ETHICAL IMPLICATIONS IN AI-POWERED TREND RESEARCH PLATFORMS

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Abstract

The manuscript discusses the limitations of applying AI in trend research platforms for the fashion system. This analysis intends to take a position within the emergent research topic of AI. Considering its ethical implications, we explore the opportunities of implementing AI to support trend research from a design-oriented perspective, realising the relationship between fashion and trends, which is central in shaping the future. Examples of AI-powered trend platforms evidence how valuable their insights are for strategic innovation. The analysis focuses on platforms that provide tailored services using AI and expert interpretation. Virtue ethics of technology serves as a useful framework to examine this topic, proposing a new set of virtues that respond to technology's shaping of behaviour and its disadvantages. The risks of applying AI are many-fold; the consequences perpetuate power imbalances and social inequality. Proposing guidelines for enabling a responsible practice explores how to forge ethics into AI, creating a pluralised practice.

Keywords: AI, Pluralisation, Fashion, Ethics of Technology

Introduction

The growing use of artificial intelligence (AI) powered platforms that offer a wide range of applications and services has fostered the development of new skills and tools. The popularity gained by GPT models that process natural language and AI systems[1] that create images (OpenAI, 2023) has exposed a variety of uses, from text-based answers to AI-generated art. This fast-growing technology fails to find a common consensus in its definition and regulation. The rise in its adoption is the result and cause of the development of innovative technologies used (and misused) among various disciplines and industries, such as fashion (O'Neill, 2016).

In particular, the use of AI in trend research—an activity particularly relevant for a futures-oriented practice as the fashion design one is and in which design and other futures-oriented disciplines find a common interest (Poli, 2019; Celi & Colombi, 2017)—opens a new field of application, for which its implications shape our futures through the very design. The interpretations drawn from the trend research phase influence the design practice, where analysing trends from a prevailed perspective only, facilitated by the unregulated and biased use of AI, may determine a single-sided future.

Through an exploratory meta-study, this manuscript uncovers why understanding these implications, embedded in the use of AI-powered trend platforms, is key for the pluralisation of the fashion system. From the decolonial concept of Pluriverse (Escobar, 2018), pluralisation describes the coexistence of countless options of knowledge, being, and perception, critiquing the idea of universal norms (Tlostanova, 2017). The relevance behind the search for a pluralised fashion practice lies in fostering specific and intangible values that may transform the fashion system by defining its foundations. Involving historically marginalised voices and realising the culture of dress comprises multiple epistemologies promoting a richer practice (Jansen, 2020).

The ethical implications regarding the use of AI in trend research analysis will be discussed under the

1 Applications of AI or machine learning could be defined as "learning algorithms that manipulate and transform data into information suitable for the given task" (Mohamed et al., 2020).

parameters of technomoral virtues (Vallor, 2016), i.e., virtue ethics. Using these as a framework allows the introduction of values related to pluriversality, reflecting on today's prioritisation of capitalist canons that put hegemonical perspectives first, intending heteronormative, patriarchal, liberal views that flatten and homogenise results and experiences. The paper searches to analyse and take a position on the emerging issue of research on AI, realising that the advantages of using AI in trend research analysis are still subject to capitalist values that often bring detrimental implications to marginalised groups.

Virtue ethics also prioritises the coexistence of society and technology, evidencing the need to build contemporary virtues that "include an explicit conception of how to live well with technologies" (Vallor, 2016, p. 3). This is increasingly present in current debates regarding the role of AI, supporting the idea that it is a mere tool. Although the discussion around technological tools as means of control has been widely covered throughout history (Deleuze & Guattari, 1987; Foucault, 1988; Winner, 1980), the debate remains open into who handles the tool and how aiming at an efficient use and learning how to dominate it. It is then necessary for designers to maintain a critical stand and question these processes.

The research proposes a first set of possible guidelines ranging from practical actions and general leading values as conclusions, these are achieved by analysing the overlapping relationship between trends, the fashion system, their incidence on the future, and the use of AI technology, delving into its ethical effects. These are semi-outputs that result from a PhD research in design, where a first literature review contextualised the research, introducing the main concepts and principles. A further phase of desk research included the examination of case examples from various AI-powered trend research platforms.

The paper is structured as follows: First, we will explore the overlapping between trend research, fashion, and futures in detail, setting the context. Second, we will analyse how AI-powered trend research platforms operate, reviewing upsides and challenges. Third, the ethical implications of AI and its consequences in trend research bring an overview of the specific effects, problems, and causes. Fourth, value ethics will be used as a framework to bring virtue ethics into technology, creating the bases for a theoretical and practical proposal. Last, the guidelines and the conclusions act not as an ending remark but as a critical debate.

