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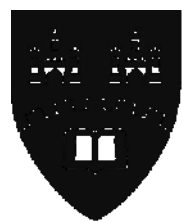
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**DECONSTRUCTING THE RIGHT TO
PRIVACY CONSIDERING THE IMPACT
OF FASHION RECOMMENDER
SYSTEMS ON AN INDIVIDUAL'S
AUTONOMY AND IDENTITY**

D ONITIU

PhD
2021



**Northumbria
University**
NEWCASTLE

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PRIVACY CONSIDERING THE IMPACT
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AUTONOMY AND IDENTITY**

DARIA ONITIU

A thesis submitted in partial fulfilment of the
requirements of the University of Northumbria
at Newcastle for the degree of Doctor of
Philosophy

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November 2021

Abstract

Computing ‘fashion’ into a system of algorithms that personalise an individual’s shopping journey is not without risks to the way we express, assess, and develop aspects of our identity. This study uses an interdisciplinary research approach to examine how an individual’s interaction with algorithms in the fashion domain shapes our understanding of an individual’s privacy, autonomy, and identity. Using fashion theory and psychology, I make two contributions to the meaning of privacy to protect notions of identity and autonomy, and develop a more nuanced perspective on this concept using ‘fashion identity’. One, a more varied outlook on privacy allows us to examine how algorithmic constructions impose inherent reductions on individual sense-making in developing and reinventing personal fashion choices. A “right to not be reduced” allows us to focus on the individual’s practice of identity and choice with regard to the algorithmic entities incorporating imperfect semblances on the personal and social aspects of fashion. Second, I submit that we need a new perspective on the right to privacy to address the risks of algorithmic personalisation systems in fashion. There are gaps in the law regarding capturing the impact of algorithmic personalisation systems on an individual’s inference of knowledge about fashion, as well as the associations of fashion applied to individual circumstances. Focusing on the case law of the European Court of Human Rights (ECtHR) and the General Data Protection Regulation (GDPR), as well as aspects of EU non-discrimination and consumer law, I underline that we need to develop a proactive approach to the right to privacy entailing the incorporation of new values. I define these values to include an individual’s perception and self-relationality, describing the impact of algorithmic personalisation systems on an individual’s inference of knowledge about fashion, as well as the associations of fashion applied to individual circumstances.

The study concludes with recommendations regarding the use of AI techniques in fashion using an international human rights approach. I argue that the “right to not be reduced” requires new interpretative guidance informing international human rights standards, including Article 17 of the International Covenant on Civil and Political Rights (ICCPR). Moreover, I consider that the “right to not be reduced” requires us to consider novel choices that inform the design and deployment of algorithmic personalisation systems in fashion, considering the UN Guiding Principles on Business and Human Rights and the EU Commission’s Proposal for an AI Act.

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List of Abbreviations

AI – Artificial Intelligence
CJEU- Court of Justice of the European Union
CNN – Convolutional Neural Networks
ECHR- European Convention of Human Rights
ECtHR- European Court of Human Rights
EU Charter- Charter of Fundamental Rights of the European Union
GAN- Generative adversarial networks
GDPR- General Data Protection Regulation
ICESCR- International Covenant on Economic, Social and Cultural Rights
ICCPR- International Covenant on Civil and Political Rights
NHRIs- National Human Rights Institutions
NLP- Natural Language Processing
NLU- Natural Language Understanding
SVM- Support Vector Machine
UCP Directive- Unfair Commercial Practices Directive
UCT Directive- Unfair Terms Directive
UDHR- Universal Declaration of Human Rights
The UN Guiding Principles- UN Guiding Principles on Business and Human Rights

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I feel truly privileged to state that I enjoyed the research from the first day up until the final stages of the work's submission. I learned a lot about the way to conduct research and formulate ideas, focusing on the value of interdisciplinary knowledge-production for academic scholarship and developing a sense of freedom to consult areas that are seemingly connected to the legal sphere. I benefited from the support of Dr Marion Oswald and Professor Wessie Ling during this process.

Besides my supervisors, my friends played an important role to support my PhD journey. Mohsen is a great colleague who always had some good advice related to the Ph.D. experience but more importantly, he became a close friend. Moreover, my experience would not have been the same without my best friend Sam and his positive energy.

The last months have been truly exciting, being involved in a new area surrounding the notion of “trust” and AI at Edinburgh University. I was lucky enough to receive incredible support, from Professor Burkhard Schafer, and his encouragement allowed me to finish this thesis. In addition, I am truly happy to be in an intellectually stimulating, inspiring and supportive environment with the team at TAS- and I want to direct my thanks also to Dr Lachlan Urquhart, Professor Robin Williams, Dr Phoebe Li, and Professor Chris Marsden.

I am certainly at the stage of my life where everything surrounding my research – the ups and downs of a “courageous” early-career researcher- are my lived experience. A special mention regarding my work during the last years goes to my mother. My mother and I both know that true happiness does not come from success – but from the way we shape our inner sense of freedom. Her strength, determination, and independence always allowed me to keep fighting in all circumstances. I dedicate my work to her as an admiration of her spirit and a symbol of the future.

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Faculty Ethics Committee on 1st of February 2019.

I declare that the word count of this thesis is 83.842

Name: Daria Onitiu

Date: 29/11/2021

I. List of publications

I confirm that I integrated published work into different chapters of this thesis. I conducted all work during my PhD research.

The work acknowledged here refers to Chapter 2, Chapter 3, Chapter 4 and Chapter 5.

Daria Onitiu, 'Algorithmic abstractions of 'fashion identity' and the role of privacy with regard to algorithmic personalisation systems in the fashion domain' [2021] *AI & Society* 10

Daria Onitiu, 'Fashion, filter bubbles and echo chambers: Questions of privacy, identity, and governance' [2022] *Law, Innovation and Technology* 1

Daria Onitiu, 'Incorporating 'fashion identity' into the right to privacy' [2022] *Law, Technology and Humans* 1

Daria Onitiu, 'Determining your 'fashion identity' in fashion recommender systems and issues surrounding the right to privacy' [2021] 12 (1) *European Journal of Law and Technology*: BILETA Special Issue 25

Daria Onitiu, '#VIRTUALSLSA2020: Why lawyers should care about 'fashion identity' in the age of artificial intelligence (AI)' (SLSA Blog, 10 August 2020)

II. Declaration of editorial help

I also confirm that significant parts of this thesis have been edited focusing on spelling, grammar and style by Ms Munziha Ahmad-Cooke.

Chapter 1

Introduction

We seem to be living the vision of a seamless digital shopping experience. Imagine a tool using artificial intelligence (AI) called the ‘AI stylist’, which is a composition of algorithms aimed at making our life easier in terms of fashion choices when engaging with subscription services, e-commerce websites, and social media. You have some idea regarding certain fashion choices, such as preferred trends and particular styles. The system may ask you things like how old you are, and what your explicit preferences are regarding colour and your current location. You are exposed to different outfits which are intended to suit ‘your style’ and the dinner party you plan to attend tonight. The AI stylist comes with the promise that personalised recommendations using AI will allow you to find your suggested content amid a large amount of fashion products.

This promise is based on a fashion brand’s use of complex algorithms and a lot of data on users, fashion items, and user-item interactions. ‘Fashion’ is a complex field and requires the quantification of values, such as individual preferences, emotions, perceptions of size and fit, as well as rules on style composition, garment texture, and the seasonality of trends.

However, our vision of the ‘personalised shopping experience’ is an illusion. This study shows how algorithmic personalisation systems may expose you to unprecedented effects shaping your sense-making with regard to fashion choices and undermining your privacy, autonomy, and identity. In doing so, the study focuses on a range of issues concerning algorithmic personalisation systems – the creation of filter bubbles and echo chambers, the manipulation of user incentives, and the creation of disparities, including unfair treatment.

By way of illustration, when you open your social media page, you are exposed to a range of fashion content, such as the blue jacket you admired on your friend and the floral skirt you recently spotted on your ‘most liked’ fashion influencer. Your engagement on social media is based on a range of algorithms used for social media analytics and behavioural advertising, creating so-called ‘filter bubbles’ and ‘echo chambers’.¹ What effectively happens is that your interaction ‘with the system is recorded in a single identity, and the information is personalised for the user using this identity’.² Indeed, I will demonstrate

¹ Efrat Nechushtai and Seth C Lewis, ‘What kind of news gatekeepers do we want machines to be? Filter bubbles, fragmentation, and the normative dimensions of algorithmic recommendations’ [2019] 1 *Computers in Human Behaviour* 298, 299-300.

² Engin Bozdag and Job Timmermans, ‘Values in the Filter Bubble: Ethics of Personalization Algorithms in Cloud Computing’ (Conference: Workshop on Values in Design - Building Bridges between RE, HCI & Ethics held in conjunction with INTERACT 2011 13th IFIP TC13 Conference on Human-Computer Interaction, September 2011).

that your exposure to filtered content is not based on your preferences as such but shared narratives of style. This raises important and under-examined implications for your own self-identification, which I will discuss using the case law of the European Court of Human Rights (ECtHR) on Articles 8 and 10(1) of the European Convention on Human Rights (ECHR).³ In addition, I will show that you can not effectively ‘consent’ to a filter bubble and echo chamber in the fashion domain within the General Data Protection Regulation (GDPR), which effectively shapes the communication structures outside your control.⁴

Another consequence of the notion that algorithms effectively record shared narratives of style is that informational structures are never ‘value neutral’.⁵ For instance, suppose that when you interact with the AI stylist you receive recommendations that reflect the current season and the information surrounding your age, which prompts suggestions to suit your style. However, what happens if the algorithm uses your location to identify your willingness to pay for designer clothing?⁶ In addition, how can we consider the effects of recommendations inferring your style choices based on certain narratives surrounding your age? The problem with the increasing subjectivity of algorithms is their invisibility when creating both new classes of individual preferences as well as new grounds that sustain social inequality. As I will show, the notion of classes based on personal and non-personal data is something that challenges EU non-discrimination law, as well as an individual’s informational self-determination.

Consider now your plan to go to a dinner party this evening. Algorithms can choose the best options for the wearing occasion, but these can also nudge you to choose a particular style. How do you identify whether the AI stylist only shows you ‘optimal options’ or directs you to choose products which disguise your body shape for the formal event?⁷ As I will discuss, nudges in algorithmic personalisation systems in the fashion domain undermine the individual’s unconscious associations with fashion, which necessitates a new approach under EU consumer law, as well as enhanced transparency within the GDPR.

This already gives an impression that algorithmic personalisation systems in fashion illustrate more than mere interferences with privacy and data protection, and challenge our fundamental understanding of

³ Convention for the Protection of Human Rights and Fundamental Freedoms (entered into force 3 September 1953) (European Convention on Human Rights, as amended) (ECHR).

⁴ Regulation of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L 199/1.

⁵ Engin Bozdag and Job Timmermans, ‘Values in the Filter Bubble: Ethics of Personalization Algorithms in Cloud Computing’ (Conference: Workshop on Values in Design - Building Bridges between RE, HCI & Ethics held in conjunction with INTERACT 2011 13th IFIP TC13 Conference on Human-Computer Interaction, September 2011); Bora Edizel, Francesco Bonchi, Sara Hajan, Andre Panisson and Tamir Tassa, ‘FaiRecSys: mitigating algorithmic bias in recommender systems’ [2020] 9 International Journal of Data Science and Analytics 197.

⁶ On price discrimination see, Frederik J Zuiderveen Borgesius, ‘Strengthening legal protection against discrimination by algorithms and artificial intelligence’ (2020) 24 (10) The International Journal of Human Rights 1572, 1584.

⁷ See for example, Stuart Mills, ‘Hyper Nudges and Big Data’ (*Towards Data Science*, 9 July 2019) <<https://towardsdatascience.com/hyper-nudges-and-big-data-d15767b2ee0b>> accessed 12 November 2021.

autonomy and identity in the digital age. This study uncovers the risks of the AI stylist, using fashion theory and psychology to shape privacy discourse. AI techniques shape two important areas regarding your engagement with ‘fashion’: the way you infer narratives on fashion with reference to the self, as well as the norms, values, and beliefs you associate with fashion. I characterise these interferences with an individual’s autonomy and identity as internal interferences with the right to privacy, based on notions of individual perception and self-relationality.

Focusing on the operations of personalisation algorithms, we can define the notions of individual perception and self-relationality regarding an individual’s privacy, autonomy, and identity at a higher level. That is, the AI stylist can only find a close approximation of your preferences, based on the way you resemble shared style and behaviour attributes within a data structure. Therefore, the study’s aim is to assess an individual’s privacy within this restricted space. Indeed, we need a nuanced discourse on how AI techniques limit an individual’s autonomy and identity, based on unquantifiable values of ‘fashion’ and ‘identity’. Acknowledging the limitations of AI in establishing the nuances of ‘fashion’ in individual identity helps us to identify the role of privacy in protecting us from the inherent reductions of algorithms, that is, a “right to not be reduced.”

The “right to not be reduced” intends to capture the gaps in the law to deal with the risks of AI techniques regarding an individual’s perception and self-relationality. Moving forward, we need new ways of incorporating these two values into legal discourse. My motivation is to develop a new perspective on privacy which can give rise to new interpretative guidance and common values in the digital age. I choose the international human rights framework as a starting point to allow the “right to not be reduced” to translate the illusion of AI into its real meaning, with reference to an individual’s privacy, autonomy, and identity.

I. Scope and significance of the study

1. Outline

Chapter 1 outlines the research question, methodology, and original contribution of this thesis to relevant academic scholarship concerning privacy and fashion identity. In addition, it defines key terms surrounding AI techniques in the fashion domain.

Chapter 2 uncovers the dynamic of ‘fashion’ and ‘identity’ and how we should consider these two elements in a socio-legal landscape, focusing on the right to privacy. I develop a definition of the right to privacy considering the social and personal aspects of fashion. In doing so, I identify two notions that are relevant to my analysis in the ensuing chapters. First, I highlight that an individual’s identity is a

process of negotiating the social and personal aspects of fashion with reference to the self (i.e. an individual's perception). Second, I define the individual's association with fashion as a key aspect of their autonomy and identity (i.e. self-relationality). My definition of privacy with regard to 'fashion identity' as including the elements of individual perception and self-relationality will guide my account of the legal issues concerning algorithmic personalisation systems in fashion throughout the thesis.

Chapter 3 de-tangles these abstract notions, including the meaning of 'fashion' in algorithmic personalisation systems. I suggest that algorithmic personalisation systems imply reductions of aspects of fashion that are inherent to an individual's ability to maintain aspects of the self. Therefore, we need to equate the socio-legal concerns regarding algorithmic personalisation systems in fashion with a "right to not be reduced". I will provide more detail on the right to not be reduced and how it can be protected in practice in Chapter 7.

Chapters 4-6 are substantive chapters on the impact of algorithmic personalisation systems in fashion on an individual's privacy, autonomy, and identity. In particular, Chapter 4 introduces the concept of filter bubbles and echo chambers in the fashion domain and discusses how emerging communication structures shape our relational privacy and whether an individual's access to information gives enhanced protection to their autonomy. Chapter 5 then investigates the role of nudges in recommender systems and how algorithms raise issues of fairness and transparency. Finally, I examine the notion of algorithmic bias including the socio-legal issues of social sorting in Chapter 6.

Chapter 7 incorporates the above findings into the "right to not be reduced." In doing so, I use an international human rights law framework to discuss how we could amend the right to privacy in accordance with present realities. In addition, I consider new legislation in the field of AI, namely the EU Commission's proposal for the AI Act, and how a human rights approach needs to complement this proposal's risk-based approach.⁸

2. Research question

This investigation aims to answer the following **main research question**:

How should we interpret the right to privacy to protect notions of individual autonomy, informational self-determination, and identity, considering the risks of algorithmic personalisation systems in fashion?

The study's objective is to identify what kind of harm algorithmic personalisation systems in fashion inflict on notions of autonomy, informational self-determination, and identity. Thus, its scope

⁸ Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts [2021] COM/2021/206 final ('Artificial Intelligence Act proposal').

encompasses an interpretation of Article 8 of the ECHR as well as EU data protection law, which includes the GDPR.⁹ Here, it is relevant for me to place the right to privacy within human rights discourse, protecting individual interests and collective values such as personal autonomy and cultural identity, data protection, and information asymmetries.¹⁰ Indeed, my primary focus will be on the European definition of privacy, whereby I do acknowledge that Article 8 ECHR is broadly similar to Article 17 of the International Covenant on Civil and Political Rights (ICCPR) and the latter's structure of civil and political rights.¹¹

In addition, I intend to answer the research question above using further elements that go beyond a strict interpretation of the right to privacy, such as by incorporating aspects of EU consumer and non-discrimination law. This is because some algorithmic interventions in an individual's autonomy and identity, such as shaping communication structures, nudging, and/or creating biases, produce a broader perspective on these values in conjunction with or regarding the right to privacy.

I intend to recommend a model through which we can protect an individual's privacy, autonomy, and identity, considering the socio-legal risks of AI techniques in fashion. This objective requires me to consider a flexible framework which enables me to formulate a definitive answer to how we should govern algorithmic personalisation systems in fashion. I intend to develop a human-rights-based approach to algorithmic personalisation systems in fashion, whereby we can use shared commitments on the value of human rights for new ends, such as the role of the right to privacy in the digital age. Moreover, I need to contrast the human-rights-based approach, with new developments at the EU level, which includes the EU Commission's proposal for the AI Act at the time of writing up this study.¹²

To summarise, I intend to answer the research question considering the boundaries of the law when dealing with the risks of algorithmic personalisation systems. Indeed, this task requires an understanding of privacy embedded in the social processes shaped by AI techniques in fashion. Accordingly, the next Section shows my approach to answering the research question using non-legal sources.

⁹ European Convention on Human Rights; General Data Protection Regulation.

¹⁰ I chose to define the essence of the right to privacy and identity, rather than examine the extent state authorities can derogate from the protection of personal data as strictly necessary; that said, for a discussion on ECtHR case law regarding mass surveillance programmes by state authorities see Eleni Kosta, *Surveilling masses and unveiling human rights* (Tilburg University Press 2017).

¹¹ Mireille Hildebrandt, *Law for Computer Scientists and Other Folk* (OUP 2020) 113; Daniel Moeckli, Sangeeta Shah and Sandesh Sivakumaran, *International Human Rights Law* (3rd edn, OUP 2018) 447; cf Susan Marks and Andrew Clapham, *International Human Rights Lexicon* (OUP) 263.

¹² Artificial Intelligence Act proposal.

3. Methodology

A methodology comprises a choice of methods as well as a theoretical basis that grounds your research.¹³ I use a socio-legal approach to inform doctrinal recommendations. Accordingly, this thesis intends to promote a strong interdisciplinary perspective on the intersection of privacy and algorithmic personalisation systems in fashion. To do this, I use legal and non-legal knowledge to address complex issues regarding the intersection between privacy and technology, integrating law, computer science, and fashion theory to study the boundaries and effects of the law. This is because we need to consider fundamental values surrounding an individual's autonomy and identity to thoroughly understand an individual's level of interaction with 'fashion' in AI systems.

Legal research involves a distinctive form of logical judgement that helps to interpret and articulate legal problems.¹⁴ Therefore, this work uses primary and secondary sources involving legislation, case law, and academic commentary to offer a shared reference regarding the problems concerned, including the impact of AI techniques in fashion, for lawyers, judges, and regulators.¹⁵ Taking a 'black-letter' approach to legal research forms a strong foundation for conclusions about legal problems since the power of explanation is 'grounded in the doctrine itself'.¹⁶

Nevertheless, a traditional doctrinal approach to research suffers from common misrepresentations of the nature of the law.¹⁷ The researcher will engage with the meaning of the law as articulated by legal practitioners and judges but will have to engage in a (theoretical) reconstruction of the law's normative value to adequately reflect the dynamics of rights evolving with society. The right to privacy is a good example of how meaning has changed with technological developments and contemporary challenges around autonomy, control, and identity in the big data age. Thus, it is increasingly recognised that legal research should not fully be detached from other external disciplinary influences, entailing the researcher's reflexivity regarding the current role of law in informing policy.¹⁸

¹³ Dawn Watkins and Mandy Burton, 'Introduction' in Dawn Watkins and Mandy Burton (eds), *Research Methods In Law* (2nd edn, Routledge 2017) 2.

¹⁴ Terry Hutchinson, 'Doctrinal research: Researching the jury' in Dawn Watkins and Mandy Burton (eds), *Research Methods in Law* (2nd edn, Routledge 2017) 8.

¹⁵ Terry Hutchinson, 'The Doctrinal Method: Incorporating Interdisciplinary Methods in Reforming the Law' (2015) 8 (3) *Erasmus law review* 130, 131; see also, Chris Dent who argues that 'the more legal, or doctrinal secondary, material is used to bolster the researcher's argument, the more likely that a legal academic or lawyer will be swayed by that argument', taken from, Chris Dent, 'A LAW STUDENT-ORIENTED TAXONOMY FOR RESEARCH IN LAW' (2017) 48 (2) *Law Review* 377.

¹⁶ Terry Hutchinson and Nigel Duncan, 'Defining and Describing What We Do: Doctrinal Legal Research' (2012) 17 (1) *Deakin LR* 83, 85.

¹⁷ As stipulated by Paul Roberts, a purely 'doctrinal analysis cannot determine whether the law is effective in practice.'; Paul Roberts, 'Interdisciplinarity in Legal Research' in Mike McConville and Wing Hong Chui (eds), *Research Methods for Law* (2nd ed, Edinburgh University Press 2017) 155; see also, Nega Ewunetie Mekonnen, 'Current Trends in the Legal Research of Ethiopian Law Schools: A Move from Doctrinal to Empirical Legal Research' (2015) 6 (1) *Bahir Dar University Journal of Law* 87, 90-91; Emerson H Tiller and Frank B Cross, 'What is Legal Doctrine' (2006) 100 (1) *Northwestern University Law Review* 517, 518, cf Sanne Taekema, 'Methodologies of Rule of Law Research: Why Legal Philosophy Needs Empirical and Doctrinal Scholarship' [2020] *Law and Philosophy* 1, 13-15.

¹⁸ Watkins and Burton 'Introduction' (n 13) 3; another point of discussion is combining doctrinal research with empirical methods, which will not be discussed here. For an outlook of this issue see Craig Allen Nard, 'Empirical legal scholarship: re-establishing a dialogue between the academy and profession' (1995) 30 (2) *Wake Forest L.Rev.* 347.

It is not uncommon, then, that many legal approaches to research involve an ‘interdisciplinarity’ in scholarship.¹⁹ Whilst there is no agreed definition of the interdisciplinary approach to legal research, we can agree that it attempts to refine the law that is embedded in its various contexts. In doing so, incorporating external disciplines is a refinement of legal arguments applied to present realities.²⁰ In addition, the researcher’s reasoning entails a constant ‘dialogue’ with other disciplines.²¹ Therefore, legal interdisciplinary research entails both the integration of external knowledge and mediation between (competing) disciplines, requiring the researcher to integrate the research within unifying themes.²²

The methodological approach to my research, whilst maintaining the essence of ‘cultivating doctrinal knowledge’,²³ intends to provide a contextual view of the intersection between human rights and technology in the fashion context. This research draws from other disciplines to refine the legal context according to present realities. Several chapters contain interdisciplinary input from fashion studies, psychology, as well as computer science to investigate the impact of algorithmic personalisation systems in fashion on the right to privacy. The intention behind a strong interdisciplinary approach in my work is to inform doctrinal conclusions and recommendations and thus make them more robust and applicable to real-world issues, including the nature of privacy in the big data age.

There are of course certain pitfalls in an interdisciplinary approach. Fons Coomans, Fred Gunfeld, and Menno T Kamminga argue that ‘genuine, high-quality interdisciplinary research is rare because few researchers are fully qualified in more than one discipline’.²⁴ Following their reasoning, the risk of an interdisciplinary approach entails an incomplete ‘juxtaposition of disciplinary perspectives’.²⁵ Another criticism regarding an interdisciplinary approach is that the research transcends many perspectives on legal and non-legal issues, which risks developing solutions that remain highly theoretical.²⁶ These considerations need to be reviewed and re-assessed within any research study, in how the researcher’s dynamic approach to the law is formulated based on key considerations from other disciplines and

¹⁹ Thomas S Ulen, ‘The Impending Train Wreck in Current Legal Education: How We Might Teach Law as the Scientific Study of Social Governance’ (2009) 6 (2) University of St Thomas Law Journal 302, 304.

²⁰ Andria Naud Fourie, ‘Expounding the Place of Legal Doctrinal Methods in Legal-Interdisciplinary Research: Experiences with Studying the Practice of Independent Accountability Mechanisms at Multilateral Development Banks’ (2015) 8 (3) Erasmus law review 95, 97-98.

²¹ Nicky Priaulx and Martin Weinel, ‘Behaviour on a beer mat: law, interdisciplinarity & expertise’ (2014) 2014 (2) Journal of law, technology & policy 361, 363.

²² Roberts ‘Interdisciplinarity in Legal Research’ (n 17) 99.

²³ Matyas Bodig, ‘Legal doctrinal scholarship and interdisciplinary engagement’ (2015) 8 (2) Erasmus Law Review 43, 49.

²⁴ Taken from, Fons Coomans, Fred Gunfeld and Menno T Kamminga, ‘Methods of Human Rights Research: A Primer’ (2010) 32 (1) Hum.Rts.Q. 179, 186.

²⁵ Roberts ‘Interdisciplinarity in Legal Research’ (n 17) 99.

²⁶ As argued by Mathias M Siems, ‘interdisciplinary research may be criticised as being too impractical and too difficult.’ See Mathias M Siems, ‘The Taxonomy of Interdisciplinary Legal Research: Finding the Way out of the Desert’ (2009) 7 (1) Journal of commonwealth law and legal education 5, 7.

making a clear dividing line what considerations from external sources are relevant to the scope of the research. I will further deal with this criticism in my conclusion in Chapter 8.

The theoretical basis of my research is informed by my own endeavour to develop a novel approach regarding the protection of international human rights standards in the digital age. My research is guided by my own understanding of the field of investigation, with my motivations influencing ‘every aspect of my research as well as my choice of methodology’.²⁷ Hence, I use my methodology to critically inform the theoretical basis of my research, rather than narrowing down my investigation to the legal implications of algorithms and big data.²⁸

Accordingly, I combine basic interdisciplinary research with a form of ‘advanced interdisciplinarity’, using legal as well as non-legal knowledge to explore the right to privacy.²⁹ Here, the aim is knowledge-building, whereby the researcher intends to assess the effects of external (legal) factors on the meaning and demands of the law.³⁰ Thus, the research question does not entail the researcher’s direct examination of the law as such, but rather the aim is to adopt an approach that offers a deliberate input to the study of legal issues using ‘non-legal themes’.³¹ Figure 1 shows the steps that describe my interdisciplinary approach:

²⁷ Watkins and Burton ‘Introduction’ (n 13) 2; Tamara Hervey, Robert Cryer and Bal Skhi-Bulley, *Research Methodologies in EU and International Law* (Hart Publishing 2011) 5.

²⁸ As argued by Tamara Hervey, Robert Cryer and Bal Skhi-Bulley ‘methodology has theoretical connotations’, taken from Hervey, Cryer and Skhi-Bulley (n 27) 5.

²⁹ Siems, ‘The Taxonomy of Interdisciplinary Legal Research: Finding the Way out of the Desert’ (n 26) 6; see also, Mathias M Siems, ‘Legal Originality’ (2008) 28 (1) O.J.L.S. 147, 162.

³⁰ To clarify, Mathias M Siems uses two ways of advanced legal interdisciplinarity to combine non-legal knowledge. One, it is possible to use a non-legal research question to examine the externalities and internalities of a legal issue. Second, we can use ‘scientific methods’ to inform legal thinking regarding a non-legal topic; Siems, ‘The Taxonomy of Interdisciplinary Legal Research: Finding the Way out of the Desert’ (n 26) 5-11.

³¹ Siems, ‘The Taxonomy of Interdisciplinary Legal Research: Finding the Way out of the Desert’ (n 26) 9-11.

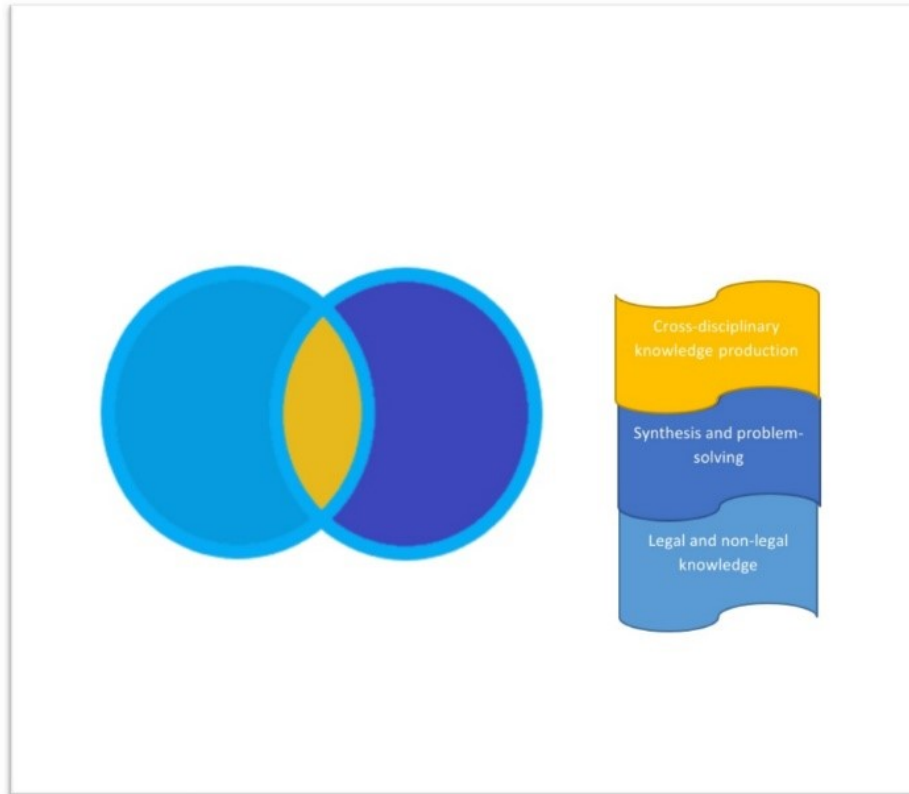


Figure 1- Cross-disciplinary knowledge production

The fact that I am interpreting the right to privacy, autonomy, and identity with regard to algorithmic personalisation systems in fashion shows my novel contribution to research – using a research question which seemingly entails a traditional interdisciplinary approach to address a set of objectives that endorse an advanced interdisciplinary outlook on normative legal conclusions.

The key to my approach is the use of auxiliary disciplines. Sanne Taekema and Bart van Klink describe this model of interdisciplinarity, entailing the researcher’s use of other disciplines, as a ‘necessary contribution of legal arguments’ as opposed to the mere use of external materials as a source of inspiration.³² In particular, I use external sources to clarify the meaning of fundamental guarantees in legal scholarship, as well as providing a nuanced discourse on the socio-legal problems of AI techniques in fashion.

The aim of my methodology is cross-disciplinary knowledge production regarding the meaning of legal concepts in the digital age. Therefore, I use a synthesis of abstract values, such as my definition of the right to privacy considering the meaning of fashion identity to make broader claims about the protection of autonomy and identity in relation to AI techniques in fashion.

³² Sanne Taekema and Bart van Klink, ‘On the Border: Limits and Possibilities of Interdisciplinary Research’ in Bart van Klink and Sanne Taekema (eds), *Law and Method* (Mohr Siebeck 2011) 10 -11.

Moreover, I position my research so as to re-assess the boundaries through which new values can emerge, such as using the concept of ‘fashion identity’ to examine the right to privacy in the digital age. My work underlines that we need to reconstruct the right to privacy in accordance with the risks posed by AI techniques in fashion to an individual’s autonomy and identity. Therefore, I use external knowledge not only to inform legal concepts, but to conduct an abstraction of legal problems within a socio-technical landscape. I elaborate on my original contribution to existing scholarship in the next Section.

4. Original contribution

This thesis intends to provide a fresh perspective by analysing algorithmic personalisation systems in the fashion domain through a human rights lens. Whilst current research rightly identifies that an interpretation of the right to privacy depends on the context and applicable research, there is no research that thoroughly investigates the instrumental value of privacy with regard to AI systems in fashion.³³ This thesis aims to move beyond the existing literature on predictive analytics and human rights, and provide a context-specific framework that addresses the gaps and opportunities in the right to privacy in relation to algorithmic personalisation systems in fashion, thereby affording the effective protection of international human rights law in the digital age.

We must take a closer look at the functional features of the right to privacy in protecting aspects of an individual’s autonomy and identity. That is, the way identity is shaped by individual interactions with algorithmic systems. We are often concerned with the aspects of identity we are ready to reveal in the online sphere, such as the extent of data processing activities.³⁴ However, my contribution in Chapter 2 shows that we need to move away from the extent to which profiling technologies examine my identity and focus on the way algorithms shape my associations with the profiled identity in the online sphere, i.e. my fashion identity. Focusing on the structural problems regarding the nature of privacy, autonomy, and personal development in Article 8 of the ECHR, I develop a new perspective on privacy incorporating an individual’s perception and self-relationality of fashion identity.

My contribution is also significant in that it suggests a deconstructed and revised notion of privacy, autonomy, and identity with regard to algorithmic personalisation systems in fashion. In Chapter 3 I focus on the limitation of AI techniques in capturing an individual’s personal and social aspects of

³³ Some research is there regarding recommender engines generally or aspects of technology in fashion, see Catharine Weiss, ‘Transformative technologies and the loss of privacy’ (2020) 7 (2-3) *Fashion, Style and Popular Culture* 351, 357- 361; Natali Helberger, Karl Karppinen and Lucia D’Acunto, ‘Exposure diversity as a design principle for recommender systems’ (2018) 21 (2) *Information, Communication & Society* 191.

³⁴ See for example, Bart van der Sloot, ‘The right to be let alone by oneself: narrative and identity in a data-driven environment’ (2021) 13 (1) *Law, Innovation and Technology* 223, 224.

fashion identity. I reveal that algorithmic constructions illustrate an incomplete semblance of individual behaviour, based on the reconstruction of ‘fashion’ resembling common narratives on style. In other words, the algorithms’ reproduction of knowledge about the self needs to be considered in light of the way identity is replicated and reduced to unquantifiable values. This relates directly to the “right to not be reduced” as a value underpinning future regulatory frameworks surrounding privacy in the digital age.

I place the notions of individual perception and self-relationality of fashion identity in a socio-legal landscape, which is another significant aspect of my contribution in this thesis. Common questions, such as how an individual can offer free and informed consent to data points, or how recommender systems shape the way information is presented to us, are given a novel perspective based on my approach of focusing on the facets of fashion and identity as assessed by algorithms in Chapters 4-6.

Finally, my thesis offers a theoretical foundation regarding the issues of privacy, autonomy, and identity in the digital age, using the nuances of ‘fashion’ that reveal the relationship between algorithmic decision-making and the self. Indeed, this research requires novel policy choices, and I make some recommendations on how we should recognise these new values informing privacy in Chapter 7. In this respect, I take up the right to not be reduced mentioned in Chapter 3 to close the circle regarding how we can ensure the effective protection of international human rights norms in relation to algorithmic personalisation systems in the future.

II. Clarifying some choices in this thesis

This Section intends to offer additional clarification concerning the scope of the study. In order to further highlight the significance of this thesis, I will address questions such as why it is about privacy and why it focuses on AI techniques in the fashion domain.

1. Why this thesis is about algorithmic personalisation and recommender systems

Current research examines the use of machine learning in the fashion industry for interactive purposes, which includes converting speech into text, supporting computer vision methods for image tagging or visual search, scanning technologies to make sense of visual features, and recommender systems for fashion items.³⁵ This thesis focuses on algorithmic personalisation systems in fashion that use two important tools and advancements in AI techniques: (i) algorithmic filtering and advertising using advancements in machine learning, as well as natural language processing and sentiment analysis; and

³⁵ Leanne Luce, *Artificial Intelligence for Fashion: How AI is Revolutionizing the Fashion Industry* (Apress 2019) 10.

(ii) recommender engines using advancements in machine learning, deep learning, as well as computer vision methods.

Not all of the advancements in AI techniques in fashion are discussed in this thesis. Some applications, such as automating tasks in manufacturing and supply-chain management are simply beyond the scope of the investigation. For example, a discussion of industrial (service) robots, whilst being an application that can gain widespread use in Europe, would change the focus of my thesis to issues of sustainability in fashion.³⁶ Second, other applications, whilst interesting from a human rights and privacy perspective, are still in their infancy and there is no consistent use of these technologies by fashion retailers, such as widespread use of conversational assistants including chatbots, or augmented reality applications including smart mirrors.³⁷ Chapter 5 only briefly mentions smart mirrors (and some aspects of wearable technology) to explain the concept of nudges to the reader.

Nevertheless, at the time of writing, and including the impact of the Covid-19 pandemic on fashion retail, there are more developments in AI techniques to challenge the traditional brick-and-mortar concept of retail in the future.³⁸ In addition, theoretical research on generative adversarial networks (GANs) for the unsupervised AI fashion designer is another area outside the scope of my thesis.³⁹ That said, given that we can definitely see more advances in AI techniques including a ‘comprehensive virtual style assistant’ in the future,⁴⁰ my analysis of current AI techniques in algorithmic personalisation systems could act as a stepping stone towards more systematic approaches for AI techniques going in an anthropocentric direction. This is another point I take up in Chapter 8 when I discuss the use of my findings in the study for further research.

³⁶ Kate Abnett, ‘The Robot Opportunity: Robotics can help fashion companies drive business efficiencies in their factories, warehouses and stores’ (*Business of Fashion*, 19 May 2016) <www.businessoffashion.com/articles/technology/the-robotics-opportunity-manufacturing-efficiencies> accessed 12 August 2021; Isak Karabegovic, ‘The role of Industrial and Service robots in the 4th Industrial Revolution- “Industry 4.0”’ (2018) 11 (2) *Acta Technica Corviniensis* 11, 12.

³⁷ Ellen Daniel, ‘Could smart mirrors change the way we shop?’ (*Verdict*, 5 June 2018) <www.verdict.co.uk/smart-mirrors-shopping-retail/> accessed 16 September 2021; Maghan McDowell, ‘Fashion gives chatbots a second chance’ (*Vogue Business*, 4 September 2019) <www.voguebusiness.com/technology/chatbots-luxury-ai-sales-personal-shopping> accessed 12 September 2021.

³⁸ Ayotunde Ogunjimi, Mizan Rahman, Nazrul Islam and Rajibul Hasa, ‘Smart mirror fashion technology for the retail chain transformation’ [2021] 173 *Technological Forecasting and Social Change* 1; Ian Edwards, ‘Comment: Chatbots could be the answer to the customer services crunch’ (*Retail Gazette*, 28 April 2020) <www.retailgazette.co.uk/blog/2020/04/chatbots-customer-services-online-retail-coronavirus-ian-edwards-facebook-opinion/> accessed 12 September 2021; Joseph DeAcetis, ‘How Luxury Fashion And Lifestyle Brands Can Leverage Technology In 2021’ (*Forbes*, 20 December 2020) <www.forbes.com/sites/josephdeacetis/2020/12/20/how-lifestyle-and-luxury-brands-can-leverage-technology-in-2021/?sh=425efc10708d> accessed 16 September 2021.

³⁹ Maghan McDowell, ‘Fashion gives chatbots a second chance’ (*Vogue Business*, 4 September 2019) <www.voguebusiness.com/technology/chatbots-luxury-ai-sales-personal-shopping> accessed 12 September 2021; Will Knight, ‘Amazon Has Developed an AI Fashion Designer’ (*MIT Technology Review*, 24 August 2017) <www.technologyreview.com/2017/08/24/149518/amazon-has-developed-an-ai-fashion-designer/> accessed 10 September 2021; cf Barbara Silvestri, ‘The Future of Fashion: How the Quest for Digitization and the Use of Artificial Intelligence and Extended Reality Will Reshape the Fashion Industry After COVID-19’ (2020) 10 (2) *ZoneModa Journal* 61.

⁴⁰ Luce (n 35) 28.

2. Why this thesis is about privacy

Much attention is given to the issue of algorithmic systems and how they affect the right to privacy.⁴¹ In fact, discussing privacy concerns with regard to advancements in technology is as old as the invention of cameras and the computer.⁴² Yet, we still like to take up this topic based on (i) the rapid advancements of technology and AI techniques, and (ii) the elusive nature and lack of definition of privacy,⁴³ whereby both considerations are the main drivers for the constant renewal of the privacy debate in academic discourse. My focus on the right to privacy intends to provide a more complete understanding of the values that should define the design and use of commercial algorithms in the fashion context.

Privacy protects several facets of individual and collective autonomy. Starting as a somewhat negative right to seclusion and protection against unwarranted interferences in an individual's private sphere, the right to privacy expands to the individual's social environment and control of information about the self.⁴⁴ ECtHR case law exemplifies the different facets of privacy in protecting physical and psychological integrity, as well as group identity and cultural values.⁴⁵ EU data protection law, such as the GDPR, implemented a form of privacy that gives an individual enhanced autonomy and control of and rights over personal data (i.e. the right to data protection and an individual's informational self-determination).⁴⁶ Yet, information technologies and advancements in AI techniques challenge users' autonomy to maintain privacy in the big data sphere.⁴⁷ We therefore still need to examine the instrumental value of privacy to define its essence, its function, and the purpose of this right when addressing an individual's autonomy, identity, and informational self-determination in relation to algorithmic personalisation systems in the fashion domain.

However, whilst I do commonly refer to privacy, I aim to provide a holistic view of the challenges posed by algorithmic personalisation systems in fashion to autonomy, identity, and informational self-

⁴¹ For example, Patricia Higham, 'Communicating with technology, computers and artificial intelligence: Are human rights and privacy being neglected?' (2020) 3 (4) *Journal of Data Protection and Privacy* 363; Ryan Calo, 'Peeping HALs: Making Sense of Artificial Intelligence and Privacy' (2010) 2 (3) *European Journal of Legal Studies* 168; European Data Protection Supervisor, 'Press Release: Artificial Intelligence Act: a welcomed initiative, but ban on remote biometric identification in public space is necessary' (23 April 2021) < https://edps.europa.eu/press-publications/press-news/press-releases/2021/artificial-intelligence-act-welcomed-initiative_en> accessed 25 August 2021.

⁴² Jan Holvast, 'History of Privacy' in Vashek Matyáš, Simone Fischer-Hübner, Daniel Cvrček, Petr Švenda (eds), *The Future of Identity in the Information Society* (Springer 2009) 13.

⁴³ See for example, Rochelle Cooper Dreyfuss and David W Lebbon, 'Foreword: Privacy and Information Technology' [1986] 3 *Annual Survey of American Law* 495.

⁴⁴ Samuel Warren and Louis Brandeis, 'The Right to Privacy' (1890) IV (5) *Harv.L.Rev* 193; Ronald Leenes and Silvia De Conca, 'Artificial intelligence and privacy—AI enters the house through the Cloud' in Woodrow Barfield and Ugo Pagallo (eds), *Research Handbook on the Law of Artificial Intelligence* (Elgar Publishing 2018) 282.

⁴⁵ See for example, Daria Sartori, 'Time and definitions in the interpretation of the ECHR. 'Private life' and the legal recognition of post-operative transsexuals' (*International Law Blog*, 16 November 2015) < <https://internationallaw.blog/2015/11/16/time-and-definitions-in-the-interpretation-of-the-echr-private-life-and-the-legal-recognition-of-post-operative-transsexuals/>> accessed 10 November 2021.

⁴⁶ Orla Lynskey, 'Deconstructing Data Protection: The 'Added- Value' of a Right to Data Protection in the EU Legal Order' (2014) 63 (3) *The International and Comparative Law Quarterly* 569.

⁴⁷ Julia I Lane, *Privacy, big data and the public good: frameworks of engagement* (CUP 2014) 2; Ronald J and Krotoszynski, *Privacy Revisited: A Global Perspective on the Right to Be Left Alone* (OUP 2016) 146.

determination, whereby a socio-legal analysis of the algorithmic systems requires me to consider issues beyond the right to privacy. A comprehensive analysis of the impact of algorithmic personalisation systems in fashion on issues such as consumer law, non-discrimination, or freedom of expression would certainly exceed the scope the thesis and distract from my intention of shaping the right to privacy's enduring value in the digital age. Nevertheless, the importance of a holistic approach to privacy is this: once we shape the definitional features of the right to privacy (such as autonomy and identity), this will influence the law as a whole system, including other features that encompass human rights norms.

3. Why this thesis is about fashion in the algorithmic landscape

What makes 'fashion' so different from other creative industries is its connection to an individual's body. Indeed, fashion can be linked with other forms of individual expression, such as the performance of music or art.⁴⁸ However, research in fashion theory identifies how clothing and the practice of dress provide the individual with a unique experience of identity connected to their body as well as the intimate relationship through which they express or disguise their appearance in various social contexts.⁴⁹ This makes an investigation of AI techniques in the fashion domain exciting and challenging, allowing me to delve into the various aspects of technological tools examining an individual's 'appearance' (i.e. the reproduction of individual behaviour in the data sphere) and how this process is related to the expressive and intimate nuances of fashion.

Moreover, another reason I decided to study algorithmic systems in the fashion domain is the extent to which we can measure the impact of online personalisation. Personalisation systems are used in multiple industries, such as movie and music recommender engines.⁵⁰ Yet, using algorithms in the fashion domain means that virtually any aspect or connection of the individual (such as social occupation and body shape) can be a valuable data source for predicting future preferences in fashion, including inferring behaviour not strictly related to fashion, such as political opinions which can be used for micro-targeting.⁵¹ Therefore, we must give more attention to how data-driven measures in the fashion domain can provide a more complete picture of individual behaviour to allow the systematic profiling of people.

