Haraway	Developed cyborg theory; blurring boundaries between human, animal, and machine (*A Cyborg Manifesto*).	Hybrid subjectivity / non-binary thinking.
1990s to present	Rosi Braidotti	Formalized the concept of the posthuman subject; critiques liberal humanism and advocates for post-anthropocentric ethics.	Nomadic subjectivity / posthuman ethics / zoē-based relationality.

2.1. Core Principles of Posthumanism

Posthumanism is more than a theoretical lens; it's a shift in worldview that challenges how we define agency, subjectivity, and even value. This section unpacks five key principles - *distributed agency, relationality, material agency, becoming and undoing dualisms* - that repeatedly surface across posthumanist literature. These principles don't just sit in philosophical abstraction; they are useful tools for thinking about how the fashion industry can evolve in ways that are more ethical, sustainable, and less dependent on exploitative logic. By analyzing how these principles work in theory and in practice, especially within business, we can start to imagine new models of creation and operation that better fit a posthuman world.

In the context of the fashion industry, these principles aren't abstract. They directly challenge the assumptions embedded in fast fashion, globalized production, and even dominant models of "sustainable" innovation. They ask us to rethink who and what matters, what counts as success, and whether ethical and profitable business practices can be reimagined from the ground up.

To further ground these theoretical ideas, I spoke with Pauline Vaandrager, whose reflections offered a thoughtful, practice-based take on posthumanism. Rather than designing from a fixed outcome or imposing control over materials, Pauline's practice centers on collaboration with both technology and matter, allowing each to shape the result.

2.1.1 Distributed Agency
One of the most widely shared posthumanist ideas is that agency doesn't belong exclusively to the human. Instead of viewing the designer, founder, or entrepreneur as the sole decision-maker, posthumanist thinkers argue that action and influence are distributed across bodies, technologies, materials, and systems. Karen Barad's theory of "intra-action" presents agency as something that emerges through relationships rather than being a pre-existing trait.[26] This becomes especially

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[26] S. S. Schweber, review of *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, by Karen Barad, *Isis* 99, no. 4 (2008): 881.

relevant when considering fashion production processes, from digital algorithms that predict trends, to sensors embedded in smart textiles that change how garments function. In design philosophy, author Ron Wakkary demonstrates this idea with everyday objects like his "Tilting Bowl," which subtly reshapes behavior and reflection without needing a human user to direct it.[27] Rosi Braidotti also builds on this, describing agency as something shared across a "zoe" (non-human) universe, where all forms of life and matter co-produce meaning and action.[28]

This idea is reflected in Pauline's design approach, where the act of printing with clay is not a one-directional execution of a plan, but a responsive dialogue with the material. As she explains, instead of working toward a fixed model, she programs the printer layer by layer, adjusting in real time based on how the clay behaves – see Figure 1.[29] She continues: "You're kind of anticipating and responding to things that are unfolding," emphasizing that creativity in this process comes not from controlling the outcome, but from allowing the material to shape it alongside her.[30]

Figure 1: Clay printing process. Photo by Pauline Vaandrager, 2025

This kind of process challenges traditional, top-down notions of authorship and value creation in fashion and design; instead of forcing materials and workflows to meet predetermined outputs, businesses might evolve more iterative, relational approaches, ones that allow unexpected events or feedback from materials, tools, or the environment to inform both the design and the value strategy. In a conventional business model, decisions are usually centralized and linear: the designer creates, the material complies, and the product is delivered. But when agency is distributed, as in Pauline's practice, the process becomes more collaborative and emergent. It opens the door to rethinking business itself as an ecosystem of mutual influence, where systems, technologies, and materials all participate in shaping outcomes.

2.1.2 Relationality

Closely connected to this is the posthumanist emphasis on relationality. Rather than positioning humans, products, and environments as separate entities, posthumanism highlights the ways in which all of these are interconnected and mutually shaping. Braidotti frames this as the "expanded relational self," where subjectivity is produced through relationships with nonhuman forces, not in isolation.[31] For fashion, this means that garments are never just objects or commodities; they carry histories, involve multiple actors, and participate in ongoing exchanges even after production ends. Recognizing this complexity invites a shift in business practice, from

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[27] Wakkary, Ron. 2021. *Things We Could Design: For More Than Human-Centered Worlds.*Cambridge, MA: MIT Press. https://direct.mit.edu/books/monograph/5175/Things-We-Could-DesignFor-More-Than-Human-Centered, 136.

[28] Braidotti, *The Posthuman*, 50.

[29] Pauline Vaandrager, photograph of clay printing in progress, taken 2025, in author's possession.

[30] Pauline Vaandrager, interview by Nita Krasniqi, April 16, 2025.

[31] Braidotti, The Posthuman, 60.

linear production and disposal toward models that value transparency, accountability, and continuity across the entire lifecycle of a garment.

Pauline also challenges the separation between designer and machine, noting that she feels "really part of the making process," rather than someone simply issuing commands to a printer.[32] Her sense of involvement suggests a relational mode of authorship where creativity is shared, not just between people, but also with tools and environments that influence the outcome in subtle, embodied ways.

2.1.3 Material Agency

A further consequence of this view is a renewed attention to the materials themselves. New materialist thinkers like Jane Bennett argue that matter is never inert; it has vitality, or what she calls "the force of things."[33] Materials shape behavior, aesthetics, and sustainability in active ways. For instance, in van Dongen's *Phototrope* collection, light-reactive textiles work with the runner's body and environment to transform both function and perception.[34] Francesca Ferrando similarly argues that we must treat matter as a participant, not just a medium; something that "talks back" in the design process.[35]

Pauline's clay printing method offers a compelling example of material agency in practice. She describes how the material often behaves unpredictably; air bubbles, moisture, or structural shifts force her to adapt mid-process. Rather than resisting this, she adjusts her code in response, saying, "I think I'm like talking to the clay all the time and it's talking back to me."[36] This shows how agency emerges not from a single actor, but from the continuous interaction between maker, machine, and material.

Within a business context, this can be taken seriously not only in ecological terms (such as supporting biomaterials and circular design), but also commercially; materials that age well, that tell stories, or that engage users emotionally offer value beyond trend cycles. In this light, material agency becomes a potential source of both innovation and long-term profitability.

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[32] Vaandrager, interview.
[33] Bennett, Jane. Vibrant Matter: A Political Ecology of Things. Durham, North Carolina: Duke University Press, 2010. doi:10.1515/9780822391623, 1-26.
[34] Wakkary, Things We Could Design, 87.
[35] Ferrando, The Posthuman.
[36] Vaandrager, interview.

2.1.4 Becoming

Posthumanism also reconfigures identity itself, not as fixed or singular, but as something always in process. According to Smelik, "the posthuman is basically a hybrid figure; it is about thinking what human is or rather becomes…".[37] Furthermore, Braidotti describes subjectivity as a constant "becoming," shaped through interactions with others, with environments, and with technologies.[38] Pauline sees creativity not as arriving at a perfect result, but as a process of becoming, with herself, her materials, and her tools. "Sometimes when structures collapse or when it looks ugly, I don't mind as much," she says, "because it's more about whether I found it interesting."[39] Her openness to collapse and unpredictability reflects a posthuman approach to value, where fluidity and emergence replace rigid standards of success; she doesn't define "success" by perfection, but by discovery, play, and surprise. Figure 2 (on the right) shows a few unexpected final forms created through Pauline's layer-by-layer printing process shaped in real-time by the unpredictable behavior of the clay and her intuitive responses to it.[40]

Figure 2: Different clay-printing outcomes. Photo by Pauline Vaandrager, 2025.

Additionally, Ferrando echoes this by defining the posthuman self as mutable, plural, and co-constituted through transformation.[41] In my opinion, this concept of becoming resonates strongly with the culture of fashion, which already plays with fluidity, transformation, and performativity. Especially in business, this concept might be rather important, as the idea of a "fixed" consumer can sometimes leads to static market segmentation, oversimplified brand personas, and inflexible production cycles. As such, a posthuman approach supports models of adaptive, co-creative fashion: modular design, digital customization, or even garments that evolve over time. These approaches can challenge the high-speed, high-waste logic of fast fashion, while opening up profitable models rooted in flexibility, emotional durability, and shared authorship.

2.1.5 Undoing Dualisms

A foundational commitment in posthumanist philosophy is the rejection of binary thinking. Traditional systems have long relied on oppositions such as human/machine, natural/artificial, mind/body, masculine/feminine, and ethical/profitable. Posthumanism doesn't simply critique these dualisms for being inaccurate; it reveals how they uphold hierarchies, limit creative

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[37] Anneke Smelik, "A Posthuman Turn in Fashion," in *The Routledge Companion to Fashion Studies*,
  ed. V. Manlow, E. Paulicelli, and E. Wissinger (New York: Routledge, 2021), 57–64., 58.
[38] Braidotti, The Posthuman.
[39] Vaandrager, interview.
[40] Pauline Vaandrager, photograph of various clay-printing outcomes, taken 2025, in author's possession.
[41] Ferrando, The Posthuman, 52.

potential, and justify exploitation. Francesca Ferrando describes posthumanism as a "post-dualistic" philosophy that aims to dissolve the logic of exclusion and instead promote hybridity.[42] Rosi Braidotti similarly insists that moving beyond binaries is essential to building a more ethical, "zoe-centered" worldview, one that includes all forms of life and material systems.[43] Anneke Smelik also illustrates how posthuman fashion challenges structures that separate and simplify; she takes Iris Van Herpen's work to exemplify the posthuman principle of undoing dualisms, particularly as it relates to aesthetics and conceptual design.

As Smelik argues, Van Herpen's collections dissolve boundaries between nature and technology, organic and synthetic, human and machine, manifesting what she calls a "posthuman style of in-between-ness."[44] Her garments, often created through a hybrid process of handcraft and advanced technologies blur these dichotomies. Although Van Herpen draws inspiration from natural systems such as fractals or water flows, she reinterprets them through technologically mediated structures, creating fashion that resists categorization. However, this undoing of binaries is primarily expressed through visual language and material composition, rather than through distributed authorship or material agency. The design process remains directed and controlled, rooted in the logic of couture, with materials serving expressive rather than co-creative roles. In this sense, Van Herpen contributes to the posthuman discourse by challenging aesthetic and conceptual boundaries, without necessarily extending these challenges to the level of production dynamics or relational authorship – see Figure 3 for reference (on the right).[45]

Figure 3. *Miss Fame wearing look 12 from Iris van Herpen's* Syntopia *collection (S/S 2019). Photo by Anneke Smelik, 2019.*

Going back to Pauline's work as well, she also emphasizes that code and clay are equally material in her process. She rejects the idea that only the physical holds substance, saying she would want others to "see both the digital and the physical as material," not just the clay.[46] This challenges persistent dualisms in design thinking and reframes digital processes as equally embedded in the posthuman material world.

In business terms, undoing dualisms can help fashion companies move beyond inherited frameworks that see, for example, sustainability and profitability as incompatible, or innovation as necessarily extractive. Posthumanism invites businesses to build models that are not based on either/or decisions, but on adaptive, hybrid thinking. This might mean developing materials that

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[42] Ferrando, The Posthuman, 56-60.
[43] Braidotti, The Posthuman.
[44] Anneke Smelik, "Fractal Folds: The Posthuman Fashion of Iris van Herpen," *Fashion Theory* 26, no. 1 (2022): 18.
[45] Anneke Smelik, photograph of Miss Fame wearing look 12 from Iris van Herpen's *Syntopia* collection (S/S 2019), taken in Paris, January 2019, in Anneke Smelik, "Fractal Folds: The Posthuman Fashion of Iris van Herpen," *Fashion Theory* 26, no. 1 (2022): 5–26, https://doi.org/10.1080/1362704X.2020.1850035.
[46] Vaandrager, interview.

are both bio-based and technologically enhanced, or creating value systems that integrate social equity and market viability. As Nick Fox argues, posthumanism's relational and materialist ontology reveals the limits of capitalist growth models that rely on binary distinctions like production/consumption or human/nature.[47] By rejecting those binaries, fashion businesses can imagine structures that don't just "balance" ethics and economics but integrate them into one evolving, context-specific model. In this way, the posthuman critique of dualisms becomes not only a philosophical stance but a strategic design for doing fashion differently.