Trend Research, Fashion and Futures

The relationship between trend research, fashion, and the future is defined by the incidence one concept has upon the other. Trend research is the detection of anomalies and discontinuity in contemporary culture that indicate something is changing (Vejlgaard, 2008; Celi & Colombi, 2020). Its evolution through time is interpreted, understanding its new possible directions by detecting behavioural and habit changes and how these affect consumption. Designers identify new meanings in these findings through their reflective practice (Schon, 1983), generating multiple design trajectories (Celi & Colombi, 2020; Raymond, 2019). As outlined by Blaszczyk & Wubs (2018), fashion and trend forecasting have an intertwining relationship. The fashion system depends on gathering and distributing information about styles, fabrics, and colours. Initially, trend forecasting stood as colour forecasting; shade cards were created by French dye houses and sold globally; later, sample houses in Paris sold books with fabric swatches to designers, both serving as referrals on the desired French style for designers and textile companies. Nowadays, online portals share fashion predictions world-wide, guaranteeing immediate access to analysed information and valuable insights. The practice of fashion forecasting emerged as a need to reduce risks by predicting consumer patterns, an advantage numerous industries also leverage from.

Fashion's interpretation of the patterns of cultural meanings evidences how crucial it is for the design field to apply trend research (Colombi, 2011). The result of doing so is the envisioning of design scapes inspired by the context and the user's values. In fashion, trend books represent this context and its evolution, creating a desired design scenario and summarising qualitative research that includes codified and un-codified, tangible and intangible cultural sources not limited to specific industries, users, or locations (Colombi, 2011).

Fashion trends delve between a cultural and a commercial dimension as an instrument that incites consumption through obsolescence and innovation processes (Blaszczyk & Wubs, 2018). Although trend research analyses the cultural dimension qualitatively (Hesmondhalgh, 2007), some methodologies support themselves with quantitative tools to measure a product's perceptive characteristics or its performance on the market. Regardless of its highly intuitive feature, the

quantitative aspect is shown in annual or monthly reports that "offer almost real-time research updates" with valuable information for launching new products (Colombi & Zindato, 2019). The aim is to reduce the risks in "creative and economic investments" and facilitate the negotiation between its stakeholders, avoiding releasing an inefficient or outdated product (Colombi & Zindato, 2019).
The application of trend research in design practices, including fashion, plays a crucial role in shaping the future. If we define designing "as the momentary coalescence of future possibilities materialised today" (Marenko & Brassett, 2015, p.6), then we may state that "[t]rends shape our futures, just as we shape trends" (Raymond, 2019:10). These are the core of the innovation and foresight process (Raymond, 2019). The interpretation of them by design practitioners makes evident the relationship between trends, design, and the creation of the future, where the role of trend research remains pivotal. [Fig. 1]
However, there are some liabilities in applying trends to define the industry's future. Trends and their anticipatory feature, i.e., foresight[2], lies at the intersection between trends and futures studies and is defined as a social construction, "[t]he future is built on the creation of knowledge and on the way this knowledge guides everyday choices" (Fuller & Loogma, 2009). The influence of trends on how society constructs this knowledge risks becoming a self-fulfilled prophecy, conditioned by the need to keep up to date with trend predictions through innovation. As individual phenomena that helps predict a probable future, a trend might "constrain the analysis to phenomena already tracked in the past." (Miller, 2006), leading to possibly repeat behaviours. When referring to a defined trend, it "is more likely to constrain than liberate exploratory thinking about the future" (Miller, 2006).
Nevertheless, future studies use trend analysis to anticipate and create probable scenarios "meant to provoke imaginative thinking … helps erasing prejudices and opening minds" (Miller, 2006), challenging current beliefs and assumptions.
As one of the outcomes of a forecasting process in fashion design, the construction of scenarios ranges from visualisation to strategic planning by exploring alternative futures. Applying social and economic aspects enables forecasting and dealing with possible adversities, engaging stakeholders and influencing design decisions. (Colombi & Zindato, 2019).

2 By using insights from trends regarding demographics, lifestyles, and technology, foresight may reinterpret the industry's norms creating competitive spaces (Colombi & Zindato, 2019).