4. Why this thesis places a strong emphasis on fashion studies

⁴⁸ Dewi Jaimangal-Jones, Annette Pritchard and Nigel Morgan, 'Exploring dress, identity and performance in contemporary dance music culture' (2015) 34 (5) *Leisure Studies* 603.

⁴⁹ Joanne Entwistle, *The Fashioned Body* (Polity Press 2001); Maureen Brewster, 'Fashioning the Body: An Intimate History of the Silhouette' (2016) 8 (2) *Design and Culture* 256.

⁵⁰ Markus Zanker, Laurens Rook and Dietmar Jannach, 'Measuring the impact of online personalisation: Past, present and future' [2019] 131 *International journal of human-computer studies* 160.

⁵¹ Morwenna Ferrier, 'Christopher Wylie: 'The fashion industry was crucial to the election of Donald Trump'' *The Guardian* (London, 29 November 2018) < www.theguardian.com/fashion/2018/nov/29/christopher-wylie-the-fashion-industry-was-crucial-to-the-election-of-donald-trump> accessed 27 August 2021.

Fashion theory and fashion psychology are key subjects informing my thesis' methodology in providing an interdisciplinary account of the limitations and the potential of the right to privacy in relation to algorithmic personalisation systems in fashion (see also Section I.3 above). First, I use fashion theory and psychology to illuminate the meaning of clothing in social contexts including the individual's interactive experience with algorithms in the fashion domain. Second, I use the concepts of appearance management and perception of fashion identity to detangle the meaning of fashion identity in a socio-legal landscape, drawing lessons from these findings to interpret the law. Whilst other disciplines, such as philosophy, sociology, and ethics, can fulfil a similar task of providing a socio-legal interpretation of human rights, it is fashion theory that offers a more compact view regarding the facets of identity in the digital age, based on its multidisciplinary examination of the meaning of clothing as communicated through an individual's appearance.⁵²

5. Why this thesis is about international human rights law

I dedicate an entire chapter to the question of how an international human rights law approach can contribute to the effective protection of privacy with regard to algorithmic personalisation systems in fashion. Nevertheless, it makes sense to pick out a key theme from that chapter and clarify its significance from the outset. International human rights law provides a set of inherent values and a set of norms to incorporate new interpretative guidance of privacy, autonomy and identity.⁵³ I focus on the framework's strength to solidify common commitments with regard to the respect of human rights norms and its ability to dynamically shape the interpretation of fundamental values regarding transboundary challenges.

That said, focusing on the international human rights framework after considering EU legislation, as well as regional treaties seems to be detached from my substantive analysis on the risks of algorithmic personalisation systems in fashion. In addition, we must consider the current EU Commission's proposal for the new AI Act which adopts a risk-based approach,⁵⁴ being in stark contrast with an international human rights approach regarding the acts of private entities. However, much of my discussion is not focused only about strengthening existing human rights guarantees but deals with the articulation of new standards surrounding privacy, autonomy, and identity. Furthermore, International human rights discourse will by no means replace important law, such as sectoral EU legislation, which is the GDPR or new efforts by the EU Commission to set the agenda for AI innovation and governance with the new

⁵² See also Colin Campbell, 'The Modern Western Fashion Pattern, Its Functions And Relationship To Identity' in Ana Marta Gonzalez and Lara Bovone (eds) *Identities through fashion: a multidisciplinary approach* (Bloomsbury Publishing Plc 2012) 14-19.

⁵³ See also Karen Yeung, Andrew Howes and Ganna Pogrebna who argue that 'the international human rights framework provides the most promising set of standards for ensuring that AI systems are ethical in their design, development and deployment' Karen Yeung, Andrew Howes, and Ganna Pogrebna, 'AI Governance by Human Rights-Centered Design, Deliberation, and Oversight: An End to Ethics Washing' in Markus D Dubber, Frank Pasquale and Sunit Das (eds), *Oxford Handbook of Ethics and AI* (OUP 2020) 78.

⁵⁴ Artificial Intelligence Act proposal.

proposal AI Act. Rather, the efforts I outline in my recommendations show how international human rights norms can be better coordinated with current and new legislative efforts in the EU and how we promote a common understanding of the values we should seek to protect in the big data age.⁵⁵

IV. AI: Defining key terms and significance in the fashion domain

This Section introduces some background knowledge for examining the socio-legal implications of AI techniques in fashion, by providing a definition of AI and an outline of relevant AI techniques. The aim of this discussion is to establish the scope of the AI systems I am going to focus on during the rest of the thesis.

1. Some useful points about AI

A useful definition of AI is provided by Jack Copeland, who states that artificial intelligence is ‘defined as the science of making computers do things that require intelligence when done by humans’.⁵⁶ When talking about current fields of AI, we largely focus on statistical approaches, including fields of machine learning. The first paradigm of AI techniques is logic based, which includes deductive as well as more rigorous reasoning.⁵⁷ Using an AI logic-based approach illustrates a basis for knowledge representation in expert systems.⁵⁸ For example, a knowledge-based expert system may be used as decision support for the coordination of apparel items normally conducted by fashion designers or other experts in the fashion domain⁵⁹

Now, imagine an expert system that can learn from experience and improve its output with more data to predict further unstated assumptions about fashion. This would be an example of an ‘intelligent fashion recommender system’ where we combine logic-based approaches with statistical approaches

⁵⁵ The relationship between EU law and international law is not a simple one and an extensive analysis would exceed the scope of this thesis which is based on theoretical considerations that implement new human rights norms in the international sphere. Suffice to mention that the EU is bound by customary international law and the international human rights treaties Member States are party to; see Tawhida Ahmed and Israel de Jesus Butler, ‘The European Union and Human Rights: An International Law Perspective’ (2006) 17 (4) EJIL 771; Ionel Zamfir, ‘The Universal Declaration of Human Rights and its relevance for the European Union’ (European Parliamentary Research Service, November 2018) < [www.europarl.europa.eu/RegData/etudes/ATAG/2018/628295/EPRS_ATA\(2018\)628295_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/ATAG/2018/628295/EPRS_ATA(2018)628295_EN.pdf)> accessed 12 September 2021.

⁵⁶ Jack Copeland, ‘What is Artificial Intelligence’ (*Alan Turing.net*, May 2020) < www.alanturing.net/turing_archive/pages/Reference%20Articles/What%20is%20AI.html> accessed 4 July 2020.

⁵⁷ John McCarthy in a paper written in 1959 underlined the centrality of logic-based systems, which is ‘a program has common sense if it automatically deduces for itself a sufficiently wide class of immediate consequences of anything it is told and what it already knows.’ John McCarthy, ‘Programs with Common Sense’ (Stanford University 1959) < <http://jmc.stanford.edu/articles/mcc59/mcc59.pdf>> accessed 20 May 2020 at page 2; see also Selmer Bringsjord, ‘The logicist manifesto: At long last let logic-based artificial intelligence become a field unto itself’ (2008) 6 (4) *Journal of Applied Logic* 502, 503; Selmer Bringsjord, ‘The logicist manifesto: At long last let logic-based artificial intelligence become a field unto itself’ (2008) 6 (4) *Journal of Applied Logic* 502, 503.

⁵⁸ *ibid.*

⁵⁹ WK Wong, XH Zeng, WMR Au, ‘A decision support tool for apparel coordination through integrating the knowledge-based attribute evaluation expert system and the T-S fuzzy neural network’ [2009] 36 *Expert Systems with Applications* 2377, 2379.

such as machine learning and deep learning to improve the output of recommendations.⁶⁰ A paper by Pedro Domingos, Stanley Kok, and Hoifung Poon *et al* summarises the meaning of this paradigm in AI perfectly, stating that ‘intelligent agents must be able to handle the complexity and uncertainty of the real world ... logical AI has focused mainly on the former, and statistical AI on the latter’.⁶¹ Much of my writing focuses on the algorithms’ statistical view of the world in capturing uncertainties regarding an individual’s tastes in fashion and personalised content.

Machine learning is a way of understanding patterns in information processes. In other words, we may want to find an approximation of why a customer likes beige clothes and why another individual prefers bright colours. An important feature of machine learning applications is that the algorithms learn from experience and can improve their performance over time.⁶² Accordingly, we use machine learning to predict future preferences, such as what colour clothes could be fashionable next season. In other words, we move from knowledge representation to the transformation of knowledge, whereby we translate a set of tasks within a certain environment and improve performance over time based on the algorithm’s exposure to a specific application domain.

A subset of machine learning is deep learning, which is another AI technique relevant to the fashion domain. Deep learning or artificial neural networks work with greater complexity regarding the relationship between input and output and use hidden layers in the predictive model.⁶³ An interesting fact is that academics were already writing about neural networks back in the 1940s, but our renewed interest in this technique is based on the computer’s stronger processing power and the greater availability of data.⁶⁴ This method is useful for dealing with data-rich environments, and we see it in tasks using image generation in the detection of products, such as identifying facets of shape, cut, and material in garments.⁶⁵

An important distinction concerning machine-learning algorithms lies in the algorithms’ training process, which can be supervised or unsupervised. In supervised learning models the programmer defines the output.⁶⁶ Unsupervised learning, in contrast, does not include that prior knowledge concerning the output variables and the algorithms work with data that is not labelled by the

⁶⁰ See for example, LC Wang, XY Zeng, L Koehl and Y Cheng, ‘Intelligent Fashion Recommender System: Fuzzy Logic in Personalized Garment Design’ (2015) 45 (1) *Intelligent Fashion Recommender System: Fuzzy Logic in Personalized Garment Design* 95.

⁶¹ Pedro Domingos, Stanley Kok, Hoifung Poon, Matthew Richardson and Parag Singla, ‘Unifying Logical and Statistical AI’ [2016] 5 *Proceedings of the 31st Annual ACM/IEEE Symposium on logic in computer science* 1.

⁶² See also, Tom Mitchell, *Machine Learning* (McGraw-Hill Series in Computer Science 1997).

⁶³ Luce (n 35) 16.

⁶⁴ Warren McCulloch and Walter Pitts describe the use of computation and logic for the understanding of neural activity, see Warren S McCulloch and Walter Pitts, ‘A logical calculus of the ideas immanent in nervous activity’ [1943] 5 *Bulletin of mathematical biophysics* 115.

⁶⁵ Luce (n 35) 160.

⁶⁶ Christopher Markou and Simon Deakin, ‘Ex Machina Lex: The Limits of Legal Computability’ (2020) Hart Publishing <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3407856> accessed 6 May 2020 at page 8.

programmer.⁶⁷ The applications I discuss in this thesis focus on supervised learning, though there are applications of unsupervised learning in the fashion domain, such as the use of GANs in neural networks for image processing and design (see also Section II.1 above).⁶⁸ In addition, there are some applications in the fashion domain that use semi-supervised learning, including labelled and unlabelled data such as speech recognition in smart environments, which are outside the scope of this thesis.⁶⁹

Examining the role of AI techniques in the fashion domain is indeed a tricky field for data and computer scientists.⁷⁰ From my perspective, the problem of AI techniques in fashion is that we often conflate the goal with the capacity of the predictive model. Therefore, we need to identify how AI techniques in fashion identify complex relationships between user preferences (such as individual preferences regarding colour and fit of clothing), garment structure (such as cut, size, and shape), and the meaning attached to clothing (the wearing occasion) including any unstated attributes regarding individual behaviour (such as inferring a user's mood for personalised clothing recommendations). In doing this, I hope to arrive at the argument that there is a correlation between the capacities and intentions of AI techniques in a commercial sector in that the more sophisticated the capacities of computational models, the more abstract the purpose of personalisation systems to identify the connection between 'fashion' and the individual.

2. AI in fashion retail: some key applications

As the Business of Fashion and McKinsey report 'The State of Fashion 2018' suggests, personalisation is more important than ever, being a driving force for fashion brands to deliver 'more-customised products, curated recommendations, communications and storytelling that connects to individuals'.⁷¹ The previous Section clarified some key terms in AI: machine learning and deep learning. I will now show how fashion brands can use these AI techniques to create actionable knowledge on individual behaviour and predict future preferences.

⁶⁷ Devin Soni, 'Supervised vs. Unsupervised Learning: Understanding the differences between the two main types of machine learning methods' (*Medium: Towards Data Science*, 22 March 2018) < <https://towardsdatascience.com/supervised-vs-unsupervised-learning-14f68e32ea8d>> accessed 5 May 2020.

⁶⁸ Ildar Lomov and Ilya Makarov, 'Generative Models for Fashion Industry using Deep Neural Networks' (2nd International Conference on Computer Applications & Information Security (ICCAIS), Riyadh, Saudi Arabia, 1-3 May 2019).

⁶⁹ Yu-Feng Li and De-Ming Liang, 'Safe semi-supervised learning: a brief introduction' (2019) 13 (4) *Frontiers of Computer Science* 669; Shigeki Karita, Shinji Watanabe, Tomoharu Iwata, Marc Delcroix, Atsunori Ogawa, Tomohiro Nakatani, 'Semi-supervised End-to-end Speech Recognition Using Text-to-speech and Autoencoders' (ICASSP 2019 - 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brighton, United Kingdom, 12-17 May 2019).

⁷⁰ Xiaoling Gu, Fei Gao, Min Tan and Pai Peng, 'Fashion analysis and understanding with artificial intelligence' (2020) 57 (5) *Information Processing & Management* 1; see also, Rachel Ramirez, 'Artificial Intelligence and the Apparel Industry: From garment design to trend spotting to copyright protection, artificial intelligence is poised to revolutionize the apparel industry' (*Wearables*, 28 September 2018) < www.asicentral.com/news/web-exclusive/september-2018/artificial-intelligence-and-the-apparel-industry> accessed 22 July 2019.

⁷¹ 'The State of Fashion 2018' (Business of Fashion, McKinsey & Company 2017) <https://cdn.businessoffashion.com/reports/The_State_of_Fashion_2018_v2.pdf> accessed 20 May 2020 at page 44; See also, S Jain, J Bruniaux, X Zeng and P Bruniaux, 'Big data in fashion industry' (2017) 254 (15) *IOP Conference Series: Materials Science and Engineering* 1, 2.

In doing this, I focus on algorithmic personalisation systems which use a fashion brand's methods to optimise the customer's interactive journey, from their discovery of fashion products and browsing e-commerce websites to their engagements on social media platforms. I will provide an outlook on the key AI techniques and tools regarding algorithmic personalisation systems in the following two Sections.

(i) *From behavioural analysis to advertising in fashion*

Fashion trends come and go at high speed. Accordingly, a fashion brand needs to find innovative ways of understanding the general perception of style and trends, such as what their customers would think about pastel colours and synthetic fur in their new winter collection.⁷² Fashion brands can use advances in machine learning, such as natural language processing (NLP) and sentiment analysis, to monitor and interpret behaviour and opinions on social media.⁷³ In doing so, retailers can assess their marketing strategies, as well as using the findings as 'building blocks' to customise content and advertising for individual customers.⁷⁴

NLP is a method of understanding unstructured data, such as text or spoken word.⁷⁵ The researcher engaging in this difficult task needs to make 'an internal representation of the input in natural text', which includes the context and semantics of wording as well as syntactic analysis.⁷⁶ One application area using NLP methods in fashion is conversational agents including chatbots, such as the 'Levi's Virtual Stylist' whereby costumers can interact with a chatbot to 'find the perfect pair of jeans',⁷⁷ or indeed, the discontinued 'Amazon Echo Look' which used an advanced NLP feature and automatic speech recognition (i.e. Natural Language Understanding- NLU).⁷⁸ However, chatbots did not initially

⁷² See also, Luce (n 35) 29.

⁷³ Cornelius Puschmann and Alison Powell, 'Turning Words Into Consumer Preferences: How Sentiment Analysis Is Framed in Research and the News Media' (2018) 4 (3) *Social Media & Society* 1.

⁷⁴ Linwan Wu, Naa Amponsah Doodoo, Taylor Jing Wen and Li Ke, 'Understanding Twitter conversations about artificial intelligence in advertising based on natural language processing' [2021] *International Journal of Advertising* 1, 3.

⁷⁵ Julia Hirschberg and Christopher D Manning, 'Advances in natural language processing' (2015) 349 (6245) *Science* 261.

⁷⁶ Gheorghe Tecuci, 'Artificial Intelligence' [2012] 4 *WIREs Computational Statistics* 168, 176.

⁷⁷ Rachel Arthur, 'The New Levi's Chatbot Aims To Help Shoppers Find The Perfect Pair Of Jeans' (*Forbes*, 4 September 2017) <www.forbes.com/sites/rachelarthur/2017/09/04/the-new-levis-chatbot-aims-to-help-shoppers-find-the-perfect-pair-of-jeans/?sh=28618283ac9c> accessed 12 September 2021; 'Levi's Launches New 'Virtual Stylist' Online Feature' (*Levi Strauss & Co*, 31 August 2017) <www.levistrauss.com/2017/08/31/levis-launches-new-virtual-stylist-online-feature/> accessed 12 May 2020.

⁷⁸ In 2017, the company Amazon introduced the 'Amazon Echo Look', which is classified as a virtual stylist and intended to give personal style advice. Amazon announced that the Amazon Echo Look device and the app will be discontinued until the 24th of July 2021. Some features from the Amazon Echo Look are now available in the Amazon Shopping App as well as the 'Style by Alexa' feature, which are intended to offer styling advice. In this respect, the main feature that has been discontinued is the 'Echo Look camera', even though a customer can still upload pictures on the 'Style by Alexa' application in the shopping app to receive style advice. In addition, voice-based assistants in the fashion domain can be found in applications using voice-command features, such as the 'ASOS Enki shopping guide' that is connected to the 'Google Assistant app' or the 'Google Assistant smart speaker'; Ashley Carman, 'Amazon will no longer support the Echo Look, encourages owners to recycle theirs' (*The Verge*, 29 May 2020) <www.theverge.com/2020/5/29/21274805/amazon-echo-look-discontinue-gadget-shopping-recycle-fashion-camera> accessed 18 June 2020; Kyle Wiggers, 'Amazon discontinues the Echo Look and migrates AI style recommendations to other apps and devices' (*Venturebeat*, 29 May 2020) <<https://venturebeat.com/2020/05/29/amazon-discontinues-the-echo-look-and-migrates-ai-style-recommendations-to-other-apps-and-devices/>> accessed 18 June 2020; Jeanna Dunne, 'HEY GOOGLE, TALK TO ASOS' (*Asos*, 12 October 2018) <www.asos.com/men/fashion-feed/2018_10_11_19>

experience significant success in the fashion domain as the individual's interaction with the agent was slow. It is only recently that fashion brands have taken up the use of chatbots again as an independent feature for personalising the customer's shopping experience.⁷⁹ Therefore, my focus is another NLP application which entails monitoring interactions on social media, such as user reviews and comments.

One important advancement in NLP (and NLU) is sentiment analysis, which is a method of extracting general sentiment, including opinions from text such as social media posts.⁸⁰ For example, Chandadevi Giri, Nitin Harale, Sebastien Thomassey *et al* use a supervised Naïve Bayes classifier to analyse the consumers' opinions on social media platforms, such as Twitter, Facebook, and Instagram, and identify the overall perception of specific fashion brands.⁸¹ Another example of sentiment analysis in fashion is the algorithms' extraction of perceptions from customer reviews to predict user ratings.⁸² We see how NLP and sentiment analysis can be valuable factors in a fashion brand's digital marketing strategy, to measure consumer satisfaction and improve an individual's shopping experience using general stances on fashion trends, style, etc.⁸³

NLP methods are an important tool in predictive analytics for shaping and defining content, such as advertising of fashion items. Predictive analytics entails the use of computational models to classify future behaviour using the analysis of past events (such as personalisation and recommender engines, which will be analysed in the next Section).⁸⁴ In other words, predictive analytics is a method for discovering what the consumer wants and acting upon it.⁸⁵ Within this context, NLP methods are an important basis for profiling users' future preferences.⁸⁶ The reasoning is that content curation and advertising for individual users need to consider general perceptions and trends to be an effective marketing tool for fashion brands' products.

thurs/asos-google-assistant/> accessed 18 June 2020; an overview of voice-command applications in fashion can be found here, Katarzyna Cieslak, 'How Voice Technologies Are Shaping The Future Of Fashion Industry?' (*upsidelab*, 20 November 2018) <<https://upsidelab.io/blog/voice-in-fashion/>> accessed 18 June 2020.

⁷⁹ McDowell 'Fashion gives chatbots a second chance' (n 38); However, fashion brands are still investing in the development of chatbots, refining the virtual 'try before you buy option' with augmented reality and to narrowing down the general selection to one specific item, see Nikki Gilliland, 'Why fashion and beauty brands are still betting on chatbots' (*Econsultancy*, 10 January 2018) <<https://econsultancy.com/why-fashion-and-beauty-brands-are-still-betting-on-chatbots/>> accessed 12 June 2020.

⁸⁰ Tudor-Mircea Dulău and Mircea Dulău, 'Cryptocurrency – Sentiment Analysis in Social Media' (2020) 16 (2) *Acta Marisiensis: Seria Technologica* 1.

⁸¹ Chandadevi Giri, Nitin Harale, Sebastien Thomassey and Xianyi Zeng, 'Analysis of consumer emotions about fashion brands: An exploratory study' [2018] *World Scientific Proceedings Series on Computer Engineering and Information Science* 1567.

⁸² Aleka Cheung, 'New: Sentiment Analysis Entity' (*Medium*, 22 May 2018) <<https://medium.com/wit-ai/new-sentiment-analysis-entity--52925e434e32>> accessed 16 June 2020.

⁸³ Feras Al-Obeidat, Anoud Bani Hani, Elhadj Benkhelifa, Oluwasegun Adedugbe, Munir Majdalawieh, 'A Sentiment Analysis Approach of Data Volatility for Consumer Satisfaction in the Fashion Industry' (2019 Sixth International Conference on Social Networks Analysis, Management and Security (SNAMS), Granada, Spain, 22-25 October 2019).

⁸⁴ Shaun B Spencer, 'Privacy and Predictive Analytics in E-Commerce' (2015) 49 (4) *New Eng.L.Rev.* 629, 630.

⁸⁵ 'How The Fashion Industry Is Using Data Science' (*Medium*, 21 April 2018) <medium.com/datadriveninvestor/how-the-fashion-industry-is-using-data-science-33c9b2739ef6> 20 June 2020.

⁸⁶ See for example, Dokyun Lee, Kartik Hosanagar and Harikesh Nair, 'Advertising Content and Consumer Engagement on Social Media: Evidence from Facebook' (2018) 64 (11) *Management Science* 1.

Therefore, a contextual approach to AI techniques in fashion entails the use of social media data for behavioural advertising and content moderation. Social media data in particular is increasingly used to infer an individual's behaviour, such as 'depression'⁸⁷, 'mood changes',⁸⁸ or likelihood to buy a specific product.⁸⁹ Fashion brands commonly use social media data for analytics determining the correlations between user behaviour and tastes, opinions, and fashion style.⁹⁰ Social media analytics is an important element in creating and also altering content shown to the user, involving the dynamic relationship between individual preferences and opinions on current trends and brand perception.⁹¹

To summarise, we have the use of sentiment analysis for the identification of fashion trends including shared preferences, as well as the use of analytics (such as NLP and other machine learning methods) to personalise the individual's engagement with filtered content through advertising and/or content moderation in the fashion domain. Advances in AI techniques for behavioural advertising and algorithmic filtering are about establishing perception in the broad sense, which includes 'the distance between how a brand wants to be perceived and how it is really perceived ... [both of which] are dependent on context'.⁹² The next Section focuses of recommender engines to elaborate on fashion brands' use of predictive analytics.

(ii) *Recommender engines*

A recommender system is a tool using several AI techniques 'required to sort, order, and efficiently convey relevant product content or information to users'.⁹³ By way of illustration, consider a user who wants to find some clothing on an e-commerce website for the summer season. A predictive model needs to consider that there is no universal standard on sizing and that a 'size 6 at [fashion retailer] Next would be a size 8 or 10 at [the fashion brand] H&M'.⁹⁴ In addition, consumers may have varying preferences

⁸⁷ Andrew G Reece and Christopher M Danforth, 'Instagram photos reveal predictive markers of depression' (2017) 6 (15) EPJ Data Science 1.

⁸⁸ Lee James Alexander, Efstratiou Christos and Bai Lu, 'Mood tracking: Exploring the use of online social network activity as an indicator of mood changes' (Workshop on Mental Health Sensing and Intervention in conjunction with UBICOMP'16, Heidelberg, Germany, 12-16 September 2016).

⁸⁹ Vivekanand Gopalkrishnan, David Steier, Harvey Lewis and James Guszcza, 'Big Data, Big Business: Bridging the Gap' (KDD '12: The 18th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Beijing, China, August 2012); see also, Lilian Edwards and Lachlan Urquhart, 'Privacy in public spaces: what expectations of privacy do we have in social media intelligence?' (2016) 24 (3) IJLIT 279; Alice E Marwick and Danah Boyd, 'Networked privacy: How teenagers negotiate context in social media' (2014) 16 (7) New Media & Society 1051.

⁹⁰ Lin Yusan, Xu Heng, Zhou Yilu and Lee Wang-Chen, 'Styles in the Fashion Social Network: An Analysis on Lookbook.nu' (SBP 2015: Social Computing, Behavioral-Cultural Modeling, and Prediction, Washington, United States, March 31-April 3 2015).

⁹¹ See also, Kati Chitrakorn, 'The new rules of guerrilla marketing in fashion' (*Vogue Business*, 23 March 2020) < www.voguebusiness.com/companies/the-new-rules-of-guerrilla-marketing-in-fashion> accessed 13 September 2021.

⁹² Lima Vallantin, 'Language, word embeddings and brands: using Natural Language Processing to pierce fashion bubbles' (*Medium*, 6 December 2019) < <https://medium.com/analytics-vidhya/language-word-embeddings-and-brands-using-natural-language-processing-to-pierce-fashion-bubbles-f80e6542f17b>> accessed 12 September 2021.

⁹³ Samit Chakraborty, Md. Saiful Hoque, Naimur Rahman Jeem, Manik Chandra Biswas and Edgar Lobaton, 'Fashion Recommendation Systems, Models and Methods: A Review' (2021) 8 (3) Informatics 1.

⁹⁴ There are few international standards on garment standards and sizing available, which are published by organisational bodies, such as the International Organisation for Standardization, the European Committee for Standardization or the Britain Standard

for the kind of fit, whereby the user may want a summer dress that is baggy or loose rather than a tight fit.⁹⁵ These are important considerations that were relevant to earlier predictive sizing platforms, such as three-dimensional (3D) body scanning technology and measurement extraction software,⁹⁶ and more recently, virtual try-on mobile applications or smart mirrors using augmented reality, recommending products of the perfect fit.⁹⁷

Moreover, users may have clear preferences on clothing for a specific occasion. Consider a recommender system which is able to incorporate style knowledge in coordinating different clothing items, such as pairing a suit jacket with a blouse.⁹⁸ An early example of a fashion recommender system containing more elaborate matching criteria in light of the occasion is the ‘Magic Closet’.⁹⁹ Here, the user inputs on the wearing occasion, such as ‘dating’ or ‘wedding’, and the system ‘automatically suggests the most suitable clothing for the occasion from the provided photos [showing the user’s own

Institution. The reality remains, however, that there are many retailers across the globe that do not have a standard sizing; Fanke Peng, Alessandra Vecchi, Mouhannad Al Sayegh and Susan Hamilton, ‘How to Use Sizing Technology and Fashion Metadata to Improve the User Experience for Online Fashion Retail’ in Alessandra Vecchi and Chitra Buckley (eds), *Handbook of Research on Global Fashion Management and Merchandising* (Business Science Reference 2016) 269.

⁹⁵ Peng, Vecchi, Al Sayegh and Hamilton (n 94) 275.

⁹⁶ The client’s body is captured with 3D body scanning technology, measuring the surface without any physical contact, and which are intended to replace the ‘traditional tape measurement’. Taken from, Yijing Zong and Young-A Lee, ‘An exploratory study of integrative approach between 3D body scanning technology and motion capture systems in the apparel industry’ (2011) 4 (2) *International Journal of Fashion Design, Technology and Education* 91, 92-93; see also, Adriana Gorea and Fatma Baytar, ‘Using 3D body scanning to measure compression variations in a seamless knitted sports bra’ (2020) 13 (2) *International Journal of Fashion Design, Technology and Education* 111, 112.

⁹⁷ 3D body scanning technology, enabling the accurate use of body scan data, can be employed on a digital surface, such as virtual-try on, which enables the customer to make an outfit choice. Current applications of the technology is the 3D body scanning booth introduced by ‘New Look’ in its store in Westfield shopping centre in London in 2012, as well as start-ups developing 3D body scanning technology for mobile applications. Further investment in 3D body technology is likely to intensify in the future; with Amazon’s acquisition of ‘Body Labs’ in 2017, in order to improve its Amazon Prime Wardrobe service. Other applications which are not based on 3D body scanning are AI size- prediction platforms, such as the ‘Body Block AI’ platform, which employs a 3D body scan database, enables customers to enter information on gender, height, age and weight, generating a 3D avatar for recommendations of preferred fit. Rajkishore Nayak, Rajiv Padhye, Lijing Wang, Kalesh Nath Chatterjee and Sheetal Gupta, ‘The role of mass customisation in the apparel industry’ (2015) 8 (2) *International Journal of Fashion Design, Technology and Education* 162, 165-166; McCormick H, Cartwright J, Perry P, Bamed L, Lynch S and Ball G, ‘Fashion retailing- past, present and future’ (2014) 46 (3) *Textile Progress* 227, 295- 296; ‘Could 3D body scanning banish the changing room for good?’ (*Verdict*, 17 October 2018) < www.verdict.co.uk/3d-body-scanning-fashion/> accessed 22 June 2020; see also, Arielle Pardes, ‘The Perfect Pair of Pants Is Just a 3D Body Scan Away: A new startup can generate a piece of custom clothing using smartphone photos you snap of your body. And that’s just the beginning of the bespoke clothing future’ (*WIRED*, 28 February 2019) < www.wired.com/story/bespoke-clothing-3d-body-scans/> 22 June 2020; Adi Robertson, ‘Amazon wants to 3D-scan volunteers’ bodies for a \$25 gift card’ (*The Verge*, 23 May 2019) < www.theverge.com/2019/5/23/18637369/amazon-body-labs-3d-scanning-study-new-york-volunteer-fashion> accessed 22 June 2020; BodyBlock AI Promises to Make Your Jeans Fit Better with Machine Learning & Big Data; World’s Largest 3D Body Scan Database is Helping Apparel Brands Predict Better Fitting Clothing’ (*PR Newswire*, 29 January) < www.prnewswire.com/news-releases/bodyblock-ai-promises-to-make-your-jeans-fit-better-with-machine-learning--big-data-300785830.html> accessed 22 June 2020; see also, ‘We are evolving: Easysize is evolving from being a sizing solution to an AI-driven return prediction platform. We comprehensively analyse customer behaviour and automatically identify which carts are likely to be returned’ (*Medium*, 7 February 2018) < <https://medium.com/@EasySize/we-are-evolving-6e24639f2b15>> accessed 22 June 2020.

⁹⁸ WK Wong, XH Zeng, WMR Au, PY Mok and SYS Leung, ‘A fashion mix-and-match expert system for fashion retailers using fuzzy screening approach’ (2009) 36 (2) *Expert Systems with Applications* 1750, 1751; In addition, ‘style knowledge’ in recommender systems can extend to colour coordination between different clothing items; see Kurt Gray, Peter Schmitt, Nina Strohminger, Karim S Kassar, ‘The Science of Style: In Fashion, Colors Should Match Only Moderately’ (2014) 9 (7) *PloS one* 1, 3.

⁹⁹ Si Liu, Jiashi Feng, Zheng Song, Tianzhu Zhang, Hanqing Lu, Changsheng Xu, Shuichen Yan, “‘Hi, Magic Closet, Tell Me What to Wear!’” (MM '12 Proceedings of the 20th ACM international conference on Multimedia, Nara, Japan, 29 October- 2 November 2012); Francie Diep, ‘Magic Closet: Keeps You Work-Appropriate’ (*News*, 26 December 2012) < www.nbcnews.com/id/wbna50299293> accessed 16 September 2021.

clothing] or retrieves the clothing from online shops which pair with a reference clothing well'.¹⁰⁰ I am not going to extensively elaborate on the method used by the Magic Closet, that is, a supervised machine learning method called the Support Vector Machine (SVM).¹⁰¹ It is sufficient to state that the SVM method provides that (i) the recommendations are constrained by the user's requests, and (ii) the data is distributed horizontally: clothing attributions inferred from individual pictures contain equal annotations of corresponding occasions so that the data is similar for all recommendations.¹⁰²

We increasingly witness how recommender engines are designed to anticipate user tastes. For example, a data science team from the fashion retailer ASOS developed an intelligent recommender system for their e-commerce website which can extract product attributes from images and other unstructured data and thus personalise the user's interactive experience with the brand's clothing.¹⁰³ Furthermore, Stitch Fix is a company using a series of recommender systems to provide a subscription-based service with personalised outfit suggestions sent to the customer's address.¹⁰⁴ These recommender systems focus not only on similar consumer purchases but also consider individual choices and preferences as relevant factors for personalised suggestions, therefore being an important tool for the user's knowledge discovery and another valuable data source for fashion retailers' decision-making.¹⁰⁵

Focusing on recommender systems on e-commerce platforms and subscription-based services, we can make some general statements on how these systems work in practice. Most recommender systems combine filtering algorithms, which are collaborative and content based for personalised recommendations.¹⁰⁶ Content-based filtering calculates the user's interactions with the selected item data, such as the similarity between product attributes.¹⁰⁷ In other words, if I frequently browse for formal clothing, or garments with floral patterns, then the algorithm will suggest items within the same category of style.¹⁰⁸ Collaborative filtering algorithms focus on the similarity between the users' actions recorded through browsing histories, click rates, product questionnaires, or user profiles and produce

¹⁰⁰ Liu, Feng, Song, Zhang, Lu, Xu, Yan (n 99) 622.

¹⁰¹ *ibid.*

¹⁰² *ibid.*

¹⁰³ Fabio Daolio, 'Deep learning for fashion attributes' (*Medium*, 6 September 2018) < <https://medium.com/asos-techblog/deep-learning-for-fashion-attributes-763c8c95034c>> accessed 12 June 2020.

¹⁰⁴ Bernard Marr, 'Stitch Fix: The Amazing Use Case Of Using Artificial Intelligence In Fashion Retail' (*Forbes*, 25 March 2018) < www.forbes.com/sites/bernardmarr/2018/05/25/stitch-fix-the-amazing-use-case-of-using-artificial-intelligence-in-fashion-retail/#3af43a6b3292> accessed 24 June 2020; Tom Davenport, 'The Future Of Work Now: AI-Assisted Clothing Stylists At Stitch Fix' (*Forbes*, 12 March 2021) < www.forbes.com/sites/tomdavenport/2021/03/12/the-future-of-work-now-ai-assisted-clothing-stylists-at-stitch-fix/?sh=42809c6e3590> accessed 12 September 2021.

¹⁰⁵ Neal Leavitt, 'Recommendation technology: will it boost e-commerce?' (2006) 39 (5) *Computer* 13; Mona Taghavi, Jamal Bentahar, Kaveh Bakhtiyari and Chihab Hanachi, 'New Insights Towards Developing Recommender Systems' (2018) 61 (3) *The Computer Journal* 319.

¹⁰⁶ Nikos Manouselis, Hendrik Drachler, Katrien Verbert and Erik Duval, *Recommender Systems for Learning* (Springer 2013) 5; Grald Kembellec, Ghislaine Charton, Imad Saleh, *Recommender Systems* (John Wiley & Sons 2014) 2.

¹⁰⁷ Ivens Portugal, Paulo Alencar, Donald Cowan, 'The use of machine learning algorithms in recommender systems: A systematic review' (2018) 87 *Expert Systems With Applications* 205, 206.

¹⁰⁸ Luce (n 35) 96.

recommendations based on the similarity with other users or how users rated certain items.¹⁰⁹ By way of illustration, I might receive clothing recommendations with floral patterns based on my historical interactions matching those of other liked-minded individuals.¹¹⁰ However, both collaborative filtering and content-based filtering suffer from weaknesses: the former is not able to provide accurate recommendations for new users with no interaction data (i.e. the cold-start problem),¹¹¹ and the latter cannot go beyond recommendations based on specific product categories.¹¹² As a result, we see that most recommender engines employ a hybrid approach that balances content-based and collaborative filtering algorithms.¹¹³

Indeed, a recommender system in fashion cannot simply be based on the user's past purchasing decisions.¹¹⁴ Product data needs to consider the emotional attributes of clothing, such as clothing reflecting lifestyle choices and/or the wearing occasion.¹¹⁵ As argued by Nick Landia, 'behavioural data usually needs to be complemented with personal information on "body shape, age, favourite colours as well as lifestyle" for more accurate style advice'¹¹⁶ as well as advanced methods to interpret product data.

Accordingly, one significant element of fashion recommender systems is product data to determine the nuances of clothing. Many of these advancements in personalisation systems are based on developments in computer vision methods to process images and neural networks to learn attributes of fashion products.¹¹⁷ Computer vision is an interdisciplinary method of understanding visual information, such as picking up visual features including colour combinations and garment texture in a product image.¹¹⁸ An obvious example of computer vision methods is technologies using augmented reality, such as smart mirrors or virtual try-on applications, which seemingly allow the user to try on clothing or makeup

¹⁰⁹ *ibid* 96-96; Congying Guan, Shengfeng Qin, Wessie Ling, Guofu Ding, 'Apparel recommendation system evolution: an empirical review' (2016) 28 (6) *International Journal Of Clothing Science And Technology* 854, 855; see also, Alexander Piazza, Pavlina Kröckel and Freimut Bodendorf, 'Emotions and fashion recommendations: evaluating the predictive power of affective information for the prediction of fashion product preferences in cold-start scenarios' (WI '17: Proceedings of the International Conference on Web Intelligence, Leipzig, Germany, August 2017).

¹¹⁰ Uma Gajendragadkar, 'Product Recommender using Amazon Review dataset' (*Towards Data Science*, 16 July 2019) < <https://towardsdatascience.com/product-recommender-using-amazon-review-dataset-e69d479d81dd> > accessed 12 August 2021.

¹¹¹ This is the so-called cold start problem regarding collaborative filtering; Ângelo Cardoso, Fabio Daolio and Saúl Vargas, 'Product Characterisation towards Personalisation Learning Attributes from Unstructured Data to Recommend Fashion Products' (ArXiv, 20 March 2018) < <https://arxiv.org/abs/1803.07679> > accessed 19 July 2019 at page 6; see also Daolio (n 103).

¹¹² Luce (n 35) 96.

¹¹³ Tulasi K Paradarami, Nathaniel D Bastian and Jennifer L Wightman, 'A hybrid recommender system using artificial neural networks' [2017] 83 *Expert Systems with Applications* 300; Minjae Ok, Jong-Seok Lee and Yun Bae Kim, 'Recommendation Framework Combining User Interests with Fashion Trends in Apparel Online Shopping' (2019) 9 (13) *Applies Sciences* 2634.

¹¹⁴ Nick Landia, 'Building Fashion Recommendation Systems' (*dressipi*, 19 April 2018) < <https://dressipi.com/blog/building-fashion-recommendation-systems/> > accessed 31 May 2019.

¹¹⁵ Guan, Qin, Ling and Ding (n 109) 868.

¹¹⁶ Landia (n 114).

¹¹⁷ Chakraborty, Saiful Hoque, Rahman Jeem, Chandra Biswas and Lobaton (n 93) 4.

¹¹⁸ Congying Guan, 'Prototyping a novel apparel recommendation system: A feasibility study' (PhD thesis, Northumbria university 2017) 107.

virtually whilst tracking individual behaviour.¹¹⁹ Some smart mirrors can be found in physical stores, whereas other virtual try-on applications can be found on mobile apps or bought as a smart assistant.¹²⁰ For the present discussion, I refer to computer vision methods to understand images and product data, such as social media images and data on images showing clothing.

Often, we see the use of advanced computer vision methods with deep learning to classify and interpret images, including semantic mapping, such as identifying that formal dresses are most likely made out of silk, whereas casual wear is likely to be made of cotton.¹²¹ Within this context, one promising approach in deep learning is the Convolutional Neural Network (CNN), a type of artificial neural network that can be used for image classification in the field of computer vision.¹²² It is argued that CNNs perform very well, based on their structure that can learn a large number of parameters from data, such as interpreting a dress using its cut, the fit and shape, and/or garment texture.¹²³ Hence, CNNs have become a popular approach to analysing visual features in the fashion domain as well as identifying non-linear relationships such as those between garment texture or colour and style.¹²⁴

Having examined how advanced computer vision and neural networks analyse product data, the next step is to elaborate on user-item interactions in fashion recommender systems. A popular method for analysing user-item interactions is the matrix factorisation model.¹²⁵ Matrix factorisation illustrates the application of collaborative filtering algorithms representing the interaction between fashion and user

¹¹⁹ For instance, 'Naked Lab' created a 3D body scanning smart mirror, which is a device that tracks the user's body measurements, as well as fat percentage. With the 'Naked Lab' smart mirror, an individual can upload images to the cloud, which are then processed by an algorithm; Kieron Marchese, 'the 3D-scanning mirror exposing the truth about your body' (*designboom*, 1 January 2019) < www.designboom.com/technology/naked-labs-3d-body-scanner-smart-mirror-01-01-2019/ > accessed 18 June 2020.

¹²⁰ Smart mirrors can be found in retail stores, such as the H&M store in Times Square in New York. Another example is the Amazon's 'iHome's iCVA66 vanity mirror', which includes the 'Alexa' voice-assistant; Muchaneta Kapfunde, 'H&M is Bang on Trend As Their Smart Mirror Wows Customers' (*Fashnerd*, 3 June 2018) < <https://fashnerd.com/2018/06/hm-smartmirror-retail-technology-fashion/> > accessed 23 June 2020; see also, Aleksandra Kwiecien, 'Examples of AR-powered virtual try ons in the fashion industry' (*divante*, 10 October 2019) < <https://divante.com/blog/examples-of-ar-powered-virtual-try-ons-in-the-fashion-industry/> > accessed 19 June 2020; see also, Ari Bloom, 'Why Augmented Reality Changes Everything' (*Business of Fashion*, 8 November 2017) < www.businessoffashion.com/articles/opinion/op-ed-why-augmented-reality-changes-everything > accessed 7 July 2019; Monica Chin, 'My Month with a Smart Mirror: Not Everything Needs Alexa' (*tomsguide*, 29 May 2019) < www.tomsguide.com/uk/us/ihome-icva66-alexa-mirror,review-6516.html > accessed 27 June 2020.

¹²¹ Deepak Halan, 'Artificial Intelligence: When Fashion Meets AI' (*Electronics For You*, 1 April 2018) < www.electronicsforu.com/technology-trends/must-read/smart-fashion-meets-ai > accessed 16 May 2019.

¹²² Alexander Schindler, Thomas Lidy, Stephan Karner, Matthias Hecker, 'Fashion and Apparel Classification using Convolutional Neural Networks' (Proceedings of the 10th Forum Media Technology and 3rd All Around Audio Symposium, St Poelten, Austria, 29-30 November 2017).

¹²³ Ken Chatfield, Karen Simonyan, Andrea Vedaldi and Andrew Zisserman, 'Return of the Devil in the Details: Delving Deep into Convolutional Nets' (Proceedings of the British Machine Vision Conference 2014, Nottingham, United Kingdom, September 2014).

¹²⁴ Maryam Moosaei, Yusan Link and Hao Yang, 'Fashion Recommendation and Compatibility Prediction Using Relational Network' (ArXiv, 13 May 2010) < <https://arxiv.org/pdf/2005.06584.pdf> > accessed 12 August 2021; see also, James Lee, 'Recommendation System Series Part 2: The 10 Categories of Deep Recommendation Systems That Academic Researchers Should Pay Attention To' (*Towards Data Science*, 31 October 2019) < <https://towardsdatascience.com/recommendation-system-series-part-2-the-10-categories-of-deep-recommendation-systems-that-189d60287b58> > accessed 13 September 2021.

¹²⁵ Wang-Cheng Kang; Chen Fang; Zhaowen Wang; Julian McAuley, 'Visually-Aware Fashion Recommendation and Design with Generative Image Models' (2017 IEEE International Conference on Data Mining (ICDM), New Orleans, LA, United States, 18-21 November 2017) page 6.

items.¹²⁶ The advantage of factorisation models for user-item interactions is that these perform with high predictive accuracy concerning multi-dimensional datasets as well as allowing the data scientist to implement additional features such as implicit feedback.¹²⁷

When we employ a CNN methodology in a matrix factorisation model we suddenly have ‘two embedding layers, one for customers and one for products’.¹²⁸ That is, the CNN methodology and matrix factorisation effectively overcome the cold-start problem of collaborative filtering algorithms and can perform well using latent features.¹²⁹ By way of illustration, a customer might have a preference for clothing in the size ‘medium’ but the algorithm needs to identify where the user’s ‘preference [would] fall along the spectrum of smallish mediums to largish mediums’.¹³⁰ Here, we need to deal with some latent features which have not been explicitly given by the user to identify the perfect fit of clothing.¹³¹ A CNN methodology will be able to contribute to the latent relationships regarding customer-item interactions based on the dimensionality of product data that is fed into the matrix factorisation model in a high-dimensional vector space.¹³² Of course, there are other (neural network) models that can be used in a collaborative filtering setting.¹³³ Nevertheless, I used the CNN method based on its popularity in research on fashion recommender systems and its ability to outperform other methods,¹³⁴ such as more “traditional” methodologies like the SVM briefly mentioned above.¹³⁵

(iii) *AI in fashion and the unstated features about individual preferences*

The complexity of AI techniques (i.e. advances in machine learning and deep learning) lies in those individual preferences that are not explicitly stated by the customer. Take the example of an individual’s statement on social media which stipulates that the *new winter collection by fashion brand ‘X’ is ‘not*

¹²⁶ Yang Hu, Xi Yi and Larry S Davis, ‘Collaborative Fashion Recommendation: A Functional Tensor Factorization Approach’ (MM '15: Proceedings of the 23rd ACM international conference on Multimedia, Brisbane, Australia, October 2015); Indeed, we can also combine a CNN methodology with a content-based filtering model.