These five principles form the theoretical core of posthumanist thinking. They are not just philosophical; they carry practical and strategic potential for transforming how fashion is made, marketed, and monetized. Together, they challenge the fashion industry to imagine models of business that are not only more ethical and sustainable, but that may redefine success itself, not as domination or endless growth, but as dynamic participation in the shared project of living and creating well.

2.2 Variants and Critiques Within Posthumanism

Posthumanism, like most major theoretical frameworks, is not a unified doctrine. It exists in multiple, sometimes conflicting strands that shape how it can be interpreted and applied in practice, including in creative industries like fashion. These variations are essential to consider, especially when evaluating whether posthumanist ideas can truly support alternative, sustainable, and profitable fashion business models in the current market context. Although posthumanism offers tools for challenging dominant economic and social structures, its internal critiques and ambiguities complicate its application. As such, as a diverse and evolving field, posthumanism carries several risks and contradictions that are important to acknowledge in the context of this thesis. Below are three key areas of critique that will frame how posthumanism's ideas can (or cannot) be translated into viable, sustainable, and ethical business models.

One common critique of posthumanist thinking is its tendency to veer into techno-utopianism, the idea that technological innovation alone can solve systemic problems. Some interpretations of posthumanism, especially those that overlap with transhumanist or speculative strands, place heavy emphasis on digital enhancement, AI, and bio-innovation. While these ideas offer imaginative possibilities, they can also obscure the material conditions of production and the ethical implications of rapid technological change. Anneke Smelik, for example, notes that posthumanism's focus on transformation and hybridity can become aestheticized and abstract, particularly when it enters fashion discourse without changing how labor, resources, or environmental limits are addressed.[48] Rather than asking how humans can be improved through technology, posthumanism invites us to rethink how humans, and therefore business and design can operate with more responsibility, reciprocity, and awareness of the nonhuman world. This shift is crucial, not to upgrade the human, but to transform the systems we create and participate in. That distinction reframes innovation not as progress for the few, but as ethical adaptation for the many.

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[47] Nick J. Fox, "Green Capitalism, Climate Change and the Technological Fix: A More-than-Human Assessment," *The Sociological Review* 71, no. 5 (2023): 1119, https://doi.org/10.1177/00380261221121232.
[48] Smelik, A Posthuman Turn in Fashion, 62-63.

There is also a tendency to celebrate technological innovation, like smart materials, algorithmic design, or biofabrication, without fully questioning who has access to these tools, who benefits from their implementation, and who may be left out or negatively impacted. Even though these advances can lead to creative breakthroughs in fashion, they are often framed through a narrow, human-centered lens focused on efficiency, novelty, or consumer appeal. A genuinely posthumanist approach asks us to look deeper. It views everyone and everything involved, humans, technologies, materials, and ecosystems, as stakeholders in the process. This means value isn't created just for the end-user, but also through ethical engagement with the environment and the tools themselves. If we don't think critically about how these innovations are integrated, we risk reinforcing old systems of exclusion and extraction under the guise of progress. Posthumanism offers a way to reframe innovation, not as domination over nature or technical mastery, but as a collective practice of care, responsibility, and co-creation.

Additionally, posthumanism's refusal to reduce the world to clear categories or binary logics is one of its most powerful traits. However, this very fluidity can make it difficult to translate into structured systems, especially in fields like business that rely on models, frameworks, and decision-making hierarchies. Posthumanism resists offering a checklist or set of standardized tools; it is anti-essentialist by nature. But when brought into the realm of business, that lack of structure can feel paralyzing rather than liberating. On this note, Mark Carrigan highlights this issue in his critical realist reading of Braidotti's posthumanism. He argues that her work, while ethically rich, lacks a clear analysis of systemic causality; it doesn't engage enough with how economic systems, labor markets, or political structures actually operate.[49] This can lead to a kind of political idealism that gestures toward change but struggles to implement it. In fashion, the real challenge is applying posthumanist values, like relational ethics or shared agency, in ways that work within the constraints of actual business operations. It's one thing to talk about care and collaboration; it's another to apply those ideas to pricing strategies, production timelines, or supply chain decisions. Fashion businesses still need to meet logistical demands, manage costs, and deliver products, all within a highly competitive market. Posthumanism might point us in a more ethical direction, but on its own, it doesn't provide concrete strategies for how to get there. Posthumanism may offer a compass, but not a map.

One of the most relevant and difficult critiques, especially in relation to this thesis, is the tension between posthumanist principles and the realities of market-driven systems. While many posthumanist thinkers challenge extractive, hierarchical structures, there is often a gap when it comes to proposing how businesses can operate differently under real-world economic pressures. Most conventional economic models prioritize productivity, efficiency, and growth, values that don't easily align with posthumanism's focus on ecological boundaries, relational ethics, and distributed agency. This creates a fundamental mismatch between the flexibility and interdependence posthumanism promotes, and the structured, outcome-focused demands of the marketplace.

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[49] Mark Carrigan and Douglas V. Porpora, "Introduction: Conceptualizing Post-Human Futures," in Post-Human Futures, ed. Mark Carrigan and Douglas V. Porpora (Abingdon: Routledge, 2021), 1–22.

Nick Fox argues that unless posthumanism explicitly addresses the logics of capital accumulation, it risks being co-opted by the very systems it seeks to challenge.[50] Fashion, with its deep entanglement in fast production and global inequality, is particularly vulnerable to this. As such, "posthuman" can easily become branding tools, used to sell smart garments or tech-integrated clothing, while supply chains, labor structures and environmental issues remain unchanged. That said, this tension does not mean posthumanism is incompatible with business. It means that for it to be useful, it must be applied strategically and critically, not as a marketing theme or design aesthetic, but as a tool for rethinking how value is created, how resources are managed, and how relationships are built. This might not involve abandoning the current market system entirely, but rather working within it to redefine success, redistribute value, and design systems that operate with a more-than-human awareness.

3. Chapter 3: How Can History Inform the Transformation of the Fashion Industry?

3.1 Key Transformations in Fashion (2000–2025)

Fashion is more than fabric and form; it is an evolving narrative of human creativity, identity, and our relationship with the world around us. The turn of the millennium marked a dramatic turning point in this narrative, catalyzed by a collision of innovation, global connectivity, and an urgent call for sustainability. This chapter traces how key moments in the last two decades have reshaped the fashion landscape and opened space for new philosophies like posthumanism to emerge. From the rise and backlash of fast fashion to innovations in circular design, regulation, and radical material choices, this chapter highlights the industry's shifting priorities. It then turns to a deep dive into the case of Allbirds, a sustainability-focused brand that, while not posthuman, offers a real-world example of how values-driven innovation both thrives and stumbles in today's marketplace. By exploring what worked, what didn't, and what was compromised along the way, this chapter sets up the critical lens through which we'll later examine whether a posthuman business model, like Minne's DieKees, can realistically exist and succeed without losing its soul.

3.1.1 The Global Rise of Fast Fashion and Digital Commerce (Early 2000s)

In the early 2000s, the fashion industry experienced a seismic shift with the rapid expansion of fast fashion giants such as Zara and H&M. Zara's parent company, Inditex, went public in 2001, accelerating global adoption of the fast fashion model characterized by rapid production cycles, affordability, and frequent product turnover. As reported by McKinsey: "Production allegedly doubled in the 2000s with the rise of fast fashion—surpassing more than 100 billion garments a year in 2014…"[51] This surge led to significant waste of clothes, where "…92 million tonnes end up in landfills…this means that the equivalent of a rubbish truck full of clothes ends up on

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[50] Fox, "Green Capitalism," 1117-18.
[51] McKinsey & Company, as cited in Faith Robinson, "No One Knows How Many Clothes Are Made. Why Won't Brands Tell Us?," *Good On You*, July 15, 2024, https://goodonyou.eco/clothing-production-volume-misinformation/, para. 2

landfill sites every second."[52] Simultaneously, the digital revolution profoundly reshaped consumer behavior, as e-commerce platforms became increasingly influential, transforming fashion retail into a global, accessible, and digitally-driven marketplace.

3.1.2 Heightened Awareness of Sustainability and Ethical Fashion (Mid-2010s)

The devastating collapse of Rana Plaza in Bangladesh in 2013, claiming over 1,100 lives, significantly elevated global consciousness around the fashion industry's ethical shortcomings.[53] This tragedy catalyzed movements such as Fashion Revolution, prompting widespread demands for transparency, ethical labor practices, and accountability from brands.[54] At that time, the global garment industry employed over 60 million workers, many of whom faced poor working conditions and inadequate wages.[55] Environmental concerns also came to the forefront, with the fashion industry accounting for up to "…10% of global carbon dioxide emissions—more than international flights and shipping combined."[56] Additionally, "around 215 trillion liters of water per year are consumed by the clothing and textile industry."[57] Incidents like Burberry's destruction of unsold luxury goods in 2018, where the company burned approximately £28.6 million worth of products to maintain brand exclusivity, further spotlighted excessive waste and prompted a broader industry shift toward circular economy practices such as recycling, resale, and responsible disposal.[58]

3.1.3 Embrace of Circularity and Technological Innovation (Late 2010s – Early 2020s)

By the late 2010s, innovative sustainable practices gained mainstream momentum. Brands increasingly adopted circular economy strategies, integrating recycling, rental, and resale models to mitigate waste. Groundbreaking material innovations emerged, including biodegradable textiles and sustainable alternatives such as Piñatex and Mylo, derived from pineapple leaves and mycelium, respectively.[59][60] One such breakthrough was the use of digital product passports - digital profiles linked to clothing items via QR codes or NFC chips. These tools allow brands and consumers to trace the origin, materials, and environmental impact of garments throughout

[52] Martina Igini, "20 Statistics About Fast Fashion Waste," *Earth.Org*, August 21, 2023, https://earth.org/statistics-about-fast-fashion-waste/, para.2

[53] Foreign & Commonwealth Office and Department for International Development, "The Rana Plaza Disaster," *GOV.UK*, published April 10, 2014, https://www.gov.uk/government/case-studies/the-rana-plaza-disaster, para. 2.

[54] Fashion Revolution, "About Us," *Fashion Revolution*, accessed April 5, 2025, https://www.fashionrevolution.org/about/.

[55] International Labour Organization, as cited in FashionUnited, "Global Fashion Industry Statistics," *FashionUnited*, accessed April 5, 2025, https://fashionunited.com/statistics/global-fashion-industry-statistics, para. 21

[56] Rachael Dottle and Jackie Gu, "The Global Glut of Clothing Is an Environmental Crisis," *Bloomberg*, February 23, 2022, https://www.bloomberg.com/graphics/2022-fashion-industry-environmental-impact/, para.1

[57] World Bank, "How Much Do Our Wardrobes Cost to the Environment?," *World Bank*, September 23, 2019, https://www.worldbank.org/en/news/feature/2019/09/23/costo-moda-medio-ambiente, para. 3.

[58] BBC News, "Burberry Burns Bags, Clothes and Perfume Worth Millions," *BBC*, July 19, 2018, https://www.bbc.co.uk/news/business-44885983.

[59] Vesti la Natura, "Piñatex: The Vegan and Sustainable Leather Alternative," *Vesti la Natura*, accessed April 15, 2025, https://www.vestilanatura.it/en/vegan-vegetable-skins/pinatex.