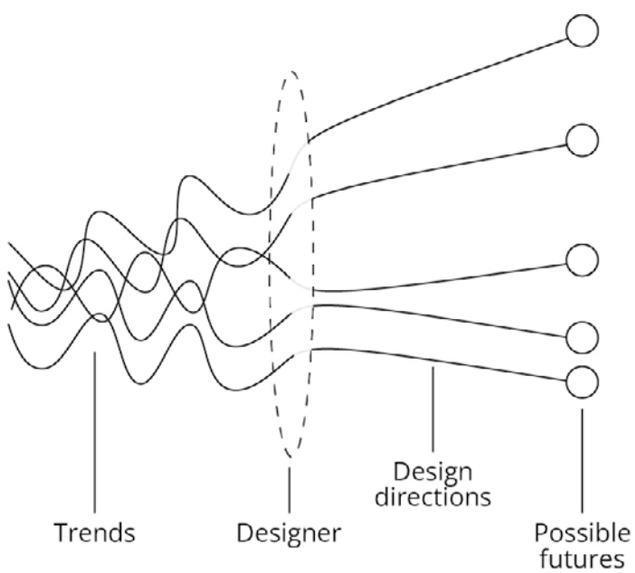

Fig. 01

AI-Powered Trend Research Platforms

This section will focus on the quantitative support of data collected by AI models used by trend research platforms. For the past few years, numerous trend research consultant companies have paired machine learning with expert interpretation to understand society's behaviours and consumption patterns (Powers, 2019). Combining quantitative and qualitative research methodologies renders the outcomes more relevant and robust, presenting themselves as safer bets when communicated to clients. Nevertheless, AI is not just a supporting tool that justifies the data; it also conducts and demonstrates these trends (Webb & Euchner, 2020). Its marketable characteristics attract investments for its development (Powers, 2019).
The relevance gained by big data in the past decades came in hand with drawing valuable interpretations from it across all industries. Necessary for competitiveness in a capitalistic economy (Powers, 2019; Zuboff, 2019), the support of data not only refines given trends but also helps in decisions regarding retail, design, sales, and marketing (Holland & Jones, 2017). Trending algorithms

concerning all sectors are available online in accessible platforms (IBM, Google, Statista, Twitter); they "select what to reveal and focus on, but also set up further decisions to be made on account of those actions, gathering more attention" (Powers, 2019, p. 26).

One of the precursors of qualitative analysis of fashion trends was Kawasaki's Fashion Technology Group, which developed products based on statistical analysis (Blaszczyk & Wubs, 2018).

A selection of data on "population structure, economic cycles, segments of specific targets, and past fashion patterns" (Donzé, 2018, p. 156) was processed using specific equations that gave a market-oriented perspective that understood customers' needs and helped predict the future.

Retail reports have appeared in newspapers in the past. Today, services like Edited (Edited, 2023) help companies in the fashion industry to adapt and plan according to the market's state. This retail technology company shares global market data from over 12 years on stock levels, tracking over 5 billion products. Their AI engine "collects, categorises, and normalises all the market data", providing analysis on "pricing, discounts, assortment, colors", etc. (Edited, 2023).

There is limited scholarly research published regarding the use of AI in trend analysis for studying consumer behaviour. The consulting agencies that use AI provide some information, remaining opaque about how the algorithms operate, from where the data is being mined, what samples are used, and what parameters are being analysed.

The predictions on consumer behaviours serve as valuable insight for innovation in any industry, launching new products or services, making strategic decisions, or understanding their customers. This presents a competitive advantage that comes in tailor-made reports or search engine platforms that map and interpret the data gathered. The qualitative interpretation of experts is fundamental to creating a differential value to what AI provides, a screening of the present context, and spotting' weak signals'[3] (Naisbitt, 1982) that may anticipate market shifts.

The functioning of these platforms does not differ much from what Rogers (2003) described in Diffusion of Innovations, where AI provides accuracy. The data is sourced from social media, e-commerce, online searches, user surveys, runway shows, retail information, etc. Machine learning, deep learning, mathematical vectors, and algorithms are some of the tools used to scrape relevant data using text or image analysis. Any kind of online trackable behaviour serves as data input for the algorithmic model, where products,

3 Weak signs emerge as anomalies in the present context. These are observed by trend researchers as part of the initial cultural and social analysis that indicate the possible directions of change in behaviours and values. (Naisbitt, 1982)

UPSIDES	CHALLENGES
• Provides analysed information and insights. • Reduces risks by predicting consumer patterns, avoiding releasing an inefficient product. • Facilitates the negotiation and engagement between stakeholders. • Anticipates probable scenarios that provoke thinking and envision alternatives to adversities. • Influences strategic planning and decision-making.	• Used as an instrument that incites consumption through obsolescence and innovation. • Their influence risks becoming a self-fulfilled prophecy, conditioned by the need to keep up to trend predictions. • Leads to the repeating of behaviours if constrained to the analysis of past phenomena. • A defined trend can limit the free exploration of the future.