¹²⁷ Taghavi, Bentahar, Bakhtiyari and Hanachi (n 105) 330; Yehuda Koren, Robert Bell and Chris Vollinsky, ‘Matrix Factorization Techniques for Recommender Systems’ (2009) 42 (8) Computer 30.

¹²⁸ Cardoso, Daolio, Saul (n 111).

¹²⁹ Abdul-Saboor Sheikh, Romain Guigoures, Evengeni Koriagin, Yuen King Ho, Rexa Shirvany, Roland Vollgraf, Urs Bergmann ‘A Deep Learning System for Predicting Size and Fit in Fashion E-Commerce’ (ArXiv, 23 July 2019) <<https://arxiv.org/pdf/1907.09844.pdf>> accessed 13 September 2021.

¹³⁰ ‘Algorithms Tour: How data science is woven into the fabric of Stitch Fix’ (MultiThreaded Stitch Fix) <<https://algorithms-tour.stitchfix.com/>> accessed 27 August 2019.

¹³¹ *ibid.*

¹³² Cardoso, Daolio, Saul (n 111).

¹³³ For example, Sebastian Heinz, Christian Bracher and Roland Vollgraf use a Recurrent Neural Network to predict style preferences based on past purchase sequences, Sebastian Heinz, Christian Bracher and Roland Vollgraf, ‘An LSTM-Based Dynamic Customer Model for Fashion Recommendation’ (ArXiv, 24 August 2017) <<https://arxiv.org/pdf/1708.07347.pdf>> accessed 16 September 2021.

¹³⁴ Wenhui Yu, Huidi Zhang, Xiangnan He, Xu Chen, Li Xiong and Zhen Qin, ‘Aesthetic-based Clothing Recommendation’ (ArXiv, 16 September 2018) <<https://arxiv.org/pdf/1809.05822.pdf>> accessed 16 September 2021; Guan, Qin, Ling and Ding (n 109) 854; Chakraborty, Saiful Hoque, Rahman Jeem, Chandra Biswas and Lobaton (n 93) 9; Congying Guan, Shengfeng Qin and Yang Long, ‘Apparel-based deep learning system design for apparel style recommendation’ (2019) 31 (3) International journal of clothing science and technology 376.

¹³⁵ Guan, Qin and Long (n 134).

horrible'.¹³⁶ Or imagine a visitor to an e-commerce website who is interested in the newest designer clothing after talking with colleagues at work, but has no clear idea what he or she is specifically looking for. Both examples underline the idea that algorithmic personalisation is based on a broad spectrum, which is detached from the explicit features of 'clothing' and 'style' (such as an individual's expressed opinion or the individual's stated preferences). Fashion brands and data scientists are no longer interested solely in the user's explicit requests or purchase history, using more (sophisticated) AI techniques to detect personal factors in clothing to personalise recommendations and content for (targeted) advertising. When I browse my social media page or a fashion brand's e-commerce platform, *I somehow see the latest fashion trends and I see the new winter jacket that looks strikingly similar to the one's I admired on social media.*

Accordingly, algorithmic personalisation systems in fashion are about the external factors influencing the meaning of 'fashion'.¹³⁷ Advancements in NLP, computer vision, deep learning, and predictive analytics signify that personalisation systems must capture dynamic changes in user preferences and infer the context of an individual's actions. For example, an algorithmic personalisation system may segment users based on their political preferences, sexual orientation, and/or mood to target them with personalised content on fashion suiting these personal characteristics. Similarly, a recommender system may infer an individual's casual type of style and recommend clothing in neutral colours. Therefore, algorithmic personalisation in fashion considers an individual's predispositions as well as emotional aspects including meanings attached to clothing.

That said, 'fashion' is a difficult area that is embedded in social context as well as the individual's implicit judgements about clothing. Just consider the way individual perceptions of 'designer clothing' and brands can differ based on demographic or socio-economic background, or how social and cultural values can shape meanings attached to style.¹³⁸ The dynamic nature of fashion, which goes beyond the fragility and seasonality of trends, is definitely a challenge for machine learning and deep learning algorithms. For instance, an important challenge in NLP models is to identify conversational intent including identifying users' spoken word utterances, such as developing a predictive model to recognise irony, metaphorical expressions, and/or slang.¹³⁹ In addition, another challenge for recommender

¹³⁶ Richard Socher, Alex Perelygin, Jean Y. Wu, Jason Chuang, Christopher D. Manning, Andrew Y. Ng and Christopher Potts, 'Recursive Deep Models for Semantic Compositionality Over a Sentiment Treebank' (Proceedings of the 2013 Conference on Empirical Methods in Natural Language Processing, Washington, Seattle, United States, October 2013), page 8.

¹³⁷ Landia (n 114).

¹³⁸ See for example, Jung-Hwan Kim, 'Imperative challenge for luxury brands: Generation Y consumers' perceptions of luxury fashion brands' e-commerce sites' (2019) 47 (2) International journal of retail & distribution management 220.

¹³⁹ For instance, Karen Hao who underlines that 'machines do not really understand what they are reading'; Karen Hao, 'AI still doesn't have the common sense to understand human language' (*MIT Technology Review*, 31 January 2020) <www.technologyreview.com/2020/01/31/304844/ai-common-sense-reads-human-language-ai2/> accessed 12 June 2020; see also, Keisuke Sakaguchi, Ronan Le Bras, Chandra Bhagavatula and Yejin Choi, 'WinoGrande: An Adversarial Winograd Schema Challenge at Scale' (ArXiv, 21 November 2019) <<https://arxiv.org/abs/1907.10641>> accessed 13 September 2021; Noah A Smith, 'Contextual Word Representations: A Contextual Introduction' (ArXiv, 17 April 2019) <<https://arxiv.org/abs/1902.06006>> accessed 15 June 2020; see also, Ashwin Ram, Rohit Prasad, Chandra Khatri, Anu Venkatesh, Raefer Gabriel, Qing Liu, Jeff Nunn, Behnam Hedayatnia, Ming Cheng, Ashish Nagar, Eric King, Kate Bland,

systems includes image segmentation (i.e. using social media images with fashion items on an unstructured background), image quality,¹⁴⁰ and coordinating the contextual features of product attributes with individual preferences.¹⁴¹ These considerations highlight that algorithms have to deal with a lot of uncertainty regarding the nuances of ‘fashion’ applied to individual circumstances.

Whilst we can agree that AI techniques can offer fashion brands a valuable amount of data sources to shape the customer’s shopping journey, it is less clear how ‘personalisation’ in AI is actually related to the individual. As highlighted by Jess Cartner-Morley:

The real point of fashion is [not] the fabric or the clothes themselves; it is how we think and feel about those clothes... and it is this human, emotional part of fashion – style, if you like – on which artificial intelligence now sets its sights.¹⁴²

Advances in AI can effectively correlate between an online post and an opinion about a fashion brand or the shape of a garment and a wearing occasion, but how these algorithmic correlations actually relate to the individual’s personal inferences about fashion is still an important question. Technical advances in the fashion domain, whilst making the concept of ‘fashion’ and clothing more customised for the (typical) customer liking fashion brand ‘X’, have certainly not made the concept of ‘fashion’ conceptually less abstract to the human observer.

V. Algorithmic personalisation: how to consider fashion in the legal sense

Referring back to the example above, *my preference for the winter jacket I noticed on social media* certainly illustrates more than me liking a garment – it is about my preferences for aspects of the clothing (such as the colour and shape of the jacket) and how this relates to my own preferences in fashion. Whilst I have outlined the technical specifications of algorithms in the fashion domain, I have not yet identified how individual statements about fashion evolve in the first place and whether this is connected to an individual’s personality. Chapter 2 uncovers the relationship between fashion and an individual’s preferences, as discussed in literature from fashion studies.

Amanda Wartick, Yi Pan, Han Song, Sk Jayadevan, Gene Hwang, Art Pettigru, ‘Conversational AI: The Science Behind the Alexa Prize’ (Alexa Prize Proceedings 2018) < <https://arxiv.org/abs/1801.03604>> accessed 12 June 2020 at pages 8-9; see also, Socher, Perelygin, Wu, Chuang, Manning, Ng and Potts (n 135).

¹⁴⁰ ‘Fashion DNA: Research Project by Christian Bracher, Sebastian Heinz & Roland Vollgraf’ (Zalando Research) < https://research.zalando.com/project/fashion_dna/fashion_dna/> accessed 12 September 2021; Chakraborty, Saiful Hoque, Rahman Jeem, Chandra Biswas and Lobaton (n 93) 22.

¹⁴¹ Landia (n 114).

¹⁴² Jess Cartner-Morley J, ‘Do robots dream of Prada? How artificial intelligence is reprogramming fashion’ *The Guardian* (London, 15 September 2018) < www.theguardian.com/fashion/2018/sep/15/do-robots-dream-of-prada-how-artificial-intelligence-is-reprogramming-fashion> accessed 12 September 2020

Moreover, I identified in the methodology and original contributions Sections I-II (of Chapter 1) that my research intends to provide an interdisciplinary account of the right to privacy focusing on the meaning of 'fashion' with reference to the individual. In doing so, we need to first clarify the connection between fashion, identity, and the right to privacy. Chapter 2 will provide an account on how we can view 'fashion' from the legal perspective. In other words, how does the nature of the right to privacy perceive individual preferences, such as my attitudes towards clothing; is an important question I try to answer with the next chapter.

Chapter 2

Incorporating ‘fashion identity’ into the right to privacy¹⁴³

We need a concept of the right to privacy and identity that incorporates an individual’s perception and self-relationality. This chapter scrutinises the meaning of the right to privacy in terms of identity construction, focusing on the meaning of ‘identity’ in fashion studies including fashion theory and psychology. The investigation delves into the value of privacy as a shield against unwarranted intrusions, an enabler of dynamic boundary negotiations, as well as a social framework for an individual’s autonomy to analyse the ECtHR’s interpretation of Article 8(1) of the ECHR. The right to privacy suffers from two problems regarding the role of parameters and conditions for identity-building in the digital age. Firstly, big data analytics necessitate an understanding of normative barriers that are not reactive to societal attitudes, but which maintain an internal sense of privacy. Secondly, profiling technologies’ relation to the conditions of identity-building suggests that we need to move away from a structural account of privacy and investigate the meaning of an individual’s self-relationality in individual sense-making. I suggest that a definition of “fashion identity” could clarify the right to privacy, stipulating how aspects of identity are impacted by social constraints in the management and perception of appearance.

I. Introduction

‘Uniqueness, individuality, constant change and materialistic values are at the centre of our society, and they deeply affect the consumer’s concept of self and his/her own identity formation’.¹⁴⁴

The right to privacy is not flawless. It suffers from many inconsistencies of interpretation. Some view privacy as a shield from unwarranted intrusions.¹⁴⁵ Others suggest that privacy is fundamental to the protection of an individual’s autonomy.¹⁴⁶ At the centre of this discourse on the meaning and value of privacy is the view that it is often a ‘sweeping concept’ which leads to the great difficulty of reaching a conclusive answer regarding its exact meaning.¹⁴⁷ Key to the right to privacy is the delimitation of its

¹⁴³ This chapter reflects my published paper in Daria Onitiu, ‘Incorporating ‘fashion identity’ into the right to privacy’ [2022] *Law, Technology and Humans* 1.

¹⁴⁴ Kirsi Niinimäki, ‘Eco-clothing, consumer identity and ideology’ (2010) 18 (3) *Sustainable Development* 150, 154.

¹⁴⁵ Warren and Brandeis (n 44); cf Ruth Gavinson, ‘Privacy and the Limits of Law’ (1980) 89 *Yale L.J.* 421; see also Edward J Bloustein, interpreting Warren and Brandeis’ findings, who adds that privacy is a protection of an individual’s human dignity, Edward J Bloustein, ‘Privacy as an aspect of human dignity: an answer to Dean Prosser’ [1964] 39 *N.Y.U.L.Rev.* 962.

¹⁴⁶ Julie E Cohen who highlights that we need ‘is a dynamic theory of informational privacy one that focuses on the conditions for meaningful autonomy in fact’, Julie E Cohen, ‘Examined Lives: Informational Privacy and the Subject as Object’ (2005) 52 *Stan.L.Rev.* 1373, 1423; see also, Danielle Keats Citron and Leslie Meltzer Henry, ‘Visionary Pragmatism and the Value of Privacy in the Twenty-First Century’ (2010) 108 *Mich.L.Rev.* 1107.

¹⁴⁷ Daniel J Solove, ‘Conceptualizing Privacy’ (2002) 90 *CLR* 1087, 1088; see also, Richard A Posner who states that ‘privacy is ‘elusive and ill defined’, Richard A. Posner, ‘The right of privacy’ (1978) 12 *Ga.L.Rev.* 393.

parameters with regard to the constraints as well as to the conditions for the exercise of this fundamental freedom.

Chapter 2, drawing from findings in fashion studies, intends to detangle the conceptual muddle in legal scholarship surrounding the right to privacy. Whilst the theory of ‘fashion’ has been traditionally viewed as the study of an ‘artifact,’ it is a field that is fuelled by diverse scholarly contributions from cultural studies, social psychology and sociology, presenting a multidisciplinary approach to the meaning of appearance and perception in ‘clothing.’¹⁴⁸ Of particular relevance is the role of ‘fashion’ in carving out various ‘identities’ expressed through the dimension of ‘clothing’ in social interaction.¹⁴⁹ A triangular framework for ‘fashion’ and ‘identity,’ suggesting the embodiment of human behaviour in a social context, sets the scene for viewing the right to privacy, in its outward and inward forms, as a disguise for identity and a protective space to explore it.

The aim of this investigation is twofold. It intends to scrutinise and revise the understanding of the right to privacy, using a definition of ‘fashion identity’ as managing and perceiving appearance. Privacy, as a dynamic process of interpersonal boundary control, addresses both the parameters of and conditions for identity-building.¹⁵⁰ As suggested by Philip Agre, privacy is ‘the freedom from unreasonable constraints on the construction of one’s identity’.¹⁵¹ This conception significantly contributes to the understanding of ‘identity’ as a process that is safeguarded by a relational concept of privacy as protecting an individual’s autonomy and maintaining selfhood.¹⁵² Nevertheless, the question remains of what the exact nature of the right to privacy is in maintaining an objective and subjective sense of self.

¹⁴⁸ As argued by Sandy Black, Amy de la Haye, Joanne Entwistle, Agnes Rocamora, Regina A Root and Helen Thomas the study of fashion incorporates a lot of key themes such as ‘its relationship with time, identity and difference, space, materiality, policy and agency, science and technology, and not least sustainability.’ Sandy Black, Amy de la Haye, Joanne Entwistle, Agnes Rocamora, Regina A Root and Helen Thomas, ‘Introduction’ in Sandy Black, Amy de la Haye, Joanne Entwistle, Agnes Rocamora, Regina A Root and Helen Thomas (eds), *The Handbook of Fashion Studies* (Bloomsbury Publishing Plc, 2013) 23; Entwistle (n 49) 40-41.

¹⁴⁹ Joanne Entwistle, ‘Introduction’ in Sandy Black, Amy de la Haye, Joanne Entwistle, Agnes Rocamora, Regina A Root and Helen Thomas (eds), *The Handbook of Fashion Studies* (Bloomsbury Publishing Plc, 2013) 111; Indeed, the relationship between ‘fashion’ and ‘identity’ is extensively studied in ‘fashion theory’ and still provides for rich scholarly contributions, see Fred Davis, *Fashion, Culture, and Identity* (The University of Chicago Press, 1992); Elizabeth Wilson, *Adorned in Dreams* (I.B. Tauris, 2003); Susan B Kaiser, *The Social Psychology of Clothing: Symbolic Appearances in Context* (2nd edn, Macmillan Publishing Company, 1990); Efrat Tseelon, *Masquerade and Identities: essays on gender, sexuality and marginality* (Routledge, 2001); Jeff Galak, Kurt Gray, Igor Elbert, Nina Strohminger, ‘Trickle-Down Preferences: Preferential Conformity to High Status Peers in Fashion Choices’ (2016) 11 PLoS one 1.

¹⁵⁰ Mireille Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (Edward Elgar Publishing Limited, 2015) 82.

¹⁵¹ Philip E Agre, ‘Introduction’ in Philip E Agre and Marc Rotenberg, *Technology and Privacy: The New Landscape* (The MIT Press, 1997) 7; other scholars discussing Agre’s concept of privacy are F.J. Zuiderveen Borgesius, ‘Improving privacy protection in the area of behavioural targeting’ (PhD thesis, University of Amsterdam, 2014) 92- 95; Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 80; Antoinette Rouvroy, ‘Privacy, Data Protection, and the Unprecedented Challenges of Ambient Intelligence’ (2008) 2 (1) *Studies in Ethics, Law and Technology* 1, 4; Noberto Nuno Gomes de Andrade, ‘Data Protection, Privacy and Identity: Distinguishing Concepts and Articulating Rights’ (Privacy and Identity Management for Life, Helsingborg, Sweden, 2-6 August 2010).

¹⁵² Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 80.

In this respect, the first task in defining the right to privacy is to determine the parameters of identity-building. Chapter 2 intends to investigate this focusing on Article 8 of the ECHR, rather than Article 17 ICCPR, notwithstanding the articles' similarities.¹⁵³ Focusing on Article 8(1) of the ECHR, the 'reasonable expectation of privacy' test provides a basis for understanding the ECtHR analysis of the behavioural barriers that inform the scope of the right to privacy.¹⁵⁴ According to the court, individual perception signifies control of self-presentation.¹⁵⁵ However, the court interprets behavioural barriers by focusing on societal attitudes, leaving out the evolving norms that define individual perception.

Another aspect regarding the definition of privacy in terms of identity construction is the conditions for identity-building, ensuring a framework that secures an individual's autonomy and authenticity. In this respect, privacy seeks to protect the conditions for and enablers of identity construction, which are the affordances for developing and respecting individual autonomy, such as freely entering into relationships with others.¹⁵⁶ This view, suggesting a structural account of privacy and autonomy, is elaborated by the ECtHR's interpretation of Article 8(1) of the ECHR in the area of personal development and data protection.¹⁵⁷ The analysis of case law points to the need for an understanding of privacy that protects the unconscious elements in the individual's development of 'self.' I describe this process, which is an individual's association with the self and the external world, to illustrate the individual's self-relationality.

Understanding the right to privacy as being connected to identity stimulates a series of uncertainties regarding its functions in self-realisation in the digital age. Profiling technologies not only have an impact on individual control concerning the flow of personal information, but algorithms also shape the contours of an individual's agency and choice.¹⁵⁸ Thus, a structural account of privacy does not offer reliable guidance for defining the potential of profiling technologies to create a "new" reality of self-relation, which attaches direct meanings to an individual's values and attitudes. We need a view of privacy that incorporates both the way individual perceptions are formed as well as the understanding of the notion of self-relationality as includes a person's unconscious associations with fashion.

¹⁵³ See also, Mireille Hildebrandt who stipulates that '[p]rivacy is explicitly protected by Article 17 of the United Nations (UN) International Covenant on Civil and Political Rights (ICCPR) of 1966, and by Article 8 ECHR of 1950, two examples of international law. Both articles are similar...', taken from, Hildebrandt, *Law for Computer Scientists and Other Folk* (n 11) 113.

¹⁵⁴ European Convention on Human Rights, article 8.

¹⁵⁵ This argument is based on the premise that the 'reasonable expectation of privacy test is a tool of legal reasoning, rather than a normative factor concerning the application of article 8 of the ECHR Convention, see *Barbulescu v Romania* (2017) 9 WLUK 42, para 73; *P.G and J.H v The United Kingdom* (2008) 46 E.H.R.R. 51, para 57.

¹⁵⁶ Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 80-81.

¹⁵⁷ See for example, *Denisov v Ukraine* App no 76639/11 (ECHR, 25 September 2018), paras 95-96; *ML and WW v Germany* App nos 60798/10 and 65599/10 (ECHR, 28 September 2018), para 87.

¹⁵⁸ Tal Z Zarsky, "'Mine your own business!': Making the case for the implications of the data mining of personal information in the forum of public opinion" (2003) 5 *Yale Journal of Law and Technology* 1, 35.

“Fashion identity” can offer a starting point for elaborating on the value of the right to privacy in the digital age because it signifies more than controlling impressions and self-representation in an environment. I suggest that the nature of the right to privacy is to hold together our separate selves in the face of objective and subjective constraints on identity formation. I conclude with guidance on clarifying the concept of the right to privacy, emphasising the relevance of fashion narratives and, self-relationality regarding objective and subjective constraints on identity formation.

II. The meaning of ‘fashion identity’

Before we address the question of the nature of the right to privacy in maintaining an objective and subjective sense of self, it is important to clarify the meaning of ‘fashion identity’ in order to define the methodological framework. ‘Fashion identity’ broadly concerns the analysis of a subject situated in a social context, focusing on the materiality of ‘clothing’ as well as the individual’s management and perception of appearance.¹⁵⁹ In this respect, the inherent inter-relationship between ‘fashion’ and ‘identity’ suggests that fashion, as a form of social behaviour, entails the various identities of self. Thus, ‘fashion identity’ consists of the ‘material self,’ the ‘social selves,’ and the ‘intimate self’ of identity. This triangular framework of ‘fashion identity’ sets the scene for investigating the extent to which individual perception and the process of inference of knowledge of self are relevant to the interpretation of the right to privacy.

1. Fashion studies

‘Fashion, which is as old as time and as new as tomorrow, is one of the most powerful forces in our lives. It influences what we wear, the way we talk, the foods we eat, the way we live, and how and where we travel, what we look at, what we listen to’.¹⁶⁰

Fashion studies intends to capture the dynamics of ‘clothing,’ ‘body,’ ‘style,’ ‘costume,’¹⁶¹ or ‘production and consumption’¹⁶² as a matter of symbolism, psychology, social or cultural construct, morality,¹⁶³ or natural extension of your body.¹⁶⁴ Research in anthropological literature, social psychology, cultural studies, and art history is relevant to understanding fashion as a mechanism for constructing and defining an individual’s behaviour, investigating design and production and analysing culture and social codes.¹⁶⁵

¹⁵⁹ Malcom Barnard, ‘Introduction’ in Malcom Barnard, *Fashion Theory: A Reader* (Routledge, 2007) 7-9.

¹⁶⁰ Kitty G Dickerson, *Inside the Fashion Business* (7th edn, Prentice Hall 2003) 34.

¹⁶¹ James Laver, *Costume* (BT Batsford Ltd 1956); James Laver, *Taste and Fashion* (George G Harrap and Company Ltd, 1937) 13.

¹⁶² Wilson (n 149); Ellen Leopold, ‘The Manufacture in the Fashion System’ in Juliet Ash and Elizabeth Wilson (eds), *Chic thrills: a fashion reader* (Harper Collins Publishers, 1992) 101.

¹⁶³ Quentin Bell, *on Human Finery* (The Hogarth Press, 1948) 13.

¹⁶⁴ Wilson (n 149); cf Douglas Gorsline, *A history of fashion: a visual survey of costume from ancient times* (London: Fitzhouse Books 1991).

¹⁶⁵ Entwistle (n 49) 40-41; Laver (n 161).

A key principle in studying fashion is that the meaning of ‘dress’ is centred not on a particular garment but on individual capabilities to shape the expressive notion of a particular style.¹⁶⁶ Engaging with fashion theory underlines the symbolic and communicative function of fashion, being a medium that connects the body to a particular social space.¹⁶⁷ Accordingly, ‘fashion’ is a study of social discourse, which focuses on the meaning attached by the individual wearer to ‘clothing.’¹⁶⁸

It is almost a ‘cliché to argue that fashion is connected to identity’.¹⁶⁹ According to Abby Lillethum, ‘identity reflects a person’s location within a social context’.¹⁷⁰ ‘Fashion’ is a tactile and sustainable experience for the situated body and its attributes, defining the individual’s appearance as well as their mood and personality.¹⁷¹ In this respect, the study of ‘fashion’ illustrates one approach to analysing the different roles of the individual’s appearance and perception that contribute to the ‘total self’.¹⁷² Thus, there is an inevitable connection between ‘fashion’ and ‘identity’ based on the study of the individual, who is a situated object within the roles of ‘dress,’ with regard to the management and perception of appearance.¹⁷³

2. The connection between fashion and identity

There are various ways how we can detangle the connection between fashion and identity. ‘Identity’ illustrates a pattern of relationships—the interaction with external factors—as well as being an object of introspection defined by the internal factors that make up the individual’s belief system.¹⁷⁴ We can classify the process of identity construction in fashion identity within a framework of the management and perception of appearance.

The first way we can describe the meaning of fashion identity is based on the individual’s process of self-representation. By way of illustration, imagine an individual getting up in the morning and putting on some clothes and accessories. Every individual ‘gets dressed’ in a way; be it through wearing garments, jewellery, perfume, a hairstyle, a cosmetic treatment, or using body modifications, such as

¹⁶⁶ Wessie Ling, ‘Korea vs Paris: There Is No Fashion, Only Image or How to Make Fashion Identity’ in Roy Menarini (ed), *Cultures, Fashion and Society’s Notebook 2016* (Pearson Italia SpA, 2016) 1.

¹⁶⁷ Davis (n 149) 3-4, 8-10.

¹⁶⁸ Ronald Barthes, *The Language of Fashion* (Bloomsbury, 2005) 20-28; see also, Mary Douglas, *Natural symbols: explorations in cosmology* (2nd edn, Routledge, 2003) 72.

¹⁶⁹ Entwistle, ‘Introduction’ (n 149) 97.

¹⁷⁰ Abby Lillethum, ‘Introduction’ in Linda Welters and Abby Lillethum (eds), *The Fashion Reader* (2nd ed, Berg, 2011) 189.

¹⁷¹ Alison Lurie, *The Language of Clothes* (William Heinemann, 1981) 5.

¹⁷² Lillethum (n 170); Mary Ellen Roach and Joanne Bubolz Eicher, ‘Introduction to the Study of Dress, Adornment, and the Social Order’ in Mary Ellen Roach and Joanne Bubolz Eicher (eds), *Dress, Adornment and the Social Order* (John Wiley & Sons, 1965) 1.

¹⁷³ Francis Corner, *Why Fashion Matters* (Thames & Hudson, 2014) 7; Umberto Eco, ‘Social Life as a Sign System’ in Malcom Barnard (ed), *Fashion Theory: A Reader* (Routledge, 2007) 144.

¹⁷⁴ Entwistle, ‘Introduction’ (n 149) 97.

tattooing or sunbathing.¹⁷⁵ This process of getting dressed is a way ‘to adorn the body’.¹⁷⁶ According to Mary Ellen Roach and Joanne Bubolz Eicher including the adornment theory, the term ‘dress’ contains two elements; one is the act of covering the body with clothing and the second element is the adornment of changing the body.¹⁷⁷ The practice of human adornment effectively underlines that every individual directs some effort to decorate the body in a way to enhance its human form for the eyes of the perceiver.¹⁷⁸

Moreover, we could argue that the individual’s process of self-representation fulfils a communicative function of fashion. Just think about a particular style, such as the ‘Sweet Lolita style’ in Japanese street fashion in the 1990s,¹⁷⁹ or a fashion trend, such as ‘Rachel haircut’, which became a popular style from the television series ‘Friends’.¹⁸⁰ Both examples show that fashion has an embodied meaning, such as incorporating a wearer’s current attitude, or a general sense of style.¹⁸¹

Furthermore, imagine how the individual who gets up in the morning might get ready for work or a meeting with friends. Georg Simmel offers the example of a lady who would not appear in a low-cut cleavage in an intimate and friendly atmosphere with two men without any embarrassment.¹⁸² A particular occasion or certain professions may require certain forms of bodily representation to ‘[look] appropriate for a particular setting’.¹⁸³ For instance, an individual who undermines social codes or cultural conventions through appearance is argued to be inappropriate, risking ‘social exclusion or ridicule’.¹⁸⁴ Accordingly, we could argue that the individual might experience external constraints to his or her self-representation of fashion based on the performative role of dress to communicate social and cultural conventions.¹⁸⁵

¹⁷⁵ Annette Lynch and Mitchell D Strauss, *Changing Fashion: A critical introduction to trend analysis and meaning* (Bloomsbury Publishing 2010) 13; Andrew Reilly, *Key Concepts for the Fashion Industry* (Bloomsbury 2014) 12.

¹⁷⁶ Roach and Bubolz Eicher (n 172); Ted Polhemus and Lynn Proctor argue that the conception of ‘adornment’ is universal, irrespective of the various degrees of involvement in appearance management; Ted Polhemus and Lynn Proctor, *Fashion & Anti-Fashion* (Cox & Wyman Ltd 1978) 11.

¹⁷⁷ Roach and Bubolz Eicher (n 172); see also Kim KP Johnson, Susan J Torntore and Joanne B Eicher, *Early Writings on Fashion and Dress* (Berg Fashion Library 2003) 5- 14.

¹⁷⁸ Alison Lurie argues that fashion ‘choices usually give us some information, even if it is only equivalent to the statement “I do not give a damn what I look today”’. Taken from, Lurie (n 171) 5.

¹⁷⁹ For instance, Marnie Fogg, using the example of the ‘Sweet Lolita style’ in Japanese street fashion in the 1990s to suggest that ‘girls consume a variety of exaggerated looks’ in order to belong to a group as well as to stand out with garments showing a sense of Victorian gothic and matching head or hair pieces. Taken from, Marnie Fogg, *Why you can go out dressed like that: Modern Fashion explained* (Thames & Hudson 2014) 22-23; cf Tets Kimura, ‘Focus on Japan’ (2014) 18 (4) *Fashion Theory: The Journal of Dress, Body and Culture* 497, 502-503.

¹⁸⁰ Eundeok Kim, Ann Marie Fiore and Hyejeong Kim, *Fashion Trends: Analysis and Forecasting* (Berg 2011) 2: see also George B Sproles, *Fashion: Consumer Behaviour Toward Dress* (Burgess Publishing Company 1979) 5-11.

¹⁸¹ Lawrence Langner, *The importance of Wearing Clothes* (S J Reginald Saunders 1959) 36; Amy De La Haye, ‘Introduction’ in Sandy Black, Amy De La Haye, Joanne Entwistle, Angnes Rocamora, Regina A Root and Helen Thomas (eds), *The Handbook of Fashion Studies* (Bloomsbury 2013) 232; see also, Van Dyk Lewis, ‘Hip-Hop Fashion’ in Valerie Steele (ed), *The Berg Companion to Fashion* (Berg Publishers 2010) 413; see also Kim, Fiore and Kim (n 179); Joel Lobenthal, ‘Hippie Style’ in Valerie Steele (ed), *The Berg Companion to Fashion* (Berg Publishers 2010) 417.

¹⁸² Georg Simmel, *On Individuality and Social Forms* (The University of Chicago Press 1971) 131.

¹⁸³ Entwistle (n 49) 16.

¹⁸⁴ *ibid* 7.

¹⁸⁵ As argued by Maria Frances Wolbers, ‘fashion’ is a material good that needs to suit certain needs and lifestyle at a given time; taken from, Maria Frances Wolbers, *Uncovering Fashion: Fashion communications across the Media* (Fairchild Books 2009) 28; Sproles (n 180)156; see also, Jennifer L Aaker, ‘The malleable self: The role of self-expression in persuasion’ (1999)

Perhaps the most evident constraint to an individual self-representation in fashion is the notion of an individual's perception of fashion. The role of dress in a social setting has an influence not only on exterior behaviour but also on perceptions towards oneself.¹⁸⁶ Susan B Kaiser uses the fictitious example of someone visiting a clothing store, observing an item and imagining how it would fit them, how it would look, and whether that would make them attractive.¹⁸⁷ This process, entailing the management and perception of appearance, results from the evaluation of how others perceive one's appearance and an individual's 'drawing inferences on how people look'.¹⁸⁸ An individual, through the process of observing, evaluates the meaning of self for the management of their appearance in clothing. Thus, the perception of appearance in "fashion identity" signifies the individual's active observations and unconscious associations of others' actions, being the internal factors in the construction of appearance.¹⁸⁹

Therefore, it seems that we need to consider both the performative and expressive, as well as external and internal constraints of an individual's self-representation when discussing the connection between fashion and identity. We can establish a definition to elaborate on this inter-relationship between fashion and identity, which I outline below:

Fashion, as a form of social behaviour, entails the various identities of self - the material self, the social selves and intimate self- for the management and perception of appearance.

This definition effectively establishes a triangular framework between the material self, the social selves, and the intimate self of fashion identity. The material self intends to identify how fashion is constructed through physical appearance. The social selves are the arrangements of fashion narratives and how fashion is perceived in individual appearance. The intimate self is an individual's inference of the social and personal aspects of fashion applied to the self. I elaborate on the elements of fashion identity in greater detail in the next Section.

3. Fashion identity: a triangular framework

The first element regarding the triangular framework regarding fashion identity is the "material self". The material self entails an individual's physical process of appearance management, as well as the bodies' expressive medium concerning the performative function of "fashion." For instance, social-

36 (1) *Journal of Marketing Research* 45, 46; MJ. Horn and LM. Gurel, *The Second Skin: An Interdisciplinary Study of Clothing* (Houghton Mifflin Company, 3rd ed, 1981) 139.

¹⁸⁶ Umberto Eco, 'Lumbar Thought' in Malcom Barnard (ed), *Fashion Theory: A Reader* (Routledge 2007) 316.

¹⁸⁷ Kaiser (n 149) 8.

¹⁸⁸ *ibid* 7; see also Gregory P Stone, 'Appearance and the Self' in Mary Ellen Roach and Joanne Bubolz Eicher (eds), *Dress, Adornment and the Social Order* (John Wiley & Sons 1965) 230.

¹⁸⁹ See also Herbert Blumer who argues that 'human beings interpret or "define" each other's actions instead of merely reacting to each other's actions', see Herbert Blumer, *Symbolic Interactionism: Perspective and Method* (Prentice-Hall Inc 1969) 79.

constructivist theory views the body as an object that conveys information on certain social categories, such as cultural parameters or social codes.¹⁹⁰ The body is a social product within the notion of “dress”, ‘conveying information about a social situation’, such as going to ‘a wedding or a funeral’.¹⁹¹ That said, the communicative function of dress is not only defined by the materiality of the garment but can be shaped by other social actors, as well as shared spaces.¹⁹² Accordingly, the material self is a medium of communication concerning the materiality of fashion discourse in a social context.

Indeed, the material self is not a static value but fulfills a dynamic function in the performative role of fashion as an everyday practice. As argued by Joanne Finkelstein ‘when we encounter a stranger as initially mysterious and inaccessible, we refer to clothing styles and physical appearance... as a reliable sign of identity’.¹⁹³ The material self is increasingly fragmented in light of the individual’s control to reveal and withhold aspects of the self in a world of increasing anonymity.¹⁹⁴ In this respect, the material self mirrors the world of contradictions between the true self and the self as performed through the body and dress. In other words, an individual’s appearance management is a form of impression management – a performance of a persona within social encounters.¹⁹⁵

In addition, the fashion’s performative role highlights that the material self is not only a reciprocal process for the individual to reveal or disguise aspects of identity but illustrates an individual’s strife for conformity and differentiation.¹⁹⁶ In other words, fashion illustrates the ambivalence between the desire to belong to a social group, as well as strife of differentiation from or within a social class.¹⁹⁷ In this respect, the physical garment may become the source of an individual’s self-identification, such as the ethnic dress, whereas, in other instances, the clothing may exhibit similar behaviour in a social space, such as a group of football fans.¹⁹⁸

¹⁹⁰ Douglas (n 168) 72; Jane Tynan, ‘Michael Foucault: Fashioning the Body Politic’ in Agnes Rocamora and Anneke Smelik (eds), *Thinking through Fashion* (London: I.B. Tauris 2016) 189.

¹⁹¹ Entwistle (n 49) 15.

¹⁹² For example, Llewellyn Negrin, using Merleau-Ponty’s phenomenology to underline that the experience of ‘dress’ is not only a visual phenomenon but as a ‘haptic engagement with dress’; Llewellyn Negrin, ‘Maurice Merleau-Ponty: The Corporeal Experience of Fashion’ in Agnes Rocamora and Anneke Smelik (eds), *Thinking through Fashion* (London: I.B. Tauris 2016) 115.

¹⁹³ Joanne Finkelstein, *The Fashioned Self* (Polity Press 1991) 128; see also, Wilson (n 149) 15.

¹⁹⁴ *ibid*; see also, Wilson (n 149) 15.

¹⁹⁵ Erving Goffman, *The Presentation of Self in Everyday Life* (4th edn, Penguin Books 1990) 32-40; see also Efrat Tseëlon, ‘Erving Goffman: Social Science as an Art of Cultural Observation’ in Agnes Rocamora and Anneke Smelik (eds), *Thinking through Fashion* (London: I.B. Tauris 2016) 154.

¹⁹⁶ Herbert Blumer, ‘Fashion: From Class Differentiation to Collective Selection’ (1969) 10 *The Sociological Quarterly* 275, 284; see also, M. Revell deLong, ‘Fashion, Theories Of’ in Valerie Steele (ed), *The Berg Companion to Fashion* (1st edn, Bloomsbury Academic, 2010) 321; Entwistle (n 49) 15.

¹⁹⁷ Early writings studying the practice of dress in the nineteenth century interpreted the role of fashion identity as a form of distinction from social classes. For instance, Colin Campbell refers to the aristocratic dandyism as a style, which intended to underline the traditional values in nobility including the ‘noble self.’ Colin Campbell, *The Romantic Ethic and the Spirit of Modern Consumerism* (1st ed, Blackwell Publishers 1987) 170; see also Eric J Arnould, ‘Reviewed Work(s): The Romantic Ethic and the Spirit of Modern Consumerism by Colin Campbell’ (1989) 53 (3) *Journal of Marketing* 131, 132; Thorsten Veblen, *The Theory of Leisure Class* (2nd edn, Penguin Books 1994) 35-67.

¹⁹⁸ See for example, Deborah Durham, ‘The Lady in the Logo: Tribal Dress and Western Culture in a Southern African Community’ in Joanne B Eicher (ed), *Dress and Ethnicity: Change Across Space and Time* (Bloomsbury Academic 1995) 183-194.

We can elaborate on this connection between an individual's management of appearance and the perception of fashion using the notion concerning the "social selves" of fashion identity. Just consider the example of cosmetic surgeries, social media, and/ or celebrity culture communicating beauty standards.¹⁹⁹ Current 'prevailing views on the ideal attributes of the body', may shape an individual's dialectic tendency to manage his or her appearance.²⁰⁰ Further, we can investigate the dialectic tendencies in fashion identity, focusing on the traditional separation between gender roles,²⁰¹ the link between dress and sexuality including attraction,²⁰² the notions concerning individualisation and social conformity in modern society,²⁰³ and/or, the cultural meaning of age.²⁰⁴ Accordingly, our second element regarding the triangular framework are the social selves in fashion identity, which are first and foremost values through which self-representation in appearance management are formed.

Indeed, the way we attribute meaning to the dialectic tendency on the management and perception of appearance is based on so-called 'perceiver variables.'²⁰⁵ Susan B Kaiser defines 'perceiver variables' in the following way:

Appearance perceptions are influenced not only by the images that are observed and evaluated, but also by the characteristics of the perceivers themselves.²⁰⁶

In this respect, 'perceiver variables' can be argued to illustrate the contextual cues clothes may give about an individual's behavior, such as a connecting a "suit" with an individual's reliability and/or occupation.²⁰⁷ Accordingly, self-representation in the social self is negotiated through the context certain narratives on style or appearance determine dominant values on appearance management. 'Perceiver variables' can shape the balance between an individual's management of appearance and perception of appearance.²⁰⁸

In addition, an individual engages with an associative process concerning the meaning of fashion narratives applied to the self. For instance, Dawn Karen, who is a fashion psychologist, asks 'how you [are] wearing your stress' is an important inquiry in how your outfit choices can improve your mental

¹⁹⁹ Meredith Jones, 'New Clothes, New Faces, New Bodies: Cosmetic Surgery and Fashion' in Stella Bruzzi and Pamela Church Gibson (eds), *Fashion Cultures Revisited* (2nd edn, Routledge Taylor & Francis Group 2013) 288, 289-291.

²⁰⁰ Finkelstein (n 193) 81-82.

²⁰¹ Davis (n 149) 46.

²⁰² Wilson (n 149) 92.

²⁰³ Simmel (n 182) 294- 297.

²⁰⁴ Julia Twigg, 'Fashion, the Body, and Age in Sandy Black, Amy de la Haye, Joanne Entwistle, Agnes Rocamora, Regina A Root and Helen Thomas (eds), *The Handbook of Fashion Studies* (Bloomsbury 2013) 89.

²⁰⁵ This is a term used by Susan B Kaiser; Kaiser (n 149) 271-272, 288.

²⁰⁶ *ibid* 271.

²⁰⁷ Kaiser (n 149) 288.

²⁰⁸ In this respect, much has been written about aesthetic value judgements concerning clothing appearance and perception; see Sharon J Lennon, 'Effects of Clothing Attractiveness on Perceptions' (1990) 18 (4) *Home Economics Research Journal* 303, 304.

health during the Covid-19 pandemic.²⁰⁹ What this shows is that ‘the clothes we wear have power not only over others, but also over ourselves’, such as shaping our own attitudes, emotions including unconscious associations with fashion and identity.²¹⁰ Accordingly, every representation an individual makes for his or her appearance is interpreted with a view of the intimate self, such as the way an individual’s beliefs, current emotions, or desires are projected through specific stimuli.

The intimate self in fashion identity is a framework concerning the construction and inference of knowledge, being responsible for formation of personal preferences and the personal expression of style. The representation of “clothing” including individual engagement can shape the formation of perceptions and the way an individual’s interpretation of appearances, emotions about clothes and readiness to respond to appearances. By way of illustration, Mark Zuckerberg’s Facebook status in 2016 included the post ‘first day back after paternity leave; what should I wear?’.²¹¹ Here, the responses to the Facebook status including the terms those responses are framed, such as a message of approval or disapproval, illustrate the context from which an individual’s perception of self is constructed.

To summarise, we just identified the three elements resembling an individual’s fashion identity. One, the material self illustrates the communication of values based on the individual management of appearance. Second, the individual’s fashion identity, including social selves illustrates a constant dialogue between the management and perception of appearance focusing on “fashion narratives”. Finally, the intimate self of fashion identity entails the individual’s inference of knowledge to the self, as well as the unconscious associations with fashion narratives.

I will show that the notion of fashion identity is a relevant factor to shape the meaning of the right to privacy in the digital age. In particular, I submit that fashion identity contributes to an individual’s management of own behavior, the formation of values including perception, as well as the formation of attitudes and preferences. Nevertheless, I need to first provide a conceptual outlook on privacy to formulate an interdisciplinary outlook on this right.

In this respect, the following discussion focuses on Philip Agre’s definition of the right to privacy as connected to identity construction.²¹² The first element of this definition concerns the parameters of the individual’s exercise of positive and negative freedom regarding social interaction.²¹³ The second

²⁰⁹ Rosie Kinchen, ‘What to wear in the lockdown, by the world’s first fashion psychologist Dawnn Karen tells Rosie Kinchen that clothes can improve mental health and help us stay positive’ *The Times* (London, 29 March 2020) <www.thetimes.co.uk/article/what-to-wear-in-the-lockdown-by-the-worlds-first-fashion-psychologist-sh733nklg> accessed 15 November 2021.

²¹⁰ Hajo Adam and Adam D Galinsky, ‘Encloded cognition’ (2012) 48 (4) *Journal of Experimental Social Psychology* 918.

²¹¹ Wie Zhiqiang and Yan Yan, ‘Inferring intrinsic correlation between clothing style and wearers’ personality’ (2017) 76 (19) *Multimedia Tools and Applications* 20273, 20274.

²¹² Agre (n 151).

²¹³ Valerie Steeves, ‘Reclaiming the Social Value of Privacy’ in Ian Kerr, Valerie Steeves and Carole Lucock (eds), *Lessons From The Identity Trail: Anonymity, Privacy and Identity in a Networked Society* (Oxford University Press 2009) 191.

element is the conditions for identity construction, emphasising the instrumental role of privacy in protecting values such as personal autonomy.²¹⁴ Both aspects will be discussed focusing on the ECtHR's interpretation of Article 8(1) of the ECHR, elaborating on the connection of privacy with our definition on "fashion identity."²¹⁵

III. Defining individual perception

The right to privacy has undergone many definitions to enhance its value as an individual right including social connotations of 'self.' One prominent perspective is that the right to privacy is the control of access to the self.²¹⁶ As identified by Samuel D Warren and Louis D Brandeis, privacy is understood as a right to be 'left alone' and as a means of protecting individuals against new threats related to the invention of photography and newspapers.²¹⁷ Increasingly, we seek to view the right to privacy as a dynamic process of boundary control, which is a means of self-representation and individual control of social interaction.²¹⁸ Agre's understanding of privacy as 'the freedom from unreasonable constraints on the construction of one's own identity'²¹⁹ builds on Irwin Altman's argument that privacy is a dynamic process of boundary negotiation between the self and the environment.²²⁰ In both theories, the central aspect of human behaviour is social interaction and privacy is related to the individual's interaction with their environment.²²¹ In addition, it is a dynamic process that takes a different shape in various spatial, temporal, and cultural situations.²²² Accordingly, the theory of privacy in terms of identity construction envisages that social interaction and the environment form the framework that privacy seeks to protect.