[60] Bolt Threads, "Mylo: A Sustainable Alternative to Leather," Bolt Threads, accessed April 15, 2025, https://boltthreads.com/technology/mylo/.

their lifecycle. In response to growing pressure and regulatory changes, several European countries have already implemented supply chain due diligence laws. Yet despite these advances, a report in 2024, shows that "only 19% of companies in the fashion industry have visibility over their value chain, and this visibility is often partial."[61] As sustainability efforts gained traction, governments began stepping in with formal regulations to hold fashion producers accountable for waste and labor conditions. For example, in Europe, the EU Waste Framework Directive requires that "from 2025, EU Member States must establish separate collection systems for used textiles" while Extended Producer Responsibility (EPR) schemes are being introduced to make fashion brands financially responsible for collecting and recycling textile waste. [62][63]

Additionally, luxury fashion underwent a significant transformation toward sustainability and ethical practices. Stella McCartney notably utilized lower-impact materials and waste reduction strategies across its supply chain.[64] Gucci and Prada incorporated eco-friendly materials and transparent supply chains, reinforcing industry sustainability standards.[65] This shift within the luxury sector signals not just a marketing trend, but a growing acknowledgment that also high-end fashion must respond to environmental and ethical pressures.

Within the broader embrace of circularity and material innovation in the late 2010s, Allbirds emerged as a widely recognized example of sustainability-focused branding in the fashion industry – explained more in depth later in this chapter. Though not a posthuman business by definition, Allbirds offers a valuable point of comparison for this thesis because of its central reliance on wool, a material also core to Minne's practice. Where Allbirds frames wool as a sustainable commodity, processed at scale and verified through certifications, Minne treats wool as a co-agent, relationally sourced and ethically entangled within its local ecosystem. This shared material allows for a direct and meaningful comparison between two fundamentally different approaches: one embedded in scalable, market-driven sustainability, and the other in situated, posthuman ethics. Allbirds was chosen not for ideological alignment, but precisely for its contrast; its prominence, recognizability, and commercial success illuminate the compromises and possibilities inherent in ethical fashion today. As Chapter 2 shows, historical shifts in fashion innovation provide a toolkit, not a blueprint. And in this context, Allbirds helps reveal where that toolkit succeeds, and where it falls short, especially when placed against a model like Minne that resists extractive logics altogether.

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[61] Amit Gautam, "Value Chain Traceability: A Major Challenge for the Sustainable Fashion Industry," *Supply Chain Brain*, October 22, 2024, https://www.supplychainbrain.com/articles/40521-value-chain-traceability-a-major-challenge-for-the-sustainable-fashion-industry, para. 5.

[62] European Environment Agency, "Management of Used and Waste Textiles in Europe's Circular Economy," *EEA*, June 10, 2024, https://www.eea.europa.eu/publications/management-of-used-and-waste-textiles, para. 1

[63] European Environment Agency, "Management of Used and Waste Textiles," para. 25.

[64] Solene Rauturier, "How Do the Most Popular Luxury Fashion Brands Rate?," *Good On You*, December 4, 2023, https://goodonyou.eco/luxury-fashion-brands-ratings/.

[65] Jordan Cole, "Brands Leading the Way in Sustainable Luxury," *BlockApps*, June 5, 2024, https://blockapps.net/blog/brands-leading-the-way-in-sustainable-luxury/

3.1.4 Emergence of Posthuman and More-than-Human Design (2021–2025)

In the early 2020s, a fresh wave of thinking emerged in fashion, moving beyond traditional ideas centered only on human needs. Designers and researchers began to see fashion as something deeply connected to materials, nature, and ecosystems, giving rise to what's called posthuman or more-than-human design. Key figures like Ron Wakkary (*Things We Could Design*, 2021) and Anna Smelik have highlighted how design and fashion could better respect the relationships between people, materials, and the environment. Inspired by these ideas, Minne Zeijdner launched a startup, DieKees, in 2024 directly embedding these principles into her business model.[66]

3.2. Allbirds: A Case of Sustainability-Driven Innovation

When former professional soccer player Tim Brown teamed up with sustainable materials expert Joey Zwillinger in 2016, they shared a straightforward yet ambitious vision: to craft shoes that were comfortable, stylish, and genuinely eco-friendly. Driven by frustration with the footwear industry's heavy reliance on synthetic, environmentally harmful materials, they launched Allbirds in San Francisco, embedding sustainability deeply within their business from the start.[67]

Allbirds' first significant breakthrough was their iconic "Wool Runner"; a shoe that quickly became their symbol of innovation and sustainability.[68] But the choice of wool wasn't just about comfort; it was a strategic response to the industry's environmental challenges. By using Merino wool, sourced from farms adhering strictly to ethical animal care, environmental standards, and fair labor practices, Allbirds differentiated themselves clearly from traditional footwear brands.[69] Wool was more than a functional material; it communicated a set of values directly to consumers, challenging the industry standard of prioritizing low-cost, synthetic fabrics.

Yet the company didn't limit itself to wool. Building on their early success, Allbirds soon expanded into other sustainable materials. Among the standout materials Allbirds used were Tencel Lyocell, sourced from sustainably managed eucalyptus forests, and "SweetFoam", a shoe sole material derived from sugarcane. One of the most significant moves Allbirds made in its sustainability journey was not just inventing "SweetFoam", but choosing to make its formula openly available to the industry. By 2021, "…SweetFoam has since been adopted by over 100 brands, including Puma, Reebok, Ugg and Timberland".[70] Rather than keeping the innovation proprietary, Allbirds shared the recipe publicly to encourage other brands to adopt lower-impact materials, prioritizing collective progress over competitive advantage.[71] This open-source

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[66] Zeijdner, Minne. 2023. *Keeping Warm.* Master Thesis, Eindhoven: Industrial Design TU/e.

[67] Kathryn Pavlovich et al., *Allbirds: Sustainable Innovation Disrupting the Casual Shoe Industry*, SAGE Business Cases Originals (SAGE Publications, 2020), https://doi.org/10.4135/9781529713206, p.4.

[68] Pavlovich et al., *Allbirds: Sustainable Innovation,* p.4.

[69] Pavlovich et al., *Allbirds: Sustainable Innovation,* p.10.

[70] Bella Webb, "Allbirds Says Its Net-Zero Carbon Shoe Is Here," *Vogue Business*, March 21, 2023, https://www.voguebusiness.com/sustainability/allbirds-says-its-net-zero-carbon-shoe-is-here

[71] Elizabeth Segran, "Allbirds Wants to Fix Your Sole," *Fast Company*, August 1, 2018, para.7, https://www.fastcompany.com/90202030/allbirds-wants-to-fix-your-sole.

mindset wasn't a one-off decision; in 2023, the company took a similar step by unveiling their net-zero carbon shoe, "M0.0NSHOT", and releasing a toolkit so other companies could replicate the process.[72]

Allbirds cleverly leveraged these material innovations as central branding tools, emphasizing simplicity and transparency over traditional fashion-driven marketing strategies. Instead of following fashion trends, Allbirds positioned itself almost like a technology company, prioritizing long-term sustainability innovations rather than seasonal style shifts.[73]

3.2.1 Market Position and Business Strategy

From the start, Allbirds made a bold choice to skip traditional retail middlemen and go straight to consumers. Their direct-to-consumer (D2C) model not only gave them tighter control over branding and storytelling, but it also allowed for fast feedback loops. This meant they could respond quickly to customer insights, improving their products rapidly. In fact, within just three years, the company had already gone through 27 design changes of their "Wool Runner."[74] This flexibility became one of their biggest competitive advantages, helping Allbirds refine comfort, fit, and aesthetics faster than many legacy footwear brands.

As consumer interest in sustainable fashion surged, Allbirds expanded aggressively. After gaining traction in the U.S., they entered markets like New Zealand, Canada, the UK, and Germany.[75] Additionally, Allbirds took a major leap by expanding into China.[76] It was a big investment in a market with huge potential, but one that came with unfamiliar consumer habits and cultural differences.

Allbirds' early growth wasn't just fast; it was financially strong. According to reports, "…the brand sold one million pairs of shoes in late 2017, generated NZD 50 million in top-line revenue, and was on track to double that in 2018…in 2019, the company had a suggested market valuation of USD 1.4 billion…"[77] As Allbirds grew, the logistics behind running a global supply chain became harder to manage. The brand's promise of low-impact fashion was challenged by the reality of sourcing materials from multiple continents and delivering products quickly across the globe. This raised questions about emissions from transportation and how transparent the company really was about its footprint, especially since it hadn't released full public life cycle assessments (LCAs).[78] While Allbirds was still a relatively small brand, the operational pressures

[72] Allbirds, "Allbirds Unveils Design for World's First Net Zero Carbon Shoe," *Investor Relations*, June 27, 2023, p.1, https://ir.allbirds.com/node/8021/pdf.

[73] Myles Ethan Lascity, "Anti-Fashion Branding: Framing Technology in Uniqlo and Allbirds," *Fashion Theory* 26, no. 6 (2022): p.881-882, https://doi.org/10.1080/1362704X.2022.2101587.

[74] Pavlovich et al., *Allbirds: Sustainable Innovation*, 7.

[75] Pavlovich et al., *Allbirds: Sustainable Innovation*, p.7.

[76] Nyima Pratten, "Business: Allbirds Goes All-in on China," *WWD*, April 12, 2019, p.2.

[77] Pavlovich et al., *Allbirds: Sustainable Innovation*, p.7.

[78] Pavlovich et al., *Allbirds: Sustainable Innovation*, p.10.

it faced started to mirror those of much larger companies, especially when trying to balance growth with real environmental responsibility.

In essence, Allbirds' business strategy was ambitious and values-driven, but not immune to the very pressures it set out to challenge. Their early wins came from staying close to consumers and being hyper-focused on a single product category. But growth required them to play a much more complex game, one that stretched the limits of their original model and forced them to adapt quickly in unfamiliar markets.

3.2.2 Branding, Sustainability Commitments, and Ethical Impact

From the beginning, Allbirds was never just trying to sell shoes; it was selling an idea: that fashion could be simpler, more ethical, and less harmful to the planet. Instead of chasing trends or pushing seasonal drops, the brand positioned itself as a sustainability-focused, tech-savvy disruptor. It leaned into minimalist design, transparent messaging, and the kind of understated confidence you'd expect from a Silicon Valley startup rather than a traditional fashion house. Allbirds built its identity around sustainability, not as an add-on, but as a core design and business principle. Its minimalist approach, seen in both product design and branding, communicated a deliberate move away from fashion's excesses. This simplicity was more than aesthetic; it signaled a commitment to transparency, longevity, and reduced environmental impact. Not relying on vague eco-friendly claims, Allbirds grounded its messaging in measurable practices, using material innovation and low-impact packaging to reflect its values. By framing itself more like a tech company than a fashion label, the brand distanced itself from fast-moving trends and positioned sustainability as part of an ongoing process of refinement rather than a seasonal campaign. This approach offered a subtle but pointed critique of the traditional fashion system, presenting an alternative model grounded in responsibility and restraint.

Allbirds built its brand around sustainability by making environmentally conscious choices part of its product design. Instead of relying on vague eco-friendly claims, the company used specific materials and methods, like castor bean oil for insoles to reduce petroleum use, and shoelaces made from recycled plastic bottles, even though they were more expensive.[79] In addition, "…the product packaging was a shoe box made from 90% post-consumer recycled cardboard and used 40% less materials than traditional packaging…"[80] Furthermore, Allbirds partnered with Soles4Souls to donate used shoes, adding a social benefit to their environmental goals.[81] One of their more innovative steps was introducing an internal carbon tax, assigning a cost to every ton of emissions, which pushed the company to consider environmental impact in their business decisions.[82] Eventually, they also became a Certified B Corporation.

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[79] Pavlovich et al., *Allbirds: Sustainable Innovation*, p.4.
[80] Pavlovich et al., *Allbirds: Sustainable Innovation*, p.5.
[81] Pavlovich et al., *Allbirds: Sustainable Innovation*, p.9.
[82] Pavlovich et al., *Allbirds: Sustainable Innovation*, p.10.

3.2.3 Critical Analysis: Failures, Setbacks, and Challenges

Despite its early rise and eco-conscious reputation, Allbirds' path hasn't been smooth. In recent years, the brand has faced financial, operational, and strategic challenges that reveal just how difficult it is to maintain values, innovation, and growth all at once, especially in a competitive marketplace that's quickly catching up.