Table 01

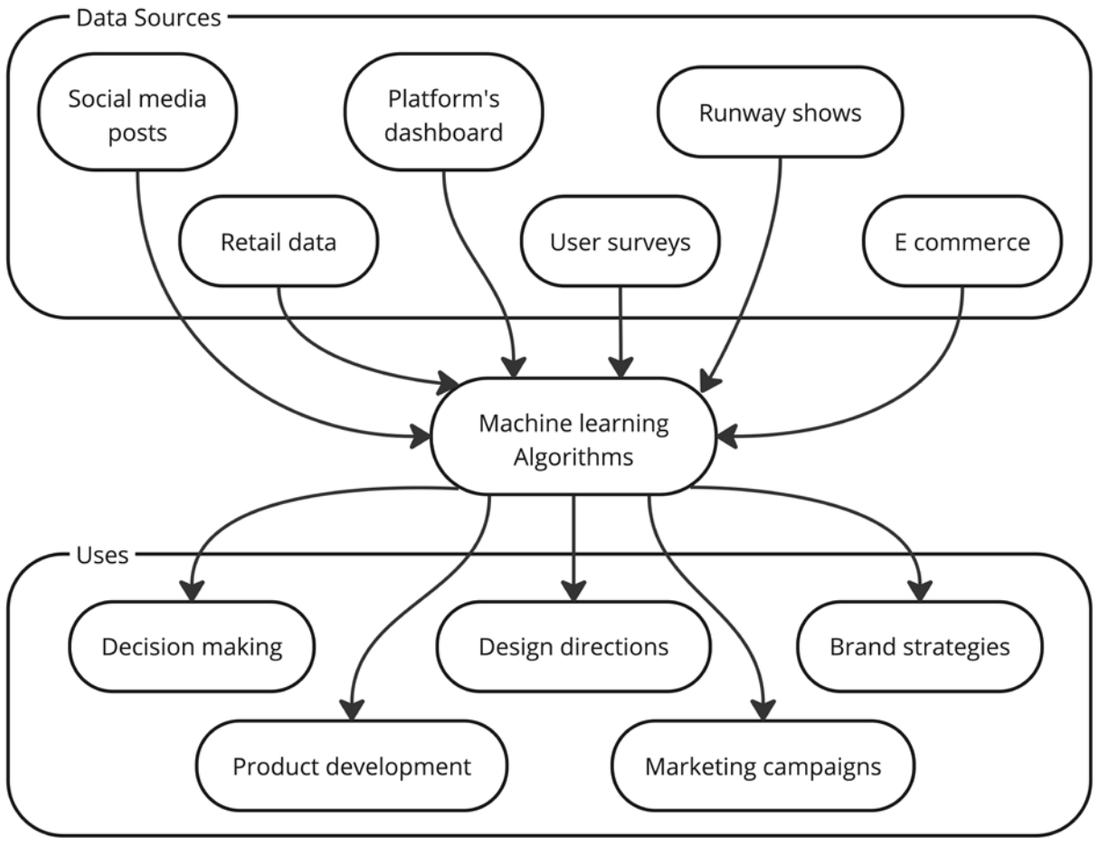

Fig. 02

the volume of searches, prices, quantities, styles, values, and any variable helpful in analysing and interpreting consumer trends are measured. An initial screening of many posts identifies early adopters and profiles of the first innovators and users that spark different behaviour. These relevant players and actors constitute the database for analysing published posts on social media or websites. Several hundred thousand users are screened; the findings, interpreted as weak signals, are translated into predictable consumer trends.

The platform itself is also a source of information; the search history from the dashboard (a database with all the curated content) is also analysed by AI. This is especially valuable in platforms with over 200 million users and over three years of experience. The connection between the keywords browsed and how deep the topic was studied brings added insights useful for more efficient identification of relevant information for their customers.