Incorporating the meaning of fashion identity in the consideration of the parameters of the right to privacy highlights the importance of individual perception for the management of appearance. According to the 'social selves' of 'fashion identity' the process of identity construction illustrates a dialectic between the individual's desire for conformity and differentiation.²²³ This argument, suggesting that individual expectations are formed by the interpretation of fashion narratives in a social context, is

²¹⁴ Arnold Roosendaal, *Digital Personae and Profiles in Law: Protecting Individuals' Rights in Online Contexts* (Wolf Legal Publishers 2013) 69-70; cf Constance L Milton, 'Privacy: Potential Violations of Human Dignity' (2019) 32 *Nursing Science Quarterly* 106, 107.

²¹⁵ European Convention for the Protection of Human Rights, art. 8 (1).

²¹⁶ David W Schoemaker, 'Self-exposure and exposure of the self: informational privacy and the presentation of identity' (2010) 12 *Ethics and Information technology* 3, 4; Luciano Floridi, 'the Ontological Interpretation of Information Privacy' (2005) 7 *Ethics and information technology* 185, 186.

²¹⁷ Warren and Brandeis (n 44); cf Gavinson (n 145) 437.

²¹⁸ JC. Buitelaar, 'Privacy: Back to the Roots' (2012) 13 *German Law Journal* 171, 185; JC. Buitelaar, 'Privacy and Narrativity in the Internet Era' (2014) 30 *The Information Society* 266, 275-276.

²¹⁹ Agre (n 151).

²²⁰ Irwin Altman, 'privacy illustrates the process of between the self and its environment', Irwin Altman, *The Environment and Social Behaviour: Privacy Personal Space Territory* (Monterey: Brooks/Cole, 1975) 18; Mireille Hildebrandt and Serge Gutwirth, 'D7.4: Implications of profiling practices on democracy and the rule of law' (FIDIS: Future of Identity in the Information Society, 5 September 2005) 36.

²²¹ Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 80.

²²² Altman (n 220); Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 79.

²²³ See discussion in (n 196).

evaluated in relation to the ECtHR's interpretation of Article 8(1) of the ECHR and the 'reasonable expectation of privacy' test.²²⁴ The 'reasonable expectation of privacy' test, being a tool of legal reasoning,²²⁵ assesses privacy interests based on objectively identified norms, rather than the individual's subjective experience. However, we need a proactive approach to assessing the normative and behavioural barriers of privacy interests in the digital age. We should therefore move away from an objective standard to a framework that incorporates the anticipated harms to privacy caused by the widespread use of big data analytics in the private and public sphere.

1. Privacy and the unreasonable constraints on identity-building

The first aspect of privacy in terms of identity construction concerns the emphasis on protection against unreasonable constraints imposed by the state or others.²²⁶ In this respect, privacy concerns the parameters of the individual's exercise of positive and negative freedom, focusing on unreasonable constraints on the individual's development of their identity.²²⁷ The state is viewed as the direct duty bearer, but safeguards of a procedural nature are increasingly being applied in the private sector through data protection law.²²⁸

In this respect, it is the parameters of the right to privacy that have seen most development in the operational sense. Warren and Brandeis' early conception of the right to privacy as the right to be 'left alone',²²⁹ building on the idea of separation and seclusion, views privacy as a condition that enables a private life outside the observation and influence of others.²³⁰ And, as Ruth Gavinson points out, 'perfect privacy' is when one is not accessible to others.²³¹

Others have more explicitly argued for the connection of privacy to an individual's self-concept. Alan Westin's theory argues that for self-realisation to be achieved, the state needs to protect the notions of solitude, intimacy, anonymity, and reserve as a means of privacy, and for personal autonomy, there

²²⁴ On a brief explanation of the reasonable expectation of privacy test, see *Libert v France* App no 588/13 (ECHR, 2 July 2018), para 23.

²²⁵ Joe Purshouse, 'The reasonable expectation of privacy and the criminal suspect' (2016) 79 MLR 871, 877.

²²⁶ Agre (n 151).

²²⁷ Steeves, 'Reclaiming the Social Value of Privacy' (n 213) 191; see also, Lorenc Danaj and Aleks Prifti, 'Respect for privacy from the Strasbourg Perspective' (2012) 5 *Academicus international scientific journal* 108, 109.

²²⁸ Juliane Kokott and Christoph Sobotta, 'The distinction between privacy and data protection in the jurisprudence of the CJEU and the ECtHR' (2013) 3 *IDPL* 222, 226; see also Paul de Hert and Serge Gutwirth, 'Privacy, data protection and law enforcement: opacity of the individual and transparency of power' in Erik Claes, Antony Duff and Serge Gutwirth (eds), *Privacy and the criminal law* (Intersentia 2006) 61, 68.

²²⁹ Warren and Brandeis (n 44); see also, Katherine J Strandburg, 'Privacy, Rationality, and Temptation: A Theory of Willpower Norms' (2005) 57 *Rutgers Law Review* 1235, 1267-1268.

²³⁰ WA. Parent, 'Recent work on the concept of privacy' (1983) 20 *American Philosophical Quarterly* 341, 342; see also Daniel J Solove who argues that 'people may recognize the value of being restrained from learning certain details about others, even if they crave gossip and would gain much pleasure from hearing it', taken from Daniel J Solove, 'The Virtues of Knowing Less: Justifying Privacy Protections against Disclosure' (2003) 53 *Duke L.J.* 967, 1050.

²³¹ Indeed, Ruth Gavinson's approach focuses on the inaccessibility to personal information, rather than control of the flow of information, see Gavinson (n 145) 428; see also, N. Moreham, 'Privacy in the Common law: a doctrinal and theoretical analysis' [2005] 121 *L.Q.R.* 628, 636.

needs to be emotional release, self-evaluation as well as limited and protected communication.²³² Privacy thus acts as a precondition for autonomy, establishing an inner circle that protects against the outside influence of others and enables the individual to act freely.²³³ As a result, there is a move away from a static conception of privacy to an understanding which acknowledges the dynamic nature of privacy as a protective space for boundary control.²³⁴

This understanding of privacy is further discussed by Altman²³⁵ for whom privacy is the ‘selective control of access to the self’.²³⁶ A crucial element of Altman’s theory is that privacy is a dialectic process, which is based on the interplay of people.²³⁷ Moreover, his theory contributes to the understanding of the ‘environment,’ which may include the physical environment, the social sphere as well as the cultural context.²³⁸ In this respect, he underlines that individuals seek privacy based on physical barriers as well as the behavioural barriers of social interaction.²³⁹ Virginia Kupritz further stipulates that physical barriers, such as walls, can add to the ‘symbolic value of privacy attached to these characteristics’.²⁴⁰ Both considerations indicate that the environment or the physical context can accommodate privacy or alter the perception of it. As a result, the right to privacy is a multifaceted concept, gaining meaning in a social context that has an impact on individual behaviour.²⁴¹

Altman’s analysis focuses on the way an individual or a group of individuals experience the ‘states of privacy’ including the physical or behavioural barriers set by themselves.²⁴² Thus, social interaction is based on an individual’s reasonable perception of privacy.²⁴³ For instance, an individual assumes that their family home is a physical barrier against eavesdropping, and that strangers are not recording them.²⁴⁴ Some social practices develop into normative practices that are codified in law.²⁴⁵ When these norms are not respected, a situation is created where an individual’s privacy is violated.

²³² Alan F Westin, *Privacy & Freedom* (The Bodley Head, 1967) 31, 34-38; see also, ST Margulis, ‘On the Status and Contribution of Westin’s and Altman’s Theories of Privacy’ (2003) 59 *Journal of Social Issues* 411, 412.

²³³ Westin (n 232); cf Charles Fried, ‘Privacy’ (1968) 77 (3) *Yale L.J.* 475, 480-481.

²³⁴ Hildebrandt and Gutwirth ‘D7.4: Implications of profiling practices on democracy and the rule of law’ (n 220) 36.

²³⁵ Altman (n 220); see also Beate Rössler who stipulates privacy concerns ‘those respects in which the exercise of autonomy is dependent upon my control of the ‘access’ of others to me’, taken from, Beate Rössler, *The Value of Privacy* (John Wiley & Sons, 2015) 73.

²³⁶ Altman (n 220) 24.

²³⁷ Margulis (n 232) 418-421; see also WA. Parent who interprets Irwin Altman’s theory suggesting that ‘privacy is understood to function like a boundary process whereby people can make themselves accessible to others or close themselves off’, see WA. Parent, ‘Privacy: A Brief Survey of the Conceptual Landscape’ (1995) 11 *Santa Clara Computer & High Tech.L.J.* 21, 22; Lara A Ballard, ‘The DAO of Privacy’ (2013) 7 *Masaryk University Journal of Law and Technology* 107, 108.

²³⁸ Altman (n 220) 32-42; Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150)79.

²³⁹ Altman (n 220) 50; Kirsty Hughes, ‘A Behavioural Understanding of Privacy and its Implications for Privacy Law’ (2012) 75 *MLR* 806, 809.

²⁴⁰ Virginia Kupritz, ‘Privacy management at work: a conceptual model’ (2000) 17 *Journal of architectural and planning research* 47.

²⁴¹ Hughes (n 239) 806.

²⁴² Altman (n 220) 32-42.

²⁴³ *ibid* 27.

²⁴⁴ Hughes (n 239) 812.

²⁴⁵ *ibid* 813; for an interesting discussion on the boundary interactions in private spaces, see Bert-Jaap Koops, ‘Privacy Spaces’ (2018) 121 *W.Va.L.Rev.* 611, 629- 633.

The question of course arises how we interpret the parameters of privacy considering that individuals increasingly act in public or semi-public spaces.²⁴⁶ As indicated by Beate Roessler ‘privacy in public then means, for instance, not listening in on private conversations between friends on the street or in a café’.²⁴⁷ But the dichotomy between private and public information is not practicable in the online sphere, without considering the way individual’s expectations of privacy are formed.²⁴⁸ Indeed, privacy as a form of a protective shell that is free from outside scrutiny entails the individual’s state as an autonomous subject.

2. Privacy and appearance management

Surveillance and tracking practices expose an individual to the identification and observance of behaviour in unprecedented ways.²⁴⁹ From surveillance cameras, RFID tracking technology to the smart assistant; surveillance and profiling technologies challenge the shape of the spatial context of privacy discourse.²⁵⁰ In particular, the rise of networked environments certainly challenge our expectations of boundary management within the ‘nonintimate’ spheres.²⁵¹ These practices can shape our sense of freedom, undermining the individual’s ‘necessity of relief’ from outside scrutiny.²⁵²

Referring back to Westin’s theory, creating a space outside the influence of others requires an individual’s control over access to information.²⁵³ We need some form of autonomy and agency to maintain our situational spaces- and mediate the processes for self-development.²⁵⁴ This form of privacy as a complex infrastructure, rather than a static value, is vital for maintaining my expressive and revealing function of aspects of identity.²⁵⁵

Social expectations can shape our sense of privacy, autonomy, as well as fashion identity. As argued by Tony Doyle and Judy Veranas:

It is true that when a person heads off to work in the morning, she trades away some of her privacy. People can see how she is dressed, make judgments about her age, appearance, race or ethnicity, and social class.²⁵⁶

²⁴⁶ Tony Doyle and Judy Veranas, ‘Public anonymity and the connected world’ (2014) 16 (3) *Ethics and information technology* 207; Paul de Hert, Serge Gutwirth, Anna Moscibroda, David Wright and Gloria Gonzalez Fuster, ‘Legal safeguards for privacy and data protection in ambient intelligence’ (2009) 13 (6) *Personal and ubiquitous computing* 435, 426-427.

²⁴⁷ Beate Roessler, ‘19 Privacy and/in the Public Sphere’ (2016) 2016 (1) *Yearbook for Eastern and Western Philosophy* 243.

²⁴⁸ Helen Nissenbaum, ‘Privacy as contextual integrity’ (2004) 79 (1) *Washington Law Review* 119.

²⁴⁹ Maria Brincker, ‘Privacy in public and the contextual conditions of agency’ in Tjerk Timan, Bryce C Newell, and Bert-Jaap Koops (eds), *Privacy in Public Space: Conceptual and Regulatory Challenges* (Edward Elgar Publishing Limited 2017) 64.

²⁵⁰ Koops, ‘Privacy Spaces’ (n 245) 619.

²⁵¹ Helen Nissenbaum, ‘Toward an Approach to Privacy in Public: Challenges of Information Technology’ (1997) 7 (3) *Ethics & behaviour* 207, 208; Joel R Reidenberg, ‘Privacy in Public’ (2014) 69 (1) *University of Miami law review* 141, 142.

²⁵² Koops, ‘Privacy Spaces’ (n 245) 620; Westin (n 232) 35.

²⁵³ Westin (n 232) 31, 34-38.

²⁵⁴ Adam D Moore, ‘Toward Informational Privacy Rights’ (2007) 44 (4) *The San Diego Law Review* 809, 812.

²⁵⁵ Koops, ‘Privacy Spaces’ (n 245) 620.

²⁵⁶ Doyle and Veranas (n 246) 209.

Hence, we are not only concerned with what aspects of identity we reveal but which readings we communicate to others.²⁵⁷ A key point of the social selves of fashion identity is the way clothing and the symbolism of dress are used to communicate with others, ensuring that individual behaviour aligns to particular social encounters, such as a formal gathering as well as the ‘implicit judgement’ of strangers.²⁵⁸

There is a clear connection between the dynamic nature of privacy and the meaning of fashion identity. Privacy overlaps with the expression of the social selves, focusing on the connection between appearance management in the material self of fashion identity. The development of the material self in fashion identity entails a degree of intimacy, which allows an individual to explore the nuances of appearance including interactions with people. Anthony Giddens argues that ‘the expectation of intimacy provides perhaps the closest links between the reflexive project of the self and the pure relationship.’²⁵⁹

We can argue that privacy protection including notions of intimacy, solitude, reserve, and anonymity, should enable the development of contingent features with regard to the management of appearance and identity. These contingent features are the act of self-representation of with a particular style or a look and the search for differentiation and conformity with a particular social context. Thus, privacy seems to provide the secure space wherein individuals can act within the ‘material self’ and think within the “social selves” of their “fashion identity.”

How is this secure space maintained in light of fashion identity? A context-specific approach to privacy allows us to consider how the management of appearance and self-representation of fashion identity is experienced in private or public contexts. For instance, the wearing of religious symbols or a particular style in a private setting could be protected by Article 8 of the ECHR as a safeguard for defining one’s personality.²⁶⁰ Fashion identity allows us to balance closeness and independence in the social selves and it is privacy that seeks to maintain this balance.

Thus, privacy maintains the parameters regarding the notions of conformity and differentiation in “fashion identity.” Referring back to Altman’s theory, privacy can provide the precondition for maintaining the boundaries of self-representation and expression.²⁶¹ It can provide a framework for how

²⁵⁷ Koops, ‘Privacy Spaces’ (n 245) 656-657; Goffman (n 195) 2.

²⁵⁸ Sproles (n 180)156; Finkelstein (n 193).

²⁵⁹ Anthony Giddens, *Modernity and Self-Identity: Self and Society in the Late Modern Age* (Polity Press, 1991) 94.

²⁶⁰ *Case von Hannover v Germany (No.2)* (2012) E.M.L.R. 16, para 95; however, the court in *Dakir v Belgium* decision confirms that a restriction to wear a veil, which covers the face, in public context did not violate articles 8 and 9 of the Convention; see *Dakir v Belgium* App no 4619/12 (ECHR, 11 December 2017), para 67; reference to, *SAS v France* [2014] 7 WLUK 38, paras 161-162.

²⁶¹ Altman (n 219) 24.

an individual experiences their social selves within the environment whilst maintaining the barriers of privacy. An individual can maintain physical boundaries, illustrated by the walls of the family home, as well as behavioural boundaries, which regulate desired contact.²⁶² Following these considerations, privacy not only offers the protective space to maintain the management of appearance and self-representation but also includes an individual's perception concerning their appearance. It is a construct that allows interpersonal accessibility and inaccessibility within the social selves of fashion identity.

However, how can an individual *maintain* his or her expectation of privacy to be free from the scrutiny of others? Whilst the performative function of fashion identity allows the individual to flexibly form aspects regarding his or her management of appearance within social contexts, a normative approach to privacy requires some sort of 'observable activity'.²⁶³ That is, the individual's rhetoric of boundary management depends on his or her 'reasonable expectation of privacy'.²⁶⁴ However, surveillance practices challenge the way we can design these boundaries.²⁶⁵ Further, Maria Brincker even questions 'if it is reasonable to have an expectation of privacy at all' in an Information society.²⁶⁶ Indeed, fashion identity can flesh out some key considerations on how a new dimension of privacy discourse could include the dialectic tendencies of appearance management.

I intend to show in the next Section how fashion identity places a stronger emphasis on the role of appearance as a medium for shaping identity. According to the social selves of fashion identity, an individual's management of appearance envisages how expectations are formed, based on the *negotiation* of their desire for differentiation and conformity. An individual's appearance is shaped by social experiences, which are induced by our perceptions. This understanding of "identity" and "self" suggests that appearance management cannot be judged by objective measurement, but rather an individual's process of negotiating the self in relation to the environment needs to be considered. The notion of individual perception within 'fashion identity' exemplifies this argument.

We can see the relevance of this argument that 'fashion identity' provides a stronger account of how individual expectations are formed in a social context in the ECtHR's interpretation of Article 8(1) of the ECHR and the 'reasonable expectation of privacy' test.²⁶⁷ The 'reasonable expectation of privacy' test examines the extent to which behavioural barriers may facilitate an individual's social interaction and privacy.²⁶⁸ The main criticism regarding the 'reasonable expectation of privacy' test in Article 8(1)

²⁶² *ibid* 50.

²⁶³ Reidenberg (n 251)141.

²⁶⁴ Paul de Hert, Serge Gutwirth, Anna Moscibroda, David Wright and Gloria Gonzalez Fuster, 'Legal safeguards for privacy and data protection in ambient intelligence' (2009) 13 (6) *Personal and ubiquitous computing* 435, 438.

²⁶⁵ Reidenberg (n 251) 146.

²⁶⁶ Brincker (n 249) 69.

²⁶⁷ European Convention on Human Rights, art 8 (1); *Denisov v Ukraine* (n 157) paras 95-96; *ML and WW v Germany* (n 156) para 87.

²⁶⁸ Hughes (n 239) 808-809.

of the ECHR is that it focuses exclusively on an individual's management of appearance, ignoring the ambivalence of appearance management and appearance perception.

3. Article 8 (1) ECHR and the reasonable expectation of privacy

Focusing on the ECtHR's interpretation of the 'reasonable expectation of privacy' test,²⁶⁹ an individual's perception of privacy may illustrate whether a measure falls within the scope of Article 8 of the ECHR.²⁷⁰ In this respect, the 'reasonable expectation of privacy' test is a tool of legal reasoning, which investigates whether the parameters of an interference fall within the scope of Article 8(1) of the ECHR.²⁷¹ In the *Copland v United Kingdom* decision, the court noted that the applicant had a reasonable expectation of privacy as she did not receive any warning that her telephone calls, email, and internet usage would be monitored.²⁷² Conversely, in the *Antovic and Mirkovic v Montenegro* decision the applicant, who acted in a professional capacity in a university lecture hall, a room for 'develop[ing] mutual relations and developing social identities with their students,' also had a reasonable expectation of privacy even though it seems that the applicants were aware of the video surveillance of their workplace.²⁷³ Here, the court held that 'the data collected by the impugned video surveillance related to the applicants' private life, making Article 8 applicable to the complaint'.²⁷⁴ Following these considerations, the 'reasonable expectation of privacy' test does not seem to be a yardstick for the applicability of Article 8 of the ECHR, but rather a factor that may indicate whether a measure has an impact on the individual's privacy interests.²⁷⁵

The 'reasonable expectation of privacy' test regarding Article 8(1) of the ECHR is relevant, providing an outlook on the way the right to privacy 'defines the limits and boundaries of the self'.²⁷⁶ Building on Altman's theory, the test focuses on behavioural mechanisms for the control of access to the self, and endorses an approach concentrating on social norms as privacy interests and barriers.²⁷⁷ As argued by

²⁶⁹ On the origins of the 'reasonable expectation of privacy' test in US jurisprudence, *Katz v United States* (1967) 389 US 367; see also, Brandon T Crowther, '(Un)Reasonable Expectation of Digital Privacy' [2012] 1 *BYU Law Review* 343; see also Bryce Clayton Newell who offers an in-depth discussion on the differences regarding the application of the 'reasonable expectation of privacy' test by the ECtHR and the US, Bryce Clayton Newell, 'Rethinking Reasonable Expectations of Privacy in Online Social Networks' (2011) 17 *Richmond Journal of Law and Technology* 1, 52-55.

²⁷⁰ Marion Oswald, 'Jordan's dilemma: Can large parties still be intimate? Redefining public, private and the misuse of the digital person' (2017) 26 *Information & Communications Technology Review* 6, 7.

²⁷¹ *Purshouse* (n 225) 877; see also, Hugh Southey and Adam Straw, 'Surveillance, Data and Privacy' (2013) 18 *Judicial Review* 440, 441.

²⁷² *Copland v The United Kingdom* (2007) 45 E.H.R.R. 37, paras 39-44; see also, *Halford v The United Kingdom* (1997) 24 E.H.R.R. 523, paras 44-46.

²⁷³ *Antovic and Mirkovic v Montenegro* App no 70838/13 (ECHR, 28 February 2018), para 44; *Antovic and Mirkovic v Montenegro* App no 70838/13 (ECHR, 28 February 2018) (Joint Dissenting Opinion Spano, Bianku and Kjølbro), para 12.

²⁷⁴ *Antovic and Mirkovic v Montenegro* (n 273) para 45.

²⁷⁵ As highlighted by the ECtHR, the 'reasonable perception of privacy test' is a significant factor to assess the intrusiveness of a measure, such as (covert) video surveillance of an employee at his or her workplace, but not conclusive element to determine the applicability of article 8 (1) of the ECHR Convention; *Barbulescu v Romania* (n 155) para 73; see also, *Purshouse* (n 225).

²⁷⁶ Altman (n 219) 50.

²⁷⁷ Hughes (n 239) 816.

NA Moreham, physical and behavioural signals are indicators of an individual's subjective choices, but it is the social norms and attitudes that determine whether a person has a privacy interest.²⁷⁸

The question, of course, arises of which normative values the right to privacy should protect. According to the ECtHR, privacy interests arise based on objectively identified norms that enable the individual's management of appearance and self-presentation. This approach is problematic as it restricts the value of privacy to a definition of behavioural barriers and seeks to translate social interactionism based on external forces. What we see in the individual's engagement with profiling technologies is that there are inherent distortions that arise from the relationship between the 'self' and the environment.

4. Individual perception and privacy

Can the 'reasonable expectation of privacy' test extend to 'newly extended audience[s]', such as the new opportunities of communication and perception within algorithmic landscapes?²⁷⁹ Indeed, Roger Brownsword underlines that one has to look at 'prevailing custom and practice' to judge whether an individual's expectation of privacy is reasonable.²⁸⁰ That is, we often assume that prevailing expectations change whenever there is a conflict between the individual interests and the pursuance of common values pertaining to society as a whole.²⁸¹ Expectations are formed based on the social interactions which can raise or lower the benchmark regarding the individual's reasonable expectation of privacy.²⁸²

Nevertheless, I argue that a problem regarding the 'reasonable expectation of privacy' test is that the notion does not consider the way perceptions are formed, but rather it focuses on the objectively identified norms establishing a privacy interest. In *Benedik v Slovenia*, the court, analysing whether the applicant using the Internet had a reasonable expectation of privacy that his otherwise public online activity would remain anonymous, focused on the dynamic IP address which could not be traced to a specific individual without the internet service provider's verification, and upon specific request.²⁸³ The court analysed the applicant's degree of online anonymity in light of the measures to obtain identifiable information, focusing on the access to content data rather than the insights the access to personal

²⁷⁸ NA. Moreham, 'Unpacking the Reasonable Expectation of Privacy Test' [2018] 134 Law Quarterly Review 651, 662.

²⁷⁹ Tobias Matzner and Carsten Ochs, 'Privacy' (2019) 8 (4) Internet Policy Review 1, 5.

²⁸⁰ Roger Brownsword, *Law, Technology and Society: Reimagining the Regulatory Environment* (1st edn, Routledge 2019) 327; see also, Aimee Jodoi Lum, 'Don't Smile, Your Image Has Just Been Recorded on a Camera-Phone: The Need For Privacy in the Public Sphere' (2005) 27 (2) U.Hawaii L.Rev. 377, 389.

²⁸¹ The right to privacy is argued to be a 'public good' as well as a 'collective interest,' protecting an individual's self-realisation in light of contemporary problems; P. Regan, *Legislating Privacy: Technology, Social Values and Public Policy* (University of North Carolina Press, 1995) 213; see also Colin J Bennett, 'In Defence of Privacy: The Concept and the regime' (2011) 8 Surveillance & Society 477, 487; Beate Roessler and Dorota Mokrosinska, 'Privacy and social interaction' (2013) 39 (8) Philosophy and Social Criticism 771; Titus Stahl, 'Indiscriminate mass surveillance and the public sphere' (2016) 18 (1) Ethics and information technology 33.

²⁸² Brownsword, *Law, Technology and Society: Reimagining the Regulatory Environment* (n 280) 327.

²⁸³ *Benedik v Slovenia* App no 62357/14 (ECHR, 24 July 2018), paras 101, 105-117.

information can generate into an individual's perception of privacy.²⁸⁴ A reason why individual expectations are not a conclusive factor in identifying an interference with Article 8(1) of the ECHR is found in the ECtHR's reasoning in *P.G and J.H v The United Kingdom*.²⁸⁵ In this decision, the court underlined that a 'person who walks down the street will, inevitably, be visible to any member of the public who is also present.... [p]rivate life considerations may arise, however, once any systematic or permanent record comes into the existence of such material from the public domain'.²⁸⁶ Accordingly, the 'reasonable expectation of privacy' test does not contain any substantive guidance on the perception of privacy, but rather a structural account of existing objectively determined privacy interests.²⁸⁷

This approach is problematic, undermining the value of privacy as the individual's control of self-presentation. The ECtHR defines the right to privacy as an inanimate object that conveys information on the social norms and 'barriers' defining individual perception. The claimant will obtain a finding of reasonable expectation of privacy protection once a practice becomes a widespread intrusive measure, such as the systematic collection of personal data or the indiscriminate monitoring of individual actions.²⁸⁸ Thus, the 'reasonable expectation of privacy' is a factual test, assessing a privacy interest through the circumstances of the case rather than the claimant's (subjective) experience of the process of appearance management. Indeed, in *Benedik v Slovenia* the question was not whether the applicant had a 'reasonable expectation of privacy' when surfing the Web, but whether they had an interest in privacy protection based on the dynamic IP address.²⁸⁹ This approach underscores the importance of "fashion narratives" in a normative account of social attitudes, being a test that asks what information or measure is considered to be private and leaving out the individual's ability to control the desired access regarding the contours of appearance management.²⁹⁰

There is something fundamentally wrong with assuming that privacy is the access to the data pertaining to the unspecified relationships in the online sphere, or indeed, the context through which social relationships are evaluated.²⁹¹ We tend to focus on the social processes shaping individual expectations, rather than the individual's internal processes premating his or her sense of privacy and autonomy. However, algorithmic processes do not only negate the possibilities to manage our appearance but impact the way our perceptions are formed.

²⁸⁴ See also *Benedik v Slovenia* App no 62357/14 (ECHR, 24 July 2018) (Concurring Opinion of Judge Yudkivska, Joined by Judge Bošnjak).

²⁸⁵ *P.G and J.H v The United Kingdom* (n 155) para 54.

²⁸⁶ *ibid.*

²⁸⁷ *Benedik v Slovenia* (n 283), paras 101, 115-177; *P.G and J.H v The United Kingdom* (n 155); see also, *Lopez Ribalda and Others v Spain* (2020) 71 E.H.R.R. 7, paras 89, 93-94, 125.

²⁸⁸ *Barbulescu v Romania* (n 155) paras 121-122; *Lopez Ribalda and Others v Spain* (n 287) para 91.

²⁸⁹ See also, Normann Witzleb and Julian Wagner, 'When is Personal Data "About" or "Relating to" an Individual? A Comparison of Australian, Canadian, and EU Data Protection and Privacy Laws' [2018] 4 Canadian Journal of Comparative and Contemporary Law 293, 326-327.

²⁹⁰ See also, James Rachels, 'Why Privacy is Important' (1975) 4 Philosophy & Public Affairs 323, 326.

²⁹¹ Sandra Seubert and Carlos Becker, 'Verdächtige Alltäglichkeit: Sozialkritische Reflexionen zum Begriff des Privaten' (2018) 19 (1) *Figurationen* 105, 106.

In other words, it is necessary to define the value of privacy in the big data age in order to elaborate that “fashion narratives” are necessary with regard to the scope of the ‘reasonable expectation of privacy’ test. As characterised by Bruce Schneier in his book *Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World*, the dangers of corporate and governmental mass surveillance of user interactions, activities, and behaviour permeate our existence.²⁹² In particular, what is known as ‘big data analytics’ – the analysis and matching of data to classify and infer individual behaviour for decision-making – has become a system of statistical observation regulating and governing human behaviour.²⁹³ However, it is not only the aggregation of data sets that leads to the erosion of an individual’s privacy in the public sphere,²⁹⁴ but the extent we can maintain our perception of the self within networked environments that fundamentally alters common norms on privacy expectations.

The expansion of the use of algorithmic systems, from targeted advertising to predictive policing, does not simply necessitate measures used to address the old privacy problem – such as an objective standard capturing a structural account of an invasions into an individual’s privacy sphere – but requires a classification of anticipated harm, given that almost any individual action leaves digital traces.²⁹⁵ It is not the CCTV camera installed on a public street, or the voice-user interfaces in our living room that underline the chilling effects of the loss of solitude and intimacy,²⁹⁶ but the algorithms, such as facial recognition technology or NLP and NLU techniques, which diminish an individual’s autonomy in establishing the parameters of self-presentation.²⁹⁷ Our communicative structures, the ability to disclose and withhold aspects of our identity, are shaped by the ‘mere belief that one is being observed’.²⁹⁸ These considerations indicate that our knowledge and beliefs are shaped by the algorithms defining an external constraint on the right to privacy.

Following these considerations, the ‘reasonable expectation of privacy’ test needs to emphasise our individual perception, considering the individual’s associations in the management of appearance that inform barriers to privacy. Kirsty Hughes has partly addressed this point, suggesting that the ‘reasonable expectation of privacy’ test needs to consider the individual’s knowledge when determining whether the

²⁹² Bruce Schneier, *Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World* (WW Norton & Company, 2015) 45, 109-110; see also, Cathy O’Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (Penguin Random House, 2016).

²⁹³ Sara Degli Esposti, ‘When big data meets dataveillance: The hidden analytics’ (2014) 12 *Surveillance & Society* 209.

²⁹⁴ Koops, ‘Privacy Spaces’ (n 245) 651.

²⁹⁵ Ryan M Calo, ‘The Boundaries of Privacy Harm’ (2011) 86 *Ind.L.J.* 1131, 1145; Fahriye Seda Gruses, ‘Multilateral Privacy Requirements Analysis in Online Social Network Services’ (PhD thesis, Katholieke Universiteit Leuven 2010) 89; see also, Urs Gasser, ‘Recoding Privacy Law: Reflections on the Future Relationship among Law, Technology, and Privacy’ (2016) 130 *Harvard Law Review Forum* 61, 63.

²⁹⁶ cf Michele Rapoport, ‘The Home Under Surveillance: A Tripartite Assemblage’ (2012) 10 *Surveillance & Society* 320, 325.

²⁹⁷ See also Mathew Johnson who highlights that ‘technology is capable of detecting and interpreting ambient information which is imperceptible to normal human senses. Such technologies undermine our expectations of what is observable’. His approach includes a discussion of the US courts’ interpretation of ‘reasonable expectation of privacy test’ in light of novel technologies, see Mathew Johnson, ‘Privacy in the Balance - Novel Search Technologies, Reasonable Expectations, and Recalibrating Section 8’ (2012) 58 (3-4) *Crim.L.Q.* 442, 444.

²⁹⁸ Calo, ‘The Boundaries of Privacy Harm’ (n 295) 1146.

applicant's expectation was reasonable.²⁹⁹ However, the notion of fashion identity in appearance management can also contribute to the external constraints that invasions of privacy can impose on the sense of self. “Fashion identity” can clarify an individual’s subjective sense of privacy based on the analysis of fashion narratives to interpret individual behaviour. In this respect, an analysis of fashion narratives can define the barriers regarding a privacy interest, balancing an individual’s negotiation of the social selves of fashion identity including the desire for conformity and differentiation. Hence, we can argue that the parameters of privacy need to consider an individual’s perception of fashion identity, which consists of the social and cultural ambivalence of clothing defining the self. I further elaborate on this statement when focusing on a definition of fashion identity and unreasonable constraints of privacy in Section V (of Chapter 2).

Having examined the parameters for establishing interferences in privacy with regard to the ‘reasonable expectation of privacy’ test in Article 8 of the ECHR, the next task is to examine the conditions for identity-building in light of the right to privacy. The second element of Agre’s definition of the right to privacy cited above is the conditions for identity construction, such as physical or psychological integrity, to freely enter into relationships with others and to manage self-perception, as well as individual practice and exercise of that freedom within the self and a social context.³⁰⁰ The aim of this discussion is to focus on the relational nature of privacy in order to secure an individual’s autonomy within a socio-cultural infrastructure.³⁰¹

IV. Defining self-relationality

Privacy not only refers to issues regarding personal information about the self, but usefully extends to the diverse aspects of everyday life that challenge how expectations are formed and impact on the individual, as indicated in the previous Section.³⁰² Now we need to elaborate how privacy seeks to protect the conditions for and enablers of identity construction, which are the affordances for developing and respecting individual autonomy, such as the freedom to freely enter into relationships with others.³⁰³

Agre’s definition of privacy, establishing a link between its social dimension and an individual’s autonomy is often discussed in relation to the implications of new technologies, such as profiling tools,

²⁹⁹ Hughes (n 239) 816, 824; see also, Sjaak Nouwt, ‘Reasonable Expectations of Geo-Privacy’ (2008) 5 *SCRIPTed: A Journal of Law, Technology and Society* 375, 395.

³⁰⁰ Agre (n 151).

³⁰¹ This is an aspect I will discuss even further in **Chapter 4** when examining filter bubbles and echo chambers in the fashion domain.

³⁰² *ibid.*

³⁰³ Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 80-81; JW. Penney, ‘Privacy and the New Virtualism’ [2008] 10 *Yale Journal of Law and Technology* 194, 216.

for an individual's process of identity-building.³⁰⁴ Profiling technologies, relying on the indiscriminate collection and unprecedented analysis of individual behaviour, influence an individual's sense of self, an 'evolving presence' which is shaped and defined by algorithms.³⁰⁵ Accordingly, authors tend to emphasise the role of privacy as a tool for an individual's self-realisation, which is rooted in the protection of personal autonomy and authenticity in social interactions.³⁰⁶

This view, suggesting that an individual's autonomy is socially embedded within the parameters that define the external constraints on identity-formation, will be investigated in light of the ECtHR's interpretation of personal autonomy with regard to Article 8(1) of the ECHR.³⁰⁷ The notion of personal autonomy is a core rationale underlying the interpretation of the right to privacy regarding an individual's personal development and data protection.³⁰⁸ In this respect, the interpretation of privacy overlaps with fashion identity, protecting the parameters through which an individual can maintain an individual's autonomy and authenticity.

There is a need to reconsider the interpretation of the conditions for the right to privacy, recognising the need to maintain an individual's self-development and authenticity in the digital age. I submit in the next Section that profiling technologies not only impact the conditions for exercising autonomy but also undermine an individual's association with appearance management and perception. We live in a world where algorithmic systems suspend the individual's process of exploration of identity. Accordingly, we need an understanding of privacy that sheds new light on the meaning of 'autonomy' and 'authenticity' and considers the conscious and unconscious associations defining a person's inter-relationship with "fashion". The individual's association with beliefs, attitudes and emotions can be defined as a form of relationality established by the individual regarding the meaning of 'fashion' (i.e. an individual's self-relationality).

³⁰⁴ Zuiderveen Borgesius 'Improving privacy protection in the area of behavioural targeting' (n 151) 92; see also, Mireille Hildebrandt and Bert-Jaap Koops, 'The Challenges of Ambient Law and Legal Protection in the Profiling Era' (2010) 73 MLR 428, 447; Mireille Hildebrandt, 'Profiling and the Identity of the European Citizen' in Mireille Hildebrandt and Serge Gutwirth (eds), *Profiling the European Citizen: Cross-Disciplinary Perspectives* (Springer 2008) 312.

³⁰⁵ Rouvroy (n 151) 36-37.

³⁰⁶ Hildebrandt and Gutwirth 'D7.4: Implications of profiling practices on democracy and the rule of law' (n 220) 70-71; Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 81; Roosendaal (n 214) 25.

³⁰⁷ European Convention on Human Rights, art 8 (1).

³⁰⁸ Bart van der Sloot, 'Privacy as human flourishing: Could a shift towards virtue ethics strengthen privacy protection in the age of Big Data?' (2014) 5 JIPITEC 230, 233; Nadezha Purtova, 'Private Law Solutions in European Data Protection: Relationship to privacy, and waiver of data protection rights' (2017) 28 N.Q.H.R 179, 181; see also, Bart van der Sloot, 'Decisional privacy 2.0: the procedural requirements implicit in article 8 ECHR and its potential impact on profiling' (2017) 7 IDPL 190.

1. Privacy and the conditions for identity-building

An important aspect of the value of privacy is that it is instrumental for an individual's autonomy, integrity, and self-development.³⁰⁹ Such a conception of privacy is characterised by its flexibility of interpretation as well as dynamic conceptions of the self.³¹⁰ As seen in ECtHR case law on the role of privacy and personal autonomy, Article 8 of the ECHR incorporates a dimension of positive freedom, such as developing one's personality and building relationships.³¹¹ Within this context, the right to privacy has increasingly developed within the notion of autonomy, requiring positive obligations on the part of the state applicable to horizontal relationships, such as the protection of personal data.³¹² Accordingly, the right to privacy, recognising both positive and negative duties, underlines the conditions for the individual's exercise of positive and negative freedom in interpersonal relationships.

The conditions framing identity and self-concept are based on exchanges and communication with others. George Herbert Mead, emphasising the distinction between 'I' and 'me,' suggests that 'the "I" is the response of the organism of attitudes of the others, and the "me" is the organised set of attitudes of the others which one himself assumes'.³¹³ This perspective endorses the idea that the notion of self-concept is a product of an individual's reflexivity and reflection based on their engagement with others.³¹⁴ An individual's identity is a product of social processes and the continuous feedback of others.³¹⁵

In this respect, we can argue that privacy, as a form of interaction, is based on the notion of symbolic interactionism. It is argued to manage the contours of self-presentation as well as the extent of audience management. This view of privacy, suggesting that an individual's autonomy does not signify detachment from social life,³¹⁶ affords the conditions for the meaningful expression of identity.³¹⁷ This definition sees privacy as a process of interpersonal boundary management, involving the relationships among people.³¹⁸ Here, the emphasis is on the individual's control of the contours of social interaction.³¹⁹ Accordingly, the nature of privacy is one of negotiated relationships, entailing the structuring of

³⁰⁹ Daniel J Solove, 'A Taxonomy of Privacy' (2006) 154 U.Pa.L.Rev. 477, 499-500.

³¹⁰ cf James H Moor, 'The Ethics of Privacy Protection' (1990) 39 Library Trends 69.

³¹¹ *Sidabras and Dziutas v Lithuania* (2006) 42 E.H.R.R. 6, para 43; *Jankauskas v Lithuania (No 2)* (2018) 66 E.H.R.R. 16 at, para 56.

³¹² Van der Sloot, 'Privacy as human flourishing: Could a shift towards virtue ethics strengthen privacy protection in the age of Big Data?' (n 308) 233; see for example, *Catt v The United Kingdom* (2019) 69 E.H.R.R. 7, paras 121-128.

³¹³ George Herbert Mead, *Mind, Self, & Society* (The University of Chicago Press, 1934) 175.

³¹⁴ *ibid*; Blumer, *Symbolic Interactionism: Perspective and Method* (n 189) 79.

³¹⁵ *ibid*; see also, Ralf de Wolf and Jos Pierson, 'Who's my audience again? Understanding audience management strategies for designing privacy management technologies' (2014) 31 Telematics and Informatics 607, 609.

³¹⁶ Westin (n 232) 34.

³¹⁷ Julie E. Cohen, *Configuring the Networked Self: Law, Code, and the Play of Everyday Practice* (Yale University Press, 2012) 114; Rössler (n 235) 133.

³¹⁸ Altman (n 219) 18-22.

³¹⁹ *ibid* 50.

relationships and protecting integrity with regard to the processes between the self and the environment.³²⁰

2. Privacy and the intimate self of fashion identity

An important aspect regarding the conditions for identity-building is the view that privacy, in terms of dynamic boundary negotiations, is an inseparable aspect of individual autonomy. This supports the idea of multiple senses of the self in the “social selves” and both contingent features of identity in light of the right to privacy as well as independent values that are part of personhood. This premise is seen in Erving Goffman’s theory that an individual chooses different appearances presented to various audiences.³²¹ To thus link privacy with the multiple senses of self is an inseparable aspect of maintaining personhood and individual autonomy. It allows an individual to freely frame their appearance and freely explore any further potential senses, which have not been yet examined.³²²

Context is also an important variable when discussing the inter-relationship between the social selves and the intimate self of fashion identity. Socio-cultural conditions, including fashion narratives, are key drivers for an individual’s management of appearance, including perception of fashion identity. Nevertheless, whilst the social self is formed in light of values for appearance management and individual perception, the intimate self concerns the various attitudes and beliefs for self-concept. In this respect, a clear distinction between the social selves and intimate self is that, whilst the former concerns the interactive experience between the self and the environment, the latter concerns the unconscious thought of desires and emotions deriving from an individual view of the performative function of fashion.

This distinction between the social selves and intimate self is relevant when discussing the enablers of identity-building regarding an individual’s privacy. “Fashion identity” notes that an individual’s inference of knowledge of self develops with social interaction, connecting the right to privacy with autonomy. Samuel R Wells argues that ‘we instinctively... judge the quality of things by their outward forms.’³²³ Nevertheless, the intimate self further adds to our understanding concerning the conditions of identity-building in that self-knowledge can illustrate an associative process detached from social life based on the individual’s formation of beliefs and attitudes. When we discuss privacy, we tend to assume

³²⁰ Steeves, ‘Reclaiming the Social Value of Privacy’ (n 213) 191; see also, Priscilla M Regan, ‘Response to Bennett: Also in defence of privacy’ (2011) 8 *Surveillance & Society* 497, 498.

³²¹ Goffman (n 195) 166, 203.

³²² On the exploration of potential aspects of self, see Hazel Markus Paula Nurius, ‘Possible Selves’ [1986] *American Psychologist* 954.

³²³ Samuel R Wells, *New Physiognomy, or, Signs of Character* (Fowler and Wells 1867) 6; see also Thomas Ford Hoult who argues that ‘most human interaction is structured in terms of the judgements people make of one another’; see Thomas Ford Hoult, ‘Clothing and the Status Ratings of Men: An Experiment’ in Mary Ellen Roach and Joanne Bubolz Eicher (eds), *Dress, Adornment and the Social Order* (John Wiley & Sons 1965) 250.

that our autonomy is shaped within social interactions detached from an individual's own associative process of "fashion identity". I will come back to this argument in how algorithms can mediate the conditions of our own sense-making and autonomy in Section IV.4 (Chapter 2).

Viewing privacy as a process of boundary control enhances the individual's exercise of the conditions for privacy embodied in social contexts – a common interpretation that is relevant to the notion of 'identity' and 'self' with regard to profiling technologies.³²⁴ In this respect, legal scholars, most notably Mireille Hildebrandt, refer to Paul Ricoeur's distinction between idem-identity and ipse-identity when investigating the impact of profiling technologies on individual privacy and autonomy.³²⁵ To clarify, idem-identity illustrates the process of recognition and sameness of identity that is shaped by the feedback of others, whereas ipse-identity is the process of classification and selfhood, the establishment of an individual's sense of self as an embodied experience.³²⁶ Following this analysis, profiling technologies influence the experiences of idem-identity and ipse-identity in that the inferences generated by the identification of idem-identity have an impact on the sense of ipse-identity.³²⁷ As argued by Hildebrandt, 'profiling may indeed lead to me being presented with certain pre-chosen aspects of that world in the form of a limited range of options'.³²⁸ This aspect of privacy and autonomy emphasises that privacy is needed for the selective representation of self. Defining the extent to which evolving information technologies, as well as profiling technologies, have an impact on the external management of identity formation is always a question about how these technologies influence the conditions through which the perception of self is formed, such as agency and choice.³²⁹ Accordingly, in terms of identity formation, privacy maintains a protective framework for self-realisation.