One of the most visible issues has been their financial decline. After years of growth, Allbirds reported a 14.5% drop in revenue in Q4 2023; for the full year 2023, they posted a net loss of $152.5 million.[83] Allbirds' financial decline in 2023 can be attributed to several interrelated factors, as detailed in their financial reports and industry analyses. According to Allbirds' reports, this decline was largely the result of "…lower average selling price, driven by increased promotional activity…"[84] While the company did not specify the exact types of promotions, the direct impact on selling prices indicates significant reliance on price-based incentives.

Critically, this strategy reveals a deeper challenge: Allbirds' promotional reliance suggests difficulty in maintaining full-price demand for its products. Given their strong initial branding around sustainability and product quality, resorting to frequent promotions might indicate that customers perceived less differentiation or value at the original pricing levels. This reliance on promotions not only erodes profitability but also risks long-term brand dilution, potentially signaling to consumers that full-priced products are not worth the original cost, thus weakening overall brand equity.

In response to these challanges, "Allbirds will close 10 to 15 underperforming U.S. stores in 2024 as it seeks to streamline its operations."[85] This decision is part of a broader strategy to streamline operations, reduce costs, and refocus on core product offerings. The company also transitioned to a "…distributor model in certain international markets to grow those regions in a cost- and capital-efficient manner…"[86] Critically, these strategic shifts suggest that Allbirds is prioritizing operational efficiency and financial stability over rapid expansion, a notable change from their previous growth-driven strategy. Closing underperforming stores and transitioning to distributors internationally may indeed reduce immediate costs and mitigate losses, but it also signals that the company's prior strategy of direct retail expansion faced significant operational and financial hurdles. The distributor model, while cost-efficient, typically reduces brand control and profit margins, potentially diluting the brand experience that originally attracted consumers. Overall, these moves represent pragmatic adjustments to financial realities, but also reflect the

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[83] Allbirds Inc. "Allbirds Reports Fourth Quarter and Full Year 2023 Financial Results." *Investor Relations*, March 12, 2024. https://ir.allbirds.com/news-releases/news-release-details/allbirds-reports-fourth-quarter-and-full-year-2023-financial

[84] Allbirds Inc., "Financial Results," 2024, para.11.

[85] Adam Blair. "Following Tough 2023, Allbirds Plans to Close 10–15 U.S. Stores This Year." *Retail TouchPoints*, March 14, 2024, para.1, https://www.retailtouchpoints.com/features/financial-news/following-tough-2023-allbirds-plans-to-close-10-15-u-s-stores-this-year

[86] Allbirds Inc., "Allbirds Reports Fourth Quarter and Full Year 2023 Financial Results, para.31.

difficulties Allbirds faces in balancing profitability with maintaining the brand's unique customer experience in an increasingly competitive market.

Competition also intensified during this period. Major players like Nike and Adidas launched their own sustainable product lines; Nike's *Move to Zero* initiative and Adidas' *Parley* collaboration,[87] leveraging superior R&D, performance technology, and global reach to attract eco-conscious consumers at scale.

The collaboration between Allbirds and Adidas on the *Futurecraft.Footprint* sneaker marked a significant achievement in sustainable innovation. Designed to dramatically reduce carbon emissions, the running shoe emitted just 2.94 kg CO_2 per pair, far below the industry average, demonstrating that performance and environmental responsibility could coexist.[88] The project blended Adidas's performance footwear expertise with Allbirds's sustainable material innovation, resulting in a design that reimagined every step of the production process. Notably, the partnership stood out for its openness, with both companies, typically competitors, sharing proprietary technology and committing to transparency, setting a new benchmark for collaboration in the industry. For Allbirds, a smaller disruptor known for its eco-credentials, the project offered a platform to showcase its innovation on a global stage. However, for Adidas, the collaboration provided access to Allbirds' brand equity and sustainable material expertise, which it could then scale across its much larger and more resource-rich ecosystem. In other words, Allbirds brought the idea, but Adidas had the tools to take it further and faster. This shows how impact in such partnerships often depends not just on innovation, but on who has the scale to deliver it widely.

Animal rights groups like PETA have long criticized the production and use of wool, arguing that no matter how it is sourced, wool involves the exploitation of animals and causes significant environmental harm.[89] Although Allbirds promotes its use of "ZQ-certified Merino wool" as a responsible choice, it still operates within a system where animals and land are treated primarily as resources to be managed. This raises deeper questions about whether sustainability can be achieved simply by improving production standards, or whether it demands a different way of relating to the materials we use. Minne's work with local waste wool, which will be explored further in Chapter 3, points to another possibility, one where materials are not just sourced, but worked with through ongoing relationships of care and respect.

To conclude, Allbirds' story is a valuable reminder that even the most promising, mission-driven companies can hit serious roadblocks. But for a startup grounded in posthuman philosophy, the stakes and the structure are different. Unlike Allbirds, which, while sustainable, still centers human comfort and consumer habits, posthuman businesses challenge deeper norms by

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[87] Luciano Colos, "Allbirds Inc.," PitchGrade, January 19, 2024, https://pitchgrade.com/companies/allbirds-inc.

[88] Adidas, "A Unique Collaboration with Allbirds to Create Futurecraft.Footprint," *Adidas Newsroom*, May 11, 2021, https://news.adidas.com/running/a-unique-collaboration-with-allbirds-to-create-futurecraft.footprint--the-brands--first-shoe-with--3/s/f0f9adb9-dbbe-4c0c-af97-a3023b52535f.

[89] PETA, "Wool, Fur, and Leather: Hazardous to the Environment," *PETA*, accessed April 15, 2025, https://www.peta.org/issues/animals-used-for-clothing/animals-used-clothing-factsheets/wool-fur-leather-hazardous-environment/.

designing for more-than-human stakeholders: materials, ecosystems, and interspecies relationships. This shift brings new possibilities, but also new forms of vulnerability in a market still driven by anthropocentric values and traditional performance metrics.

What a posthuman startup like Die Kees can take from Allbirds is not a business model to copy, but a cautionary landscape to navigate. The pressure to scale fast, the risk of diluting values under market expansion, and the difficulty of keeping messaging clear as operations globalize; these are challenges that don't disappear just because a company is philosophically radical. On the contrary, they may intensify.

Still, Allbirds shows that values-led branding, material transparency, and supply chain innovation can resonate with consumers and shape industry standards. The key for a posthuman startup is to ask: how can these lessons be translated or reimagined in a model that resists centering the human, and instead holds space for the agency of nature, materials, and other beings? Chapter 3 will explore this question by turning to Minne's startup, Die Kees, and investigating whether posthuman principles can exist, not just as theory, but as a viable, sustainable, and ethical business model within today's marketplace.

4. Chapter 4: In what ways are posthuman principles being applied in real-world fashion businesses, and what do these cases reveal about their practical and economic viability?

This chapter examines how posthuman principles are currently being applied in a real-world business, and what these applications reveal about the practical and economic viability of such an approach. Through a comparative case study of *Die Kees* and *Allbirds*, this chapter explores how values aligned with posthumanism are expressed, negotiated, and at times compromised within distinct business models. While Die Kees embraces posthuman design and business philosophies explicitly, Allbirds provides a relevant counterpoint, representing a scalable, market-oriented sustainability brand that, although not posthuman in intention, reflects contemporary industry strategies for balancing ecological responsibility with profitability.

Wool serves as a material and symbolic connector between the two cases. In Die Kees, wool is approached not merely as a raw resource but as a collaborator in the design process, one that resists, shapes, and informs the final product. In contrast, Allbirds treats wool as an optimizable input within a value chain structured around performance and scalability. The differences in how wool is conceptualized and engaged with in each case reflect broader divergences in business philosophy, relational ethics, and understandings of material agency.

To structure the analysis, this chapter employs the five principles of posthuman design outlined in Chapter 1: distributed agency, relationality, material agency, becoming, and undoing dualisms. Each principle will be used as a lens to critically examine how it is embodied, resisted, or transformed within both businesses. Rather than presuming the superiority of the posthuman approach or positioning Allbirds as a compromised model, the chapter seeks to uncover what each case reveals about the affordances and limitations of implementing values-led design and commerce in fashion.

Ultimately, this analysis aims to surface the real-world frictions and creative possibilities involved in aligning business with posthuman values. By investigating where these principles are applied successfully, where they fall short, and how compromises are negotiated, the chapter offers grounded insights into whether, and how, a posthuman business can operate within or alongside the current market systems.

4.1 Case Overwiew: Die Kees

Die Kees is a Dutch startup founded by designer and researcher Minne Zeijdner. It emerged after the practice-based research project *Keeping Warm*, conducted as part of her MA thesis in 2023. Keeping Warm began not as a business, but as a personal and philosophical inquiry into how people stay warm under energy scarcity, and how design might move beyond human-centered thinking. Working with raw Dutch wool, Minne developed a series of scarves that challenged both conventional fashion production and human-centered design logics – see Figure 4.[90] This early exploration laid the foundation for Die Kees later, which now operates as a micro-business that continues to integrate posthuman principles in its design and operating decisions.

Figure 4. *Wool scarf made from Dutch waste wool, created during a participatory workshop using a posthuman design approach. Photo by Minne Zeijdner, 2023*

To briefly summarize the project *Keeping Warm;* it explores how posthumanist design principles might be applied outside of theory and within contexts shaped by energy poverty, community need, and limited economic resources. Zeijdner's process combined ethnographic research in seven households with hands-on experimentation using Dutch waste wool. A key insight was that warmth is highly situated, affected by each person's living space, habits, and physicality, and therefore, posthuman fashion should be adaptive rather than standardized.[91] Her material experiments treated wool as a co-actor, not a tool, allowing its qualities to shape design outcomes. Economically, she tested different business pathways and ultimately proposed a participatory workshop model that distributed labor and authorship, allowing garments to be made collectively. Funding proved to be a challenge, particularly through charities or municipal support, leading her to consider more grassroots, community-based models. She also worked with the Business Model Canvas to test how different formats, like toolkits, workshops, and pre-made products, could function within real-world constraints. In doing so, she reflected critically on the limitations of traditional business tools, noting how they often rely on assumptions about ownership, scale, and linear growth. Rather than reject the model entirely, she adapted it to better suit her aims by emphasizing flexibility, open access, and decentralization. Still, she found that applying posthuman values in practical settings raised unresolved tensions, particularly in securing

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[90] Minne Zeijdner, photograph of participant wearing a wool scarf made from Dutch wool waste, in *Keeping Warm* (MA final report, TU/e, 2023), 46.

[91] Minne Zeijdner, *Keeping Warm* (Master's thesis, Eindhoven University of Technology, 2023).

funding, building long-term infrastructure, and aligning ethical commitments with economic systems.

While *Keeping Warm* and Die Kees are separate projects, they share a common design philosophy grounded in material agency and posthuman ethics. In her thesis, Zeijdner reflects on how the characteristics of wool shaped both the physical product and the process around it, acknowledging that materials, people, and systems all influenced the outcome: "As much as the garment is influenced by what is possible with the wool and the washing machine, the people and business structures potentially behind this too have influence on how the garment takes shape."[92] This understanding of design as a negotiation between materials, tools, and social contexts continues to inform her approach in Die Kees.

4.2 Distributed Agency

Distributed agency recognizes that outcomes are influenced by multiple interconnected actors, materials, environmental conditions, humans, and social or economic systems, rather than driven solely by individual human intentions.

Die Kees invokes distributed agency in theory but applies it unevenly in practice. While the brand centers ecological interdependence in its design philosophy, its business structure remains highly centralized. Zeijdner is solely responsible for design, production, fulfillment, and communication, managing the brand part-time: "Everything is just really going very slow, which is also why my numbers are still low and everything, and I feel like if I could just divide the work, I would have a bigger reach and it would be easier to really become a serious business because right now it's just me managing everything in two days a week."[93] This concentration of agency is not the result of unwillingness, but of limited capacity. Hiring help or outsourcing would require funding the business doesn't yet have. As a result, the posthuman logic that informs the product, co-agency with nonhuman materials and ecological cycles, is not mirrored in the organizational model.