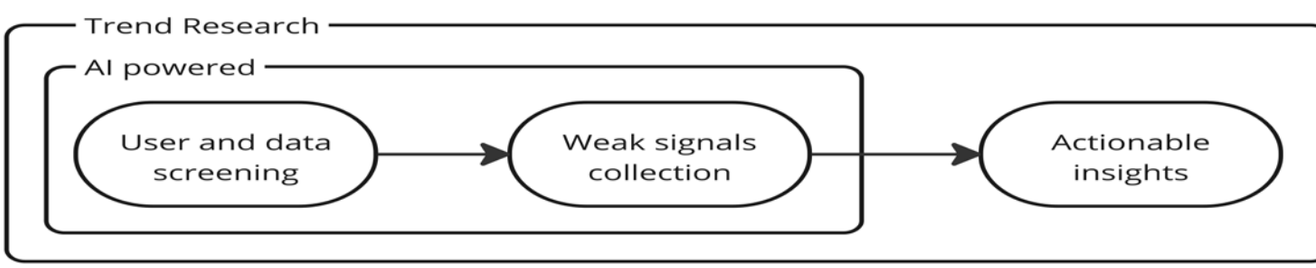

Fig. 03

Ethical Implications in AI and the Consequences in Trend Research

Analysing the ethical implications involved in AI helps understand possible threats when applied to trend research. The issues outlined have been analysed as the problem, its cause, effects, and a proposal of potential solutions inspired by technomoral virtues. The problems and their causes can be categorised into four groups: the bias in the data sourcing, the embedded values and the bias of the person designing the algorithmic model, the misuse and bias of the users of the model, and the model's opaqueness. In fact, we will discuss these issues' effects and how they perpetuate social inequalities and power imbalances.

The upsides and downsides of AI are many-fold; analysing these under the lens of virtue ethics, we find that one of the main issues concerns that any mathematical model designed will inherently have the designer's values embedded in it (Gebru, 2020; Joyce et al., 2021), but whose values are being represented? "[T]he lack of representation among those who have the power to build this technology has resulted in a power imbalance" (Gebru, 2020, p. 253). The dominance of the most powerful groups over marginalised ones results in systemic discrimination, reflected in what the technology can offer. "AI can obscure asymmetrical power relations in ways that make it difficult for advocates and concerned developers to meaningfully address during development." (Mohamed et al., 2020, p.662).

The false conception of the neutrality of AI comes from the perception that the data used is representative and truthful without considering who and what it is representing. These assumptions perpetuate the development of existing inequalities (Joyce et al., 2021). Machine Learning systems are trained with existing and real-time data to make automated decisions which are then integrated into the social world. The existing bias translated from its context to the algorithm is built into our social institutions; this hinders the nurturing of values like transparency and fairness, making it even harder for AI designers to frame them into the algorithms (Joyce et al., 2021). When trained on biased data representing inequalities, this model will exacerbate "existing societal issues driving further marginalisation" (Gebru, 2020:257). This perpetuates the status quo since the new data input "reinforces the bias creating a run-away feedback loop"[4] (Gebru, 2020:257).

The lack of legal regulations on AI (Luján Escalante et al., 2021) results in organisations keeping their mathematical models private, protecting their intellectual property and evading responsibility for their actions and outcomes (O'Neill, 2016). Many of these organisations claim instead that the users make their models racist or sexist (Joyce et al., 2021), ignoring the original virtues embedded in the design of these algorithms.

AI represents its surrounding context, embedded with the bias it entails (Mohamed et al., 2020).

4 Such as the predictive policing model in the United States. Information on certain crime arrests is input in the model, although not all crimes committed are being reported, and the ones that are reported are performed by marginalised individuals. This leads to the increase of police presence in these neighborhoods, increasing the number of arrests there. The new arrests are input data to train the model, "increasing over-policing in disadvantaged neighborhoods and amplifying societal bias" (Gebru, 2020:257), falsely justifying their presence.

PROBLEMS	CAUSES	EFFECTS
• Feedback loops. • Misrepresentation. • Model's opaqueness. • Algorithmic oppression and exploitation.	• Values embedded in the algorithm. • Biased user. • Biased data input. • Biased algorithm designer. • Lack of regulations. • Over-trusting of data.	• Power inequalities. • Perpetuation of status quo.

Table 02

The same model will work differently in one location or another; trends from a specific culture create dissonance when replicated globally and used as strategic insight in a different one. At the same time, many trend research platforms leverage a privileged position based in developed countries (Powers, 2019). Nations that have been Westernised import these models modifying the ways their society consumes and behaves according to standards that do not belong to their context, history, or reality.[5] This is exacerbated when using AI, where "the tendency of people to overtrust automated tools" (Gebru, 2020, p. 265) comes into play.

Mohamed et al. (2020) categorise as algorithmic oppression the subordination of one group under another, typical in predictive algorithms[6] that result biased. Similarly, algorithmic exploitation is how these algorithmic tools exploit marginalised actors for their benefit. [7]"[T]hese inequities are historically contextualised in global systems of racial capitalism, class inequality and heteronormative patriarchy, rooted in colonial history" (Mohamed et al., 2020, p. 667).