The question thus arises of how privacy functions in an individual's self-realisation. According to the ECtHR's interpretation of Article 8 of the ECHR, the notion of 'identity' has no fixed essence and pertains to areas that safeguard an individual's personal autonomy, such as notions of personal development and the process of identification.³³⁰ An analysis of Article 8(1) of the ECHR in terms of personal development and personal data protection reveals a structural account of privacy, suggesting that an individual's autonomy is socially embedded within the parameters that define the external constraints on identity formation. According to this conception of personal autonomy, the right to

³²⁴ Zuiderveen Borgesius 'Improving privacy protection in the area of behavioural targeting' (n 151) 92.

³²⁵ Hildebrandt and Gutwirth 'D7.4: Implications of profiling practices on democracy and the rule of law' (n 220) 70-71; Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 81; Roosendaal (n 214) 25.

³²⁶ Hildebrandt, 'Profiling and the Identity of the European Citizen' (n 304) 314.

³²⁷ Katja de Vries, 'Identity, profiling algorithms and a world of ambient intelligence' (2010) 12 *Ethics and Information Technology* 71, 79.

³²⁸ Hildebrandt and Gutwirth 'D7.4: Implications of profiling practices on democracy and the rule of law' (n 220) 42; see also, Mireille Hildebrandt, 'Who Needs Stories if You Can Get the Data? ISPs in the Era of Big Number Crunching' (2011) 24 *Philosophy & technology* 371, 382.

³²⁹ In this respect, see Daniel Susser, Beate Roessler and Helen Nissenbaum, 'Online Manipulation: Hidden Influences in a Digital World' (2019) 4 *Georgetown Law Technology Review* 1, 38.

³³⁰ See also, Yusef Al Tamimi, 'Human Rights and the Excess of Identity: A Legal and Theoretical Inquiry into the Notion of Identity in Strasbourg Case Law' (2018) 27 *Social & Legal Studies* 283, 296.

privacy seeks to safeguard an individual sense of authenticity, such as the ability to wear certain clothes or the communication of certain thoughts and beliefs.³³¹

3. Article 8 (1) ECHR and autonomy

The ECtHR has continuously taken an expansive approach to interpreting privacy, without outlining an exhaustive list of its meanings.³³² Two notable areas underline an extension of the right to privacy, based on the notion of personal autonomy, which includes aspects of the individual's personal development as well as developments in the area of data protection.³³³ Both are based on the conception of privacy as a social product that connects autonomy with authenticity.

Focusing on the notion of personal autonomy, Article 8(1) of the ECHR provides for the protection of multiple aspects of an individual's personality, such as physical or social identity, physical and psychological integrity, as well as the person's ability to develop relationships.³³⁴ In this respect, the ECtHR accepts that privacy, as well as the notion of personal autonomy, covers sexual orientation,³³⁵ gender identification,³³⁶ the right to discover one's origins,³³⁷ religious and philosophical convictions,³³⁸ the right to a name in identity documents,³³⁹ the right to personal choice including desired appearance,³⁴⁰ as well as the right to an ethnic or group identity.³⁴¹ Accordingly, the development regarding the dynamic nature of privacy is based on the core rationale of personal autonomy in Article 8 of the ECHR, which entails positive obligations on the part to state to take measures that facilitate personal development. The ECtHR's reasoning in *Aksu v Turkey* highlights this point, that protecting an individual's expression of identity not only requires a blocking shield from intrusions by the state or other actors, but also active involvement to preserve and explore identity, such as protecting minorities against 'negative stereotyping that impacts a group's self-worth'.³⁴²

³³¹ R. Ingham, 'Privacy and Psychology' in J.B Young (ed), *Privacy* (John Wiley & Sons Ltd, 1979) 44.

³³² *Pretty v the United Kingdom* (2002) 35 E.H.R.R. 1, para 61; *Niemietz v Germany* (1993) 16 E.H.R.R. 97, para 29; see also, Brian O'Beirne, 'The European Court of Human Rights' recent expansion of the right of privacy: a positive development?' (2009) 14 (2) Coventry Law Journal 14, 16.

³³³ For an extensive discussion on all the facets of privacy, see Van der Sloot, 'Privacy as human flourishing: Could a shift towards virtue ethics strengthen privacy protection in the age of Big Data?' (n 308) 230; Bart van der Sloot, 'Privacy as Personality Right: Why the ECtHR's Focus on Ulterior Interests Might Prove Indispensable in the Age of "Big Data"' (2015) 31 Utrecht Journal of International and European Law 25, 44.

³³⁴ *Mikulic v Croatia* (2002) 2 WLUK 216, para 53; *X and Y v the Netherlands* (1986) 8 E.H.R.R. 235, para 22; *Paradiso and Campanelli v Italy* (2017) 65 E.H.R.R. 2, para 159.

³³⁵ *Sousa Goucha v Portugal* App no 70434/12 (ECHR, 22 June 2016), para 27; *Beizaras and Levickas v Lithuania* App no 41288/15 (ECHR, 14 May 2020), para 109.

³³⁶ *Hamalainen v Finland* (2015) 1 F.C.R. 379, para 68; *AP Garcon and Nicot v France* App nos 79885/12, 52471/13 and 52596/13 (ECHR, 6 April 2017), paras 95-96.

³³⁷ *Gaskin v the United Kingdom* (1990) 12 E.H.R.R. 36, paras 39, 49; *Odievre v France* (2004) 38 E.H.R.R. 43, para 29.

³³⁸ *Folgero and others v Norway* App no 15472/02 (ECHR, 29 June 2007), para 98.

³³⁹ *Burghartz v Switzerland* (1994) 18 E.H.R.R. 101, para 24.

³⁴⁰ See for example, *Aurel Popa v Romania* App no 4233/09 (ECHR, 18 June 2013), paras 30-32.

³⁴¹ *Tasev v North Macedonia* App no 9825/13 (ECHR, 16 August 2019), paras 32-33; *Ciubotaru v Moldova* (2010) 4 WLUK 411, para 49.

³⁴² *Aksu v Turkey* (2013) 56 E.H.R.R. 4, para 58.

The court's interpretation of Article 8 and personal autonomy suggests that privacy focuses on the conditions for expressing and exploring aspects of identity and in this its resemblance with 'fashion identity' is evident. The right to privacy, like 'fashion identity,' views the sense of self as an embodied experience. That is, an individual's management of appearance and perception is rooted in their autonomy to control the contours of self-presentation and self-exploration in a social context. Accordingly, the right to privacy addresses the context where personal values are formed in fashion appearance and perception, enabling the exploration of the "social selves" and the "material self" and aspects of the "intimate self" of fashion identity. For instance, the ECtHR stipulated that an individual's choice of appearance, such as a haircut or a beard when attending university, relates to their personality within the scope of Article 8 of the ECHR.³⁴³ As a result, the right to privacy illustrates the affordance for the individual to control the parameters of appearance management and perception of (fashion) identity, which includes the communication of values, as well as the inference of knowledge of self.

Another rationale of Article 8 of the ECHR and personal autonomy is the individual's informational self-determination in the area of data protection. In *Satakunnan Markkinapössi Oy and Santamedia Oy v Finland*, the court explicitly recognised the right of informational self-determination, which allows individuals to 'rely on their right to privacy as regards data which, albeit neutral, are collected, processed and disseminated collectively and in such a form or manner that their Article 8 rights may be engaged'.³⁴⁴ Again, the right to privacy envisages an individual's control of aspects of identity, whereby informational self-determination underpins the disclosure or withholding of personal attributes. In this respect, the court in the *Amann v Switzerland* decision stipulated that the mere storing of personal information by a public authority interferes with Article 8 of the ECHR, pointing out that it is 'not for the Court to speculate as to whether the information gathered on the applicant was sensitive or not or as to whether the applicant had been inconvenienced in any way'.³⁴⁵ Following this reasoning, the ECtHR held that the systematic collection of the applicant's personal information about his distant past by agents of the state falls within the scope of Article 8(1) of the ECHR, particularly when that information is likely to injure the applicant's reputation.³⁴⁶ Accordingly, the court has recognised notions in data protection that enhance an individual's control of information and informational self-determination, which can relate to the storing as well as the systematic collection of personal data.³⁴⁷

The element of informational self-determination highlights the importance of the right to privacy and data protection to establish an individual's control over their identification process. Again, the notion of personal autonomy ensures the positive obligations of the state regarding the protection of an

³⁴³ *Aurel Popa v Romania* (n 340) para 32; *Mahmut Tig v Turkey* App no 8165/03 (ECHR, 24 May 2005).

³⁴⁴ *Satakunnan Markkinapössi Oy and Santamedia Oy v Finland* (2018) 66 E.H.R.R. 8, para 137.

³⁴⁵ *Amann v Switzerland* (2000) 30 E.H.R.R. 843, para 70.

³⁴⁶ *Rotaru v Romania* (2000) 5 WLUK 77, paras 44-46; see also, *Catt v United Kingdom* (n 309) para 112.

³⁴⁷ *ibid*; see also, Van der Sloot, 'Privacy as human flourishing: Could a shift towards virtue ethics strengthen privacy protection in the age of Big Data?' (n 308) 231.

individual's privacy, which may entail appropriate rules ensuring that there is an independent supervisory body in secret surveillance cases, specific safeguards regarding sensitive data, as well as guidance that personal data should not be used in ways that are beyond the normally foreseeable.³⁴⁸ This understanding of privacy as enabling the individual to participate and escape from social pressures acts as the protective space for setting the parameters of identity-building. In this respect, privacy reflects the predominance of external factors in 'fashion identity,' which strengthen or challenge an individual's control in defining the contours of appearance management, such as the reading and assessment of personal attributes.

It follows that Article 8 of the ECHR provides a structural account of the right to privacy, which is based on the notion of personal autonomy strengthening an individual's control of the expression and exploration of identity. This understanding regarding the relational nature of the right to privacy suggests that an individual's autonomy is socially embedded within the parameters that define the external constraints on identity formation. From this perspective, privacy as a regulator of social interaction seeks to maintain an individual's authenticity – their inner core – in setting the parameters for the exploration and expression of identity within a social context. An individual's authenticity is the process of deliberation and introspection, allowing the establishment of values, beliefs, and attitudes.³⁴⁹ In this respect, privacy in terms of social interaction safeguards authenticity because it focuses on the protection of autonomy as a tool for self-realisation.³⁵⁰

That being said, the right to privacy does not establish a 'right to identity' or any other aspect of identity of independent significance, but rather a right to maintain aspects of identity including autonomy for personal development.³⁵¹ This finding is important, revealing that identity is a construct of constitutive elements securing my autonomy, personal development as well as other universal values, such as human dignity. Accordingly, the concept of privacy and autonomy, being embodied in a social context, frames the meaning of 'identity' as a continuous power struggle between the individual establishing the contours of self-presentation and the social forces that impact aspects of an individual's identification process.³⁵² Thus, privacy gives a structural account of an individual's autonomy, protecting their authenticity in establishing the relationship between self and the environment.

How does the right to privacy define contemporary problems, in particular the widespread use of profiling technologies? Profiling technologies are argued to be a powerful tool for ensuring the sameness

³⁴⁸ This is known as the 'purpose limitation' principle, *Peck v The United Kingdom* (2003) 36 E.H.R.R. 41; *P.G and J.H v The United Kingdom* (n 155).

³⁴⁹ Marijn Sax, Natali Helberger and Nadine Bol, 'Health as a Means Towards Profitable Ends: mHealth Apps, User Autonomy, and Unfair Commercial Practices' (2018) 41 JCP 103, 109.

³⁵⁰ For a discussion on the relationship between autonomy and authenticity see, Hanne Laccelle, *Aging and Self-Realization: Cultural Narratives About Later Life* (Transcript Verlag, 2018) 118.

³⁵¹ *Bensaid v the United Kingdom* (2001) 33 E.H.R.R. 10, para 47; *Odievre v France* (n 337) para 29.

³⁵² *Al Tamimi* (n 330) 287.

of user experience, using algorithmic decision-making adapted to user preferences.³⁵³ Nevertheless, these technologies pose significant risks to privacy. Tal Z Zarsky, focusing on the impact of profiling technologies on the sense of self, argues that the interaction with these technologies causes an ‘autonomy trap,’ whereby conscious decisions are impacted by the information asymmetries inherent in algorithmic systems.³⁵⁴ Accordingly, the right to privacy in terms of identity construction seeks to redress the impact of profiling technologies on the subjective sense of self, such as unreasonable manipulation and the impact on an individual’s agency, choice, and control of authenticity.

Nevertheless, if we take the view that privacy is interpreted according to the theory of symbolic interactionism, we must accept that perception is a matter of reading the other, which is disembodied from the unconscious elements of self. The main argument is that we need to move beyond an understanding of privacy as a means of control to preserve a person’s individuality. Thus, if the self is a constructed project it entails an analysis of an individual’s external and internal worlds, including bodily experience and unconscious forms of thought.³⁵⁵

4. Self-relationality and privacy

Current literature on the impact of profiling technologies on privacy and identity suggests that algorithmic systems have an impact on the subjective sense of self.³⁵⁶ As indicated above, big data analytics have an impact on the parameters of exercising the right to privacy, undermining an individual’s autonomy in establishing the contours of self-presentation. Moreover, profiling technologies constantly adjust their recommendations to the user’s implicit feedback, which can influence an individual’s decisional context as well as create a filtered exposure to content.³⁵⁷ As highlighted by Roger Brownsword, profiling technologies can provoke an ‘identity crisis’, whereby ‘there is a concern that our identities should not be assumed or ‘reconstructed’ by others...’.³⁵⁸

Several authors highlight how profiling technologies have an impact on the conditions for exercising the right to privacy, influencing an individual’s agency, constraining their choice to a range of options,

³⁵³ Lilian Edwards and Michael Veale, ‘Slave to the Algorithm? Why a ‘Right to an Explanation’ Is Probably Not the Remedy You Are Looking For’ (2017) 16 *Duke Law & Technology Review* 18, 32; Sandra Garcia- Rivadulla, ‘Personalisation vs privacy: an inevitable trade-off?’ (2016) 42 *IFLA Journal* 227, 228; See also, Eran Toch, Yang Wang and Lorrie Faith Cranor, ‘Personalization and privacy: a survey of privacy risks and remedies in personalization-based systems’ (2012) 22 (1-2) *User Modeling and User-Adapted Interaction* 203.

³⁵⁴ Zarsky (n 158) 35; see also, James Grimmelmann, ‘First-Class Objects’ (2011) 9 *Journal on telecommunications & high technology law* 421.

³⁵⁵ On this matter and research in that area, see A. Elliot, *Concepts of Self* (Polity Press, 2014) 53.

³⁵⁶ Hildebrandt and Gutwirth ‘D7.4: Implications of profiling practices on democracy and the rule of law’ (n 220) 70.

³⁵⁷ On a discussion of these issues, please consult, Karen Yeung, ‘“Hypermudge”: Big Data as a Mode of Regulation by Design’ (2017) 20 *Information, Communication & Society* 118; Seth Flaxman, Sharad Goel and Justin M Rao, ‘Filter Bubbles, Echo Chambers, and Online News Consumption’ (2016) 80 298.

³⁵⁸ Roger Brownsword, ‘Friends, Romans, Countrymen: Is there a Universal Right to Identity?’ (2009) 1 (2) *Law, innovation and technology* 223, 224.

and impacting their ability to develop a sense of identity.³⁵⁹ In this respect, Ricoeur's theoretical outlook on selfhood in ipse-identity is helpful for seeing an individual's identity as a process of identification with certain values, beliefs, and aspirations.³⁶⁰ Profiling technologies attribute certain beliefs and attitudes to an individual, based on certain pre-defined criteria. Indeed, our expectations are shaped by those who profile us and it is correct to assume that algorithms create knowledge that could be used to shape individual preferences beyond the awareness of the person being 'profiled'.³⁶¹ Following this reasoning, it is argued that the right to privacy, which seeks to establish an individual's control and maintain aspects of their identity in a social context, is implicated by the 'pre-emptions' made by algorithms that create a 'new normativity' regarding how individuals establish their sense of self in relation to others.³⁶²

However, this view that individual perception is shaped by the assessment of algorithms does not highlight that algorithms have the potential to create a 'new' reality of self-relation.³⁶³ I argue that profiling technologies have an impact on the individual's sense of self (i.e. authenticity and selfhood) based on the translation of their appearance into hidden meanings,³⁶⁴ rather than the assumptions generated by the algorithms *about* individuals. I will recall this remark on the way algorithms construct an individual's fashion identity later in Chapter 3 when talking about the "right to not be reduced."

Nevertheless, let us elaborate on why an understanding of privacy does not only encompass the constitutive elements of an individual's identity. Fashion identity illuminates that an important aspect of individual perception is an individual's association with fashion narratives with reference to the self. That is, an individual's hair colour, their geographical location, or race, are all attributes which only gain meaning if there is an established relationality for self-evaluation.³⁶⁵ Much of our privacy discourse focuses on what aspects of identity are replicated within social processes, rather than how conclusions on my identity disturb my own identity discourse with reference to the self.

In this respect, algorithms actualise new forms concerning the relevance of identity in the big data sphere, such as creating links and patterns in data between an individual's browsing behaviour and their current mood, or a person's unique physical specifications and clothing style. More concretely then, profiling technologies not only disturb a person's relationship to their own values, beliefs and desires,

³⁵⁹ Zuiderveen Borgesius 'Improving privacy protection in the area of behavioural targeting' (n 151) 92; see also, Sofia Grafanaki, 'Autonomy Challenges in the Age of Big Data' (2017) 27 *Fordham Intell.Prop.Media & Ent.L.J.* 803, 810- 813.

³⁶⁰ Laceulle (n 350)155; see also, Hildebrandt, 'Profiling and the Identity of the European Citizen' (n 304) 314.

³⁶¹ Hildebrandt and Gutwirth 'D7.4: Implications of profiling practices on democracy and the rule of law' (n 220) 38.

³⁶² *ibid*; see also, K.E.C. Levy, 'Relational Big Data' [2013] 66 *Stanford Law Review Online* 73, 77; Sheri B Pan, 'Get to Know Me: Protecting Privacy and Autonomy Under Big Data's Pretending Gaze' (2016) 30 *Harv.J.L.& Tech.* 240, 257.

³⁶³ See Edmund Husserl who compares self-relation as a notion of intersubjectivity, A. Duranti, 'Husserl, intersubjectivity and anthropology' (2010) 10 *Anthropological theory* 16; Compare with the notion on self-relation as a dialectic movement, see Charles Taylor, *Hegel* (CUP 1975) 130-133.

³⁶⁴ On unconscious sense-making see Martin Heidegger, *Being and Time* (Oxford: Blackwell 1967).

³⁶⁵ Kaiser (n 149) 289-290.

but also create the basis through which they make their associations and transform a ‘thing’ into reality, such as the value of a “dress” as an expression of their femininity or the meaning of a “suit” as an assertion of their social status. In this sense, the individual’s process of association between the self and the ‘perceived self,’ such as the identification of a targeted advert for a “feminine dress” with my body image or my current mood, is not something that is fully exhausted by the algorithmic manipulation of inferred desires, but an oversimplification of the individual’s unconscious purpose.³⁶⁶

There is a shortcoming in the right to privacy, which does not clarify the value of protecting the individual’s unconscious associations that define perception as a semblance of individual qualities. The “self” as embodied within the social context is a conjunction of associations within the individual mind. The right to privacy currently suggests that an individual’s management and perception of appearance is shaped by virtue of *external stimuli*, which are the realities and demands of a social context.³⁶⁷ In other words, privacy as a regulator between the self and external stimuli focuses on the conscious acts of representation for identity construction. This conception of privacy underscores the importance of what contingent aspects of the self form the basis of the right to privacy. The relationship between the self and the socio-cultural environment is framed as an act of pure human automatism because the value of human behaviour is a pure reproduction of a social act and feedback from others. It does not elaborate on behaviour as a sequence of steps, which implies both the conscious reasoning self that establishes social values as well as the source from which impressions and feelings originate. The current relational understanding of privacy suggests that pre-reflective choices are pre-determined by those conscious associations that make up a belief system about the self and the environment. However, any relationship and association regarding an individual’s management and perception of appearance contain a certain degree of independence that is not simply exhausted by the readings of ‘others.’ It is the individual who constantly gives the notion of appearance and perception a renewed meaning.

Once the process of exploration of self becomes a task of statistical observation and classification of individual behaviour, we have a concept of human agency and choice that deliberately ignores a person’s underlying motivations and self-evaluation. It follows that an individual’s notion of self-representation and personal identification derives from statistical correlations and shared group characteristics.³⁶⁸ In other words, we live in a world where there is an artificial information structure against which freedom is assessed. Following these considerations, the current interpretation of privacy suggests that dynamic

³⁶⁶ On a discussion about reflection and unconscious associations see Daniel Kahneman, *Thinking, Fast and Slow* (Farrar, Straus and Giroux, 2011) 21.

³⁶⁷ Virginia Wilson Johnson further contends that, the environment including its symbolic meaning ‘is perceived not only in terms of stimuli, but in the structure of that stimuli.’ It could be argued that this structure is exemplified in the interplay of appearance management and perception of privacy, which offers the preconditions to develop freely and shape the nuances of one’s own identity including multiple selves; see Virginia Wilson Johnson, ‘Architectural Correlates of Privacy: The Dynamics of Privacy Regulation’ (PhD thesis, Faculty of the Virginia Polytechnic Institute and State University 1990) 30.

³⁶⁸ Lee A Bygrave, ‘Automated Profiling: Minding the Machine: Article 15 of the Data Protection Directive and Automated Profiling’ (2001) 17 C.L.S.Rev 17.

boundaries are negotiated within the inherent constraints of identity formation. If we accept that the right to privacy only deals with the tangible repercussions for the self and objectively determined values regarding the parameters of interferences in the notion of identity-building, then we fail to understand the process through which notions of personal autonomy are negotiated in light of technological developments. Once privacy is equated with control regarding the space for maintaining personal autonomy, individuality is negated.

Accordingly, we need to focus on an individual's self-relationality within privacy discourse. In this respect, we need an understanding of privacy that does not focus on its social conception regarding personal autonomy and authenticity, but which incorporates a person's individuality. Our perspective should be premised on why certain values contribute to an individual's identity construction, instead of what contributes to inter-subjective friction. An individual may possess the qualities of being "hardworking" and 'focused' at work, which is evidenced in their work ethic as well as their casual clothing. That same individual, however, may be perceived as 'outgoing' and 'fun' in their circle of close friends and thus different qualities dominate, reflected in their communication skills and modern clothing. Profiling technologies, by contrast, do not focus on the individual's appearance management and perception, but rather on how attributes such as 'work ethic' and 'modern clothing' shape the data *about* the individual or individuals sharing similar characteristics. Accordingly, we need an understanding of privacy that recognises the extent to which an individual's perception shapes the interpretation of his or her attributes, such as the relationality of the 'painting brush' to the art student or the 'black suit' to the barrister. I call this process of identity-building an individual's self-relationality.

Fashion identity can offer a starting point for elaborating on the value of the right to privacy in the digital age. Fashion identity signifies more than controlling impressions and self-representation in an environment. It is not only about the visual stimuli that awakened them but also the conditions an individual imposes on self-perception and appearance management. In this respect, the study of 'fashion identity' includes the various nuances of how norms have an impact on managing behaviour in the material self; how fashion narratives in the 'social selves' can illustrate personal preferences as well as a tendency towards specific social norms; and how personal preferences and attitudes in the intimate self in fashion identity illustrate the generation of knowledge about the self. The causes of communication of 'fashion identity' define the way personal identity is impacted by social behaviour. Privacy, on the other hand, does not concern the unconscious motivations of the self, but rather the conditions in which an individual interacts with the environment.

V. Privacy considering fashion identity

There is an inherent gap in the understanding of the right to privacy which needs to be addressed in light of contemporary problems regarding profiling technologies. Privacy recognises the continuity of negotiated relationships, supporting the idea that fashion identity builds on the given opportunities and constraints within social codes. This continuity concerning the governance of the process of self and self-reflection, however, does not cover all aspects of fashion identity. Fashion identity, as a form of social behaviour, suggests that human perception is both rational and emotional. Perception is based on the interaction between the social selves and the intimate self in fashion identity, which concerns the formation of values as well as attitudes. Moreover, the construction of fashion identity within the environment illustrates the tension between conformity and differentiation, as well as the goals that define an individual's unconscious aspirations to define their identity. Thus, there is a gap in how privacy relates to an individual's perception and sense-making. As indicated above, we need a notion of privacy that does not simply react to external constraints on identity-formation, but which is proactive in ensuring the space for self-reflection.

The final part of this discussion establishes a basis for future discourse on privacy regarding the impact of technology on individual behaviour. Fashion identity is a valuable tool for clarifying the nature of the right to privacy, which is a construct that holds together our separate selves in the face of objective and subjective constraints on identity formation. Using this definition, we can expand the facets of the right to privacy to incorporate the notion of individual perception and self-relationality in the assessment of Article 8(1) of the ECHR.

1. Privacy and fashion identity

The next step is expanding our outlook on privacy considering fashion identity. Figure 2 illustrates the overlap between privacy and fashion identity and how we can broaden the perspective of the former:

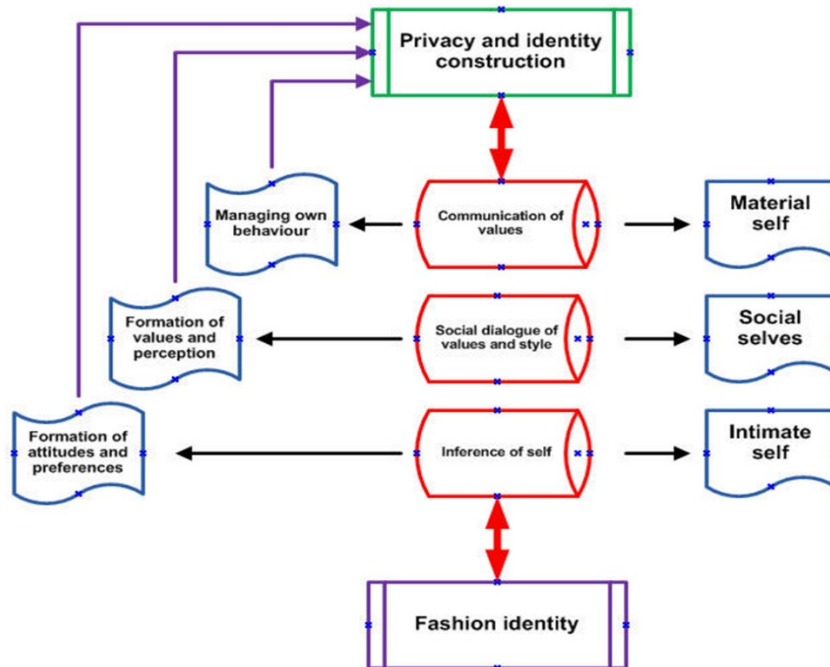


Figure 2 – On privacy considering fashion identity

I identified is that there is a connection between fashion identity and privacy based on the **communication of values** in that privacy overlaps with the expression of the social selves, focusing on an individual's appearance management. The right to privacy, just as fashion identity addresses the context where personal values are formed, in that we consider the evaluative judgments, including external stimuli regarding an individual's appearance management. However, we need to expand on the notion of privacy, identity, and autonomy as a means to shape the performative role of fashion including an individual's process to **manage his or her behaviour**.

In this respect, we need to elaborate on how fashion identity shapes an individual's privacy, autonomy, and identity as an embodied experience. Context can influence an individual's experience of the sense of self, how the material self is expressed on a given occasion, how the social selves are experienced with a certain group or circle of people. Privacy recognises the **continuity of negotiated relationships (i.e. the social dialogue between values and narratives on style)**, supporting the idea that fashion identity builds on the opportunities and constraints given within social codes. Nevertheless, fashion identity further clarifies that social processes illustrate an individual's dialectic tendency to weigh up

between fashion narratives and social values. Accordingly, fashion identity can contribute to our understanding of **how values are formed**, based on the notion of **individual perception**.

Finally, whilst privacy rightly recognises that the self is constructed based on the feedback of others, it is fashion identity that offers an elaborative view on the **individual's inference of knowledge of self**. Fashion identity, as a form of social behaviour, suggests that human perception is both, rational and emotional. Perception is formed based on the interaction between the social selves and the intimate self, which concern the formation of values as well as attitudes. That said, the construction of fashion identity with the environment, illustrates the tension between conformity and individuality, as well as the goals that define an individual's unconscious aspirations to define one's identity. Thus, there seems to be a gap in how privacy relates to the intimate self of fashion identity. With the intimate self, identity construction builds on further levels of thoughts that are based on the **formation of values, emotions, and attitudes** rather than pure symbolic interactionism. We attach the meaning to our intimate self as autonomous subjects based on our **self-relationality**.

2. Defining individual perception and self-relationality in privacy

The following definition intends to illustrate guidance to clarify the scope of the right to privacy:

Privacy is a construct that holds together our separate selves from the objective and subjective constraints on identity formation

How should privacy safeguard the separate selves of identity? The notion of privacy, which extends to the multiplicity of identities to include external and internal worlds, should broaden the outlook on external stimuli that have an impact on the subjective sense of self. Fashion identity can clarify the nature of privacy as an enabler for dynamic boundary negotiations on appearance management and perception.

The concept of privacy posited by this chapter allows us to incorporate “fashion identity” with regard to the objective constraints on privacy in terms of identity construction. The notion of ‘fashion identity’ in appearance management can contribute to the external constraints invasions of privacy can impose on the sense of self, being relevant to the clarification of the ‘reasonable expectation of privacy’ with regard to Article 8(1) of the ECHR. An individual's reasonable expectations of privacy are framed by the objective norms that protect privacy as well as the individual's perception regarding the objective characteristics that influence their level of awareness and frames of self-presentation – the fashion narratives or so-called ‘perceiver variables’ including fashion narratives.³⁶⁹ ‘Fashion identity’ can help to develop the ‘reasonable expectation of privacy’ test. The first stage would be assess whether the

³⁶⁹ Kaiser (n 149).

individual's subjective expectation of privacy is strong enough to inform the external inference of their privacy? This would be examined in light of fashion narratives which should reflect an individual's tendency either towards conformity or differentiation. If we conclude that the intrusion contradicts an individual's pursuit of differentiation, the next step is to balance societal attitudes with an individual's perception on a case-by-case basis.

Accordingly, "fashion identity" can emphasise the importance of fashion narratives regarding our understanding of the right to privacy. The definition of the social selves could sustain the formation of fashion narratives and their impact on the exercise of collective identities in private. In this respect, 'fashion identity' can sustain the importance of variables connected to identity to balance the social dialogue between dominant values and personal expression of style. Dominant values regarding conformity and differentiation in the social selves of "fashion identity" could illustrate the parameters for addressing social constraints on a fundamental level, rather than limiting the interpretation of values to a particular form of control. In other words, "fashion identity" may offer the means to analyse the way new communication patterns on the expression of identity emerge, such as the emergence of new socio-technical infrastructures that shape and predict aspects of an individual's personality.

Moreover, "fashion identity" could expand the notion of privacy that relates to certain characteristics, acknowledging the generation of attitudes for the inference of knowledge about the self. This premise should shift the focus from (physical) self-representation to an individual's experience in specific relations. An individual's choice of clothing results from conscious decisions about which aspects of identity to reveal in a social situation, as well as an unconscious decision that a certain style would better suit a specific body type. This example underlines that 'fashion' and identity construction may create a medium of communication as well as the creation of attitudes. Accordingly, 'fashion identity' could elaborate the social construction of privacy as an embodied experience between the self and the environment, underlining the formation of attitudes that are not 'context-specific'³⁷⁰ but part of the intimate self of "fashion identity."

In this respect, "fashion identity" can draw attention to the subjective constraints on the right to privacy, focusing on the notion of individual perception. As highlighted above, we need an understanding of the right to privacy that not only addresses the use of profiling technologies to track individual behaviour but also to develop new meanings of the individual including fashion identity.³⁷¹ In this respect, our understanding of the right to privacy should not simply respond to the demands of the social context but translate the notion of individual perception and self-relationality into its invisible usefulness, such as

³⁷⁰ H. Riemer, HR. Markus and SS. Havitt and M. Koo, 'Preferences Don't have to be Personal: Expanding Attitude Theorizing With a Cross-Cultural Perspective' (2014) 121 *Psychological Review* 619, 625.

³⁷¹ See also, Louise Amoore, *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others* (Duke University Press 2020) 85.

the individual's respect for cultural norms, the importance of social codes, and the relevance of personal desires within the process of management and perception of appearance.

Thus, we can agree that an interference in the right to privacy not only applies when algorithms extend to instances where individual perception is used to attribute relationality. Whilst it could be argued that inaccurate profiling is trivial in that an individual can still maintain agency and choice in choosing the 'right' clothing, the engagement with recommender systems undermines an individual's self-relationality through filtered content. As a result, the interplay between the intimate self and other aspects of "fashion identity" can contribute to the scope of privacy to maintain one's self-relationality, as it investigates the extent to which fashion narratives (i.e. 'aesthetics') relate to an individual's perception (i.e. attitudes towards gender and the role of femininity/masculinity in appearance management).

VI. A starting point to consider socio-legal concerns of AI in fashion

Chapter 2 intended to fulfil two important functions of this research study. One, I aim to establish the connection between fashion and identity in a legal landscape. In doing so, I focused on the understanding of the right to privacy in terms of identity construction. Chapter 2 offers a fresh outlook on the right to privacy, focusing on the meaning of identity in fashion studies. Second, I define two key values which aim to shape the meaning of the right to privacy in the big data age, which is an individual's perception and self-relationality of fashion identity. The first notion focuses on an individual's ambivalence of the social and personal aspects of fashion, whereby the latter notion is the individual's process of sense-making of fashion.

Individual perception and self-relationality are not an end in itself, but only the starting point to assess the implications of algorithmic personalisation systems in fashion within a privacy landscape. By doing so, we need first to examine how do abstract values of fashion and identity relate to algorithmic constructions of individual preferences in the fashion domain? And, do the nature of algorithms in fashion demand a revised understanding of privacy, based on the notions of individual perception and self-relationality? Chapter 3 intends to answer both questions.

Chapter 3

Algorithmic abstractions of ‘fashion identity’ and privacy³⁷²

Chapter 3 introduces the nuances of “fashion” in recommender systems and social media analytics, which shape and define an individual’s perception and self-relationality. It underlines the limitations of computational models in capturing the diverse meaning of ‘fashion’, whereby the algorithmic prediction of user preferences is based on individual conscious and unconscious associations with fashion identity. I test this statement in the context of current concerns over the impact of algorithmic personalisation systems on individual autonomy and privacy: creating ‘filter bubbles’, nudging the user beyond their conscious awareness, as well as the inherent bias in algorithmic decision-making. We need an understanding of privacy that addresses the inherent reduction of fashion identity to literal attributes and protects individual autonomy in shaping algorithmic approximations of the self.

I. Introduction

‘But a personal narrative is never fully accurate, nor can it account for everything a person is or does. The capacity to self-narrate depends, among others, on an individual’s ability to select and prioritise information about herself, as she cannot understand herself as merely a bundle of facts and figures’.³⁷³

How do we approach issues of privacy and identity with regard to a fashion brands’ frequent use of recommender engines and social media analytics? There is a lot of academic interest in analysing the challenges to privacy of recommender engines in e-commerce. Recent headlines such as ‘YouTube makes money by keeping users on the site and showing them targeted ads’³⁷⁴ or ‘Instagram algorithm systematically boosts semi-nude pictures’³⁷⁵ fuel the debate on incorporating guidelines and standards to protect user privacy in the design and deployment of consumer profiling.³⁷⁶ Algorithms become more and more persuasive, adaptive, and seamless in relation to an individual’s preferences, taking advantage of the user’s conscious and unconscious attention.³⁷⁷ This chapter enumerates some problems, we need

³⁷² This chapter fully reflects my published paper; some changes have been conducted to fit the overall structure of the thesis; Daria Onitiu, ‘Algorithmic abstractions of ‘fashion identity’ and the role of privacy with regard to algorithmic personalisation systems in the fashion domain’ [2021] *AI & Society* 10.

³⁷³ Van der Sloot, ‘The right to be let alone by oneself: narrative and identity in a data-driven environment’ (n 34) 225.

³⁷⁴ Zeynep Tufekci, ‘YouTube’s Recommendation Algorithm Has a Dark Side’ (*Scientific American*, 1 April 2019) < <https://www.scientificamerican.com/article/youtubes-recommendation-algorithm-has-a-dark-side/>> accessed 12 November 2020.

³⁷⁵ Isobel Asher Hamilton, ‘It looks like Instagram’s algorithm systematically boosts semi-nude pictures’ (*Markets Insider*, 16 June 2020) < <https://markets.businessinsider.com/news/stocks/instagram-algorithm-promotes-topless-pictures-2020-6-1029312141>> accessed 12 November 2020.

³⁷⁶ Dimitris Paraschakis, ‘Algorithmic and Ethical Aspects of Recommender Systems in E-Commerce’ (Licentiate Thesis, Malmö University 2018) 35-36.

³⁷⁷ Nir Eyal, *Hooked: How to Build Habit-Forming Products* (Penguin 2014) 7.

to consider when discussing the commercial use of predictive analytics by fashion brands, focusing on issues of individual autonomy and identity.

The main contribution of this chapter is to assess the role of identity and autonomy in the big data age considering the role of ‘fashion’ and ‘identity’ as they are influenced by recommender engines and social media analytics in the fashion domain. Current literature deals with questions of individual autonomy and identity *within* the algorithmic information structure. Accordingly, the individual is constituted by information based on algorithmic classification, including semblances of individual preferences.³⁷⁸ To reiterate, the connection between personal identity and informational privacy is shown in Agre’s definition of privacy, as well as delineating that ‘control over personal information is control over an aspect of the identity one projects to the world’.³⁷⁹ Both conceptions recognise the ambivalence between the individual’s control over revealing aspects of their identity and shaping their identity on their own terms.³⁸⁰ Data protection laws, such as the GDPR, establish a rule-based framework to strengthen individual autonomy and informational self-determination by considering information asymmetries caused by big data analytics.³⁸¹ Privacy, on the other hand, is a right that has developed into a positive freedom to protect notions of personal autonomy and development under Article 8 of the ECHR.³⁸² Both are concerned with how the individual is situated within a social context and the external constraints on the expression and development of aspects of identity.

My aim here is to situate the current privacy discourse within the algorithms’ shaping of identity in the personalisation age. In doing so, I intend to highlight the capacities of algorithmic personalisation systems in fashion to offer common representations of individual behaviour, persuade individual users, and employ subjective neutrality in human decision-making. First, algorithmic personalisation systems set the parameters for expressing identity in the Infosphere, based on the influence of the contours of self-representation and the communicative function of fashion. Second, fashion recommender systems shape the conditions for the individual’s expression of identity and free choice, which requires a deeper understanding of algorithmic personalisation systems affecting individuals’ unconscious association with fashion. Finally, we need to acknowledge that algorithmic personalisation systems, being based on the computational classification of individual attributes, introduce a new area of subjectivity that influences self-relationality.

³⁷⁸ Luciano Floridi, ‘The Informational nature of personal identity’ (2011) 21 (4) *Minds and Machines* 549.

³⁷⁹ Agre (n 151).

³⁸⁰ *ibid*; The approach in Roger Clarke introduces the model of ‘digital personae’ to examine the algorithms’ constant accumulation of data about the individual and how that algorithmic construct brings ‘the potential to create valuable new opportunities and to impinge upon established and important values’; see Roger Clarke, ‘The digital persona and its application to data surveillance’ (1994) 10 (2) *The Information Society: An International Journal* 77, 90.

³⁸¹ General Data Protection Regulation, Recital 1, Recital 4, art 1 (2).

³⁸² European Convention for the Protection of Human Rights and Fundamental Freedoms, Sept. 3, 1953, ETS 5, 213 UNTS 221, art 8; *Niemietz v Germany* (n 332) para 29.

II. AI in fashion: a theoretical outlook on privacy, autonomy and identity

We need to assess how algorithmic constructions of fashion and identity affect one's sense of self, focusing on individual autonomy and privacy. Several recent academic discussions highlight how algorithmic personalisation causes a refined 'informational choice architecture' including asymmetries in knowledge between the processed and processor, the creation of 'filter bubbles' and 'echo chambers' impacting an individual's autonomy, as well as the control of personal information.³⁸³ How do I re-establish my sense of identity within the infrastructure using the tools of privacy to maintain my autonomy in disclosing aspects pertaining to the self? This is the classic question pervading current (human rights) discourse on the right to privacy in the big data age. For instance, we could ask ourselves whether a consent model for the processing of personal data can counter the continuous algorithmic tracking and processing of personal information defining user preferences.³⁸⁴

We need to ask ourselves about the extent to which algorithmic personalisation systems in fashion relate to an individual's perception and self-relationality regarding identity construction.³⁸⁵ Three observations, which I will elaborate on in Sections II.2- 4 (of Chapter 3) highlight that algorithmic personalisation systems are an imperfect semblance of individual behaviour.³⁸⁶ The first focuses on predictive and social media analytics to create individual profiles based on the matching of common preferences and general sentiment.³⁸⁷ The second, suggesting that algorithms exhibit common readings of individual behaviour, investigates fashion recommender systems which discern the relevance of products regarding user-item interactions, and tailor and rank content based on individual attributes. The third observation is that algorithmic personalisation systems are a 'human construct' being subject to biases reflected in the input data and the output of decisions.³⁸⁸

Considering the notion of individual autonomy and identity with regard to algorithmic personalisation in the fashion domain allows us to move away from an understanding of privacy based on the control of

³⁸³ Yeung, "'Hypernudge': Big Data as a Mode of Regulation by Design' (n 357); Flaxman, Goel and Rao (n 357) 298; Engin Bozdag, 'Bias in algorithmic filtering and personalisation' (2013) 15 (3) *Ethics and Information Technology* 209, Lewis Mitchell and James Bagrow, 'Do social media algorithms erode our ability to make decisions freely? The jury is out' (*The Conversation*, 11 October 2020) < <https://theconversation.com/do-social-media-algorithms-erode-our-ability-to-make-decisions-freely-the-jury-is-out-140729>> accessed 12 November 2020.

³⁸⁴ For example, Lilian Edwards and Michael Veale suggest that the notice and consent model does not provide 'any semblance of informational self-determination but merely legitimises the extraction of personal data from unwitting data subjects' Edwards and Veale, 'Slave to the Algorithm? Why a 'Right to an Explanation' Is Probably Not the Remedy You Are Looking For' (n 353) 64.

³⁸⁵ **Chapter 2** focused on the meaning of privacy and identity, whereas **Chapter 3** elaborates further on my findings within the algorithmic landscape in the fashion domain.

³⁸⁶ See also Arnold Roosendaal who states that profiles 'relate to individuals that are not identified or identifiable', Roosendaal (n 214) 38.

³⁸⁷ See also Bygrave 'Automated Profiling: Minding the Machine: Article 15 of the Data Protection Directive and Automated Profiling' (n 367).

³⁸⁸ Andrea Jones-Rooy, 'I'm a data scientist who is skeptical about data' (*Quarz*, 24 July 2019) < <https://qz.com/1664575/is-data-science-legit/>> accessed 13 November 2020.

personal data and consider the inherent constraints of algorithmic personalisation on identity-construction. It allows us to delve into questions of how to maintain an individual's uniqueness and individuality mirrored in the process and conditions of identity-building. Therefore, considering the algorithmic "abstractions of fashion identity" enables a fundamental re-thinking of privacy that protects an individual's autonomy to shape algorithmic approximations of the self.

1. The distinction between privacy and data protection

But before we move to the substantive discussion on the role of algorithms regarding an individual's fashion identity, we need to clarify some key notions regarding privacy and data protection. The distinction between data protection and the right to privacy has not always been clearly established by the Court of Justice of the European Union's (CJEU) in case law;³⁸⁹ however, there is general agreement of the complementary nature about the rights in article 7 and 8 of the Charter of Fundamental Rights of the European Union (EU Charter).³⁹⁰ Privacy may entail more than the right to data protection based on its nature to protect an individual's private and family life, home, correspondence as well as bodily and psychological integrity.³⁹¹ Conversely, the right to data protection operates even when there has been no interference with the right to privacy, being applicable whenever personal data is processed.³⁹² That said, the force of a right to data protection as codified in legislation, such as the GDPR should not be underestimated; as it imposes obligations on private entities which may even reach to the design of algorithmic systems.³⁹³ The complementary nature of the right to data protection and privacy, precluding

³⁸⁹ In *Österreichischer Rundfunk and Others and Christa Neukomm and Joseph Lauerermann v Österreichischer Rundfunk* the court does not provide a clear distinction between data protection and privacy; see Joined cases C-465/00, C-138/01 and C-139/01 *Österreichischer Rundfunk and Others and Christa Neukomm and Joseph Lauerermann v Österreichischer Rundfunk* [2003] I-04989, paras 68-72; a similar approach is seen in Joined Cases C-92/09 and C-93/09 *Volker und Markus Schecke GbR (Case C-92/09) v Land Hessen* [2010] I-11063, Opinion Advocate General Sharpston, para 65; However, the distinction is clearer in the *Digital Rights Ireland* case, see Joined Cases C-293/12 and C-594/12 *Digital Rights Ireland Ltd (C-293/12) v Minister for Communications, Marine and Natural Resources, Minister for Justice, Equality and Law Reform, The Commissioner of the Garda Síochána, Ireland and the Attorney General, and Kärntner Landesregierung, Michael Seitlinger, Christof Tschohl and Others (C-594/12)* [2014] 3 C.M.L.R. 44, para 29; In general the discussion regarding the CJEU's distinction between data protection and privacy lead to many academic discussions, see Lynskey (n 46); Valentin M Pfisterer, 'The Right to Privacy—A Fundamental Right in Search of Its Identity: Uncovering the CJEU's Flawed Concept of the Right to Privacy' (2019) 20 (5) German Law Journal 722, 726; Christopher Kuner, 'Reality and Illusion in EU Data Transfer Regulation Post Schrems' (2017) 18 (4) German Law Journal 881, 892; Maja Brkan, 'The Essence of the Fundamental Rights to Privacy and Data Protection: Finding the Way Through the Maze of the CJEU's Constitutional Reasoning' [2019] 20 German Law Journal 864, 878.