Die Kees is materially distributed but structurally centralized. If expanding labor is financially unfeasible, alternatives could include forming low-cost partnerships with aligned makers, bartering services within values-based networks, or developing modular guides to allow semi-autonomous replication of the product in other regions. These options would not eliminate all constraints, but they offer a path to partial distribution of agency without immediate capital investment.

Allbirds does not engage in distributed agency in the posthuman sense. Its model is firmly human-centered, with sustainability framed as a design and management problem to be solved through human-led systems. Nevertheless, the brand operates through a functionally distributed

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[92] Zeijdner, *Keeping Warm*, 31.
[93] Minne Zeijdner, interview by Nita Krasniqi, April 10, 2025.

structure: production, sourcing, and logistics are handled by a global network of suppliers and manufacturers; these partnerships enable consistent quality and efficient scale.

However, this distribution is instrumental, not relational. Materials are optimized for performance and sustainability metrics, but not engaged as co-shaping agents. Technologies support efficiency and transparency, but not unpredictability or transformation. While Allbirds shows how production can be geographically and logistically distributed, the model keeps decision-making and innovation centralized at the brand level.

For Die Kees, the Allbirds model shows that distributing labor can support growth, but only if the work becomes standardized and predictable. That's what enables Allbirds to scale, but it also flattens complexity and removes material or contextual responsiveness. If Minne were to outsource production, she'd likely need to simplify her process, which could weaken the care and specificity central to her brand. A more compatible path might be to partner with small, like-minded producers who can work locally but align with her values, allowing growth without turning the business into a system of pure efficiency.

4.3 Relationality

In posthuman terms, relationality holds that all entities, human and nonhuman exist through relationships. It values embeddedness, mutual care, and accountability across systems, not just efficient exchange.

Die Kees is grounded in close, place-based relationships. Minne sources Dutch wool directly and designs with the material's natural life cycle in mind. When customers misunderstand decomposition as a flaw, she doesn't redesign the product; she defends its ecological intent. This approach reflects a deep commitment to material and ethical embeddedness. Yet it also creates limits. As she admits: "I want to be very local. But then how are you going to change the world, you know… I'm fine with my product flying out to the US."[94] This reveals a structural tension: remaining small preserves relational depth but restricts visibility. Expanding reach risks weakening those ties, especially if growth means shipping rather than sharing production.

Allbirds builds relational credibility through verified systems. These tools make sustainability legible, but they replace personal ties with institutional ones. The customer trusts the brand, not the farmer or factory. As Chapter 2 highlights, this model enabled rapid global growth, but also led to logistical contradictions, like high transport emissions, managed through carbon offsets rather than avoided. Relationality here is designed for scale, but loses specificity. It's traceable, but not touchable.

Die Kees depends on local relationships to maintain ethical coherence, but that limits growth. Zeijdner has acknowledged this tension, wanting to stay embedded while still reaching more people. Allbirds shows that trust can be built at scale, but through abstract tools like

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[94] Zeijdner, interview.

certifications and emissions scores rather than direct connections. For Die Kees, the lesson isn't to copy these tools, but to recognize that some form of translation may be needed. If Zeijdner wants to expand without compromising values, she may need to make her relational model more legible, possibly by documenting sourcing practices, clarifying the role of decomposition, or working with local partners abroad. This would not replicate Allbirds' system but adapt its communicative clarity.

4.4 Material Agency

In posthuman theory, material agency recognizes that materials are not passive resources but active participants in shaping outcomes.

At Die Kees, material agency is foundational. The grower pots are made from 100% Dutch wool, washed and felted without chemical treatment, dyeing, or artificial reinforcement. The wool is chosen not for what it can be made to do, but for what it already does: retain moisture, insulate, and decompose.

Decomposition is not a flaw; it's the function. The material is not stabilized to meet expectations of permanence, and Zeijdner does not try to eliminate variability in color, scent, or texture. When customers push back against these features, she stands by the design: "I've had people who've been saying, 'Oh, I don't want it to decay. It's so pretty… But that's good for the plant… it's very humanist and it's something that I keep encountering.'"[95]

This approach imposes limits on standardization and scale. Each batch of pots may differ slightly, and their breakdown is dependent on soil conditions. But rather than correct for these variances, Die Kees builds them into the brand identity. Material agency is acknowledged not only in design, but in business logic: consistency is secondary to ecological responsiveness.

On the other hand, Allbirds engages materials as part of a broader innovation strategy. The company invests in low-impact alternatives, and aims to reduce the carbon footprint of each product through sourcing and design decisions. However, these materials are selected and optimized for consistency and control. Their behavior is engineered to meet standards of durability, comfort, and environmental scoring, not to vary or surprise. Material decisions are led by performance metrics, not mutual negotiation with the material itself.

The company's focus is on predictable quality at scale. While this supports its commercial goals, it flattens the possibility of material agency as understood in posthuman terms. The materials don't shape the product; they are shaped to fit the system and this allows for clarity and efficiency.

Die Kees treats its material as a co-author. This creates a distinctive, ecologically grounded product, but also introduces uncertainty for consumers and complicates efforts to scale. Allbirds shows that material innovation can be successful in the market, but only when variability is eliminated and behavior is controlled. For Die Kees, the challenge is not whether to preserve

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[95] Zeijdner, interview.

material agency, but how to explain it. Developing clear language about decomposition, imperfection, and natural variation could help customers understand the value behind these features, without undermining the product's integrity. Die Kees can use its material-led approach as a unique selling point by clearly communicating how the product's natural behavior adds value. This strategy could strengthen market appeal by inviting customers to engage with the wool's properties, as part of the product experience.

4.5 Becoming

Die Kees engages the posthuman principle of *becoming* through the life cycle of its core material: Dutch wool waste. What begins as discarded agricultural byproduct is transformed into a functional plant pot, and eventually decomposes into soil, becoming nutrient. This continuous transition, from waste, to product, to nourishment, reflects a fluid material identity shaped by time, environment, and use. Rather than fixing wool into a permanent object, Die Kees allows it to evolve across states, highlighting an entangled process of making and unmaking that embodies becoming in a tangible, grounded way.

4.6 Undoing Dualisms

Undoing dualisms means challenging rigid binaries, like nature vs. culture, human vs machine etc. Die Kees engages with some dualisms but doesn't dissolve all of them, and that's part of what makes the case revealing. For example, its core product, a wool plant pot, intentionally blurs the boundary between "product" and "waste." It is designed to decompose, nourishing the soil after fulfilling its function. This directly resists the dominant market logic that equates value with durability and permanence. However, consumer reactions often reflect discomfort with this challenge. As Minne explains: "From the get go, I've had people who've been saying, 'Oh, I don't want it to decay. It's so pretty… But that's good for the plant… and people don't get that… it's very humanist and it's something that I keep encountering'".[96] This friction illustrates how undoing dualisms isn't just a matter of intention; it's also about reception. Despite her efforts, consumers often revert to binary expectations: a good product should last, a pretty object shouldn't decay. Minne doesn't cater to these views, but navigating them increasingly seems imperative to the business's survival.

Another relevant binary is sustainability vs. marketability. On one hand, Die Kees prioritizes ecological ethics, for instance, avoiding soil tablets that would make the product easier to sell: "If I did, I would have a more marketable product… but the soil in always those type of things, it's very hard to get soil that is sustainable, that has been dug up in a sustainable way."[97] On the other hand, she's made concessions in other areas, such as packaging: "I would have liked to have no packaging at all, or have it very limited… but that's not going to sell."[98] This contradiction doesn't undermine her commitment; it highlights the real-world limits of undoing dualisms. Minne isn't trying to pretend these tensions don't exist; she lives inside them.

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[96] Zeijdner, interview.
[97] Zeijdner, interview.
[98] Zeijdner, interview.

She expresses a desire to expand the business and its impact, yet struggles with how to do so without compromising core values. As she puts it, "To make an impact in the world, you have to be in the world," acknowledging that meeting market expectations often requires concessions she's hesitant to make. The challenge is not reluctance to grow, but a lack of scalable models that align with her posthuman approach.[99]

Allbirds, by contrast, operates through balance rather than undoing. It integrates sustainability into a high-functioning market. It frames environmental stewardship as compatible with brand success - "green growth" in a familiar form. For instance, Allbirds innovated and open-sourced their materials. These are market strategies that also benefit sustainability, and they don't fundamentally disrupt market categories. Comfort, scalability, and consumer trust remain central. Their shoes are still made to last, still packaged attractively, and still priced to support margin growth. Allbirds operates effectively within current market structures by translating its ethical commitments into standardized systems. These tools are designed for scalability; they abstract relationships into data points and create consistency across global operations. While not posthuman in orientation, this model demonstrates how values can be operationalized in a way that's legible to investors, regulators, and consumers. For Die Kees, the relevance lies in the clarity and usability of such tools. Zeijdner may not want to adopt industrial logistics or institutional sourcing, but she could consider how selective formalization, such as simple impact statements or clear provenance documentation, might preserve relational ethics while improving market accessibility. Allbirds' case highlights that growth under current conditions often requires values to be framed as deliverables.

4.7 Viability and Tensions: Die Kees Business Analysis

Die Kees offers a grower pot kit priced at €24.99 (see Figure 5 on the right) for individual customers and also provides limited B2B options to small-scale retailers and concept stores.[100] The product is available through the website and at design events, with orders also managed manually via email.

From a market perspective, the short lifespan of the product (2-3 months before decomposition) presents both opportunity and challenge. On one hand, it creates a built-in mechanism for repeat purchases; customers who embrace the circular logic may return seasonally

Figure 5: Die Kees Wool Pot Kit

or gift the product. On the other hand, the €24.99 price point may feel high to new buyers unfamiliar with its eco logical value, especially when compared to cheaper long-lasting alternatives like plastic or ceramic. Without strong brand communication, the product risks being seen as niche, ephemeral, costly and even faulty.

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[99] Zeijdner, interview.
[100] Die Kees, "The Wool Pot," accessed June 4, 2025, https://diekees.nl/?page_id=321.

Die Kees currently has no large-scale e-commerce infrastructure, limited international accessibility, and a very modest social media presence. As Minne acknowledges: "I have to be on social media because otherwise I don't exist."[101] Still, she posts sparingly and avoids digital marketing techniques that might clash with the project's ethical tone. This contributes to low online visibility, making the brand dependent on exhibitions, word of mouth, and boutique retail, channels that are meaningful but difficult to scale.

Importantly, the brand's posthuman commitments are not explicitly mentioned on the website or social media platforms. Although this protects the product from academic jargon, it also leaves the design philosophy underexplained. Potential customers are not offered context about why the pot decays, why wool is used in this way, or how these design choices tie into broader systems thinking. Without that framing, the product may appear rustic or even impractical to uninitiated consumers.

This combination of limited production, high-touch sales, and modest communication, keeps the business authentic but fragile. Minne has expressed a desire to grow and professionalize Die Kees, but the path forward is unclear: "If I could just divide the work, I would have a bigger reach and it would be easier to really become a serious business because right now it's just me managing everything in two days a week."[102]

To address these tensions without compromising its core values, Die Kees could pursue several pragmatic adjustments. The rapid decay of the product, while ecologically intentional, might be reframed as a feature through clearer messaging or bundled seasonal offerings that add perceived value. Visibility could be improved through a thoughtful and active social media presence, not only to commercialize, but also educate. Sharing behind-the-scenes processes, user stories, or seasonal rhythms in a way that supports transparency without adopting extractive marketing tactics could be rather useful. On the logistics side, implementing basic e-commerce tools, such as pre-order forms or streamlined checkout systems, could reduce ordering friction while maintaining the brand's human scale. Clarifying the narrative around decomposition and material choice in more accessible language would also help customers better understand the product's purpose and value.