Applying Value Ethics to Technology

The debate on the ethical implications of technology has been boarded by numerous scholars finding a base in the ethics of technology; Jonas (1979) emphasises the urgency of bringing ethical considerations into technology since humanity's survival is being jeopardised by it. Differing from one context to another, AI is used to "recognise, sort, and predict outcomes from analysis of existing data sets" (Joyce et al., 2021, p. 2), lacking one same standard or protocol used world-wide (Webb & Euchner, 2020) to regulate its use. An understanding of ethics must consider the parameters we use to study it (Luján Escalante et al., 2021). Scattered efforts have been made to codify ethical protocols and principles regarding AI (Asilomar, UNESCO, Belmont), resulting too specific or too general. The considerable evidence on the implications of AI in diverse disciplines is enough to call attention to how to "expand the scope of AI's benefits and harms and reveal the relations of power that underlie their deployment" (Mohamed et al., 2020).

Shannon Vallor (2016) crafts the concept of technomoral virtues based on moral philosophy and the application of ethics to the use and development of technology, where the context in which we find ourselves is described as being shaped by technology, evidencing the need to create a different set of virtues that are related to these new social abilities enabled by it. This is aligned with Jonas' (1979) statement: technology modifies human desires, even those about the technology itself. Vallor's (2016) proposal bases its philosophical foundations on virtue ethics, facilitating a framework common to the diverse narratives of the world's plurality, ensuring a collective action. This allows the framing of "broader normative implications of emerging technologies", motivating the improvement of the "techno-social systems and human participation in them" (Vallor, 2016, p. 33). Having yet unknown implications; it demands flexibility in terms of how we might adapt in their encounter. The malleable framework enabled by virtue ethics is crucial since a moral discussion on technology sheds light on the effects a given technology might have on humans and the environment in the future, a context of constant development where "new technologies may suggest, create, even impose new ends." (Jonas,1979, p. 2). The moral choices of today have a world-wide effect on non-humans and generations to come (Vallor, 2016).

Possible Guidelines

The following section is dedicated to a first set of guidelines as intermediate results of the ongoing research. The guidelines are meant to steer the way in the discussion of the implementation of AI; these could also be perceived as transversal practices that go across disciplines and applicative sectors, not only regarding trend research or the fashion industry. Not only does it search to promote a critical discussion on this issue, but it is also essential to highlight the actionable points and into what direction we might prefer going towards.

5 For example, the One Laptop Per Child campaign, ruled out of India and China since it overlooked local education policies and methods (Nussbaum, 2010).

6 Some examples on how bias affects in healthcare access, facial recognition, or job recruitment can be found on O'Neill, 2016 and Buolamwini & Geb

7 Evidenced by "ghost workers" that label data for it to be useful, working under detrimental conditions (Gray & Suri, 2019), and the non-ethical beta-testing of algorithmic systems in places with no regulations around data use.

1. Employing pluriversality: The recurrent concept of plurality, whether discussing the decolonial concept of the pluriverse or how Vallor's (2016) techno-moral virtues construct from the multiplicity of conceptions, could also be understood as a common denominator that allows us to imagine that any possible solution should be based on the cooperativeness and collaboration of humans. In this case, framing fashion as a design discipline it enjoys the assorted skills and tools that come from the design practice. These resources already enable critical assessment and active interventions that may take us towards desirable futures that mirror pluriversal values, embracing ontological and epistemological difference.
2. Embracing difference: Although the emerging ethical practice proposed by Vallor (2016) sets to achieve a diverse enumeration of goods, "global community, intercultural understanding, global justice, human security, and collective human wisdom" (Vallor, 2016:51), these are not universal concepts shared by the cultures that populate the world. Nevertheless, all these actors agree in having diverse interpretations of these goods and wanting to live well amongst each other (Vallor, 2016).
3. Involving actors: Defining who designs algorithmic models and who sets their goals and values is crucial, "[i]f we are to work on technology that is beneficial to all of society, it has to start from the involvement of people from many walks of life and geographic locations. The future of whom technology benefits will depend on who builds it and who utilises it." (Gebru, 2020:267). The inspiration and empowerment of multiple perspectives, views from the borders, and historically marginalised voices contribute to constructing a responsible practice that may lead us into these preferable and plural futures.
4. Developing critically: Trying to avoid and solve the problems inflicted by AI needs to be carried out during its development (Webb & Euchner, 2020). Researchers working in this field should learn and question how AI is being used, only possible by collaborating with different disciplines and experts that bring valuable insights into the forging of ethics into the practice (Gebru, 2020).
5. Reviewing values: Decolonial theory intersects the values and the power embedded in AI and provides tactics that remain critical and empower marginalised communities. It allows the analysis of its risks and opportunities by analysing algorithmic oppression in a broader socio-political and cultural context. Promoting co-designing systems that are context-aware and driven by the values of these communities allows them to include concepts like fairness, equity, and diversity through accountability and responsibility (Mohamed et al., 2020). Bringing decolonial principles into practices as trend research and fashion design carries new values, resulting in a complex layering of topics we need to evidence and problematise.