³⁹⁰ cf Case C-275/06 *Productores de Música de España (Promusicae) v Telefónica de España SAU* [2008] 2 C.M.L.R. 17, para 63; see also, Hielke Hijmas who argues that privacy and data protection are 'two sides of the same coin'; Hielke Hijmas, 'The European Union as a constitutional guardian of internet privacy and data protection' (PhD thesis, University of Amsterdam 2016) 66-70; see also, Gloria González Fuster, *The Emergence of Personal Data Protection As a Fundamental Right of the EU* (Springer International Publishing AG 2014) 263.

³⁹¹ Hildebrandt, *Law for Computer Scientists and Other Folk* (n 11) 131; Raphael Gellert and Serge Gutwirth, 'The legal construction of privacy and data protection' (2013) 29 C.L.S.Rev 522, 524.

³⁹² Kokott and Sobotta (n 228) 225; However, when data processing involves aspects of the applicant's private life it could fall within the scope of article 8, see Menno Mostert, Annelien L Bredenoord, Bart van der Sloot and Johannes JM van Delden, 'From Privacy to Data Protection in the EU: Implications for Big Data Health Research' [2014] 24 European Journal of Health Law 1, 4.

³⁹³ Yvonne McDermott, 'Conceptualising the right to data protection in an era of Big Data' (2017) 4 (1) Big Data & Society 1, 2.

any inferiority of one right over the other, highlights their distinctiveness.³⁹⁴ For instance, whilst the GDPR generally provides a permissive system for the protection of fundamental rights, it may be prohibitive with regard to the processing of sensitive data.³⁹⁵ Therefore, the right to privacy and data protection, whilst ‘linked by common human needs’,³⁹⁶ significantly differ in their substantive ends. We can argue that the definition of privacy in light of fashion identity can illustrate the normative values which are extended by the right to data protection ensuring the control of personal information.³⁹⁷ Serge Gutwirth and Paul de Hert, who outlined that the nature of the right of privacy is a tool of opacity, whereby the right to data protection is a transparency tool, argue that:

[o]pacity tools embody normative choices about the limits of power; transparency tools come into play after these normative choices have been made in order still to channel the normatively accepted exercise of power.³⁹⁸

However, I question the current configuration of data protection to strengthen the normative basis and nature of the right of privacy and *vice versa*.³⁹⁹ One, we need to make certain normative choices with regard to the articulation of privacy, autonomy, self-determination in the context of algorithmic personalisation systems, and second, we need to incorporate these findings in a set of principles that can channel these values within data processing activities.

To start with the first consideration, data protection intends to protect an individual’s informational self-determination and autonomy over the use of personal data⁴⁰⁰ and provide the user with a set of rights regarding unlawful data processing activities, whilst redressing inherent information asymmetries.⁴⁰¹ However, data protection, being an expression of a ‘personality right’, only provides enhanced control with regard to the algorithm’s reproduction of knowledge, rather than the classification of individual behaviour. Let us consider the example of persuasive profiling, whereby smart wearables can nudge their user to adopt a healthy standard of living. An individual may have control of the algorithmic

³⁹⁴ The CJEU stipulates that ‘Article 8 of the Charter concerns a fundamental right which is distinct from that enshrined in Article 7 of the Charter and which has no equivalent in the ECHR’, taken from, Case C-203/15 *Tele2 Sverige AB v Post- och telestyrelsen and Secretary of State for the Home Department v Tom Watson and Others* [2017] 2 W.L.R. 1289, para 129.

³⁹⁵ Hildebrandt and Gutwirth ‘D7.4: Implications of profiling practices on democracy and the rule of law’ (n 220) 20-21.

³⁹⁶ Martin Abrams, ‘Building upon the roots of data protection and privacy’ (*OIPC: Office of the Information & Privacy Commissioner For British Columbia*, 26 February 2016) <www.oipc.bc.ca/news/building-upon-the-roots-of-data-protection-and-privacy/> accessed 10 December 2019.

³⁹⁷ De Hert and Gutwirth ‘Privacy, data protection and law enforcement: opacity of the individual and transparency of power’ (n 228).

³⁹⁸ *ibid*.

³⁹⁹ See also Paul de Hert who argues that ‘the question is not does a data protection arrangement realise a given principle? The question is rather is this data protection arrangement conceived in such a way that a given principle in part or wholly can be attained?’ Taken from, Paul de Hert, ‘Data protection as bundles of principles, general rights, concrete subjective rights and rules’ (2017) 3 (2) *EDPL* 160,179.

⁴⁰⁰ Yves Poulet, ‘About the E-Privacy Directive: Towards a Third Generation of Data Protection Legislation?’ in Serge Gutwirth, Yves Poulet and Paul De Hert (eds), *Data Protection in a Profiled World* (Springer 2010) 4.

⁴⁰¹ Recital 7 of the GDPR notes that ‘[n]atural persons should have control of their own personal data.’; Regulation of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L 199/1, Recital 7; see also, Lynskey (n 46) 595.

extensions of human consciousness (i.e. how does the system assess my behaviour and recommend products for a healthy lifestyle) based on notions of transparency in the GDPR, such as the data subjects rights of access information and the notification duties.⁴⁰² But an individual can not control how the algorithm deconstructs fashion narratives associated with appearance management and perception in fashion identity. Thus, data protection facilitates the exercise of data subject rights, which does not necessarily imply the interpretability of algorithmic personalisation systems in fashion.⁴⁰³

This issue leads me to my second point in that we need normative propositions to ensure individual autonomy and expression of identity regarding data processing activities. Current privacy discourse focuses on the control of the communicative function of identity with reference to the data controller's processing of personal information. It does not provide the appropriate answer as to which aspects of identity need to be protected using the interplay between opacity tools and rules protecting transparency.

Therefore, whilst it is important to clarify the distinction between privacy and data protection from a doctrinal perspective, I do not see any added value in a strict separation of these two rights when discussing the values of autonomy and identity in the context of predictive analytics. We need to shift the focus to protect the generalisations of AI techniques in fashion, rather than the strict assessments of algorithms. The following Sections will enumerate how privacy problems should be approached considering the limitations of AI techniques in the fashion domain.

2. Algorithmic personalisation: common representations of the self

Social media analytics define the parameters of how the social aspects of 'fashion identity' are identified. We need to investigate the function of algorithms in shaping the individual's process of self-presentation, including the communicative function of 'fashion', focusing on the role of social media analytics to guide fashion brands' instincts and trends. The fact that an individual's social media activity is observed by methods of predictive analytics to inform a brand's trend forecasting, marketing, as well as advertising strategies raises concerns regarding individual control of personal data and information as well as the exposure to content.⁴⁰⁴ It is the process of content filtering and personalisation for targeted advertising that shapes an individual's autonomy and privacy to set the parameters and conditions for their expression of 'fashion identity'.

⁴⁰² General Data Protection Regulation, arts 13-14, art 22.

⁴⁰³ I will discuss this further in **Chapter 5**.

⁴⁰⁴ Lewis Mitchell and James Bagrow, 'Do social media algorithms erode our ability to make decisions freely? The jury is out' (*The Conversation*, 11 October 2020) < <https://theconversation.com/do-social-media-algorithms-erode-our-ability-to-make-decisions-freely-the-jury-is-out-140729> > accessed 12 November 2020.

Margaret Boden, who writes on the capabilities of AI more generally, highlights the ‘non-objectivity of AI programs’, which enforce rather than deny user subjectivity.⁴⁰⁵ She argues that ‘the point about subjectivity in human beings is that each of us has a mind which gives us an idiosyncratic view of the world’.⁴⁰⁶ Thus, the purpose of an AI program is not to produce an objective representation or truthful depiction of the world but rather, to adapt to individual intentions, beliefs, and values, making a verifiable judgement.⁴⁰⁷

The issue with current applications of AI, such as social media analytics, is that algorithms engage with value-laden judgements. Considering the inherent limitations of natural language processing models to understand subjective attributes in (unstructured) data, algorithms set out to identify *shared narratives* of preferences in style and trends as well as the individual’s ambivalences towards the social selves of fashion identity (i.e. their desire for conformity and differentiation). In this respect, predictive analytics, considering the user’s participation on social media and their negotiation of the ambivalences in the social selves of fashion identity (i.e. developing targeted advertising based on users’ ‘liking’ or ‘following’ trends and individual profiles of preferences), directly act upon an individual’s subjectivity in expressing aspects of fashion identity.

This issue, setting the parameters of the communicative function of ‘fashion’ and implying a model centred on user subjectivity either affords or takes away an individual’s privacy to exercise an informed choice in expressing and developing aspects of the self. Individuals living in so-called ‘echo chambers’ tend to engage with like-minded people or follow individuals that reflect their desires (i.e. those with similar opinions, values, or preferences).⁴⁰⁸ What accelerates calls to protect an individual’s authenticity in the digital world is that our values and beliefs become a source of alienation.⁴⁰⁹ Algorithmic filtering can induce so-called ‘filter bubbles’ shaping the negotiation of shared narratives on norms and/or preferences based on the user’s relative exposure to content.⁴¹⁰ Hence, it could be argued that the algorithms’ ubiquitous manifestation of fashion narratives could affect an individual’s perception of the social selves of fashion identity. In other words, the exposure to content summarising values of conformity can shape an individual’s perception in forming their own values, beliefs, and attitudes that define their authenticity. Take the example of a fashion brand that wants to use predictive analytics to investigate how people perceive its new jeans collection. What are the boundaries or parameters of the

⁴⁰⁵ Margaret Boden, ‘Artificial Intelligence: Cannibal or Missionary’ (1987) 21 (4) *AI & Society* 651, 655.

⁴⁰⁶ *ibid* 655.

⁴⁰⁷ *ibid* 651.

⁴⁰⁸ See for example, the design of Raf Simons who presents fashion for ‘young men who are thrilled by sportswear that expresses the energy of electronic music or contemporary art’, Robin Givhan, ‘Opinion: How Raf Simons let fresh air into the echo chamber of New York men’s fashion’ (*The Washington Post*, 3 February 2017) < www.washingtonpost.com/news/arts-and-entertainment/wp/2017/02/03/how-raf-simons-let-fresh-air-into-the-echo-chamber-of-new-york-mens-fashion/ > accessed 12 November 2021.

⁴⁰⁹ Thijs Lijster and Robin Celikates, ‘Beyond the Echo-chamber: An interview with Hartmut Rosa on Reasonance and Alienation’ [2019] 1 *Krisis: Journal of Contemporary Philosophy* 64, 65-65.

⁴¹⁰ Flaxman, Goel and Rao (n 357) 298.

right to privacy regarding the use of individual perception to target a user with ads for a new jeans collection for a politically conservative audience? The current understanding of privacy is well-suited to protect the expressive notion of ‘fashion’, such as regulating the user’s disclosure of personal data based on their informed choice, but less so to regulate algorithmic ‘harms’ on the individual’s ongoing negotiation of the social self of fashion identity in the Infosphere.

Hence, we need to grasp the implications of predictive and social media analytics in fashion for individual privacy including the conditions for identity-building. There is a lot of research on the impact of ‘filter bubbles’ on individual agency and choice but we need to go further than asserting an individual’s control of appearance in the digital age.⁴¹¹ Predictive analytics in the fashion domain not only shape the deliberative perception of ‘facts’ regarding diverse fashion content but also the means through which we engage in reflective choice for individual sense-making. For instance, how does my constant exposure to jeans shape my relationality and unconscious associations with my own characteristics, such as my body-image, my political views, or desires? Defining the right to privacy according to the conditions for identity-building addresses the frictions that social media analytics in fashion can produce in notions of individuality. Accordingly, it is important to investigate the extent to which emerging communication infrastructures in fashion undermine an individual’s autonomy to make diverse associations necessary for the inference of knowledge of self regarding their fashion identity.

3. Algorithmic personalisation: persuasion

Another aspect of algorithmic personalisation systems in fashion is the relationship between user and product attributes in fashion recommender systems. Two aspects of fashion recommender systems allow us to elaborate on the impact of algorithmic decision-making on notions of individual perception and self-relationality: the use of computer vision and a CNN methodology to classify images and other unstructured information, and the interpretation of user-item interactions using a matrix factorisation techniques.⁴¹² In this respect, fashion recommender systems shape the notion of self-relationality through the algorithms’ potential to “nudge” or persuade the user.

The algorithms’ quantitative characterisation of product attributes in fashion recommender engines seeks to personalise the user’s shopping experience within the contours of a brand’s image.⁴¹³ A CNN methodology enables both the extraction of visual features in product attributes as well as the

⁴¹¹ Daniel Susser, Beate Roessler and Helen Nissenbaum, ‘Technology, autonomy, and manipulation’ (2019) 8 (2) Internet Policy Review 1.

⁴¹² The CNN method illustrates an effective way to extract representations, such as colour, shape, size and style in product images including clothing in fashion, Daolio (n 103); In addition, see my discussion in Section IV.4 of **Chapter 1**.

⁴¹³ Daolio (n 103).

coordination of fashion items/outfits.⁴¹⁴ It is this process of associating attributes like colour, shape, texture, and style that forms the basis of establishing the link between product and individual attributes, such as occasion, preferences in style, or mood.⁴¹⁵ Recommender systems can thus shape the contours of algorithmic decision-making to establish a connection between visual appearance and emotional attributes in clothing.

Fashion recommender systems, exploring product attributes within non-linear relationships, apply these findings to match items with individual characteristics. They thus delve into ‘fashion narratives’, such as rules on style, cut, and shape in product attributes, defining the relationship between an individual’s perception and the process of inference of knowledge of self in ‘fashion identity’. Take the example of a dress with floral patterns, which connotes a ‘fit-and-flare style’ suitable for ‘girly girl [customers]’.⁴¹⁶ An individual interacting with products with these characteristics will conduct the process of inference of self regarding his or her fashion identity in light of the algorithms’ interpretation of fashion narratives including variables on style (i.e. interpretations of gender or age). How do we determine whether an individual is being ‘nudged’ to buy a certain fashion item or when the algorithm is being deceptive? The answer depends on whether the right to privacy can secure the conditions for identity-building, providing the space to reflect on the social and personal aspects of fashion with reference to the self.

The second point, reflecting on the recommender systems’ exploration of pre-existing fashion narratives, concerns the algorithms’ interpretation of user-item interactions and its impact on an individual’s unconscious associations within the personal self of ‘fashion identity’. The methodology to analyse user-item interactions can certainly identify correlations within the data, though it cannot causally connect the reliance on certain criteria.⁴¹⁷ Take the example of the Style Check application in Amazon’s discontinued Echo Look, which would prefer ‘all-black’ over grey looks without explaining why black items look better on the user.⁴¹⁸ Focusing on the matrix factorisation technique in recommender systems, we can assume that the computational model represents products and users in a high-dimensional vector space which is inferred from the rating patterns.⁴¹⁹ The method allows for inferences of preferences of data based on implicit feedback, such as browsing behaviour.⁴²⁰ These so-

⁴¹⁴ Lin, Moosaei and Yang (n 124); Diogo Goncalves and Paula Brochado, ‘How to Build A Recommender System: It’s all about rocket science- Part 2’ (*Farfetch Blog*, 2 March 2020) < www.farfetchtechblog.com/en/blog/post/how-to-build-a-recommender-system-it-s-all-about-rocket-science-part-2/> accessed 18 November 2020.

⁴¹⁵ Guan, Qin, Ling, Ding (n 109) 854.

⁴¹⁶ Cardoso, Daolio, Saul (n 111).

⁴¹⁷ Charles Beckwith, ‘Can Artificial Intelligence Ever Understand Fashion?’ (*Business of Fashion*, 27 February 2019) < www.businessoffashion.com/articles/opinion/op-ed-can-artificial-intelligence-ever-understand-fashion> accessed 28 July 2020.

⁴¹⁸ Kyle Chayka, ‘Style Is an Algorithm’ (*Vox*, 17 April 2018) < www.vox.com/2018/4/17/17219166/fashion-style-algorithm-amazon-echo-look> accessed 15 July 2020.

⁴¹⁹ Yehuda Koren, Robert Bell and Chris Volinsky, ‘Matrix Factorization Techniques for Recommender Systems’ (2009) 42 (8) IEEE Computer Society 30.

⁴²⁰ *ibid.*

called ‘data trails’⁴²¹ can either enhance or disturb an individual’s autonomous judgements. In other words, algorithms can either personalise the user’s shopping experience, giving them the tools to manage their appearance according to their preferences, or it can undermine their capacity to make a verifiable judgement regarding their “fashion identity”.

Indeed, commentators are often concerned about the impact of inferential analytics on an individual’s control of their data, underlining the individual’s passivity in their exposure to the non-transparent readings of algorithms ⁴²² I would like to take this argument further and suggest not only does the lack of control over the (non-transparent) process of inferences raise privacy (and data protection) issues but also the algorithms’ lack of causality influences the process of unconscious thought. Take, for example, a fashion recommender system that infers from the individual’s browsing and typing behaviour that they have always wanted a particular body shape or an ‘hour-glass’ figure. This is not solely an issue pertaining to the legal use of personal data; it invites us to think deeply about the role of privacy in the formation of new values, which requires space to make the associations that contribute to our own well-being, scrutiny, and personal development. We need to think about this aspect of self-relationality that allows us to think freely. In this respect, we need to ask ourselves what is the role of the right to privacy in securing our own values considering the scrutiny of algorithms regarding the personal self of fashion identity?

It follows that algorithmic personalisation systems are about persuasion, which entails the identification of the inter-relationship between ‘fashion’ and ‘identity’ based on the algorithms’ modelling of user responsiveness to fashion products. Fashion recommender systems can have a significant impact on how user perceptions are formed, based on the presentation of information and the re-structuring of options according to the user’s preference structure. For example, a recent paper by Karl Hajjar, Julia Lasserre, Alex Zhao *et al* develop a deep learning predictive sizing model which is argued to prevent a negative body experience, recommending products that suit the customer’s size and shape.⁴²³ Nevertheless, fashion recommender systems constantly adjust to changes in user behaviour based on a set of properties and factors that influence an individual’s daily clothing decisions. These properties or ‘fashion narratives’ on ‘clothing’ are based on the algorithms’ interventions in the user’s conscious associations with ‘fashion’. In this respect, an important aspect of investigating the impact of fashion recommenders

⁴²¹ Brent Mittelstadt, ‘From Individual to Group Privacy in Big Data Analytics’ (2017) 30 (4) *Philosophy & Technology* 475, 476.

⁴²² Sandra Wachter and Brent Mittelstadt, ‘A Right to reasonable inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI’ [2019] 2 *Columbia Business Law Review* 494.

⁴²³ Karl Hajjar, Julia Lasserre, Alex Zhao, Reza Shirvany, ‘Attention Gets You the Right Size and Fit in Fashion’ (RecSys ’20 fashionXrecsys ’20, New York, United States, 22- 26 September 2020); see also, Humberto Corona, ‘The State of Recommender Systems for Fashion in 2020’ (*Towards Data Science*, 30 September 2020) <<https://towardsdatascience.com/the-state-of-recommender-systems-for-fashion-in-2020-180b3ddb392f>> accessed 17 October 2020.

on the right to privacy is to elaborate on the nuances of persuasion in an individual's impression formation, considering the suggestions on the nature of privacy noted above.

4. Algorithmic personalisation: subjective neutrality

The final aspect of algorithmic personalisation in fashion pertaining to an individual's perception and self-relationality is the boundaries of inevitable and unacceptable algorithmic bias. Algorithmic bias is a consequence of the programmer's subjectivity and/or the outcome of algorithmic modelling, which can be reflected in the target variables, the training data, and/or the feature selection of proxies.⁴²⁴ In addition, we witness the incorporation of algorithmic decision-making based on efficiency and statistical objectivity.⁴²⁵ This subjective neutrality in algorithmic systems risks de-contextualising the individual's presence and sense-making of 'fashion identity' to the contours resembling their attributes. In this respect, the role of privacy requires us to look deeper into the meaning of privacy for securing one's reflective choice against the risks of differentiation from people with a semblance of similar attributes.⁴²⁶

Algorithmic personalisation operates according to patterns and correlations in data, creating unstated assumptions that are based on a statistical probability of someone purchasing a certain fashion product. Accordingly, the very purpose of an algorithmic system is to differentiate between individuals, interpreting user profiles containing a number of features, which are compared to many other parameters from other users.⁴²⁷ The logic of differentiating between entities is clear, which is to enable more targeted decision-making. A fashion recommender system will suggest fashion items based on the individual's profiles, such as their current geographical location. The task of differentiating between entities is an important aspect of algorithmic personalisation and predictive analytics, allowing fashion brands to tailor recommendations relevant to the consumer. Take the example of a predictive sizing application that needs to reflect an individual's unique attributes and preferences of fit (i.e. height, body shape, weight, size) for accurate decision-making.

Whilst these individual attributes may not directly correlate with any protected characteristics under discrimination law, such as race, gender, or age, an algorithm may infer information that is sensitive⁴²⁸ or which reinforces a particular prejudice against individuals with specific characteristics.⁴²⁹ The main

⁴²⁴ Solon Barocas and Andrew D Selbst, 'Big Data's Disparate Impact' (2016) 104 (3) CLR 671, 680-691.

⁴²⁵ Bernhard Rieder, 'Big Data and the Paradox of Diversity' (2016) 2 (2) Digital Culture and Society 39, 45.

⁴²⁶ See also Engin Bozdog who asks whether 'private companies that are offering information services have a social responsibility, and should they be regulated?'; Bozdog, 'Bias in algorithmic filtering and personalisation' (n 380) 220.

⁴²⁷ Louise Amoore and Krystian Woznicki, 'The politics of artificial intelligence: an interview with Louise Amoore' (*Open Democracy*, 26 October 2018) < www.opendemocracy.net/en/digital liberties/politics-of-artificial-intelligence-interview-with-1/ > accessed 27 October 2020.

⁴²⁸ This could lead to issues of indirect discrimination if the decision is based on a protected characteristic in discrimination law, Raphaële Xenidis, 'Tuning EU equality law to algorithmic discrimination: Three pathways to resilience' (2020) 27 (6) Maastricht Journal of European and Comparative Law 737, 743.

⁴²⁹ Take the example of differential pricing which can cause risks to enforce social inequality; Jennifer Valentino-DeVries, Jeremy Singer-Vine and Ashkan Soltani, 'Web Sites Vary Prices, Deals Based on Users' Information' *The Wall Street Journal*

issue is not only that recommender engines comprise human-made biases but also that their data is approximated to real-life events.⁴³⁰ Once we acknowledge this operational substance of algorithms, it becomes clear that we cannot deal with algorithmic bias exclusively as a matter of ‘fairness metrics’ but need a better grasp of the underlying role of the right to privacy to regulate emerging trends in ‘subjective neutrality’ within algorithmic decision-making.

In this respect, fashion recommender systems could raise several issues regarding an individual’s perception and self-relationality, as they are based on factual readings of an individual’s attributes and need to be scrutinised in terms of the right to privacy in identity construction. Take the example of a subscription-based service processing the user request ‘I need something to wear to a casual, outdoor, wedding’. Suppose each clothing style has several attributes (i.e. style, season, and wearing occasion) which will be matched with the target client to infer their preference (i.e. what they will most likely end up buying). Nevertheless, a subscription-based service is more than the mere categorisation and matching of attributes with the individual; it is a process that allows the user to ‘make up’ identities, such as by consciously giving feedback on size and fit or providing instructions regarding the wearing occasion in the process.⁴³¹ Our own involvement allows us to receive more “accurate classifications” that recommend an outfit we will most likely keep in our wardrobes. The key is, however, that the more user involvement there is in the recommendation process, the more the algorithm has to deal with latent and unstated features, which need to be inferred from other structured or unstructured data (i.e. interpreting text, visual data). Fashion recommender systems, dealing with multi-dimensional features of clothing and perception of clothing (e.g. a medium size could illustrate a large or small medium fit considering the user’s body shape and personal preferences), place an individual’s conscious choices within the categories one seeks to identify with. It is this association of attributes to clarify latent features that defines the parameters of social exclusion and inclusion.

Thus, we need to identify the extent to which algorithmic categorisation shapes individual perception, including the way we experience identity. As Katja de Vries accurately states, algorithms shape our sense of self within our own assigned social categories (i.e. my perception of lifestyle, health, well-being, and location as an ‘illusion’ regarding the algorithm’s dynamic categorisation of my social status).⁴³² But it is not only the algorithms’ categorisation of individual behaviour into social categories that encroaches on individual agency and choice but also the de-contextualisation of an individual’s

(New York City, 24 December 2012) < www.wsj.com/articles/SB10001424127887323777204578189391813881534> accessed 30 August 2021; Kate Abnett, ‘Will Personalised Pricing Take E-Commerce Back to the Bazaar?’ (*Business of Fashion*, 20 March 2015) < www.businessoffashion.com/articles/technology/personalised-pricing-turns-e-commerce-online-bazaar> accessed 13 November 2020.

⁴³⁰ Jones-Rooy (n 388).

⁴³¹ Liz Webber, ‘How exactly Stitch Fix’s “Tinder for clothes” learns your style’ (*Quartz*, 5 May 2019) < <https://qz.com/quartz/1603872/how-stitch-fixs-style-shuffle-learns-your-style/>> accessed 14 November 2021.

⁴³² De Vries (n 327) 83; see also, Silvia Milano, Mariarosaria Taddeo and Luciano Floridi, ‘Recommender systems and their ethical challenges’ [2020] 35 *AI & Society* 957, 962.

attributes from their everyday experience of identity. For instance, a subscription-based service may infer my clothing preferences in light of my behavioural profiles on style, physical features, and budget based on the correlation of attributes and group similarities, rather than my interpretation of fashion narratives of the social self of fashion identity. Thus, algorithms direct me towards the limited options to which I have assigned myself consciously (i.e. explicit feedback) and sub-consciously (i.e. implicit feedback that is detached from my subjective experience of self). In this respect, privacy, as an enabler of social interaction, induces us to strike a delicate balance between an individual's perspective on identity regarding aspects of identification (i.e. the accurate description of my subjective sense of self) and the structural properties within the system of perception of identity (i.e. the fashion narratives defining my interpretation of identity). What is the role of the right to privacy in setting the parameters regarding the impact of algorithms on social exclusion and inclusion?⁴³³ This is an important question requiring the implementation of safeguards (and values) in the design of algorithmic personalisation systems before the systems' deployment, to mitigate risks of unfair treatment.

In light of these considerations, we need to acknowledge that algorithmic categorisations introduce a new area of subjectivity. The problem with algorithmic categorisations and bias is that their operations result in a complex configuration of multi-dimensional and substantive relationships between attributes. Algorithms are designed to engage in a process of 'task-centric abstraction', which entails the classification of a problem within one social setting.⁴³⁴ Let us suppose that a fashion recommender system, containing a neural network to detect the parameters of reading visual data, establishes relationships for recommendations targeted at 'Muslim women'. The algorithms' implied normativity in detecting the social and cultural aspects of 'clothing' might lead to some accurate suggestions (i.e. identifying an individual's demographics and race) but it will not capture the variety of 'identity' within social-cultural contexts (i.e. an individual's identification with 'Muslim culture' or their perception of 'gender', 'age', or 'aesthetics' in their social-cultural context).⁴³⁵ How do algorithmic categorisations define my self-relationality to my own attributes, and how does privacy secure the conditions for the exercise of these attributes (e.g. religion, traits of behaviour)?

⁴³³ David Lyon gives a perspective on the risk of big data analytics to amplify unfair treatment and social sorting. He argues that 'everyday surveillance is implicated in contemporary modes of social reproduction- it is a vital means of sorting populations for discriminatory treatment- and as such it is unclear that it is appropriate to invoke more privacy as a possible solution' David Lyon, 'Surveillance as social sorting: computer codes and mobile bodies' in David Lyond (ed), *Surveillance as social sorting: privacy, risk and automated discrimination* (Routledge 2003) 19; Without going into detail, my suggestion is that the question posed in the article allows us to move away from a regulatory framework regarding 'protected categories' under EU anti-discrimination law and to assess ways by which unfair sorting could be framed as a privacy issue, as well as an opportunity for scrutinising the social impact of fashion recommender systems corresponding to the Data Protection Impact Assessments in the General Data Protection Regulation.

⁴³⁴ Andrew D Selbst, Suresh Venkatasubramanian, Danah Boyd, Janet Vertisi, Sorelle A Friedler, 'Fairness and Abstraction on Sociotechnical Systems' (FAT* '19: Proceedings of the Conference on Fairness, Accountability, and Transparency, Atlanta, GA, United States, January 2019).

⁴³⁵ Fjord's interpretation of the 'inclusivity paradox' offers a good illustration of this problem, 'The inclusivity paradox' (Fjord, Accenture 2018) < <https://trends19.fjordnet.com/trends/inclusivity-paradox>> accessed 11 January 2019.

5. AI in fashion- an abstraction of self? Privacy and the right to not be reduced

The discussion so far has established the bedrock for investigating the challenges to privacy posed by algorithmic personalisation systems in fashion, focusing on the individual's perception and self-relationality in fashion identity. From social media analytics to fashion recommender systems, algorithmic personalisation systems delve into the process of communicating and developing aspects of identity.

In other words, it is important to note that the limitations of AI techniques in analysing user sentiment and individual explicit and implicit preferences, illustrate the conceptual boundaries leading to an abstraction of the self in relation to one's fashion identity. Algorithms in the fashion domain entail a form of knowledge resemblance to aspects of identity, which does not encompass the experience of identity, such as my own relative perception of appearance applied to my own style and/or body shape. What happens is that you expand your knowledge of self (including the conscious and unconscious expression of perception and self-relationality) based on the algorithms' process of associating personal attributes with fashion narratives. This process undermines an individual's autonomy to define abstract entities including fashion narratives and how these ubiquitous manifestations shape my view regarding my own qualities of the self.

Where do these considerations leave us regarding the role of the right to privacy in securing the contours of identity-building? I elaborated in Chapter 2 how we need a different conception of privacy and autonomy focusing on fashion identity. To reiterate, the current theoretical conception of the right to privacy, as well as academic discourse on Agre's definition of privacy,⁴³⁶ supports a direct propositional formula to secure the individual's autonomy and identity in a social environment and against the readings of algorithms.⁴³⁷ However, identity is not always representational of social interaction but retains an essence beyond the observed individual state, that is, individual perception and self-relationality.

Nevertheless, I want to add here that our understanding of privacy, autonomy and identity needs to be further considered in light of the algorithms abstract entities to shape individual behaviour. We need to move beyond the effects of algorithms to undermine an individual's autonomy (and informational self-

⁴³⁶ Agre (n 151).

⁴³⁷ Edwards and Veale 'Slave to the Algorithm? Why a 'Right to an Explanation' Is Probably Not the Remedy You Are Looking For' (n 353) 73; Sarah Eskens, 'A right to reset your user profile and more: GDPR-rights for personalized news consumers' (2019) 9 (3) IDPL 153, 172; Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 102-103.

determination) to the way AI systems shape the conditions of autonomous subjects to define aspects of the fashion identity. For instance, an AI system would never communicate to the user that “a certain outfit does not fit your body shape” but rather, would infer that a certain type of clothing could fit you better including “a more conservative audience”. Defining the contours of personalisation can not be done concerning the data processing activities as such, nor the (legal) status of the individual as it is not tied with identifiable categories. What we need is an understanding of the algorithmic fixtures of identity which are detached from an individual’s experience of (fashion) identity.

Therefore, I submit that we need an understanding of privacy that protects against the inherent reduction of fashion identity to literal attributes (such as fashion narratives on ‘gender’ or ‘casual style’) and considers an individual’s autonomy to shape the algorithmic approximations of the self. This analysis suggests that whatever our expectations of algorithmic personalisation to predict individual preferences, we should not make the error of reducing the discourse on privacy and autonomy according to algorithms’ inherent reductions of fashion identity. Thus, the discourse on challenges to privacy regarding algorithmic personalisation systems needs to correspond to a bigger picture in order to discuss the meaning of individual autonomy in maintaining perception and self-relationality within the constrained spectrum of possibilities.

I propose a “right to not be reduced” to focus on the individual’s practice of identity and choice with regard to the algorithmic entities incorporating imperfect semblances on the personal and social aspects of fashion. In other words, I use the “right to not be reduced” to articulate the individual’s autonomous practice of individual perception and self-relationality within the algorithmic landscape in the fashion domain. I suggest that our articulation of an individual’s privacy, autonomy, identity lies both within the algorithmic constructions and outside the algorithm’s singular construction of fashion identity, being a useful concept to create new perspectives on the risks of AI techniques in the fashion domain.

III. How AI shapes the individual: de-constructing the right to privacy

Algorithmic personalisation in fashion does not entail the assessment of an individual’s fashion identity in terms of what is, but rather what personal qualities illustrate relevant data for the algorithms’ knowledge construction. Chapter 3 considered how we should consider an individual’s perception and self-relationality focusing on the limitations of AI techniques in fashion. It is the narrow understanding of personal identity as a form of knowledge reproduction in algorithmic systems which requires a different conception of privacy as a form of control over aspects of the self.

Two contributions in Chapter 3 are relevant for the thesis' further investigation in the next chapters. One, I highlighted three perspectives on the implications of algorithmic personalisation systems in fashion (Sections II.2-4 of Chapter 3). To reiterate, I provided a theoretical outlook on how to address the problems surrounding the individual interacting with algorithmic personalisation systems in fashion. The next task is to further introduce these considerations into a socio-legal landscape in Chapter 4-6. In doing so, I will elaborate on algorithms to shape communication structures, manipulating individual behaviour and causing issues of bias but, also consider the human rights implications more extensively. Therefore, Chapter 4-6 deals with the de-construction of the right to privacy in the age of AI in fashion.

Second, I suggested that we need to focus on the algorithms' process of abstraction of self to establish the contours of individual autonomy in the big data age (Section II.5 of Chapter 3). This suggests that, contrary to the assumption that an individual needs a 'right how to be read',⁴³⁸ we need an understanding of autonomy that allows for a "right to not be reduced" to algorithmic abstractions that are not comprehensible to an individual's fashion identity. This concept of privacy allows us to think about autonomy and identity as a form of protecting the individual process of inference of knowledge of the self, rather than the individual's narrow control of the algorithms' knowledge production. However, we still need to identify the contours of the right to not be reduced in practice, such as what would be the normative basis of this new right? And, what kind of responsibilities does it entail for private entities? These are questions I am going to deal with in Chapter 7 which uses international human rights law as a governance mechanism for new values. For now, we can argue that the right to "not be reduced" requires the implementation of new interpretative guidance and normative choices which re-construct the right to privacy in the age of AI in fashion.

⁴³⁸ Edwards and Veale 'Slave to the Algorithm? Why a 'Right to an Explanation' Is Probably Not the Remedy You Are Looking For' (n 353) 73; Eskens (n 437) 172; Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 102-103.

Chapter 4

Fashion, filter bubbles and echo chambers: filtering identity and autonomy⁴³⁹

Online representation and communication in fashion are regulated by the filtering of algorithms. This chapter will use the right to privacy, including the notions of individual perception and self-relationality focusing on the concepts of filter bubbles and echo chambers in the fashion domain. The discourse on filter bubbles and echo chambers applies to the use of social media analytics and consumer profiling for behavioural advertising in the fashion industry, being relevant to an individual's autonomy and control of personal information. However, we need to expand on the concept of filter bubbles and echo chambers to define the contours of self-exposure within the algorithmic context applied to the social and personal aspects of fashion. An analysis of the ECtHR's interpretation of Article 8 of the ECHR reveals that we need to shape notions of personal development and autonomy to include an individual's plurality of needs, desires, and beliefs, as well as unconscious associations with fashion identity. Further, the reading of article of Article 8 in conjunction with Article 10 (1) of the ECHR suggests that self-relationality needs to offer a bedrock for a subjective right regarding the right to receive information.

It follows that privacy needs to address aspects of personality within fashion identity, rather than the notion of identifiable information, recognising the findings above. I intend to reinforce this argument, focusing on the notion of informational privacy and the consent model in the GDPR. A user will only be able to consent to the fashion narratives captured by 'data points' which precludes the individual's effective control regarding the management and perception of appearance.⁴⁴⁰ In other words, we need a new conceptual framework that implements human values in the design and interpretation of the consent model, and which goes beyond privacy management governing the contours of appearance management.

⁴³⁹ This chapter reflects parts of my published paper Daria Onitiu, 'Fashion, filter bubbles and echo chambers: Questions of privacy, identity, and governance' [2022] *Law, Innovation and Technology* 1. Some ideas of this chapter, focusing on the GDPR's notions of consent are inspired by my own work in Daria Onitiu, 'Why lawyers should care about 'fashion identity' in the age of artificial intelligence (AI)' (*SLSA Blog*, 2020) < <http://sfsablog.co.uk/blog/blog-posts/virtualslsa2020-why-lawyers-should-care-about-fashion-identity-in-the-age-of-artificial-intelligence-ai/>> accessed 12 March 2021.

⁴⁴⁰ Onitiu, 'Why lawyers should care about 'fashion identity' in the age of artificial intelligence (AI)' (n 439)

I. Introduction

‘There’s an obvious benefit to being served content catered to our tastes: We know we’ll like it. But when social networks like Facebook harness information about us, they end up spotlighting the things we’ve already shown an inclination to buy’.⁴⁴¹

Social media analytics and consumer profiling using social media data change the face of fashion.⁴⁴² To illustrate, when I open my social media page, I am immediately confronted with the newest fashion trends, my favourite fashion influencers, and advertising that suits my sense of style. My interactions entailing my browsing behaviour, feedback on my friends’ visual appearance, engagement with fashion brands – are valuable data trails, which are captured by algorithms to interpret my behaviour and predict future preferences.⁴⁴³ While social media analytics use computational models to identify general fashion trends, consumer profiling uses AI techniques to identify an individual’s future preferences.⁴⁴⁴ Algorithms investigate human behaviour on social media platforms, using fashion as a source of identity represented by an individual’s appearance and perception of appearance.⁴⁴⁵ In other words, when I interact on my social media platforms, I know what I want to wear based on my data.

Suppose now that my behaviour on social media regarding fashion brands creates experiences that only entail content reflecting my own preferences, which are shared by like-minded individuals. Several authors have investigated how algorithms in news and media personalisation impact the way individuals consume personalised content.⁴⁴⁶ The abundance of information in the online sphere solidifies the creation of ‘echo chambers’ in which individuals only engage with content aligned to their beliefs.⁴⁴⁷ An echo chamber can be defined as an informational structure resembling the thoughts of like-minded individuals.⁴⁴⁸ Further, personalisation algorithms escalate information segregation including the user’s over-exposure to content recommending products they are likely to engage with, and causing so-called

⁴⁴¹ Clare Kane, ‘We’re Trapped in an Online Fashion Bubble — Here’s How to Escape’ (*Mic*, 27 August 2015) < www.mic.com/articles/124463/we-re-trapped-in-an-online-fashion-bubble-here-s-how-to-escape> accessed 23 October 2021.

⁴⁴² Jorge Ale Chilet, Cuicui Chen and Yusan Lin, ‘Analyzing Social Media Marketing in the High-End Fashion Industry Using Named Entity Recognition’ (2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), San Francisco, CA, USA, 18- 21 August 2016); Yu-I Ha, Sejeong Kwon, Meeyoung Cha and Jungseock Joo, ‘Fashion Conversation Data on Instagram’ (ArXiv, 13 April 2017) <<https://arxiv.org/pdf/1704.04137.pdf>> accessed 12 November 2020.

⁴⁴³ See Christopher Wylie who describes that “‘music and fashion are the most informative [tools] for predicting someone’s personality””, taken from Leah Harper, ‘Whistleblower Christopher Wylie joins fashion retailer H&M’ *The Guardian* (London, 31 January 2019) < www.theguardian.com/fashion/2019/jan/31/whistleblower-christopher-wylie-joins-fashion-retailer-h-m> accessed 12 December 2020

⁴⁴⁴ See for example, Chilet, Chen and Lin (n 442); Lin, Xu, Zhou and Lee, ‘Styles in the Fashion Social Network: An Analysis on Lookbook.nu’ (n 90); see also Jaehyuk Park, Giovanni Luca Ciampaglia and Emilio Ferrara, ‘Style in the Age of Instagram: Predicting Success within the Fashion Industry using Social Media’ (Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing, New York, United States, February 2016); see also my discussion in **Chapter 1** Section IV.

⁴⁴⁵ Ramirez (n 70).

⁴⁴⁶ Eli Pariser, *The Filter Bubble: What the Internet is Hiding From You* (Penguin Books, 2011); Mariella Bastian, Mykola Makhortykh, Jaron Harambam, Max van Drunen, ‘Explanations of news personalisation across countries and media types’ (2020) 9 (4) *Internet Policy Review* 1, 2.

⁴⁴⁷ Flaxman, Goel and Rao (n 357) 299.

⁴⁴⁸ C Thi Nguyen, ‘Echo Chambers and Epistemic Bubbles’ (2020) 17 (2) *Episteme* 141.

‘filter bubbles,’⁴⁴⁹ which solidify narrow assumptions, ‘creating the impression that our narrow self-interest is all that exists.’⁴⁵⁰ Whilst the concepts of echo chambers and filter bubbles are not uncontested in academic scholarship,⁴⁵¹ their theoretical and empirical underpinnings provide useful insights into the impact of algorithmic personalisation on content diversity and media pluralism. There is no research that studies the effects of personalisation and algorithmic filtering in the fashion domain on individual agency and choice. Thus, Chapter 4 provides a fresh outlook; and sheds light on the problems associated with echo chambers and filter bubbles regarding algorithmic personalisation in the fashion domain and how the law ought to interact with an understanding of individual expression and development of identity in the digital age.

By analysing the impact of algorithms on the fragmentation of communication structures and an individual identification process, this chapter addresses the need to assess individuals’ perception and self-relationality when investigating the concepts of filter bubbles and echo chambers in the fashion domain. Focusing on the two notions of individual perception and self-relationality, I claim that filter bubbles and echo chambers in fashion undermine the individual’s dialectic tendencies to develop and maintain their own assumptions on conformity and differentiation in fashion identity.

This argument is tested against the ECtHR’s interpretation of Article 8 of the ECHR.⁴⁵² Article 8 ECHR secures aspects of personal development including identity.⁴⁵³ This view of the right to privacy that is linked to the development of autonomy and identity is relevant when discussing how algorithmic filtering affects individual perception and self-relationality. This chapter thus seeks to establish whether the right to privacy as interpreted by the ECtHR provides protection against the harm caused by filtering algorithms in the fashion domain. It makes two suggestions concerning the meaning of identity and autonomy with regard to Article 8’s guarantees: first, perception needs to play a more important role in defining notions of personal development, such as cultural identity; second, we need to configure the right to privacy provided by Article 8 of the ECHR to include an understanding of the social constraints on the exercise of identity and recognise the conditions of identity-building.

In addition, I test the argument whether an individual can have control of the flow of information focusing on Article 8 in conjunction with Article 10 (1) of the ECHR.⁴⁵⁴ I assess whether Article 10 (1)

⁴⁴⁹ *ibid*; see also, Axel Bruns, ‘Filter bubble’ (2019) 8 (4) *Internet Policy Review* 1.

⁴⁵⁰ Adam Piore, ‘Technologists are trying to fix the “filter bubble” problem that tech helped create’ (*MIT Technology Review*, 22 August 2018) < www.technologyreview.com/2018/08/22/2167/technologists-are-trying-to-fix-the-filter-bubble-problem-that-tech-helped-create/ > accessed 1 March 2020.

⁴⁵¹ See for example, Frederik J Zuiderveen Borgesius, Damian Trilling, Judith Möller, Balazs Bodo, Claes H de Vreese, Natali Helberger, ‘Should we worry about filter bubbles’ (2016) 5 (1) *Internet Policy Review* 1.

⁴⁵² European Convention on Human Rights, art 8.

⁴⁵³ Paul de Hert, ‘A right to identity to face the Internet of Things?’ (UNESCO 2008) page 7 < https://pure.uvt.nl/ws/portalfiles/portal/1069135/de_Hert-Paul.pdf > accessed 17 April 2021.

⁴⁵⁴ As argued by Karen Mc Cullagh ‘[individuals] exercise both their freedom of expression and privacy rights when they decide what personal information to share, and with whom’; Karen Mc Cullagh, ‘The general data protection regulation: a

of the ECHR can provide a building block assessing issues of autonomy and identity in conjunction with Article 8, provided that self-relationality can offer the contours for subjective right to receive information.

Moreover, I intend to test the argument which seeks to clarify the unconscious associations of fashion identity for the interpretation of privacy focusing on the consent model in the GDPR. Consent is a legal basis for the processing of personal data in the GDPR, allowing fashion brands to advertise and show specific consent to the user, provided the individual is shown a logical outlook of the peculiarities of data processing.⁴⁵⁵ I use academic literature evaluating the consent model to offer a perspective on the meaning of user control of data regarding echo chambers and filter bubbles in the fashion domain. I suggest that we need a revised understanding of an individual's informational self-determination which seeks to understand the relevant of fashion narratives in filter bubbles and echo chambers.