Additionally, rather than scaling through central production and global shipping, Die Kees could consider glocal partnerships: working with values-aligned makers in other countries to replicate the process locally. Through licensing, small-scale collaborations, or even open-source templates, the brand's model could travel without requiring the product itself to be shipped, reducing environmental costs while supporting broader impact.

Finally, to ease operational strain, Minne could explore low-risk collaborations with values-aligned partners, interns, or community contributors, allowing her to retain creative control while

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[101] Zeijdner, interview.
[102] Zeijdner, interview.

expanding capacity. Together, these steps could help Die Kees grow on its own terms, balancing ecological attentiveness with practical and financial viability.

5. Chapter 5: Findings and Implications for the Fashion Industry

Posthumanism is not yet embedded in the fashion industry; its presence remains limited, surfacing occasionally in niche or experimental design contexts. Die Kees explicitly embraces material co-agency, ecological embeddedness, and a relational rather than proprietary sense of authorship. Allbirds, on the other hand, integrates sustainability into scalable business strategies, but often translates ethics into quantifiable metrics (e.g., carbon scores, certifications), rather than rethinking the logic of business itself. This highlights a crucial tension: while sustainability has become marketable, posthumanism resists easy commodification. It requires not only new materials, but new metaphors, ones that can be difficult to align with current systems of profit, production, and branding.

The main barriers are not technological, but structural and cultural. As Marina Toeters emphasized, innovation in fashion is often driven by finance rather than design or sustainability. In fast fashion especially, buying departments hold more power than R&D, meaning that cost-efficiency routinely overrides experimentation. Even companies that claim sustainability must operate within these logics, whether through global shipping, labor outsourcing, or performance-driven material selection.[103] The dominant fashion system often rewards speed, standardization, and scale, favoring designs, materials, and processes that can be easily replicated, globally distributed, and consumed without disruption. On the other hand, posthumanism asks for time, difference, and care; it embraces slowness to support processes that unfold with materials rather than control them, difference as an acceptance of irregularity, unpredictability, and local specificity, and care as a responsibility toward both humans and nonhuman actors. These values clash not only with industry priorities but also with consumer habits shaped by decades of convenience and disposability.

Localism and transparency can be market assets, but only if communicated effectively. Die Kees demonstrates that posthuman design can be distinctive, ecologically attuned, and economically functional, at a small scale. However, its limited visibility and lack of operational support pose clear challenges. Marina points out that while posthuman fashion design's complexity is inspirational, its communication can be difficult.[104] Many consumers don't know how to interpret the biodegradable aspect as a feature rather than a flaw, or how to value non-standardized aesthetics. Without clear explanation or framing, these qualities risk being misunderstood or dismissed. Here, posthuman businesses must borrow a page from more conventional models, not to mimic their strategies, but to articulate their value in accessible, compelling terms. Transparency doesn't require simplification, but it does require translation.

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[103] Marina Toeters, interview by Nita Krasniqi, May 21, 2025, Eindhoven, Netherlands.
[104] Toeters, interview.

Posthumanism offers a viable path, but not a shortcut. Although posthumanism may initially appear too abstract for business, this research suggests otherwise: its principles offer a compelling foundation for designing systems that are ethical, adaptive, and ecologically grounded. However, translating these values into viable operations is not so straightforward, it often requires slower, hands-on methods that are resource-intensive and difficult to communicate. Financially, posthuman approaches face challenges not because they are inherently unviable, but because existing market structures favor efficiency, scalability, and immediate returns, metrics that don't easily capture long-term ecological or relational value. Minne's refusal to include soil tablets or dye her pots in popular colors reflects a deep commitment to systemic ethics over superficial appeal. Yet these same decisions limit sales and scalability. The implication here is not that posthumanism cannot work, but that it cannot work on the same terms as extractive fashion models.

Financial viability is possible, but requires new metrics of success. Marina's insights underline that when ecological and social externalities are properly accounted for, local posthuman-inspired production can be financially competitive with global supply chains, especially since the latter often outsource not only labor but also environmental harm and societal cost.[105] The challenge is that current business accounting does not internalize these losses. As such, a posthuman business may appear "less efficient" on paper, even when it delivers far more in ecological and social value. To shift toward more circular and posthuman models, both brands and policymakers need to expand, not replace, traditional fashion KPIs. Alongside metrics like unit cost and sales growth, businesses should also measure ecological care, local impact, and collaborative authorship, recognizing that long-term viability depends on more than just profit margins.

Strategic hybridity, not purity, may be the way forward. Both Pauline and Marina acknowledge that compromise is not failure; it is a negotiation. Minne's own concessions around packaging and distribution show that purity is not always possible, nor desirable. The key is to make compromises consciously, not defensively. In other words, posthuman businesses must decide which values are non-negotiable, and which can flex to meet external demands. This kind of strategic hybridity may allow posthumanism to enter the fashion industry not as a wholesale replacement, but as a disruptive graft: reshaping operations from within while remaining true to its ethical core.

6. Conclusion: Rethinking Fashion's Future

This thesis set out to explore whether posthumanist values can be translated into fashion business models that are both ethically grounded and economically viable. By analyzing two contrasting cases, Die Kees, a posthuman-inspired micro-enterprise, and Allbirds, a globally scaled sustainability brand, this research reveals that while the fashion system is deeply embedded in anthropocentric and extractive logics, there are openings for different ways of doing business. These openings are not without tension, but they suggest that posthumanism may serve not just as a critique of fashion's dominant systems, but as a set of tools for transforming them from within. Historical analysis further reinforces this possibility: tracing developments from the rise

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[105] Toeters, interview.

of fast fashion to the mainstreaming of circularity shows how values and practices in fashion evolve, sometimes rapidly, when social, environmental, and technological pressures intersect.

For designers, this thesis suggests that materials should not be treated as passive mediums but as co-creators, capable of shaping both process and meaning. Rather than forcing materials into pre-defined outcomes, a posthuman approach invites designers to work *with* their properties: allowing texture, variability, or responsiveness to guide form. In fashion, this could involve garments that adapt to climate or body movement over time, or pieces that visibly wear, soften, or shift, inviting emotional durability rather than aiming for permanence or perfection. Relational design, when framed this way, can generate not only more sustainable products but also deeper, more embodied connections between wearer, material, and environment.

For entrepreneurs, the implication is that radical ethics are not necessarily incompatible with economic viability, but they require creative framing, thoughtful growth, and ongoing negotiation. As seen in the case of Die Kees, values like local sourcing, material co-agency, and ecological responsibility can be translated into viable micro-models, especially when supported by storytelling, slow distribution, and community trust. At the same time, building a business that opposes the logic of the dominant system, while needing to survive within it, poses a structural dilemma: how to grow without being absorbed or undermined by the very market dynamics one seeks to critique. In contrast, Allbirds shows how aligning sustainability with conventional performance metrics, like comfort, durability, and global scalability, can successfully bring ethical ideas into the mainstream, yet this very success often depends on framing sustainability in ways that are market-friendly. Together, the two cases suggest that posthuman fashion ventures must not only define what values they refuse to compromise but also remain adaptive enough to navigate external pressures without losing coherence.

For scholars, this research highlights the need for further exploration of posthumanism's application beyond aesthetics and theory, particularly in fashion systems, business models, and operational practices. While much of the literature focuses on speculative or artistic design, there is significant academic value in investigating how posthuman principles function in enterprise, in production systems, and in the ethics of sustainability discourse. This intersection between posthuman theory and fashion economics remains underdeveloped and worth deeper academic attention in my opinion.

Finally, for the fashion industry, this research invites a shift in how sustainability is approached, as a deeper structural and value-driven commitment. Posthumanism challenges core assumptions about control, authorship, and value. As such, it reframes fashion as a process shaped by both human and nonhuman actors, rather than just a linear chain of production and consumption. This also opens space to rethink success, not only in financial terms, but also in terms of impact, integrity, and adaptability. Although not easy to apply, posthuman values offer a grounded framework for reimagining fashion business models that can be both ethically grounded and financially viable within today's market realities.

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Appendix A: Interview with Minne Zeijdner (April 10, 2025)

This appendix contains a transcript of an original interview conducted with Minne Zeijdner, a posthuman designer and founder of the startup Die Kees. The interview was conducted by Nita Krasniqi on April 10, 2025, as part of a master's thesis exploring posthuman fashion and sustainable business models.

The transcript below has been lightly edited for clarity and readability. Filler words, false starts, and repeated phrases have been removed unless essential to the meaning. The interviewee reviewed and approved the use of this material for academic purposes.

Nita Krasniqi

OK, cool. Thank you for being part of my thesis research on post human fashion and business strategies, so. To start, if you could please briefly introduce yourself and your work, and also what your startup or business is about.

Minne Zeijdner

Yeah. So my name is Minne Zeijdner. I am a graduate from Eindhoven University of Technology, where I studied industrial design, Bachelor and Master. I do design on a few different levels. For me it's most important to make the world a better place, and usually that's either very social design and also always very I try to make it very sustainable design and especially sustainability part is where I got very intrigued and I got into post humanism. So that's something that I take along, try to take along in my design process as well. And currently I have a startup called Die Kees where I use waste wool to make products for plants. Right now it's a grower pot, but I'm also in the process of developing new products.

Nita Krasniqi

Second question is what inspired you to build your startup around post human human principles rather than following a more conventional, sustainable fashion?

Minne Zeijdner

So while studying I always try to apply sustainable principles, but it never felt quite right. I've always felt that there was something missing or. Like something was bugging me and I didn't know what that was, but it just never felt really sustainable in a way. Also yeah, it just feels like you're you're trying to make nice things and sustainable things, but in the end, you're usually just adding to more waste for example; it's just kind of that feeling all the time. And while I was struggling with that, I came across the book about posthumanist design by Ron Wakkari, and actually had the privilege of having him as a teacher for a semester, which was really great. And his way of how he formulated post humanist design really struck that tone for me. The thing that I was missing, the thing that was rubbing me the wrong way the entire time. It's just that we're always doing this very human centered way of thinking and that if you're trying to design or do

anything sustainable that doesn't make sense and that you would have to take the whole world into consideration. So yeah, really, because I feel like it's THE sustainable method, yeah.

Nita Krasniqi

Third question uh, how does the post humanism shape your decision making and business model? Maybe in like everyday activities or business operations? Is it always in your mind?

Minne Zeijdner

It's in a sense, it's always in your mind is of course, something that the humanist way of thinking is obviously so integrated into our system that of course I make mistakes and probably a lot that I don't see. But for me it's really…It's a core part, so when I try to develop new product or when I'm thinking about expanding my product, it's always there. If I try to make a packaging material, the packaging material has to fit into this principle - And that that's a very concrete one, where a lot of people or some people have recommended to me that I should take dyed boxes or do different things in a certain way. And where I've always where I say no, I'm not doing that because it makes it hard to recycle. And I want to be a truly sustainable business. So I don't care about that it might look better. This is how it's supposed to be. So yeah, it's always just kind of there. It's like in your head.

Nita Krasniqi

Next question is have you had to reject both human principles to survive in the current market, and if so, when and why was a moment like that?

Minne Zeijdner

Well, the for me like it kind of begs the question then…So this is, yeah, is always a struggle with posthuman where you cannot deny that we have to exist and that humans are existing. So in that sense I have to do humanist things to make and make it work for myself. Hmmm have I done that?

Nita Krasniqi

If it maybe makes it easier as a question if maybe just also in regards to your business, was there a time when the principal wasn't really aligning with the market and you have to either compromise on the value or stick with it still?

Minne Zeijdner

I think it's yes. I think in like in a sense maybe again back to the packaging, I would have like to have no packaging at all, or have it very limited, I right now have the complete cardboard box with different stickers on it. It's still made in a very sustainable way, but I would have preferred to just have a bag, but that's not going to sell. So of course there is always this balance between…UM to make an impact in the world, you have to be in the world. I cannot deny that people want certain things in a certain way. Yeah, it's a I think and there that that's mainly the struggles also with marketing for example or how you do things in that way or in a sense for me I

think not wanting to be on social media or something could be very much related in a way to a post humanist mindset. But I have to be on social media because otherwise I don't exist.