Conclusions

Although fashion is tied to trend research's genesis, it goes well beyond that. As one of the initial research methodologies used when outlining a design project's conceptual bases and values (Celi & Rudkin, 2016), the fashion designer entails the power and responsibility of shaping future behaviours. A critical understanding and ethical debate of the overlapping of AI, trend research, futures, and fashion through design must be prioritised by centring a pluriversal perspective. This calls not only to combat the colonial tendency that presumes that one framework is valid for all the others (Tuin and Nocek, 2019) but also to question the discipline, discussing how these methodologies and tools are used to carry out the practices responsibly. Regardless of the colonising legacies that define design, it still contains the agency to describe the future responsibly by questioning and reviewing how its skills and tools enable embracing multiple ontological and epistemological values. It is essential to devise how AI systems contribute to creating inequalities in society (Joyce et al., 2021); designers are called to not only design the functions of a system but the protocols of knowledge creation where culture is expressed (Luján Escalante et al., 2021). Prioritising voices from marginalised positions to prevent further marginalisation may positively affect the outcomes of AI across many other disciplines besides fashion or design. The proposed guidelines search to ignite the conversation and deploy the complexity of the issue, evidencing that a deeper understanding of how to apply a pluriversal perspective to data sources and analysis of trends is needed. Focalising on the emerging topic of AI is relevant in our present context, AI use in trend research needs to prioritise these perspectives, where it could serve as starting point for future applications across diverse sectors.

References

Blaszczyk R. & Wubs, B. (2018). Beyond the crystal ball. The rationale behind color and trend forecasting. In: Blaszczyk R. & Wubs, B. (eds.) The Fashion Forecasters. A hidden history of color and trend prediction. Bloomsbury.

Buolamwini, J., & Gebru, T. (2018). Gender shades: intersectional accuracy disparities in commercial gender classification. In Conference on fairness, accountability and transparency, pp 77–91.

Celi, M., & Colombi, C. (2017). Innovating Trend Research Practice Through A Data Driven-approach: A Blended Experience Within The Design Field. Iceri2017 Proceedings, 6580–6588.

Celi, M., & Colombi, C. (2020). Trends as Future Prompts in the Anticipatory Design Practice. Futures, 121, 102564. DOI: 10.1016/j.futures.2020.102564

Celi, M., & Rudkin, J. (2016). Drawing food trends: Design potential in shaping food future. Futures, 83, 112–121. DOI: 10.1016/j.futures.2016.05.002

Colombi, C. (2011). Design research in Fashion: From trends to design directions. 2(1), 11.

Colombi & Zindato (2019) Design Scenarios and Anticipation. In Poli, R. (Ed.). (2019). Handbook of Anticipation: Theoretical and Applied Aspects of the Use of Future in Decision Making. Springer International Publishing. https://doi.org/10.1007/978-3-319-91554-8

Deleuze, G., & Guattari, F. (1987). A thousand plateaus: Capitalism and schizophrenia. Minneapolis: University of Minnesota Press.

Donzé, P.Y. (2018) Fashion prediction and the transformation of the japanese textile industry. The role of kentaro kawasaki, 1950 1990. In: Blaszczyk R. & Wubs, B. (eds.) The Fashion Forecasters. A hidden history of color and trend prediction. Bloomsbury.

Edited, (2023). Global market data across billions of products. Retrieved at: https://edited.com/products/market-intelligence/

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University press.

Fuller, T., & Loogma, K. (2009). Constructing futures: A social constructionist perspective on foresight methodology. Futures, 41(2), 71–79. https://doi.org/10.1016/j.futures.2008.07.039

Foucault, M. (1988). Technologies of the Self. In L. H. Martin, H. Gutman, & P. H. Hutton (Eds.), Technologies of the Self: A Seminar with Michel Foucault. University of Massachusetts Press.

Gebru, T. (2020). Race and Gender. In Dubber, M.D., Pasquale, F. & Das, S. (Eds.), The Oxford handbook of ethics of AI. Oxford University Press.

Gray, M.L., & Suri, S. (2019). Ghost work: how to stop silicon valley from building a new global underclass. Eamon Dolan Books.

Hesmondhalgh, D. (2007). The Cultural Industries. Sage.

Holland, G. & Jones, R. (2017). Fashion Trend Forecasting. Laurence King.