II. The impact of filtering algorithms on individual autonomy

Algorithmic filtering directs and shapes an individual's exposure to information and content.⁴⁵⁶ Filter bubbles and echo chambers lead individuals to connect and communicate with like-minded persons and when picked up by algorithms, can lead to over-exposure to specific content.⁴⁵⁷ This Section gives a theoretical outlook on filter bubbles in the fashion domain, given that there are no empirical studies on the impact of fashion recommender engines on user perception.⁴⁵⁸ It is important to underline how algorithmic personalisation can shape the user's discovery of new content, informing a nuanced approach of filter bubbles and echo chambers applied to the fashion domain. To plan my interdisciplinary outlook on the socio-legal issues of filter bubbles and echo chambers, we need to clarify some key considerations regarding the consequences of algorithmic filtering which, acting on shared narratives on appearance and style in the fashion domain, shape an individual's self-representation.

partial success for children on social network sites?' in Tobias Bräutigam and Samuli Miettinen (eds), *Data Protection, Privacy and European Regulation in the Digital Age* (Unigrafia 2016) 114.

⁴⁵⁵ General Data Protection Regulation, art 7; see also, Charles R Taylor, 'Artificial intelligence, customized communications, privacy, and the General Data Protection Regulation (GDPR)' (2019) 38 (5) *International journal of advertising* 649.

⁴⁵⁶ Paul Bernal, 'Fakebook: why Facebook makes the fake news problem inevitable' (2018) 69 (4) *NILQ* 513.

⁴⁵⁷ Vikram Alexei Kansara, 'Cambridge Analytica Weaponised Fashion Brands to Elect Trump, Says Christopher Wylie' (*Business of Fashion*, 29 November 2018) <[ps://www.businessoffashion.com/articles/video/cambridge-analytica-weaponised-fashion-brands-to-elect-trump-says-christopher-wylie](https://www.businessoffashion.com/articles/video/cambridge-analytica-weaponised-fashion-brands-to-elect-trump-says-christopher-wylie)> accessed 8 October 2020.

⁴⁵⁸ Some authors claim that other areas of predictive analytics likewise do not extensively provide an empirical analysis on filter bubbles and echo chambers, see Zuiderveen Borgesius, Trilling, Möller, Bodo, de Vreese, Helberger (n 451) 10. In addition, for a critical approach regarding the existence of filter bubbles and echo chambers see, Mario Haim, Andreas Graefe and Hans-Bernd Borsius, 'Burst of the Filter Bubble' (2018) 6 (3) *Digital Journalism* 330; Camille Roth, Antoine Mazieres, Telmo Menezes, 'Tubes and bubbles topological confinement of YouTube recommendations' (2020) 15 (4) *PLoS ONE* 115.

1. Filter bubbles and echo chambers: working definitions and issues

Imagine a straightforward scenario where you browse social media, check out your friends' pictures, read some of your favourite fashion blogs, and ultimately end up wearing the same jacket as your classmate at your weekly university lecture. According to Cass R Sunstein, this is not an uncommon situation, highlighting that our individual choices lead us to be trapped in so-called echo chambers that reflect our own opinions.⁴⁵⁹ An echo chamber is defined as a space where individuals only connect with like-minded people.⁴⁶⁰ This concept has been studied extensively in terms of user engagement with news articles including political content.⁴⁶¹ We see the potential for an individual's selective representation in echo chambers in the fashion domain in consumption habits, as well as the visualisation of 'fashion' in consumer cultures (for example, sustainable fashion impact, eco-fashion consumption or Generation Z consumers affecting existing fashion trends).⁴⁶² This allows us to imagine the creation of digital chambers on a theoretical level based on user engagement on these platforms and knowledge of the social role of fashion, highlighting the individual's potential to reiterate and re-define their appearance based on shared narratives.⁴⁶³ Individual engagement with social media platforms enables the systematic circulation of images of self-representation within one's digital sphere or echo chamber.

Suppose now that your decision to buy the jacket, which is identical to your classmate's clothing, is connected to your social media feed, in which a popular fashion brand advertises a new winter collection targeted at young students. Consumer profiling and social media analytics – encompassing recommender engines, tracking cookies, predictive analytics for consumer profiling including analytics regarding brand perception – are often analysed in relation to the concept of filter bubbles.⁴⁶⁴ Filter bubbles illustrate the common idea that personalisation systems cause the individual's over-exposure to information, which suits personal preferences and hides diverse engagement on a given subject.⁴⁶⁵

⁴⁵⁹ Cass R Sunstein, *Infotopia: How many minds produce knowledge* (OUP 2006) 9.

⁴⁶⁰ For example, R Kelly Garrett who identifies that individual's engage with news information that reflects their preferred political figures, R Kelly Garrett, 'Echo chambers online?: Politically motivated selective exposure among Internet news users' [2009] 14 *Journal of Computer-Mediated Communication* 265, 266; see also, Emanuele Brugnoli, Matteo Cinelli, Walter Quattrociochi and Antonio Scala, 'Recursive patterns in online echo chambers' (2019) 9 (1) *Scientific reports* 20118; Larry Diamond, 'The Road to Digital Unfreedom: The Threat of Postmodern Totalitarianism' (2019) 30 (1) *Journal of democracy* 20, 22.

⁴⁶¹ Flaxman, Goel and Rao (n 357) 298; Ana S Cardenal, Carlos Aguilar-Paredes, Camilo Cristancho, Silvia Majo-Vazquez, 'Echo-chambers in online news consumption: evidence from survey and navigation data in Spain' (2019) 34 (4) *European Journal of Communication* 360; Lisa Harris and Paul Harrigan, 'Social Media in Politics: The Ultimate Voter Engagement Tool or Simply an Echo Chamber?' (2015) 14 (3) *Journal of Political Marketing* 251.

⁴⁶² Niinimäki (n 144) 150; Imran Amed, Anita Balchandani, Marco Beltrami, Achim Berg, Saskia Hedrich and Felix Rölkers, 'The Influence of 'woke' consumers on fashion' (*McKinsey*, 12 February 2019) < www.mckinsey.com/industries/retail/our-insights/the-influence-of-woke-consumers-on-fashion# > accessed 12 November 2020.

⁴⁶³ There is no empirical verification on the existence of 'echo chambers' in the fashion domain; only few website articles which mention the concept in light of the consumption culture in 'fast fashion'; see for example, Tim Blanks, 'The End of the (Fashion) World as We Know It' (*The Business of Fashion*, 24 March 2020) < www.businessoffashion.com/opinions/luxury/the-end-of-the-fashion-world-as-we-know-it > accessed 12 November 2020.

⁴⁶⁴ Flaxman, Goel and Rao (n 357) 299; Robert Hunt and Fenwick McKelvey, 'Algorithmic Regulation in Media and Cultural Policy: A Framework to Evaluate Barriers to Accountability' [2019] 9 *Journal of Information Policy* 307, 308.

⁴⁶⁵ Dominic Spohr, 'Fake news and ideological polarization: Filter bubbles and selective exposure on social media' (2017) 34 (3) *Business Information Review* 150; Ana S Cardenal, Carlos Aguillar- Paredes, Carol Galais and Maria Perez-Montoro, 'Digital Technologies and Selective Exposure: How Choice and Filter Bubbles Shape News Media Exposure' (2019) 24 (4)

According to Eli Pariser, filter bubbles demonstrate the ‘unique universe’ of tailored information, which changes ‘the way we encounter ideas’.⁴⁶⁶ Accordingly, an important aspect of the concept of filter bubbles is that personalisation is ‘media-driven’⁴⁶⁷ and occurs without the user’s self-determined engagement with content.⁴⁶⁸

Indeed, algorithmic personalisation is argued to be a prerequisite for a positive web experience.⁴⁶⁹ Take the situation where an individual receives advertising for a jacket they liked on a friend’s social media post. A recommender system will support the user to find this garment and others of a similar style from a large content catalogue.⁴⁷⁰ In this light, several authors suggest that algorithmic personalisation has a ‘positive effect on the individual’s information exposure.’⁴⁷¹ For example, Natali Helberger argues that ‘search and recommendation systems may help or even stimulate (nudge) the audience to choose more diverse content’.⁴⁷² Accordingly, content diversity in algorithmic personalisation systems is closely linked to user involvement with the recommendation process.⁴⁷³

Nevertheless, users are often ‘not aware of the different options’.⁴⁷⁴ The individual, having liked the jacket of his or her Facebook friend, might be confronted with diverse items – for example, a blazer or cardigan – that resemble certain characteristics such as the style or occasion on which it was worn. Therefore, the user might not be aware of the extent of the filtering process, which influences their agency and choice.⁴⁷⁵ Having taken an interest in the jacket, they might receive outfit recommendations from that fashion brand such as corresponding accessories or items from a specific collection, which resonate with their implicit feedback and preferences. This highlights how an individual, engaging with increasingly available information, navigates a constrained spectrum of possibilities based on the filtering process of algorithms.⁴⁷⁶

The International Journal of Press/Politics 465; Silvia Knoblock-Westerwick and Steven B Kleinman, ‘Preelection Selective Exposure: Confirmation Bias Versus Informational Utility’ (2012) 39 (2) Communications Research 170.

⁴⁶⁶ Pariser (n 446) 9.

⁴⁶⁷ Natali Helberger, ‘Freedom of expression and the Dutch Cookie-Wall’ (2013) Amsterdam Law School Research Paper No 2013-66, 6 < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2351204> accessed 12 November 2020; Zuiderveen Borgesius ‘Improving privacy protection in the area of behavioural targeting’ (n 151) 122.

⁴⁶⁸ Committee of Ministers, ‘Recommendation CM/Rec (2007) 3 of the Committee of Ministers to member states on the remit of public service media in the information society’ (adopted 31 January 2007) < https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016805d6bc5> accessed 17 November 2020.

⁴⁶⁹ Christian Pieter Hoffman, Christoph Lutz, Miriam Meckel, Giulia Ranzini, ‘Diversity by Choice: Applying a Social Cognitive Perspective to the Role of Public Service Media in the Digital Age’ [2015] 9 International Journal of Communication 1360,1366; Helberger, Karppinen and D’Acunto (n 33) 192.

⁴⁷⁰ Bart P Knijnenburg, Martijn C Willemsen, Zeno Gartner, Hakan Soncu and Chris Newell, ‘Explaining the user experience of recommender systems’ (2012) 22 (4-5) User Modeling and User-Adapted Interaction 441, 442.

⁴⁷¹ Helberger, Karppinen and D’Acunto (n 33) 192; Michael D Ekstrand, Daniel Kluver, Maxwell Harper F and Joseph A Konstan, ‘Letting Users Choose Recommender Algorithms: An Experimental Study’ (Proceedings of the Ninth ACM Conference on Recommender Systems, Vienna, Austria, 16-20 September 2015).

⁴⁷² Natali Helberger, ‘Merely Facilitating or Actively Stimulating Diverse Media Choices? Public Service Media at the Crossroads’ [2015] 9 International Journal of Communication 1324, 1329.

⁴⁷³ *ibid.*

⁴⁷⁴ Engin Bozdag and Jeroen van den Hoven, ‘Breaking the filter bubble: democracy and design’ (2015) 17 (4) Ethics and Information Technology 259, 251; Hoffman, Lutz, Meckel, Ranzini (n 469) 1366.

⁴⁷⁵ *ibid.*

⁴⁷⁶ Roth, Mazieres, Menezes (n 458) 11.

Against this background, the first concern regarding algorithmic filtering in ads and content is that it can cause the fragmentation of communication structures. Several commentators argue that algorithmic personalisation systems foster the development of polarised communications and fragmentation of diverse negotiations.⁴⁷⁷ For example, consider user interactions on Twitter where individuals with a conservative political inclination retweet posts of other users with a similar outlook.⁴⁷⁸ As highlighted by Pablo Barbera, John T Jost, Jonathan Nagler *et al*, ‘discussions on Twitter regarding the US election in 2012 illustrated an echo chamber of ideas, including people’s exchange of content with similar ideological preferences’.⁴⁷⁹ Whilst technological developments facilitate the exchange of information and distribution of content, they also lead to the isolation of existing perceptions and patterns of thinking within the personal sphere.⁴⁸⁰ The convergence of algorithmic filtering in content, ads, and individual perceptions effectively solidifies existing differences, rather than providing a pluralist outlook on an issue.

The main difficulty with the fragmentation of public discourse in echo chambers is that there is no ‘robust middle’ that mediates between the various views in the networks.⁴⁸¹ In this respect, it is argued that echo chambers foster the development of ‘alternative facts’ including misinformation and, in some instances, the development of ideological segregation and extremism expressed in the political online sphere.⁴⁸² Whilst it is correct to assume that the technological landscape is by no means the sole contributor to the increasing fragmentation of public discourse, it is certainly a significant factor amplifying existing differences, contributing to the formation of biases, and destabilising meaningful democratic exchange of information.⁴⁸³

⁴⁷⁷ Spohr (n 465) 150; Cardenal, Aguillar- Paredes, Galais and Perez-Montoro (n 465) 465; Knoblock-Westerwick and Kleinman (n 465) 170; see also Cass R Sunstein warns that a democratic society must be exposed to diverse views; Sunstein, *Infotopia: How many minds produce knowledge* (n 458) 5; see also Calude Castelluccia and Arvind Narayanan, ‘Privacy considerations of online behavioural tracking’ (European Network and Information Security Agency (ENISA) 19 October 2012) < www.enisa.europa.eu/publications/privacy-considerations-of-online-behavioural-tracking#:~:text=Privacy%20considerations%20of%20online%20behavioural%20tracking.%20Internet%20users,to%20support%20and%20respect%20the%20right%20for%20privacy.> accessed 12 November 2020 at 13-14.

⁴⁷⁸ Pablo Barbera, John T Jost, Jonathan Nagler, Joshua A Tucker and Richard Bonneau, ‘Tweeting From Left to Right: Is Online Political Communication More Than an Echo Chamber?’ (2015) 26 (10) *Psychological Science* 1531, 1537.

⁴⁷⁹ *ibid* 1539.

⁴⁸⁰ For example, a recent paper looking at social media comments of users who follow conspiracy theories revealed that ‘social media can play a role in spreading conspiracy theories, but it mostly entrenches beliefs among those who already have them’, taken from Colin Klein, Adam Dunn, Peter Clutton, ‘Don’t (just) blame echo chambers: conspiracy theorists actively seek out their online communities’ (*The Conversation*, 19 November 2019) < <https://theconversation.com/dont-just-blame-echo-chambers-conspiracy-theorists-actively-seek-out-their-online-communities-127119>> accessed 28 November 2020; Colin Klein, Adam Dunn and Peter Clutton, ‘Pathways to conspiracy: The social and linguistic precursors of involvement in Reddit’s conspiracy theory forum’ (2019) 14 (11) *PLOS One* 1; see also, Bernal (n 456) 81.

⁴⁸¹ See research by John Kelly and Camille François, ‘This is what filter bubbles actually look like Maps of Twitter activity show how political polarization manifests online and why divides are so hard to bridge’ (*MIT Technology Review*, 22 August 2018) < www.technologyreview.com/2018/08/22/140661/this-is-what-filter-bubbles-actually-look-like/> accessed 12 November 2020.

⁴⁸² Petter Törnberg, ‘Echo chambers and viral misinformation: Modeling fake news as complex contagion’ (2018) 13 (9) *PLOS One* 1, 17.

⁴⁸³ For an extensive discussion on this subject Yochai Benkler, Robert Faris and Hal Roberts, *Network Propaganda: manipulation, disinformation, and radicalization in American Politics* (OUP 2018) 5-21, 23.

The second concern regarding algorithmic personalisation is its impact on the individual's identification process. Take the Cambridge Analytica scandal, which showed the potential of behavioural profiling as a tool to psychologically shape political viewpoints.⁴⁸⁴ This well-known case, highlighting the importance of commercial algorithms to tap into political discourse, has important socio-cultural implications.⁴⁸⁵ In particular, algorithmic filtering leads to a paradoxical outcome in that the more I interact with fashion to engage with personalised content, the more will I become vulnerable to the dynamics shaping my own preferences. In other words, filter bubbles affect the way individual participation shapes and defines people's engagement with the nuances of fashion.

An important consideration I want to emphasise here is that filter bubbles and echo chambers raise significant concerns not only concerning the user's utility of choice but the individual's contours of sense-making.⁴⁸⁶ To illustrate this, let us assume that a recommender system could support an individual's (subjective) experience of exposure diversity, affording the user more opportunities to exercise and express his or her preferences.⁴⁸⁷ Whilst principles on exposure diversity seem to provide an initial response addressing user isolation in echo chambers and within filter bubbles, it does not provide a sufficient account of the normativity of algorithms' to reproduce patterns of individual behaviour. A recommender engine will still be constrained by the individual's attributes and common characteristics to read individual perception.⁴⁸⁸ Therefore, we need to establish first how the normativity of an individual's own attributes within an algorithmic landscape (as derived from explicit and implicit data) constraining an individual's autonomy within echo chambers and filter bubbles. In intend to suggest in the next Section that filter bubbles and echo chambers in fashion shape not only our information choices, but affect the way individual's communicate and conceal aspects of identity.

⁴⁸⁴ *ibid* 275.

⁴⁸⁵ Ramus Helles and Mikkel Flyverbom, 'Meshes of Surveillance, Prediction, and Infrastructure: On the Cultural and Commercial Consequences of Digital Platforms' (2019) 17 (1/2) *Surveillance & Society* 34; Ellen P Goodman and Julia Powles, 'Facebook and Google: most powerful and secretive empires we've ever known' (*The Guardian*, 28 September 2016) < www.theguardian.com/technology/2016/sep/28/google-facebook-powerful-secretive-empire-transparency> accessed 18 November 2020; Jose van Dijck, 'Datafication, dataism and dataveillance: Big Data between scientific paradigm and ideology' (2014) 12 (2) *Surveillance & society* 197, 198.

⁴⁸⁶ As pointed out by Eli Pariser, filter bubbles are not only about targeted advertising but how algorithms shape the 'own filter to make sense of the world.' Pariser (n 446) 8- 10; see also, Alessandro Acquisti and Jens Grossklags, 'Privacy and Rationality: A Survey' in Katherine Strandburg and Daniela Stan Raicu (eds), *Privacy and Technologies of Identity: A Cross- Disciplinary Conversation* (Springer 2006) 18.

⁴⁸⁷ It is possible to implement several criteria in the design of recommender engines to increase the user's exposure to diversity. Examples are approaches aiming 'diversity in design' as well as principles of serendipity in personalisation systems. I am not intending to discuss these approaches in greater detail as it would direct my investigation focusing only on the utility of choice, leaving other aspects of individual autonomy relevant to the conceptual outlook on filter bubbles and echo chambers in fashion; see also, Natali Helberger, 'Diversity by Design' [2011] 1 *Journal of Information Policy* 441, 448; Chifumi Nishioka, Hauke Jorn and Ansgar Scherp, 'Influence of tweets and diversification on serendipitous research paper recommender systems' [2020] 6 *Peer J Computer Science* 1, 2; Urbano Reviglio, 'Serendipity as an emerging design principle in the Infosphere: challenges and opportunities' (2019) 21 (2) *Ethics and Information Technology* 151, 156; Helberger, 'Merely Facilitating or Actively Stimulating Diverse Media Choices? Public Service Media at the Crossroads' (n 472) 1325.

⁴⁸⁸ For example, Alexis Anzieu understands serendipity as an 'accidental discovery', such as 'at home when looking for a specific item only to come face to face with a previously lost object instead. Or in the evening when we look for a friend, but end up finding another one with whom the discussion turns out to be boring.' In both examples, serendipity is to create novelty based on my own outlook of the world. However, algorithms create this 'novelty' based on the reading of my own perception, thus only strengthening an individual's autonomy in an artificial sense. Alexis Anzieu, 'Introducing Serendipity into Recommendation Algorithms' (*Medium*, 6 June 2019) < <https://medium.com/ssense-tech/introducing-serendipity-into-recommendation-algorithms-fb92af88ee0b>> accessed 2 November 2020.

2. The impact of filtering algorithms on individual autonomy and identity

Predictive and social media analytics, acting on shared narratives on appearance and style in the fashion domain, negotiate the communicative function of fashion as a means of appearance management and perception. Digital platforms, allowing for the expression of individual preferences and perceptions, go beyond the personal sphere within inter-subjective relationships, shaping an individual's self-presentation as a form of fashion consumption.⁴⁸⁹

Take the example of an individual who posts curated pictures and videos of themselves on social media, receiving a considerable number of followers and 'likes.' The individual receives many endorsements such as 'followers' based on his or her personality, the 'aesthetics' in the visual content, or fashion style. Suppose now that the same individual is an influencer who wears clothing, make-up, and accessories from a luxury fashion brand targeted at young professionals. Social media analytics and consumer profiling will take advantage of this echo chamber to investigate individual perceptions including meanings attached to a young professional fashion consumer – i.e., what is the general sentiment about that luxury fashion brand? What is the personality of its ideal consumer and what kind of "aesthetics" and "style" represent them?⁴⁹⁰ Filter bubbles and algorithms solidifying echo chambers in online space undermine the individual's autonomy to shape and control the negotiation between the management of appearance (self-presentation on social media) and perception (the use of feedback on someone's self-presentation) within the algorithmic filtering process.

In addition to the impact of algorithmic personalisation and behavioural advertising in fashion on the contours of perception, we need to elaborate on the impact of social media analytics and consumer profiling on the conditions for the individual's exercise of reflective choice. Christopher Wylie, who investigated the extent to which Cambridge Analytica used fashion as a tool to shape individual opinions, reveals that 'fans of American denim brands such as Wrangler, Hollister and Lee Jeans were found to be more likely to engage with pro-Trump messaging, whereas fashion labels such as Kenzo or Alexander McQueen were more likely to attract Democratic voters'.⁴⁹¹ He suggests that Cambridge

⁴⁸⁹ A good example is the increasing awareness regarding the issues of sustainability with the fashion consumer, Laura Bovone, 'The issue of identity: From urban tribes to political consumerism to sharing fashion' (2016) 3 (2) *International Journal of Fashion Studies* 267, 273-274.

⁴⁹⁰ For instance, it is argued that the collaboration between the commercial retailer 'H&M' and the designer 'Alexander Wang' for the fall collection back in 2014 was so successful due to their utilisation of social media analytics to address overall brand sentiment, which did lead to a 66% of an overall positive sentiment of consumers about the collaboration that dominated 60% of H&M social media conversation before the premiere of the collaboration. Similarly, H&M's and Balmain's collaboration in 2015 including their marketing campaign received more than 93,000 Twitter mentions using the #HMBalmation hashtag; taken from Hilary Milnes, 'H&M-Balmain collaboration is heating up on social' (*Digiday*, 20 October 2020) <<https://digiday.com/marketing/hm-balmains-upcoming-collaboration-heating-social/>> accessed 10 October 2020; see also, Marcus Beard, 'Paris Fashion Week: Chanel, Luxury Fashion, and a Social Tour de Force' (*Brandwatch*, 13 October 2015) <<https://www.brandwatch.com/blog/paris-fashion-week-chanel-luxury-fashion-and-a-social-tour-de-force/>> accessed 10 October 2020.

⁴⁹¹ Harper (n 443).

Analytica used user preferences concerning fashion brands for the analysis of algorithms, which targeted individuals with pro-Trump news during the 2016 US presidential election.⁴⁹² This is a form of political micro-targeting to influence voter opinions based on the ‘direct transmission of a specific stimuli’.⁴⁹³

Whilst an extensive debate on micro-targeting is beyond the scope of the present discussion,⁴⁹⁴ the importance of fashion as a predictor of individual characteristics, attitudes and personality traits can be seen, both at the level of political micro-targeting as well as for filter bubbles more generally. Algorithmic filtering, mediating exposure to content, the individual’s process to reflect upon and filter between own beliefs and the social media comparator, such as an influencer and/or a new trend. A fashion brand engaged in behavioural advertising and targeting bases this on the individual’s affinity with a brand or product before that individual can make a validated choice regarding their preferences. This pre-emptive nature of algorithms concerning virtually every aspect of an individual’s daily life and decisions – occupation, style, current mood – does not simply suggest that one cannot ‘muddle the waters’ within diverse or novel content,⁴⁹⁵ but that our characteristics and their correlations between profiles are the defining feature of (artificial) choice, rather than our ability to reiterate and re-define the contours of appearance and perception. Therefore, we can argue that the impact of social media analytics and consumer profiling on reflective choice defines the individual’s ability to establish self-relationality regarding the expression of their own assumptions on fashion and identity.

The discussion on echo chambers and filter bubbles in the fashion domain is indeed fundamental for understanding that an individual’s expression of fashion identity is a mere reflection of pre-existing configurations relating to fashion. We need to examine the impact of echo chambers and filter bubbles on an individual’s autonomy including the user’s identification and de-identification with fashion in the algorithmic landscape. The right to privacy is central to solving the tension between the performative and reflective function of fashion identity in filter bubbles and echo chambers.

⁴⁹² Vikram Alexei Kansara, ‘Cambridge Analytica Weaponised Fashion Brands to Elect Trump, Says Christopher Wylie’, (*Business of Fashion*, 29 November 2018) <ps://www.businessoffashion.com/articles/video/cambridge-analytica-weaponised-fashion-brands-to-elect-trump-says-christopher-wylie> accessed 8 October 2020.

⁴⁹³ Orestis Papkyriakopoulos, Simon Heglich, Morteza Shahrezayee and Juan Carlos Medina Serrano, ‘Social media and microtargeting: Political data processing and the consequences for Germany’ (2018) 5 (2) *Big Data & Society* 1, 2.

⁴⁹⁴ *ibid*, see also, Frederick J Zuiderveen Borgesius, Judith Möller, Sanne Kruikemeier, Ronan O Fathaigh, Kristina Irion, Tom Dobber, Balazs Bodo, Claes de Vreese, ‘Online Political Microtargeting: Promises and Threat for Democracy’ (2018) 14 (1) *Utrecht Law Review* 82.

⁴⁹⁵ Sylvie Delacroix, ‘From Agency-Enhancement Intentions to Profile-Based Optimisation Tools: What is Lost in Translation’ in Emre Bayamilioglu, Irina Baraliuc, Lisa Janssens and Mireille Hildebrandt (eds), *Cogitas Ergo Sum: 10 Years of Profiling the European Citizen* (American University Press 2018) 17.

III. Article 8 and 10 (1) ECHR: Filter bubbles and echo chambers in fashion

This Section places in a legal landscape the discourse regarding the influence of filtering algorithms in fashion on individual autonomy. The nuances of privacy in the big-data context can envisage ‘the control of information about oneself’⁴⁹⁶ which can include an interest ‘in controlling access to, and sharing, information about ourselves’.⁴⁹⁷ However, algorithmic filtering undermines the individual’s participation to shape self-representation with regard to the invisible classification of filtering algorithms. That said, individuals have a collective interest in the right to privacy based on the algorithms’ ‘creation of information about a group’.⁴⁹⁸

The intention here is to identify whether the right to privacy as interpreted under Article 8 of the ECHR gives protection against the harm caused by filtering algorithms in the fashion domain. I intend to investigate as to what an individual’s autonomy signifies as an embodied entity within a filter bubble and echo chamber? I intend to highlight that the ECtHR’s account of privacy is one-dimensional, requiring a normative account of the role of performativity in fashion regarding algorithmic filtering.

Furthermore, I intend to investigate whether Article 10 (1) of the ECHR can give an added protection to an individual’s autonomy focusing on changing communication structures regarding filter bubbles in fashion, whereby we need to note that the right to receive information is not directly connected to an individual’s personal self-development. Therefore, we focus on the type of information that can affect communication structures in a filter bubble and echo chamber, rather the risks of the information structure undermining user perception of privacy.

1. Overarching challenges of algorithmic filtering for privacy

Echo chambers illustrate the objective constraint on an individual’s privacy in terms of fashion identity, based on the collection and processing of preferences and enacted by fashion narratives that define the user’s exposure to content. Take the example of an algorithmic personalisation system, whereby the consumer has provided ‘consent’ concerning the processing of cookies.⁴⁹⁹ Informational privacy serves

⁴⁹⁶ See Daniel J Solove who argues that ‘privacy is a sweeping concept, encompassing (among other things) freedom of thought, control over one’s body, solitude in one’s home, control over information about oneself.’ Taken from Solove, ‘Conceptualizing Privacy’ (n 147) 1088.

⁴⁹⁷ Brownsword, *Law, Technology and Society: Reimagining the Regulatory Environment* (n 280) 304; see also, Stephen B Zhao, ‘Exposure and concealment in digitalized public spaces’ in Tjerk Timan, Bryce C Newell, and Bert-Jaap Koops (eds), *Privacy in Public Space: Conceptual and Regulatory Challenges* (Edward Elgar Publishing Limited 2017) 155; see also my analysis in **Chapter 2**.

⁴⁹⁸ Mittelstadt ‘From Individual to Group Privacy in Big Data Analytics’ (n 421) 475.

⁴⁹⁹ See also, Eleni Kosta, ‘Peeking into the cookie jar: The European approach towards the regulation of cookies’ (2013) 21 (4) *IJLIT* 380, 381.

to protect acts of self-representation, which includes the control of personal data.⁵⁰⁰ Informational privacy sets the boundaries of communication structures, such as the extent of cookie tracking in the fashion domain, by requiring the user's informed choice regarding data processing activity. However, sometimes the objective boundaries of the control of personal information can be detached from the experience of fashion identity within the filter bubble and echo chamber. For example, consider the algorithmic personalisation system in fashion that requires user consent for the collection of personal data to detect clothing style. Here, an algorithm describes the individual's clothing style as a practical entity summarised in terms of individual preferences, such as a 'style' based on the inferences of the user's browsing and/or click behaviour.

This highlights that informational privacy as a tool to control the data points of self-representation (i.e. personal data) does not offer an effective means to secure the individual's effective participation in communication structures, including controlling the parameters of the echo chamber.⁵⁰¹ Whilst the collection of personal data can illustrate an objective constraint on an individual's privacy in terms of fashion identity, we need to go further to secure the individual's control of the abstract entities, such as aspects of the self to infer clothing style. Control in the form of consenting to data processing does not equal control over one's fashion identity. I will elaborate on the notion of consent in Section V of Chapter 4.

In other words, an account of the constructed relationships within the algorithmic landscape is not based on a traceable structure and, indeed, the user is intertwined with the algorithmic reflection of the self.⁵⁰² Algorithmic filtering shape both my own ability to re-evaluate my own account of identity, as well as the affordances through which we encounter reproductions of the social aspect of fashion identity in the Infosphere.⁵⁰³ Privacy and autonomy require protection 'beyond the persona of self-representation' and include the construct formalising my interactions in the online sphere.⁵⁰⁴

⁵⁰⁰ For a recent description on the meaning of informational privacy as control of personal information about oneself see, Jens-Erik Mai, 'Three Models of Privacy: New Perspectives on Informational Privacy' (2020) 37 (1) *Nordicom Review* 171, 171-172.

⁵⁰¹ Of course, there are various issues with the enforcement of a notice consent model in a big data context. For an extensive and general discussion on this subject see, Fred H Cate and Viktor Mayer-Schönberger, 'Notice and consent in a world of Big Data' (2013) 3 (2) *IDPL* 67, 68-69; Bart W Schermer, Bart Custers and Simone van der Hof, 'The crisis of consent: how stronger legal protection may lead to weaker consent in data protection' (2014) 16 (2) *Ethics and Information Technology* 171; see also, Frederik J Zuiderveen Borgesius, Sanne Kruikemeier, Sophie C Boerman and Natali Helberger, 'Tracking Walls, Take-It-Or-Leave-It Choices, the GDPR, and the ePrivacy Regulation' (2017) 3 (3) *EDPL* 353, 374.

⁵⁰² Brincker (n 249) 72, 79; Nora A Draper and Joseph Turow, 'Audience Constructions, Reputations, and Emerging Media Technologies: New Issues of Legal and Social Policy' in Roger Brownsword, Eloise Scotford, and Karen Yeung (eds), *The Oxford Handbook of Law, Regulation and Technology* (OUP 2017) 1153.

⁵⁰³ The Infosphere can be defined as the relation of the individual and identity to the networked environment; see Luciano Floridi, 'Information ethics: a reappraisal' (2008) 10 (2-3) *Ethics and information technology* 189, 190; Indeed, it is difficult to speak about one Infosphere and that there are a series of Information structures constantly adapting to user interactions, see Hildebrandt, 'Who Needs Stories if You Can Get the Data? ISPs in the Era of Big Number Crunching' (n 328) 374; Luciano Floridi, 'The Philosophy of Information as a Conceptual Framework' (2010) 2-3 *Knowledge, Technology & Policy* 253, 279.

⁵⁰⁴ Here I am referring again to Erving Goffman's theory which I examined in **Chapter 2**; Goffman (n 195) 166, 203; see also, Floridi, 'the Ontological Interpretation of Information Privacy' (n 216) 187.

Therefore, the parameters of the right to privacy need to address the aspects of personality within fashion identity, rather than the notion of identifiable information. Recognising that predictive analytics including the formation of echo chambers entail the plurality of attributes and grouping of preferences, we need to move away from a concept of privacy as an individual interest.⁵⁰⁵ Luciano Floridi is arguably one of the first to discuss collective interests in relation to the right to privacy and consumer profiling.⁵⁰⁶ He envisages that privacy needs to assume the level of harm deriving from algorithmic practices, which seek to resemble common representations of the self.⁵⁰⁷ The degree through which I can assess the contours of my self-representation is embodied in the social patterns shaping my reference to the self.⁵⁰⁸ Accordingly, our focus is not the individual's expressive notion of identity (such as the communication of preferences) but the informational structure shaping the performative function of fashion identity.

Privacy is thus a collective interest in preserving the contingency of fashion as recorded by algorithms. This account of privacy allows us to elaborate on the issues of echo chambers and filter bubbles focusing on the enablers of autonomy for an individual's privacy.⁵⁰⁹ One, privacy can entail the individual control of communication structures that include a contextual account to one's 'profiled identity' in the online sphere.⁵¹⁰ Second we may consider the role of privacy entailing the individual's capacity to manage one's self-representation in the algorithmic landscape.⁵¹¹ In this respect, privacy sets a notion of coherence (i.e. how does the algorithmic construct of my preferences define the filtered content) and consistency (i.e. how does algorithmic filtering create and reproduce behavioural patterns relating to my fashion identity) to protect an individual's autonomy within filter bubbles and echo chambers.

Moreover, echo chambers and filter bubbles affect not only the contexts through which I derive my own choices, as well as those relations that are irreducible to social interactions. Whilst predictive and social media analytics in the fashion domain characterise online interactions in the echo chamber, it is the individual who fulfils the role of managing self-representation within the communication structure.

⁵⁰⁵ Michele Loi and Markus Christen, 'Two Concepts of Group Privacy' (2020) 33 (2) *Philosophy & Technology* 207, 220-221.

⁵⁰⁶ *ibid* 208; see also, Luciano Floridi, 'Open Data, Data Protection, and Group Privacy' [2014] 27 *Philosophy & Technology* 1.

⁵⁰⁷ Luciano Floridi, 'Group Privacy: a defence and an interpretation' in Linnet Taylor, Luciano Floridi and Bart van der Sloot (eds), *Group Privacy: New Challenges of Data Technologies* (Springer 2017) 87, 93-94; see also Luciano Floridi who argues that 'our current ethical approach is too anthropocentric (only natural persons count) and atomistic (only the single individual count). We need to be more inclusive because we are underestimating the risks involved in opening anonymised personal data to public use, in cases in which groups of people may still be easily identified and targeted.' Taken from Floridi, 'Open Data, Data Protection, and Group Privacy' (n 506) 2; see also, Urbano Reviglio and Rogers Alunge, "'I Am Datafied Because We Are Datafied": an Ubuntu Perspective on (Relational) Privacy' [2020] 33 *Philosophy & Technology* 595, 600.

⁵⁰⁸ Koops, 'Privacy Spaces' (n 245) 611.

⁵⁰⁹ See also, Paul Helm and Sandra Seubert, 'Normative Paradoxes of Privacy: Literacy and Choice in Platform Societies' (2020) 18 (2) *Surveillance & Society* 185, 193.

⁵¹⁰ Mittelstadt 'From Individual to Group Privacy in Big Data Analytics' (n 421) 475, 478; see also, Peter H Klopfer and Daniel I Rubenstein, 'The Concept of Privacy and its Biological Basis' (1977) 33 (3) *Journal of Social Issues* 52.

⁵¹¹ Koops, 'Privacy Spaces' (n 245) 659-660; see also, Roger Brownsword, 'Friends, Romans, Countrymen: Is there a Universal Right to Identity?' (n 358) 224.

Just take the example of an individual's perception of body image in fashion, whereby they construct the variables of "style" and "figure" including fashion narratives on body shape based on the associations with their personal look and celebrities or influencers.⁵¹² With their need to establish a balance between conformity and differentiation, individuals express dialectic tendencies with reference to the self, such as choosing a dress that flatters the figure or hiding uncomfortable parts of the body. The abstract entities of style and body with reference to the self retain their independence within the constraints of the echo chamber. Therefore, it is the way the independence of abstract entities affects the plurality of one's own needs, desires, and beliefs, and how the fractions of individual data points relate to an individual's autonomy that are important here.⁵¹³ After all, the influence of echo chambers on communication structures in the fashion domain is a question of plurality among the social aspects of fashion as well as within the personal aspects of fashion identity. How do social patterns including my digital presence in the Infosphere affect the inter-relationship of my own perception of fashion is an important question positioning privacy discourse.

Recognising that privacy can pertain to the dialectic tendencies of fashion identity is an important contribution in how informational structures can inform the behavioural patterns of collective thought and consist of both of an individual's contextual and causal relationality.⁵¹⁴ This understanding goes further than mainly asserting that algorithms impact an individual's manifestation of my own judgements of identity within an informational structure, and signifies the process of introspection establishing the meaning attached to the social aspects of fashion. How do my self-relationality and inference of self develop within my unique world of filtered content? Once our own patterns of thought – the associations with fashion identity in the filter bubbles – are constantly assessed by algorithms, the gaze through which we can identify with aspects of fashion identity become limited: 'We become, neurologically, what we think.'⁵¹⁵

To summarise, privacy pertains to the undeveloped thoughts necessary to form one's individual perception and self-relationality. It is an affordance that is relational to an individual's autonomy and contextually situated in the Infosphere.⁵¹⁶ In addition, privacy is not only about controlling aspects of

⁵¹² Jasmine Fardouly, Brydie K Willburger and Lenny R Vartanian who wrote on the formation of women's perception of 'body image' using the social media platform 'Instagram' noted that 'greater overall Instagram use was associated with greater self-objectification, and that relationship was mediated both by internalization and by appearance comparisons to celebrities.' Taken from Jasmine Fardouly, Brydie K Willburger and Lenny R Vartanian 'Instagram use and young women's body image concerns and self-objectification: Testing mediational pathways' (2018) 20 (4) *New Media & Society* 1380; see also, Andra Sibak, 'Constructing masculinity on a social networking site The case-study of visual self-presentations of young men on the profile images of SNS Rate' (2010) 18 (4) *Nordic Journal of Youth Research* 403.

⁵¹³ Luciano Floridi, in contrast, suggests that the self is constituted by the information, whereby the Infosphere creates a 'new' conception of self, see cf Floridi, 'The Informational nature of personal identity' (n 378) 556; see also, Matteo Turlilli and Luciano Floridi, 'The ethics of information transparency' (2009) 11 (2) *Ethics and Information Technology* 105, 108.

⁵¹⁴ See also, Brownsword, *Law, Technology and Society: Reimagining the Regulatory Environment* (n 280) 306-307.

⁵¹⁵ This quote is taken from Nicholas Carr, *The Shallows: How the Internet is Changing the Way We Think, Read and Remember* (London: Atlantic Books 2010) 46.

⁵¹⁶ Mireille Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 80- 81; Jonathon W Penney, 'Privacy and the New Virtualism' [2008] 10 *Yale Journal of Law and Technology* 194, 216; Hildebrandt and Koops (n 304) 435.

the self, but also illustrates the circularity of one's identity shaping the content that dynamically adapts to changes in user preferences.⁵¹⁷ That being said, we are not only concerned with the reproduction of knowledge in an echo chamber and filter bubble, but how the informational structure shapes my own choices on how my preferences are shaped. Further, an individual is pre-determined by the echo chamber and filter bubble he or she is engaging with, which shapes the contours of the process of their self-identification.

The following Section will apply these contextual findings to a legal framework, focusing on the ECtHR's interpretation of the right to respect of an individual's private and family life in Article 8 ECHR.⁵¹⁸ Article 8, whilst not directly regulating the acts of private entities, does have an indirect horizontal effect.⁵¹⁹ The legal analysis highlights the limitations of the ECtHR's interpretation of Article 8 in order to incorporate individual perception and self-relationality within the notions of personal development and autonomy.

2. Article 8 ECHR: privacy and communication structures

There are developments in ECtHR case law which increasingly concern a violation of the right to privacy based on the substantiation of objective constraints on an individual's personal development. In this respect, the court considers the collective character of individual rights. The *Chapman v the United Kingdom* decision highlights the right to personal development based on cultural identity, including autonomy to freely choose one's cultural life regarding Roma Travellers.⁵²⁰ The court stated that the caravans of the Roma community illustrate 'an integral part of [the applicant's] ethnic identity as a Gypsy, reflecting the long tradition of that minority of following a travelling lifestyle'.⁵²¹ Therefore, measures that impact the use of a caravan, whilst directly correlating with the applicant's right to a home, affect her 'ability to maintain her identity as a Gypsy and to lead her private and family life in accordance with that tradition'.⁵²² This reasoning is significant, highlighting that a state's obligation under Article 8 ECHR is to protect an individual's cultural identity and lifestyle, as well as maintaining 'cultural diversity of value to the whole community'.⁵²³

The collective dimension of (cultural) identity is an important factor in maintaining the individual's reference to self in fashion identity. The ECtHR's decision in *Chapman v the United Kingdom*, whilst specifically relating to the lifestyle of Roma Travellers, highlights the continuity of identity-formation

⁵¹⁷ Matzner and Ochs (n 279) 7.

⁵¹⁸ European Convention on Human Rights, art 8.

⁵¹⁹ Clare Ovey and Robin CA White, *The European Convention on Human Rights* (4th edn, OUP 2006) 49-50

⁵²⁰ *Chapman v the United Kingdom* (2001) 33 E.H.R.R. 18, paras 68-70.

⁵²¹ *ibid* para 73; see also, *Winterstein and Others v France* App no 27013/07 (ECHR, 28 July 2016), para 146.

⁵²² *Chapman v the United Kingdom* (n 519) para 73.

⁵²³ *ibid*, para 93.

as a right to express identity in a collective environment and maintain identity in relation to a social context. Based on these considerations, the right to privacy intends to secure the individual's communication of fashion to maintain the collective identity and the individual's effort to use fashion for self-identification including personal development. The applicability of Article 8 ECHR to echo chambers' communicative structures thus secures the individual's 'right to self-identification' free from unwarranted scrutiny including stereotyping.⁵²⁴

We can measure the applicability of Article 8 of the ECHR including the right to privacy with regard to the relationship between the individual's communication of information and the algorithms' filtering of the social aspect of fashion identity within filter bubbles and echo chambers. To do this, we need a comparator that measures the algorithms' disruption or forging of an individual's fashion identity within Article 8 guarantees.⁵²⁵ ECtHR case law suggests that shared values that illustrate the aspects of identity relating to one's culture are an integral part of an individual's personal development.⁵²⁶ Accordingly, the echo chamber's shaping of communication structures could be evidenced based on a change of collective belief, such as the information on individual attributes and clothing style, and the lack of pluralism or cultural diversity in appearance management (such as advertising specific clothing trends pertaining to a specific region or cultural environment).

Nevertheless, these shared values require objective identification through a shared comparator, such as ethnicity and culture.⁵²⁷ In other words, the individual needs to establish an objectively verifiable link between aspects of the self and the social aspect of fashion identity that is integral to self-development within the meaning of Article 8.⁵²⁸ The ECtHR provides for a structural account of group identity based on shared characteristics in cultural and ethnic identity, but leaves out other aspects of social identity that fall within the development of aspects of the self, such as the inference of knowledge of self for appearance management.⁵²⁹

Therefore, a specific limitation regarding the applicability of Article 8 guarantees to communicative structures based on echo chambers in the fashion domain is the court's rigorous reliance on the

⁵²⁴ *Tasev v North Macedonia* (n 341) para 33; see also, *Aksu v Turkey* (n 342) para 58; In *Lewit v Austria* the court held that concerning negative stereotyping 'similar considerations apply with regard to heterogeneous social groups.' *Lewit v Austria* (2020) 71 E.H.R.R. 5, para 46

⁵²⁵ This would not apply to data protection cases, whereby the mere storing of personal information by a public authority interferes with article 8 of the ECHR Convention, see *Amann v Switzerland* (n 345) para 70.

⁵²⁶ *Munoz Diaz v Spain* (2010) 50 E.H.R.R. 49, paras 57- 59; *Winterstein and Others v France* (n 521) para 142.

⁵²⁷ *Ciubotaru v Moldova* (n 341) paras 57; *Tasev v North Macedonia* (n 341) paras 37-41.

⁵²⁸ For example, in *Sejdić and Finci v Bosnia and Herzegovina* the court described that 'ethnicity has its origin in the idea of societal groups marked in particular by common nationality, religious faith, shared language, or cultural and traditional origins and backgrounds.' Taken from, *Sejdić and Finci v Bosnia and Herzegovina* App nos 27996/06 and 34836/06 (ECHR, 22 December 2009), para 43.