Nita Krasniqi

So now the question would be, what's been the hardest part of aligning the post human values with making a profit? Something that you have seen happening, maybe even in your own business.

Minne Zeijdner

Aligning it with making a profit. Yeah, I think it's for sure. The thing that I was describing just now for example about the packaging and just making the thing appealing.

Nita Krasniqi

Low Cost maybe? Low cost as well, but then you have to compromise maybe on something else.

Minne Zeijdner

Yeah. And there's certain things that I or there's also a nice example maybe so people have asked me if I couldn't put in like an Earth tablet that you add water to it and it becomes a lot of soil. You have these type of tablets and it's really nice. They're really small. They would very and then I would have a complete package. You would get a pot and the soil and the seeds, which I think be super marketable, but the soil in always those type of things, it's very hard to get soil that is sustainable, that has been dug up in a sustainable way. There's always turf in it, which is to dig that up. It's just adding all these gases. And it's you have to dig up entire nature like forests and everything. So I don't want to be a part of that. So that's why I said, OK, I'm, I'm just not going to use those tablets. I'm not going to use those soil tablets and it's definitely something where I think it's…If I did, I would have a more marketable product. And again, if I would choose to use a different type of packaging, I would have a more marketable product.

If I would but also with….I think decision process is in, in in dying for example which is a question that I would get if it's possible to have it in in in certain colors it is, but the dying process is… sustainable dyeing process is super, super expensive. So and in a sense it's limiting, but in a sense it's also really comforting, right? Yeah. It's just this is the product and the yeah.

Nita Krasniqi

The next question is do for example clients or buyers or people in general understand what post human even means? Or do you always have to kind of frame it for them so they also understand the product?

Minne Zeijdner

I don't explain posthumanism to them, it's too much. What I do find very funny, which relates to this is that my product it's biodegradable and in that biodegradation decaying process…That's the nice part about it, because that's where all the nutrients are released into the soil and that's what's really helping the plant. And from the get go, I've had people who've been saying, oh, I don't

want it to decay. It's so pretty like. But that's good for the plant and if you want, you can buy a new one next year, right? So, but people don't get that, and they don't want it to degrade, which is a compliment. But it's very humanist and it's something that, yeah, that I keep encountering. It's really funny.

Nita Krasniqi

My next question is how do you measure success in a business that doesn't prioritize growth in a human centered way? So for you, what's the measure of success?

Minne Zeijdner

Wow. Yeah, I think it's so part of of the posthuman design process is also realizing that this is not my product. I am a person who is doing this, but I am also able to do it because I get to work here, because I have access to the wool, because I have the wool. This is not my… I'm not the owner, I'm the owner of the brand maybe, but this is not my thing. This is not my idea. I don't own it and for me then success is really to see that the wool is finding ways where it's used in this way. So I in a weird way, always celebrate when people contact me that I have competitors because then I'm like…And they're in, in magazines or whatever, because I'm like, OK, word is getting out, you know. And it will be super awesome if I can make a living of this, of course. But that's not the point. The point is that people will…Yeah, that the wool will find a way to be useful in this way.

Nita Krasniqi

So it again aligns with values rather than just profit or monetizing?

Minne Zeijdner

Yeah, of course. I mean, of course, it's cool. Every time I get, if I make money and it's the response of people, I guess shows for me that there, that there really is something here which is great because I in the end, I have to pay my rent but, it's not about the success, it's not about me having a success. It's yeah…

Nita Krasniqi

Yeah, it's about the all interconnected agents in the process.

Minne Zeijdner

Yeah, yeah.

Nita Krasniqi

My next question is, up until now, was there any specific compromise that you had to make in order for your product to be developed, shown or sold?

Minne Zeijdner

Can you explain what the differences between this and you've asked questions like this a little bit before I think like with the humans… So the only thing I can think of right now is that I got approached by…I was at a Conference and I got approached by these people who make well, doesn't matter. They make something they wanted to work with me and the owner, she came up to me, she was like, but we do sell to a lot of clients in the US is that a problem for you - Because that means you would have to fly your product out. And I never really thought about that. And I this is one of those….I think it's a compromise where I could be like, no, I want to be very local. But then how are you going to change the world, you know, so that, that, that would be for me a point where I say no, I'm fine with my product flying out to the US, even though it's supposed to be very local,

Nita Krasniqi

OK. So yeah, that basically also answers the next question. It was like or in the future if you had to make a compromise. Yeah. Make a bigger change. What would it be so?

Minne Zeijdner

Yeah, yeah, I do want to, of course, try to make it as local as possible, so my preference would then be to find a producer in the US for them to do it and just work with my design. But yeah, you cannot be…it cannot be just me and my principles. I have to reach people as well.

Nita Krasniqi

Does technology play a key role in the business or in the production or something?

Minne Zeijdner

Or, yeah, I'd say so.

Nita Krasniqi

What kind of technology specifically?

Minne Zeijdner

So the laser cutter and sewing machine. And I think, yeah, of course Social media. Internet.

Nita Krasniqi

In your own opinion and experience, do you simple human fashion for example or design becoming mainstream? Or do you think it will continue to be inherently pretty niche?

Minne Zeijdner

I do see a lot of projects around it, so in that sense there is a lot of I am in the Ron Wakkari bubble. Of course so. But you do see it happening…No, I think I think, I think it's already a trend because it's in the design but in the fashion world I find it a bit harder, but in the design world specifically you have this very like peak now as well with indigenous design, which is very much related to each other or they are very much alike, just from different they come from

different people and…Yeah, but only time can tell whether it will be as big as human centered design. I hope it will be.

Nita Krasniqi

If you had to design your business again from scratch, what would you do differently? Especially maybe knowing also the financial aspect and the current market trends and how it goes.

Minne Zeijdner

Yeah. I think, and I think I would just find a partner to be able to do more because everything is just really going very slow, which is also why my numbers are still low and everything, and I feel like if they're, if I could just divide the work, I would have a bigger reach and it would be easier to really become a serious business because right now it's just me managing everything in two days a week.

Nita Krasniqi

Yeah. And how do you reach the clients or partners?

Minne Zeijdner

Yeah, that. So that's that's going really well actually. I feel that. So that's through either through word of mouth or through trade shows? Or dutch design week that type of thing, and that's going really well in the sense that right now I'm not getting enough work in. I just actually got in like a nice order in from the word of mouth. So that's really really nice and it's yeah…But, but yeah, if you only have two days a week to spend on it, right, you cannot do a lot. So that's my main struggle right now. And also where I feel like there's a lot. I just don't know a lot that has to be done. So I'm kind of just missing a partner to…

Nita Krasniqi

For again responsibilities?

Minne Zeijdner

Yeah, yeah, yeah. And to make…yeah to focus.

Nita Krasniqi

So being more business focused now, is how is Die Kees performing financially like are you breaking even? Is there a profit or a loss? I don't need specific numbers, you don't have to share that if you don't want to, but at least just to have an idea.

Minne Zeijdner

I made profit last year, which is very small. But I did. There wasn't a loss.

Nita Krasniqi

Question - roughly how many customers or client have you had in the past year?

Minne Zeijdner

So it might be nice to say that during Dutch design week I sold a lot and that that was the launch. But that's the only time I did B2C. So that would have been, I think I sold…I think it's like 200 boxes, which is…So a little less than I think maybe 1 to 75 or something people and then. But I want to do B2B. And for that, I've had since then roughly about 5-6 clients.

Nita Krasniqi

And this is since 2024, when the business launched?

Minne Zeijdner

No, that since last October, then I had the week B2C and then since after that I think I've had…something like that.

Nita Krasniqi

And what is the price per package the product?

Minne Zeijdner

Retail recommended retail price is 24,99, so that's also for how much I sell them. If I get an order online…from a private person, B2C it's 10,50 and then the first one is including taxes and the second one is excluding taxes.

Nita Krasniqi

So to businesses is 25 and to customers is 10,50 euros?

Minne Zeijdner

The other way around, so to businesses, it's 10,50 excluding taxes, and for private people it's 24,99 including taxes.

Nita Krasniqi

OK. Thank you.

The other one is do you rely on product sales alone or do you also generate income through services, grants or collaborations in regards to the business?

Minne Zeijdner

No, I also the second one. So I do sometimes some workshop or speaker or kind of that type of thing.

Nita Krasniqi

Where would you say your biggest cost comes from? Like is it materials production time or something else?

Minne Zeijdner

Definitely time. Although I'm that's maybe..that's so actually - right now it's materials because I'm bootstrapping, so all costs that I make go to producing or presenting somewhere or anything like that. So actually…Yeah, I don't pay myself right now.

Appendix B: Interview with Pauline Vaandrager (April 16, 2025)

This appendix presents the transcript of an interview conducted with Pauline Vaandrager, a master's student in Industrial Design, as part of a thesis exploring posthuman fashion as a sustainable business model. The interview was held by Nita Krasniqi on April 16, 2025 in Eindhoven, Netherlands.

The transcript has been edited for clarity and brevity, with filler words and hesitations removed. The content has been preserved to reflect the participant's ideas and voice accurately. The participant has granted permission for use of this interview in academic work.

Nita Krasniqi

Thank you so much again for the interview. So the first question is if you can briefly introduce yourself and your practice and then in relation to that, how does post humanism thinking show up in the way you work.

Pauline Vaandrager

OK, so yeah, I'm Pauline and I study a master industrial design and I'm now working with clay printing, but it's kind of related to both humanism in the way that's normally you have this kind of printing where you make model and you slice it and that's what you print, so it's very outcome focused.

But the thing about clays that it's very it's very indeterminate. It's like more indeterminate than plastic. Uh, so what I was interested in is how can you make it material focused instead of outcome focused, so not with a model, but kind of, like printing it coil by coil and or layer by layer. So that's you kind of code and print at the same time and then you can respond to what happens in the material. So it's if you see a certain behavior you can play with it and that's why it's more Material focus where it's not. Oh, the material just has to behave a certain way because that's what you want in order to achieve that outcome that was made before.

Nita Krasniqi

Thank you.

And what does like posthumanism or post humanism value, or the ideology or the philosophy itself, mean to you personally? Why is it important?

Pauline Vaandrager

Yeah. So I really like the theory theory of material engagement by. Basically what I like is that it's more about looking at things holistically at a sort of perspective where you don't have an individual who's like a creative genius who just randomly comes up with interesting stuff. But it's more about the sort of flow between things and where the material also has a certain agency. So by playing through that material, that's the kind of the…And that generates creativity because

you're kind of like normally in the world. You're always kind of anticipating and sort of responding to things that are unfolding. So you're, like, improvising in a way is creativity. So it's not that to me, it's not such a like mystical thing, but it's something that we all do, and if we want to do it in our creative practice, it can help a lot to give more agency to the machine or to a material so that you can respond to what's like the differences, the kind of unique events that are happening.

Nita Krasniqi

OK, uh, can you just describe a moment where you felt like the clay spoke back or resisted your intentions, and how did that shape the final outcome again?

Pauline Vaandrager

That's interesting. Yeah, I think it happens all the time because one of the aspects is that I basically code a layer, but then I never know exactly how that coded thing. Like I have a sort of line representation, but I don't know how it manifests as the material. So there's always this kind of unexpected element for me where I code a layer and then see what it actually looks like physically.

UM, but I think one of the most unpredictable moments was when I had a lot of air balls in the clay. And normally that's really detrimental and you basically just have to fix your play and start over. But I could just work with those air bubbles. So what was happening is like, I would make a coil and there were like air bubbles and I'd have to think for the next layer, OK, the structure will collapse if I just keep doing this thing, so I had to adjust the path to make sure that I sort of build around the air bubbles. So basically constantly, constantly responding or sometimes the way that is expressed in clay makes me realize that.