Jansen, M. A. (2020). Fashion and the Phantasmagoria of Modernity: An Introduction to Decolonial Fashion Discourse. Fashion Theory, 24(6), 815–836. https://doi.org/10.1080/1362704X.2020.1802098

Jonas, H. (1979). Toward a Philosophy of Technology. The Hastings Center Report, 9(1), 34–43. DOI:10.2307/3561700

Joyce, K., Smith-Doerr, L., Alegria, S., Bell, S., Cruz, T., Hoffman, S. G., Noble, S. U., & Shestakofsky, B. (2021). Toward a Sociology of Artificial Intelligence: A Call for Research on Inequalities and Structural Change. Socius, 7, DOI: 10.1177/2378023121999581

Luján Escalante, M., Moffat, L., Harrison, L.,and Kuh, V.(2021) Dancing with the Troubles of AI. In Leitão, R.M., Men, I., Noel, L-A., Lima, J., Meninato, T. (Eds.), Pivot 2021: Dismantling/Reassembling, 22-23 July, Toronto, Canada. DOI:10.21606/pluriversal.2021.0037

Marenko, B., & Brassett, J. (2015). Deleuze and Design. Edinburgh University Press. DOI: 10.1515/9780748691555

Miller, R. (2006). From trends to futures literacy: Reclaiming the future. Centre for Strategic Education.

Mohamed, S., Png, M.-T., & Isaac, W. (2020). Decolonial AI: Decolonial Theory as Sociotechnical Foresight in Artificial Intelligence. Philosophy & Technology, 33(4), 659–684. https://doi.org/10.1007/s13347-020-00405-8

Naisbitt, J. (1982). Megatrends: Ten New Directions Transforming Our Lives. Warner Books.

Nussbaum, B. (2010, June 7). Is Humanitarian Design the New Imperialism? [Fastcompany]. Retrieved January 16, 2023, from https://www.fastcompany.com/1661859/is-humanitarian-design-the-new-imperialism.

O'Neill, C. (2016). Weapons of Math Destruction. Penguin Random House.

OpenAI, (2023). Transforming work and creativity with AI. Retrieved at: https://openai.com/product

Poli, R. (Ed.). (2019). Handbook of Anticipation: Theoretical and Applied Aspects of the Use of Future in Decision Making. Springer International Publishing. https://doi.org/10.1007/978-3-319-91554-8

Powers, D. (2019). On Trend. The business of forecasting the future. University of Illinois Press.

Raymond, M. (2019). The Trend Forecaster's Handbook (2nd ed.). Laurence King Publishing.

Rogers, E.M. (2003). Diffusion of innovations (5th ed.). Free Press.

Schultz, T., Abdulla, D., Ansari, A., Canlı, E., Keshavarz, M., Kiem, M., Martins, L. P. de O., & J.S. Vieira de Oliveira, P. (2018). What Is at Stake with Decolonizing Design? A Roundtable. Design and Culture, 10(1), 81–101. DOI: 10.1080/17547075.2018.1434368

Schon, D.A. (1983). The Reflexive Practitioner: How Professionals Think in Action. Basic Books.

Tlostanova, M. (2017). On decolonising design. Design Philosophy Papers, 15(1), 51–61. DOI: 10.1080/14487136.2017.1301017

Tuin van Der, I., & Nocek, A. J. (2019). New Concepts for Materialism: Introduction. Philosophy Today, 63(4), 815–822. DOI: 10.5840/philtoday2019634294

Vallor, S. (2016). Technology and the Virtues. Oxford University Press.

Vejlgaard, H. (2008). Anatomy of a trend. McGraw-Hill.

Voros, J. (2015). On examining Preposterous! futures – The Voroscope. Retrieved at https://thevoroscope.com/2015/12/28/on-examining-preposterous-futures/.

Webb, A. & Euchner, J. (2020) Which AI Future Will We Choose?, Research-Technology Management, 63:6, 15-21, DOI: 10.1080/08956308.2020.1813503

Winner, L. (1980). Do Artifacts Have Politics? Daedalus, 109(1), 121–136.

Zuboff, S. (2019). The age of surveillance capitalism: the fight for a human future at the new frontier of power. London: Profile Books.

Figure Captions

Fig. 01: Trends, design, and futures. Source: Summary by the authors, based on Voros' Futures cone (Voros, 2015)
Fig. 02: Sources and uses of AI-powered trend research platforms
Fig 03: Area of incidence of AI in the trend research process
Table 01: Upsides and challenges of using trends. Source: Summary created by the authors.
Table 02: Problem, causes, and effects of AI models.
Source: Summary created by the authors.