How my logic in the code actually works or sometimes also too deep back like when you have a path and suddenly there's a space where there's no path, then I can see like oh something weird is going on here. So I think I'm like talking to the clay all the time and it's talking back to me.

Nita Krasniqi

That's very cool.

What value do you see in slow, intuitive and embodied processes, in contrast to may be efficiency driven design methods or other methods that are explained to you as an industrial design student.

Pauline Vaandrager

Yeah, I think there are like multiple elements to it. And I think it also just fits my personality that I don't really like to plan things. So in general in life, I like it when things sort of unfold and I feel like now I can express it in my way of digital fabrication as well, where planning can give a lot of stress. And if you have a sort of vision in mind and things don't turn out according to this vision. It's kind of a frustrating thing as well, to me at least.

But now, because there's no outcome, I feel way more curious in the whole process. Like, oh, what's going to happen? And then in the printing itself, I feel engaged rather than, UM, yeah, how should I? I feel like I am part of the machine. Like normally I would say, OK, I made a model. Now press print and you make it basically. And I feel like if I wasn't there, the system would also be different. So I feel more like, really part of the making process, yeah.

Yeah. So one thing to add also is that with clay, time matters a lot. Because you have it's very like influenced by all these environmental factors like the humidity and the whole drying process. So normally if you have a model that's kind of hard to work with, but now it's also interesting that you can think about.. OK, layer needs to dry a little bit. So I think that with Clay specifically, it also allows you to pay more attention to time and temperance.

Nita Krasniqi

My next question is if your practice in this case had to be shared with a wider public or even monetized at some point, what values here would you want to really protect and what compromises maybe could feel unethical?

Pauline Vaandrager

I think one thing I'd really like to protect is the craft element as well, because I'm trying to be like integral to crafts and owner that in a way where the sort of process I'm doing is sort of developing because I'm also hand coiling with the ceramicist and rather than just talking to them once and then sort of using them. It's really like including them and on a weekly basis developing the workflow based on what I do there. So I think that when it's Monetize. I find it important for others that they also recognize the value of the Craftsman and especially their whole material knowledge and their way of working their way of thinking and I think also the material aspect think I would find it important that people see both the digital and the physical as a material and not just think Ohh it's it's only the clay that's the material. Because to me like the code is also a material. Yeah.

Nita Krasniqi

Since this is not very a very traditional way of making something, how do you measure success? So how do you consider successful outcome in this case?

Pauline Vaandrager

That's quite a difficult question, I think because. I think like a very important part of success sounds a bit silly maybe, but just being able to have fun in the process to be surprised by the material thing that's really important. So also I feel like sometimes when structures collapse or when it looks when other people would say, oh, that's very ugly. I don't mind as much because it's more about whether I found it interesting or or whether I made certain discoveries in the making process, so it's really like I'm making for practice where that aspect is the most important. And then what comes out. Of course, it's nice if people say, oh that's beautiful, but I'd rather have them say ohh that's interesting or as like oh, what happened here? Where it becomes

a sort of conversation starter or like a sense making object and not so much that they…Yeah, the aesthetically pleasing part is kind of secondary to me.

Nita Krasniqi

Would you say sustainability is also part of this? And if yes, is it more like in the ecological aspect or maybe emotional aspect, or something else?

Pauline Vaandrager

Right now I find the sustainability aspect a bit difficult, maybe in the sense that clay sounds sustainable, but it's not really because you fire it at very high temperatures and the clay I'm using now, it's just, like it's just factory clay basically. So they have to harvest the clay and everything and that's actually not that environmentally friendly. But like a sort of underlying vision that I have is if we can play more to the unexpected behavior of the material, then ultimately it be interesting to print with materials that aren't as predictable, and if we can step away from the whole wanting materials for digital fabrication to be as uniform and predictable as possible, there's also more space for working with self-made materials. Or for instance, you can also like collect and make your own clay in the sort of like near the region that you live in, and then you can make a much more sustainable practice. So I think it's like future aim where you do start making your own clay and use like that ecology in the digital fabrication because you can respond because the materials don't have to be so uniform or so perfect or so predictable.

Nita Krasniqi

The last questions…The first one is do you think posthumanism is still relatively new and niche, or do you think it's now quite an emerging trend that could be getting bigger and bigger in the future?

And then after this; Would you ever consider to maybe start a business on your own with this philosophy in mind, considering how the current market is regulated and that it's very human centered?

Pauline Vaandrager

Hmm yeah, this question I think to answer the first question like also the aspect of whether it's new or not. I find it hard to say because on one hand I feel like these kind of theories have existed for quite some time. Like I've read things from like 1960 or 70 or something like that, which if you look at theories now, a lot of it is derived from that and it's still quite similar. So I feel like the Philosophy is there, but…

Nita Krasniqi

Maybe in design?

Pauline Vaandrager

Like, yeah, yeah. Also in also in design, I feel like it always takes a while for ideas to really become integrated into practice. And I do think that a lot of the ideas are Misunderstood or kind of used as this buzzword, but then. Yeah, because it sounds nice and like that's not really post human or to me that's not really post humanism. So I think the ideas have been there for some time. But yeah, I don't know about…I don't see that many post human centered practices.

And what? What was the second question?

Nita Krasniqi

And would you consider starting a business of your own? Maybe with Clay? Something else that kind of embodies this philosophy and its practices?

Pauline Vaandrager

If I were to start a practice, then I would find this quite important and I think also what we talked about earlier about the sustainability aspect of it. That is something that would be important for me to start working with like clay that you collect yourself instead of the factory bsically. And also yeah, to just decentering the human in general giving more agency to material and machine that would definitely be core values if I were to start a business.

Nita Krasniqi

Yeah. Thank you.

Appendix C: Interview with Marina Toeters (May 21, 2025)

This appendix presents the transcript of the interview conducted with Marina Toeters, a fashion-tech designer, author and founder of the Fashion Tech Farm in Eindhoven, Netherlands as part of my thesis exploring the possibility of applying posthuman practices in the fashion industry. The interview was held by Nita Krasniqi on May 21, 2025 in Eindhoven, Netherlands.

This transcript has been edited for readability and conciseness, while preserving the integrity of the participant's ideas and voice. The participant has provided consent for the interview to be used in academic research.

Nita Krasniqi

Hi Marina, thank you so much for making the time for this interview. My first question is, what do you think are the biggest structural barriers to sustainability in the fashion industry today?

Marina Toeters

We ourselves, don't really experience those kinds of things. The barriers that I see in the fast fashion industry…um the buying departments, that's so much bigger than well, R&D, actually R&D is even non-existing. There is a design department, but the power of those is typically very limited. And the buying department, yeah, they have the biggest say…like where it's going to be sourced. And if the buying department has the biggest say, that is often number based, what means often finance based. That there is a tendency more to calculating stuff like LCA, so that you can construct also the impact of your materials, like what's it's being used more and more…But it's not as easy and straightforward…So there's a yeah, there's a huge economical focus or innovation and economics in the total fashion industry, instead of to focus on making it better, either for the consumer or for the people, making it or for a societal impact.

And the thing is that those companies are still making a whole of money by shipping everything globally. That also brings maybe a second barrier, so it's so hard to feel responsible for something that's happening on the other side of the globe…if you see it happening here..what might be retailers, neighborhoods who don't look good or your neighbor who doesn't feel well, that's super easy to empathize with them. Yeah, but when a garment is being made somewhere around the globe…well, there's no connection at all…and to feel empathy with that is also a barrier both for especially for consumers, but also for brands, because yeah, every now and then you're gonna go for a work trip somewhere Asia, but often also not it's the most empathized people who would do that, and also have a say in how to do it differently.

Nita Krasniqi

What challenges do you see in running a fashion business that treats materials, technology or ecosystems as active collaborators? And also in your view, what are the potential benefits of adopting a posthuman approach in fashion?

Marina Toeters

I think it can be super inspirational, and not it's Yeah, really promote your umm openness of your scope. And uh, um, of course, there are also many challenges, and how many collaborators, ore agents, we want to take, how many can you like, really like in depth take into account…So that's of course, all what you see…so still you need to scope it or something as we can do in fashion, you have to target your um, so it is, of course, it brings in a level of complexity to take so many agents into account, but also inspirational, so Yeah, you can lose yourself in that, that can be a challenge.

Um Mm, and what is another challenge and that comes more into the marketing of things, so if you say that you are..well, I'm going to use the word of the previous question like a sustainability designer or umm, you directly get back that it could have been even better. Uh and that is true. It's never…there's never an end on doing it better for society. Um but it's such a hard selling point, so you hardly can use it as a promotional tool. So it should be inevitable that you do the best you can. But without like promoting it too much, but yeah, if I say to that, yeah, did I try to I give an answer or an alternative on fast fashion, then, for example, interviewers are going to ask me how I personally would recycle my stuff? Yeah, that's a total different level, and then I'm also, I'm being an addresses as a consumer, and of course, I also try to do my best there. But you so you are being encountered right away. Um, and of course, it's a coping mechanism of people are not doing that, or you kind of few blames that you are not doing enough, which can always be because things are that is Yeah, I'm not sure if you can make sense out of that, but that is them. Um. Yeah, that's a bit of the feel. Then more yeah, you say, also feasibility in the practical things, so the chain of fashion is super deep, it's um.

So if you have, for example, the chain of electronics, or electronic goods, you have maybe a a company, you have maybe 1 or 2 or 3 material companies…behind that, and then you have a assembly company and you have a marketing in retail distribution or whatsoever. That's it well…Especially in the you know, in a biomaterials, it starts all the way at this like this farm. That's them making a decision on how to grow their crops to like yarn stood and the knitting, and we weaving process to get materials to, uh well then of course stitching it up, it's highly specialized if you do woven knits, you oh sorry, woven cotton, it's, it's a total different chain, and if you do polyester knits or whatsoever, to even in different countries, and yeah, keeping track of these kind of complex…this is also a thing and that brings me back to also the question of the answer on one, the chain is very deep and very globalized. But that goes for any of the fashion goods, that's also a challenge for fast fashion, it's not specifically for um, posthuman, because a feature of that is that the focus is much more on localized. And yeah, that gives I think the super nice strength and this can be used as a branding thing, people like to know, sometimes to know where it comes from…So if you promote that instead off yeah, just "it's sustainable" … It's more a feature.

Nita Krasniqi

How do you see the financial implications of adopting posthuman principles in the fashion industry?

Marina Toeters

I think it's totally doable if I, if I calculated through and we did it with, for example, isolation gowns…a few years ago, and that project had a very deep dive, and it was a lot about the business aspects. And it was well, the cost price is kind of even, so it's not profitable, but it was like an 8% of impacts on like the materials on society, and yeah, so this one 92% is a societal loss. So it's not precisely in the chain where then the losses are but it's in the society, it's in that you have more waste more CO2, because of all the materials being burned more, and that's also a super high cost thing, and next to that we calculate also through and the production could happen here. So you have also the profits here, instead of yeah, shipping everything, and this case often from China and then bringing the money to China, and don't understand me wrong that I think that we all are all connected over the total globe. But we cannot just stop thinking. And if the calculation is kind of the same, but then yeah, the ecological profits are only 8%, yeah I really cannot get my head around it. Why not shifting right away? Ah, and that's it, but also in the case of the isolation gowns, I didn't manage, I didn't manage to push it through. While for me it's such an open door even business wise, even with our way higher labor costs.

And also, yeah, for me, I find it so strange that here in Europe you can still make a super cool electronic, but also the more ordinary ones like electric toothbrushes and phones, and cars and those kind of complexities, and also up to a compatible level um but we don't manage to do that for garments and yeah, and I think this is totally, because all the focus in fashion, well now I dive into a history a bit more again, went for decades and decades in innovating in the financial side, instead of how to produce our things.

Appendix D – Interview Consent forms

The following pages contain signed consent forms from the three interview participants whose contributions informed this research. Each participant reviewed the purpose of the study and agreed to take part under the conditions outlined.

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