⁵²⁹ There needs to be a tangible impact on an individual's exercise of self-representation as evidenced in the exercise of collective identities. Again, see the reasoning in *Ciubotaru* which stipulates that 'Mr Ciubotaru's claim is based on more than his subjective perception of his own ethnicity. It is clear that he is able to provide objectively verifiable links with the Romanian ethnic group such as language, name, empathy and others. However, no such objective evidence can be relied on under the Moldovan law in force,' *Ciubotaru v Moldova* (n 341) para 58.

identification of shared characteristics for the communication of collective interests.⁵³⁰ In *Ciubotaru v Moldova* the ECtHR had to examine the Moldavian authority's refusal to allow the applicant to register their ethnic identity as 'Romanian'.⁵³¹ The court did 'not dispute the right of a Government to require the existence of objective evidence of claimed ethnicity'.⁵³² Its reasoning leads to a normative claim that the individual's subjective choice is in fact the individual's identification with shared values including the *comparators* establishing the reference to the self (i.e. a shared culture and tradition within a group). Requiring an objectively verifiable connection is, however, problematic in the context of algorithmic filtering in fashion, whereby the plurality of needs, desires, and beliefs are summarised in individual data points without reference to an individual's perception of identity. The individual needs to establish a reference to how shared narratives of fashion in the algorithmic filtering process are forging their individual self-representation. However, they are not able to recognise those shared and formal differences in an echo chamber.

A dialectic tendency of fashion identity is not an attribute resembling a social pattern but a condition to make verifiable choices. Filter bubbles and echo chambers create conditions 'reaffirming and narrowing individuals' worldviews' regardless⁵³³ of whether the individual's subjective choice is in fact the individual's identification with shared values including the comparators establishing the reference to the self (i.e. a shared culture and tradition within a group). My concern is that the way algorithms optimise my choices to re-establish my shared values is not considered by Article 8 guarantees. We need to move away from a notion of collective identity that is manifested in the context (such as, an individual's expression of desires and goals) to a notion of privacy that protects collective action as an assemblage of different units on the personal and social aspects of fashion. In other words, the ECtHR's reasoning establishes a notion of collective identity incompatible with the nature of algorithmic filtering, which undermines the autonomous expression of collective identities.

Therefore, I suggest that perception needs to play a more important role in defining notions regarding personal development, such as cultural identity. The individual will not be able to show a verifiable objective interest regarding a collective interest under Article 8 of the ECHR based on the impact of algorithmic filtering on the process of inference of knowledge of self. A state's positive obligation would be limited to those instances where the harm constitutes a tangible impact on an individual's exercise of self-representation as evidenced in the exercise of collective identities.⁵³⁴ Filter

⁵³⁰ See also, *Ciubotaru v Moldova* [2010] 4 WLJK 411, Concurring Opinion Judge Mijovic; 'while the majority concentrated on the requirements of Moldovan law that made it impossible for the applicant to adduce any evidence in support of his claim, in my personal opinion a violation should have been based on the authorities' refusal to uphold the applicant's request to change the records in such a way as to reflect his own perception of his ethnic identity.'

⁵³¹ *Ciubotaru v Moldova* (n 341) paras 5-13.

⁵³² *ibid*, para 57.

⁵³³ Cynthia Dwork and Deirdre K Mulligan, 'It's Not Privacy, and It's Not Fair' [2013] 66 *Stan.L.Rev.* 25, 37.

⁵³⁴ Again, see the reasoning in *Ciubotaru v Moldova* which stipulates that 'Mr Ciubotaru's claim is based on more than his subjective perception of his own ethnicity. It is clear that he is able to provide objectively verifiable links with the Romanian

bubbles and echo chambers in the fashion domain, in contrast, require the consideration to balance the dialectic tendencies between appearance management and perception, including the exercise of identity within the inherent social constraints in the algorithmic filtering process. The court should shift to a risk-based approach, assessing the impact of algorithmic filtering on identity, enabling the individual to raise discrepancies between the algorithm's identification of shared narratives and the filtered content, which includes the 'feedback loop' illustrating the untransparent intervention in personal development.⁵³⁵

3. Article 8 ECHR: privacy and self-identification

Relational identity illustrates the dynamic interplay between the negative and positive dimensions of the right to privacy.⁵³⁶ The right to privacy constitutes a space of solitude, intimacy, and anonymity as well as the dynamic process of inter-personal boundary control including the relationship between the self and the environment.⁵³⁷ This understanding of privacy as a means to ward off unreasonable constraints and an enabler of social interaction, whilst not reflected explicitly in Article 8 of the ECHR, has developed progressively in the case law.⁵³⁸ For instance, the ECtHR held that privacy cannot be viewed in isolation or restricted to an 'inner circle', but extends to the right to enter relationships with others.⁵³⁹ This form of privacy extending to notions of personal identity is relational as it encompasses 'how people perceive themselves, and how they think others perceive them'.⁵⁴⁰

A relational understanding of identity is helpful for capturing a contextualised outlook on the notion of personal autonomy and privacy. In this respect, the court held that, among others, Article 8 protects the applicant's right to access their name and origins, as well as establish their gender identity and sexual orientation.⁵⁴¹ In *Mikulic v Croatia* the ECtHR held that the applicant's right to identify her natural father illustrates a matter of personal identity including the promotion personal development.⁵⁴² Accordingly, the right to privacy requires, as a general principle, the space to express and form aspects

ethnic group such as language, name, empathy and others. However, no such objective evidence can be relied on under the Moldovan law in force,' *Ciubotaru v Moldova* (n 341) para 58.

⁵³⁵ Some developments in this direction are the admissibility of *in abstracto* claims in mass surveillance cases, which allow the applicant's demonstration of interest based on a law or policy; *Roman Zakharov v Russia* App no 47143/06 (ECHR, 4 December 2015), paras 163, 171; *Szabó and Vissy v Hungary* (2016) 63 E.H.R.R. 3, para 33. My focus is how an individual could raise a claim based on the algorithms' terms to filter content undermining individual perception of fashion identity.

⁵³⁶ Agre (n 151) 7; see also, Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 82.

⁵³⁷ Steeves, 'Reclaiming the Social Value of Privacy' (n 213) 191; Altman (n 219) 18, Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 82; cf Warren and Brandeis (n 44).

⁵³⁸ Jill Marshall, *Personal Freedom through Human Rights Law? Autonomy, Identity and Integrity under the European Convention on Human Rights* (Martinus Nijhoff Publishers 2000) 70.

⁵³⁹ *Niemietz v Germany* (n 332) para 29; see also, Rouvroy (n 151) 25.

⁵⁴⁰ Bert-Jaap Koops, Bryce Clayton Newell, Tjerk Timan, Ivan Skorvanek, Tomislav Chokrevski and Masa Galic, 'A Typology of Privacy' (2017) 38 (2) *University of Pennsylvania Journal of International Law* 483, 535.

⁵⁴¹ NA Moreham, 'The right to respect for private life in the European Convention on Human Rights: a re-examination' [2008] 1 *European Human Rights* 44, 68.

⁵⁴² *Mikulic v Croatia* (n 334) paras 54, 64.

of personality according to the contours of self-representation I have established with reference to the self.⁵⁴³

A relational understanding of personal autonomy regarding the right to privacy indeed provides the means to test the relationship between the subjective sense of self and filter bubbles in fashion. Article 8 establishes both an expressive and performative notion of individual autonomy pertaining to choice about one's own personal development, such as physical and mental integrity.⁵⁴⁴ Accordingly, an individual would need an account of the significance of filter bubbles and echo chambers to shape the informational structure.⁵⁴⁵ In this respect, privacy intends to provide the space for deliberation, which can illustrate a cocoon free from tangible friction. These tangible frictions can illustrate the way information is shared (or not distributed) and how the information structure relates to my sense-making within a filter bubble and echo chamber.⁵⁴⁶

Nevertheless, a relational understanding of identity regarding the right to privacy would require us to move from an individualistic notion of personal autonomy to a framework that encompasses the plurality of selves in the filter bubble. Article 8 of the ECHR primarily concerns the protection of individual interests.⁵⁴⁷ Its guarantees are restricted to the harm of the applicant's private life, family life, correspondence, and home.⁵⁴⁸ For example, the applicant in *Pretty v United Kingdom* suffered from 'psychological distress' due to the final stages of her disease and lack of control in being 'spared from further suffering'.⁵⁴⁹ Hence, it seems that notion of personal autonomy acts as a norm of inherent restraint on the exercise of identity, rather than a progressive constraint that could be evidenced in the impact of filter bubbles and echo chambers on the process of self-identification. A progressive restraint on an individual's autonomy would include the means of inner deliberation, such as the emergence of a cocoon in a different form of appearance. Article 8 does not cover this form of transcendence, concerning the informational structures overtaking our own reflective thought and guiding into a different form of performativity. It is important to note these intangible frictions of data traces on my inference of knowledge to the self.

⁵⁴³ This point is made clear with regard to the desired appearance cases; see *Aurel Popa v Romania* (n 340) paras 30-32; *SAS v France* (n 260) paras 103-107.

⁵⁴⁴ *Denisov v Ukraine* (n 157) paras 95-96; see also, Koops, Clayton Newell, Timan, Skorvanek, Chokrevski and Galic (n 540) 532-533.

⁵⁴⁵ Brownsword, *Law, Technology and Society: Reimagining the Regulatory Environment* (n 280) 317.

⁵⁴⁶ See also Brincker (n 249) 70.

⁵⁴⁷ As argued by Bart van der Sloot 'First, the current privacy paradigm is focused on individual rights. Second, it is focused on individual interests', taken from, Van der Sloot, 'Privacy as human flourishing: Could a shift towards virtue ethics strengthen privacy protection in the age of Big Data?' (n 308) 240; see also, Van der Sloot, 'Privacy as Personality Right: Why the ECtHR's Focus on Ulterior Interests Might Prove Indispensable in the Age of "Big Data"' (n 333) 46.

⁵⁴⁸ For example, the ECtHR highlighted that aspects of an individual's sexual orientation and/or life and gender identification fall within article 8 of the ECHR, see *Beizaras v Lithuania* (n 335) para 109; *P.G and J.H v The United Kingdom* (n 155) para 56; *Dudgeon v the United Kingdom* (1981) 3 E.H.R.R. 40, paras 40-41; cf *Laskey and Others v the United Kingdom* App nos 21627/93; 21628/93; 21974/93 (ECHR, 19 February 1997), para 36.

⁵⁴⁹ *Pretty v the United Kingdom* (n 332) para 8.

We therefore need to configure the right to privacy to not only include the social constraints on the exercise of identity but to recognise the manifestation of constraints for an individual's identity-building. The ECtHR's conception of the right to privacy and personal development seems to be stuck in a rhetoric of self-fulfilment. Filter bubbles in the fashion domain signify that individuals become more self-centred in an information structure wherein personal attributes form a sense of fashion through the filtering algorithms' decision-making process. It is not only a question of deciding the contours of self-representation, but rather, algorithmic filtering in fashion necessitates the viewing of self-relationality within the social constraints that define fashion identity.

Let me elaborate on this argument using an example. This morning I opened my social media and I received an ad about a fashion brand and style I am interested in. I might ask myself how the algorithm got my preferences right, what was instrumental in filtering out content. First, I need to understand what defines me in order to explore what aspect of fashion identity is relevant in my own filter bubble. In this regard, *I v United Kingdom* vividly outlines the perspective of personal autonomy to establish my claim of identity, which is 'the personal sphere of each individual, including their right to establish details of their identity as individual human beings'.⁵⁵⁰

However, my engagement with fashion in the filter bubble will induce me to think about claims beyond self-knowledge to establish my identity (i.e. I know that the ad suits my personal preferences), and arbitrate the differences within the filter bubble. For instance, how does the ad's choice of style entailing bright colours and a feminine shape define *my* properties correlating with style, such as my personal aspects of fashion and association with my body shape? Therefore, the second consideration is that I am involved in the inter-relationship of fashion narratives with reference to my own identity. This kind of self-relationality, as a form of introspection rather than self-fulfilment, is not found in ECtHR case law, which deals with the expression of personal autonomy rather than the foundation of beliefs and attitudes.⁵⁵¹ Take the cases that deal with the individual's freedom to access information on their origin, where the individual requesting details about their personal identity is part of 'the right to personal development and to self-fulfilment'.⁵⁵² The case law focuses on elements that facilitate personal development, expressing aspects of the self that are already known to us, such as the conscious associations we need to establish links to our origin. Nevertheless, we need a higher level of understanding of the values securing personal development to enable genuine self-knowledge within the algorithmic landscape. I argue that the state's positive obligation needs to focus on the individual's *capacity* for self-development. That is, we need to identify the aspects enabling the individual to retain

⁵⁵⁰ *I v United Kingdom* (2003) 36 E.H.R.R. 53, para 70; see also, David Feldman, *Civil Liberties and Human Rights in England and Wales* (2nd edn, OUP 2002) 699.

⁵⁵¹ For instance, the ECtHR in the *Aurel Popa v Romania* Case stated that the cutting of the applicant's hair on prison premises undermines the individual's expression of his personality, illustrating an interference with the right to respect private and family life; *Aurel Popa v Romania* (n 340) paras 32-33.

⁵⁵² *Odievre v France* (n 337) paras 40-43; the ECtHR underlined that article 8 ECHR includes the control of information about the self, such as access to personal records, discover one's origin, *Gaskin v the United Kingdom* (n 337) para 49.

the own personal development of fashion identity within Article 8 guarantees based on the configuration of the risk-based approach highlighted in the previous Section.

4. Article 8 and 10 (1) ECHR: cohesion and diversity

Another avenue to assess the legal implications of filter bubbles and echo chambers in the fashion domain is to use the starting point of article 8 in conjunction with Article 10 (1) of the ECHR. Article 10 (1) of the ECHR stipulates that ‘an individual ‘has the freedom to receive and impart information and ideas’.⁵⁵³ The right to receive information within Article 10 of the ECHR has been gradually recognised in case law, whereby the ECtHR articulated its importance regarding environmental issues,⁵⁵⁴ as well as the free negotiation of ideas in a pluralist society.⁵⁵⁵ Accordingly, the right to receive and impart information is relevant in two respects; to elaborate on the means to maintain communication structures, as well as securing the space of self-development in the filter bubbles and echo chambers in the fashion domain.

The right to privacy has been argued to impose a positive obligation on the part of the state, which may include the individual’s access to information regarding personal data or personal information relating to an individual’s private life.⁵⁵⁶ In this respect, Sarah Eskens, Natali Helberger and Judith Moeller suggest that ECtHR case law effectively recognises that the right to access information to ensure the maintenance of ‘social cohesion and exposure diversity’, ensuring an individual’s autonomy and self-development.⁵⁵⁷ Referring to cases in *Leander v Sweden* and *Guerra v Italy*, the authors argue that the accessing and receiving of personal data or information relating to the individual’s privacy life may implicate article 8 of the ECHR Convention.⁵⁵⁸

⁵⁵³ European Convention on Human Rights, art 10 (1); see also, *Cengiz and Others v Turkey* which dealt with the applicants’ blocked access to the Youtube platform, outlines that the blanket ban impaired the right to receive information of political and social significance; *Cengiz and Others v Turkey* App nos 48226/10 and 14027/11 (ECHR, 1 March 2016), paras 38, 47-66; see also, *Kalda v Estonia* App no 17429 /10 (ECHR, 6 June 2016), paras 41-54; *Roşţianu v Romania* App no 27329/06 (ECHR, 24 June 2014), paras 62-68.

⁵⁵⁴ Dominika Bychawska-Siniarska, ‘Protecting the right to freedom of expression under the European Convention of Human Rights: A Handbook for legal practitioners’ (Council of Europe, July 2017) < <https://rm.coe.int/handbook-freedom-of-expression-eng/1680732814>> accessed 12 November 2020 at page 15; reference to *Gaskin v the United Kingdom* (n 337) paras 52-53.

⁵⁵⁵ In *Tarsasag A Szabadsagjogokert v Hungary* the court stated that article 10 (2) ‘protects not only those who wish to inform others but also those who seek to receive such information. To hold otherwise would mean that freedom of expression is no more than the absence of censorship, which would be incompatible with the above-mentioned positive obligations.’ Taken from *Tarsasag A Szabadsagjogokert v Hungary* (2011) 53 E.H.R.R. 3, para 23.

⁵⁵⁶ Sarah Eskens, Natali Helberger, Judith Moeller, ‘Challenged by news personalisation: five perspectives on the right to receive information; (2017) 9 (2) The Journal of Media Law 259, 272, 275.

⁵⁵⁷ Eskens, Helberger and Moeller (n 556) 272, 275; see also, see also, Maija Dahlberg, ‘Positive obligations and the right of access to information in the European Convention on Human Rights: yes or no?’ [2019] 4 European Human Rights Law Review 389, 390.

⁵⁵⁸ Eskens, Helberger and Moeller (n 556) 276; However, the *Leander v Sweden* case the ECtHR stipulated that ‘article 10 does not, in circumstances such as those of the present case, confer on the individual a right of access to a register containing information on his personal position, nor does it embody an obligation on the Government to impart such information to the individual, see *Leander v Sweden* (1987) 9 E.H.R.R. 433, para 74; *Guerra and Others v Italy* (1998) ECHR 7, paras 53-60.

The analysis, which considers the interplay between Articles 10 (1) and 8 of the ECHR, is significant to define the algorithmic' personalisation of content respecting an individual's autonomy and self-development. Article 10 (1) of the ECHR, whilst not creating a subjective right to receive information,⁵⁵⁹ establishes the contours operating with regard to the plurality of ideas for democratic discourse, which in future, could include the dynamics of algorithmic personalisation systems in fashion generally in the Infosphere. In this respect, the right to receive information could act as a building block to ensure autonomy and agency in a world where the algorithms' analysis of fashion narratives produces a lack of plurality regarding the communication of ideas, whereby the change of communication structures is influencing individual self-identification in the filter bubble and echo chamber. Nevertheless, certain conditions need to fulfil to apply Articles 8 and 10 (1) of the ECHR in the context of filter bubbles and echo chambers in the fashion domain, which are that the information needs to be of clear public interest or of importance for the public debate and/or be particularly significant to the individual concerned. This reasoning seems to be problematic as it will not capture the impact of algorithmic filtering in fashion on an individual's self-relationality.

There are serious limitations to incorporating Articles 8 and 10 (1) considerations into the context of algorithmic filtering in the fashion domain, notwithstanding the difficulty to adapt ECtHR case-law on fashion matters from a third party. Let us elaborate on the significance focusing first on the parameters regarding an individual's perception to receive and access information used for behavioural advertising in fashion. It needs to be noted that the right to receive information is not directly linked to the notion of personal development. The right to access to information pertains to instances where state authorities precluded an individual access to information or where the information is of such significance that is fundamental to an individual's freedom of expression.⁵⁶⁰ Accordingly, the ECtHR investigated measures by national authorities, such as acts that discouraged public exchange regarding the role of media as a society's 'watchdog' to reveal 'matters of legitimate concern'⁵⁶¹ or access to documents for 'legitimate and historical research' supporting political negotiation.⁵⁶² Hence, ECtHR case law indicates that individual perception would be measured by virtue of the type of information rather than the risks of the

⁵⁵⁹ As argued by Eskens, Helberger and Moeller 'people always have a subjective right to receive certain information from news media, but rather than news personalisation may enable or hinder the exercise of this largely institutionally protected right'; taken from, Eskens, Helberger and Moeller (n 556) 272, 283.

⁵⁶⁰ According to the court in *Magyar Helsinki Bizottsag v Hungary* 'article 10 of the Convention would lead to situations where the freedom to "receive and impart" information is impaired in such a manner and to such a degree that it would strike at the very substance of freedom of expression. For the Court, in circumstances where access to information is instrumental for the exercise of the applicant's right to receive and impart information, its denial may constitute an interference with that right. The principle of securing Convention rights in a practical and effective manner requires an applicant in such a situation to be able to rely on the protection of Article 10 of the Convention', see *Magyar Helsinki Bizottsag v Hungary* (2020) 71 E.H.R.R. 2, para 155.

⁵⁶¹ *Tarsasag A Szabadsagjogokert v Hungary* (n 555) para 26; *Thorgeir Thorgeirson v Iceland* (1992) 14 E.H.R.R. 843, paras 63, 70; *Observer and Guardian v The United Kingdom* App no 13585/88 (ECHR, 26 November 1991), para 59.

⁵⁶² In *Kenedi v Hungary* the court contends that 'The Court observes that the Government have accepted that there has been an interference with the applicant's right to freedom of expression. The Court emphasises that access to original documentary sources for legitimate historical research was an essential element of the exercise of the applicant's right to freedom of expression' see *Kenedi v Hungary* App no 31475/05 (ECHR, 26 May 2009), para 43; see also, *De Haas and Gijssels v Belgium* App no 19983/92 (ECHR, 24 February 1997), paras 32-49.

information structure undermining user perception of privacy. Further, there is no positive state obligation to ‘provide access to information on its own motion’⁵⁶³ but rather, the right to receive and access information is judged by reference to the character of the information or the acts of public authorities to undermine discourse of public interest.⁵⁶⁴ This limits the scope of Article 10 (2) of the ECHR to a right to access in *strictu sensu*, rather than a right to promote democratic and diverse discourse.

Hence, the basis of the right to receive and access information relating to information pertaining to the applicant’s private and family life only extends to areas where the access is instrumental to secure the individual’s freedom of expression, rather than self-development. The court has held that an individual has an interest to access his or her personal data held by public authorities, as well as information, which is necessary for ‘each individual’s self-fulfilment’.⁵⁶⁵ In doing so, however, the court does not clarify the link between the value of an individual’s freedom of expression to ensure pluralist and democratic discourse and the individual’s autonomy to access information pertaining to the self. The court, whilst supporting that the right to access information is relevant within an individual’s private sphere, limits the analysis to information that once has been accessible or is accessible by virtue to the individual’s characteristics or circumstances.

The second message from ECtHR’s reasoning regarding the right to receive information is that the state including public authorities are required to take positive steps to ensure individual participation in a pluralist and democratic discourse. In this respect, any limitation to this right is interpreted restrictively. For instance, in *TV Vest AS & Rogaland Pensjonistparti v Norway* the court balanced the government’s argument that the ban on political advertisement to ensure ‘pluralism and quality regarding complex issues’ in light of the proportionality principle, concluding the ban unduly put the applicant’s political party a disadvantage compared with major parties.⁵⁶⁶ This interpretation allows us to address behavioural targeting and the creation of echo chambers and filter bubbles for political aims, which is not limited with regard to governmental efforts to steer misinformation or censorship but which undermines an individual’s agency and choice, such as ‘forming an opinion of the ideas and attitudes about a political leader’.⁵⁶⁷

⁵⁶³ In *Guerra and Others v Italy* the ECtHR stipulated that the state’s failure to provide information on the factory’s severe environmental pollution affected the individual’s private life, which does not, however, impose on the state a ‘positive obligation to collect and disseminate information of its own motion’ see *Guerra and others v Italy* (n 558) paras 53-60; see also, *Sirbu and Others v Moldova* App nos 73562/01, 73565/01, 73712/01, 73744/01, 73972/01 and 73973/01 (ECHR, 15 June 2004), paras 17-19.

⁵⁶⁴ *Magyar Helsinki Bizottsag v Hungary* (n 560) paras 157-179.

⁵⁶⁵ *Lingens v Austria* (1986) 8 E.H.R.R. 407, para 41.

⁵⁶⁶ *TV Vest AS & Rogaland Pensjonistparti v Norway* (2009) 48 E.H.R.R. 51, paras 70-73; cf *Zana v Turkey* (1999) 27 E.H.R.R. 667, para 62.

⁵⁶⁷ See also, *Zana v Turkey* which states that article 10 (2) of the ECHR Convention is not only applicable to “‘information” or “‘ideas” that are favourably received or regarded as inoffensive or as a matter of indifference, but also to those that offend, shock or disturb’ taken from, *Zana v Turkey* (n 566) para 62.

For example, it could be argued that making use of an individual's data on his or her appearance on social media as a part of a political campaign to advertise first-time voter's specific merchandise regarding the US election in 2020 could steer political fragmentation and my access to pluralistic discourse.⁵⁶⁸ We will arrive at the same finding regarding a claim on the right to receive information pertaining to an individual's private and family life, whereby an individual's personal information on appearance and perception would be used for purposes of governmental surveillance and political behavioural targeting, limiting access to and development of pluralist negotiations. Key with such reasoning would be not my own perception with what content I identify or not identify with (for example, receiving advertising on brands for a conservative audience when I identify with a liberal political outlook) but whether my lack of access to information (i.e. information pertaining to my political outlook) undermines a conversation of general interests (i.e. effective political exchange) or at least, is of fundamental importance for the right to freedom of expression.

However, these considerations indicate that ECtHR case law does not protect the conditions of the right to privacy can secure an individual's self-relationality that is impacted by social media analytics and consumer profiling in fashion to receive information. Referring to the *Khurshid Mustafa and Tarzibachi v Sweden*, the ECtHR stipulates that the right to receive information includes the applicants' access to news in their native language and country of origin based on the broadcaster's restrictions.⁵⁶⁹ In this respect, the right to receive information secures the individual's exercise of the right to privacy, such as one's expression of culture or demographic background. In doing so, however, the reasoning does not clarify the way a lack of access to information can illustrate a subjective interference with the individual's formation of attitudes. Suppose the example, an algorithm looks at the individuals' engagement with fashion brands to predict an individual's personality trait and influence voter behaviour.⁵⁷⁰ Accordingly, the problem of behavioural advertising is not that it disturbs my relationality with my own 'appearance' including representation of the online self, but rather, that the behavioural profiles shape my identification with my own personality, behavioural traits, influencing my perception and attitudes regarding political content. It is not the availability of content as such that shapes my access to information regarding my private and family life, but the algorithm's prioritisation of information that shapes my attitudes regarding filtered content and which can possibly steer choices. In this respect, the court limits the notion of self-development regarding Articles 10 (1) and 8 of the ECHR to static values, rather than the formation of attitudes.

⁵⁶⁸ This is just a theoretical example. Nevertheless, many fashion brands did provide for specific merchandise and efforts to encourage voting, Lucy Maguire, 'Post-election, Gen Z wants brands to step up' (*Vogue Business*, 23 November 2020) <www.voguebusiness.com/fashion/post-election-gen-z-wants-brands-to-step-up> accessed 12 November 2020.

⁵⁶⁹ *Khurshid Mustafa and Tarzibachi v Sweden* (2011) 52 E.H.R.R. 24, para 44.

⁵⁷⁰ Ferrier (n 51).

IV. Preliminary conclusion

The previous discussion focused on the concepts of filter bubbles and echo chambers in the fashion domain and addressed some gaps in the law in relation to questions of individual control, with a focus on Article 8 of the ECHR.⁵⁷¹ The ECtHR's interpretation of Article 8 effectively limits the notion of personal development and personal autonomy to the expressive function of fashion in the Infosphere. Similarly, a reading of article 8 in conjunction of Article 10 (1) of the ECHR, whilst adding to the notion of shifting communication structures in filter bubbles and echo chambers in fashion, will not encompass an individual's self-relationality.

We can also investigate the influence of algorithmic personalisation systems on communication structures and self-identification, focusing on an individual's informational self-determination. As argued by Frederick Zuiderveen Borgesius 'the online behaviour of hundreds of millions of people is tracked, without their knowledge or consent'.⁵⁷² I have already indicated in Section III.1 (of Chapter 4) that a consent model will not protect an individual's capacity of autonomy regarding algorithmic filtering in fashion. Nevertheless, more elaboration of this claim is needed, considering the meaning of informed consent within the GDPR.

V. Individual consent to data points on "fashion identity"

The GDPR notion of consent is a 'cornerstone of data protection' law.⁵⁷³ The GDPR recognises the notion of consent as a legitimate ground for the processing of personal data.⁵⁷⁴ As described by Michael Veale, 'online consent is most often obtained by displaying a link to a privacy policy at the time of entry to or registration with a site, app or network, and asking the user to accede to these terms and conditions by ticking a box'.⁵⁷⁵ These safeguards of the privacy notice safeguarding individual control of data disclosure need to be examined considering commercial practices by fashion retailers and social media providers.

There has been a surge of academic interest regarding the notion of consent regarding social media analytics and predictive analytics for marketing strategies.⁵⁷⁶ The success of social media analytics and predictive analytics (in fashion) largely depends on the wealth of data gathered by brands from social

⁵⁷¹ European Convention on Human Rights, art 8.

⁵⁷² Zuiderveen Borgesius 'Improving privacy protection in the area of behavioural targeting' (n 151) 15.

⁵⁷³ Elena Gil González and Paul de Hert, 'Understanding the legal provisions that allow processing and profiling of personal data—an analysis of GDPR provisions and principles' (2019) 19 (4) ERA Forum 597, 600.

⁵⁷⁴ In this respect, the GDPR makes a distinction between personal and special category of data; General Data Protection Legislation, arts 4 (1), 9 (1).

⁵⁷⁵ Michael Veale, 'Governing Machine Learning that Matters' (PhD thesis, University College London 2019) 117-118.

⁵⁷⁶ See for example, Dominique Machuletz and Rainer Boehme, 'Multiple Purposes, Multiple Problems: A User Study of Consent Dialogs after GDPR' [2020] 2 Proceedings on Privacy Enhancing Technologies 481.

media pages and e-commerce sites to track and interpret user behaviour and sentiment. Within this context, user consent is a step to gain back control navigating through the wealth of data collected for the brands' data processing activities.⁵⁷⁷ In this respect, the notion of consent is becoming a socio-legal issue with regard to social media analytics in recent years.⁵⁷⁸ As highlighted in the final report of the 'CONSENT' project by the European Commission back in 2013:

One of the key changes in societal trends and lifestyles ... has been the move on-line of many consumers and the way they have become increasingly sophisticated in their media consumption habits. These real, rapid changes in market dynamics and consumer consumption require urgent evaluation of consumer consent as a fundamental aspect of the value systems on which the European market economy is based.⁵⁷⁹

Since then, there is an increasing interest in incorporating user expectations of privacy into the assessment of the consent model in data protection laws. Just take the usual scenario of an individual navigating on a social media page and receiving a notice to consent to data processing activities for targeted advertising. What needs to be specified in the terms of the agreement to enable the user's effective control of the disclosure of his or her data? In addition, what expectations do users have on what information on fashion identity can be inferred within the echo chamber and filter bubble? We have the requirements of consent in data protection laws, as well as the behavioural perspective, including user expectations of privacy to assess and scrutinise the consent model.⁵⁸⁰

This part of the discussion will take up existing literature on the analysis of the consent model in data protection law(s) and implement it in the context of social media analytics and predictive analytics in the fashion domain.⁵⁸¹ In this respect, I will use the consent model to make three arguments. First, I suggest that user consent will not likely guard of contextual vulnerabilities caused by filter bubbles and echo chambers in fashion. Second, I will focus on academic literature discussing the problems with the notion of consent considering data protection law and underline that the user can not exercise effective control over the communication of fashion identity, which is summarised in "data points." Finally, I

⁵⁷⁷ As argued by Timo Jakobi, Maximilian von Grafenstein, Christine Legner, Clement Labadie, Peter Mertens, Ayten Öksüz and Gunnar Stevens '[t]he protective purpose of the GDPR is to enable individuals, against the background of modern data processing possibilities and techniques and their risks, to decide for or against a consent to data processing on the basis of appropriate information on how their personal data are handled and in a self-determined manner.' Taken from, Timo Jakobi, Maximilian von Grafenstein, Christine Legner, Clement Labadie, Peter Mertens, Ayten Öksüz and Gunnar Stevens, 'The Role of IS in the Conflicting Interests Regarding GDPR' (2020) 62 (3) Business Information Systems Engineering 261.

⁵⁷⁸ It can also be an ethical issue regarding biomedical research involving human participants, see Edward S Dove, 'The EU General Data Protection Regulation: Implications for International Scientific Research in the Digital Era' (2018) 46 (4) The Journal of Law, Medicine & Ethics 1013.

⁵⁷⁹ 'Final Report Summary - CONSENT (Consumer sentiment regarding privacy on user generated content services in the digital economy)' (1 May 2010-30 April 2013) <<https://cordis.europa.eu/project/id/244643/reporting>> accessed 12 November 2020; see also, Bart Custers, Simone van der Hof, Bart Schermer, Sandra Appleby-Arnold and Noellie Brockdorff, 'Informed Consent in Social Media Use – The Gap between User Expectations and EU Personal Data Protection Law' (2010) 10 (4) SCRIPT-ed: A Journal of Law, Technology & Society 435, 436.

⁵⁸⁰ I van Ooijen and Helena U Vrabec, 'Does the GDPR Enhance Consumers' Control over Personal Data? An Analysis from a Behavioural Perspective' (2019) 42 (1) JCP 91.

⁵⁸¹ See for instance discussion by Engin Bozdag outlining some drawbacks of the consent model regarding big data analytics on social media, see Engin Bozdag, *Bursting the Filter Bubble: Democracy, Design and Ethics* (Master Thesis, Technische Universiteit Delft 2015) 83-84.

argue that we need a new conceptual framework that addresses procedural and normative concerns of the consent model. In doing so, I will move away from efforts of privacy management and propose a starting point based on the value-sensitive design framework for further research.

1. GDPR: Informational privacy and the notion of consent

Consent generally illustrates an agreement to proceed with an activity, being a precondition for a legally valid decision.⁵⁸² Data protection law interprets the meaning of consent enabling informed decision-making, whereby key values are the protection of an individual's informational self-determination.⁵⁸³ In particular, the GDPR provides a series of requirements when consent can illustrate a legal ground of the processing of personal data.⁵⁸⁴ Against this background, we need to identify this; does an individual's authorisation of data processing activities illustrate an informed choice within the context of algorithmic filtering context? To formulate user expectations regarding the notion of context, we need to first clarify the key provisions regarding consent in the GDPR.

First, the consent model in the GDPR intends to illustrate the user's empowerment to be involved in the data controller's act to collect personal data for a specific purpose.⁵⁸⁵ As indicated by the CJEU in the *Bundesverband der Verbraucherzentralen und Verbraucherverbände - Verbraucherzentrale Bundesverband eV v Planet 49 GmbH* case (The *Planet 49* case), the act of giving consent needs to be a clear affirmation of an individual's autonomy.⁵⁸⁶ Mere inactivity or the user's silence cannot serve as evidence for the user's valid consent.⁵⁸⁷

Second, the requirements of consent in EU data protection serve a communicative function, enabling the individual to make a verifiable decision regarding data processing activities. Again, the *Planet 49* case re-states that 'pre-ticket boxes' do not constitute an individual's consent.⁵⁸⁸ What this means is that

⁵⁸² Nancy S Kim, *Consentability: Consent and Its Limits* (CUP 2019) 5; Sheila McLean, *Autonomy, consent, and the law* (London: Routledge-Cavendish 2010) 41; Kevin Macnish, 'Data, Privacy and the Individual' (*Centre for the Governance of Change*, November 2019) < www.ie.edu/cgc/research/data-privacy-individual/> accessed 12 November 2020 at page 3; see also, Laccelle (n 350)175.

⁵⁸³ Article 29 Data Protection Working Party states that 'consent is related to the concept of informational self determination', Article 29 Data Protection Working Party, 'Opinion 15/2011 on the definition of consent' (adopted on 13 July 2011) 01197/11/EN WP187, page 8.

⁵⁸⁴ The GDPR states that "consent" of the data subject means any freely given, specific, informed and unambiguous indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her"; General Data Protection Regulation, art 4 (11).

⁵⁸⁵ In this respect an important question, which will be not discussed here is the individual's capacity to consent and the variations of requirements in the GDPR; The basic requirements of 'consent' are outlined in article 6 (1) (a) read in conjunction with article 7 and Recital 43 of the GDPR. Further conditions apply for a child's consent in article 8 of the GDPR.

⁵⁸⁶ Case C-673/17 *Planet49 GmbH v Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V* [2020] 1 C.M.L.R. 25, par 52.

⁵⁸⁷ Elenia Kosta, *Consent in European Data Protection Law* (Martinus Nijhoff Publishers 2013) 256.

⁵⁸⁸ *Planet49 GmbH v Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V* (n 586) para 62; General Data Protection Regulation, Recital 32; see also, Rebecca Hill, 'Max Schrems is back: Facebook, Google hit with GDPR complaint: "Forced consent" is no consent, state legal challenges' (*The Register*, 25

user consent must be active.⁵⁸⁹ Hence, ‘requiring a user to positively untick a box ... does not satisfy the criterion of active consent’.⁵⁹⁰

Moreover, consent needs to be ‘freely given’ meaning that the communicative function of consent to negotiate the interaction between data subject and controller precludes any ‘take-it-or-leave-it’ approach, bundled consent for multiple purposes, and non-negotiable terms in the notice.⁵⁹¹ An interesting aspect that consent needs to be freely given is provided by the CJEU in *19 Orange Romania SA v Autoritatea Națională de Supraveghere a Prelucrării Datelor cu Caracter Personal (ANSPDCP)*.⁵⁹² Here the court adds that consent is not informed and freely given when the terms of the ‘contract are capable of misleading the data subject as to the possibility of concluding the contract in question even if he or she refuses to consent to the processing of his or her data’.⁵⁹³ In addition, consent is clearly not freely given when the user is not offered a real opportunity to object to data processing activities.⁵⁹⁴ Thus, the consent model intends both, to enable the individual to make a verifiable and self-determined decisions regarding the disclosure of aspects of the self in the filter bubble and echo chamber based on the requirements that intend to restore information asymmetries between the data subject and the data controller.

Finally, another requirement regarding the terms of the agreement is that “consent” needs to be ‘specific’.⁵⁹⁵ Article 29 of the Working Party stipulates that, the ‘gradual widening or blurring of purposes’, resulting in ‘unanticipated use of personal data’ will most likely not constitute ‘specific’ consent.⁵⁹⁶ Thus, when a data controller, collecting personal data for a recommender system, later wants to share the data with a third party to suggest targeted advertising, that requires again the user’s

May 2018) <www.theregister.co.uk/2018/05/25/schrems_is_back_facebook_google_get_served_gdpr_complaint/> accessed 12 March 2020.

⁵⁸⁹ *Planet49 GmbH v Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V* (n 586) para 52.

⁵⁹⁰ Case C-673/17 *Planet49 GmbH v Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V* [2020] 1 C.M.L.R. 25, Opinion of Advocate General Szpunar, para 88.

⁵⁹¹ General Data Protection Regulation, article 7 (4); According to the European Data Protection Board ‘The element “free” implies real choice and control for data subjects. As a general rule, the GDPR prescribes that if the data subject has no real choice, feels compelled to consent or will endure negative consequences if they do not consent, then consent will not be valid. If consent is bundled up as a non-negotiable part of terms and conditions it is presumed not to have been freely given. Accordingly, consent will not be considered to be free if the data subject is unable to refuse or withdraw his or her consent without detriment. The notion of imbalance between the controller and the data subject is also taken into consideration by the GDPR’, taken from European Data Protection Board, ‘Guidelines 05/2020 on consent under Regulation 2016/679’ (Version 1.1., adopted on 4 May 2020) page 13; Zuiderveen Borgesius, Kruikemeier, Boerman and Helberger, ‘Tracking walls, take-it-or-leave-it choices, the GDPR, and the ePrivacy Regulation’ (n 501) 368; see also, Damian Clifford, Inge Graef and Peggy Valcke, ‘Pre-formulated declarations of data subject consent- citizen-consumer empowerment and the alignment of data, consumer and competition law protections’ (2019) 20 (5) German Law Journal 679, 686.

⁵⁹² Case C-61/19 *Orange Romania SA v Autoritatea Națională de Supraveghere a Prelucrării Datelor cu Caracter Personal (ANSPDCP)* (11 November 2020).

⁵⁹³ *ibid* para 52; see also, Article 29 Working Party, ‘Guidelines on Consent under Regulation 2016/679’ (adopted 28 November 2017, revised and adopted 10 April 2018) 17/EN WP259, page 8.

⁵⁹⁴ Case C-291/12 *Michael Schwarz v Stadt Bochum* [2014] 2 C.M.L.R. 5, para 32.

⁵⁹⁵ General Data Protection Regulation, art 5 (1) (b), art 6 (1); see also, *Planet49 GmbH v Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V* (n 586) para 88.

⁵⁹⁶ Article 29 Data Protection Working Party, ‘Guidelines on Consent under Regulation 2016/679’ (n 593) page 11.

consent in light of the new purpose.⁵⁹⁷ In this respect, Article 6 (4) GDPR highlights that the data controller needs to include the information for each purpose of data processing operations requiring user consent.⁵⁹⁸

Whether an individual consented to a particular practice is decided regarding the terms of the agreement including the circumstances of the disclosure of the information. For instance, Facebook, introduced a feature to suggest users who to tag on uploaded pictures through facial recognition technology back in 2011.⁵⁹⁹ That application has been discontinued, after administrative proceedings have been initiated by the Data Protection and Freedom of Information Commissioner of the State of Hamburg (*Hamburgischen Beauftragten für Datenschutz und Informationsfreiheit*),⁶⁰⁰ because it enabled the large-scale processing of user profiles including sensitive data without informed consent.⁶⁰¹ Consent as a legal ground for the collection and processing of personal data under the GDPR requires that the individual has a clear picture of the peculiarities the implications of the decision-making process, which include the scope of data collection, the details on data processing and storage as well as the purpose of data use.⁶⁰² That said, the user may withdraw consent at any time.⁶⁰³

There are important developments concerning the notion of consent considering the proposal of the e-Privacy Regulation.⁶⁰⁴ Data controllers can not use direct marketing, such as using online messaging,

⁵⁹⁷ *ibid*; see also, Guido Noto La Diega, 'Some Considerations on Intelligent Online Behavioural Advertising' [2017] *Revue du droit des technologies de l'information* 53, 59.

⁵⁹⁸ General Data Protection Regulation, art 6 (4); Damien Geradin, Theano Karankikioti and Dimitros Katsifis, 'GDPR Myopia: how a well-intended regulation ended up favouring large online platforms - the case of ad tech' (2021) 17 (1) *ECJ* 47, 58.

⁵⁹⁹ Charles Arthur, 'Facebook in new privacy row over facial recognition feature' (*The Guardian*, 8 June 2011) <www.theguardian.com/technology/2011/jun/08/facebook-privacy-facial-recognition> accessed 20 October 2021.

⁶⁰⁰ Der Hamburgische Beauftragte für Datenschutz und Informationsfreiheit, 'Tätigkeitsbericht Datenschutz des Hamburgischen Beauftragten für Datenschutz und Informationsfreiheit zugleich Tätigkeitsbericht der Aufsichtsbehörde für den nicht-öffentlichen Bereich 2010 / 2011' (1 HmbBfDI, 2010-2011) <https://datenschutz-hamburg.de/assets/pdf/23_Taetigkeitsbericht_Datenschutz_2010-2011.pdf> accessed 4 May 2020 at pages 166-167; Johannes Caspar, 'The CJEU Google Spain decision' (2015) 39 (9) *Datenschutz und Datensicherheit* 589.

⁶⁰¹ The report stipulates that, "[d]enn damit die Erkennung und Zuordnung von Gesichtern funktionieren kann, ist im Hintergrund eine gigantische Datenbank erforderlich, in der alle Mitglieder der Netzwerke detailliert mit ihren biometrischen Gesichtsmarkmalen erfasst und profiliert werden."; taken from, Der Hamburgische Beauftragte für Datenschutz und Informationsfreiheit, 'Tätigkeitsbericht Datenschutz des Hamburgischen Beauftragten für Datenschutz und Informationsfreiheit zugleich Tätigkeitsbericht der Aufsichtsbehörde für den nicht-öffentlichen Bereich 2010 / 2011' (n 600) page 165; see also, Article 29 Data Protection Working Party, 'Opinion 02/2012 on facial recognition in online and mobile services' (adopted 22 March 2012) 00727/12/EN WP 192, page 7.

⁶⁰² Eugenia Politou, Efthimios Alepis and Constantinos Patsakis, 'Forgetting personal data and revoking consent under the GDPR: Challenges and proposed solutions' (2018) 4 (1) *Journal of Cybersecurity* 1, 5; Lothar Fritsch, 'Partial commitment – "Try before you buy" and "Buyer's remorse" for personal data in Big Data & Machine learning' (Trust Management XI: 11th IFIP WG 11.11 International Conference, IFIPTM, 12-16 June 2017) page 3.

⁶⁰³ General Data Protection Regulation, article 7 (3); see also, Guidance by Article 29 Data Protection Working Party which stipulates that 'when consent is obtained via electronic means through only one mouse-click, swipe, or keystroke, data subjects must, in practice, be able to withdraw that consent equally as easily', see Article 29 Data Protection Working Party, 'Guidelines on Consent under Regulation 2016/679' (n 593) page 21; see also, Midas Nouwens, Illaria Liccardi, Michael Veale, David Karger, Lalana Kagal, 'Dark Patterns after the GDPR: Scraping Consent Pop-ups and Demonstrating their Influence' (ArXiv, 8 January 2020) <<https://arxiv.org/pdf/2001.02479.pdf>> accessed 12 November 2020.

⁶⁰⁴ There are two e-Privacy Regulation proposals by the European Commission and the Council and no final text has been agreed; see Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the respect for private life and the protection of personal data in electronic communications and repealing Directive 2002/58/EC (Regulation on Privacy and Electronic Communications) COM/2017/010 final - 2017/03 (COD); here are the proposed amendments by the EU Council Presidency- Proposal for a Regulation of the European Parliament and of the Council

on the basis of their legitimate interest but need the user's informed consent.⁶⁰⁵ Nevertheless, the proposal enumerates some situations where consent is not required, which includes the controller's use of 'statistical audience measuring tools for websites'.⁶⁰⁶ Another important feature of the proposal is that the Regulation does not explicitly prohibit cookie-walls.⁶⁰⁷ Both elements, the regulation's vague definition of analytics for audience measurement and possible take-it-or-leave it approaches, have been criticised by the European Data Protection Board.⁶⁰⁸

Let us now focus on the role of consent to protect user vulnerability.⁶⁰⁹ In this respect, it is important to note that the notion of consent is connected to the notions of fairness and transparency in Article 5, as well as the information duties in Articles 13- 14 of the GDPR.⁶¹⁰ Accordingly, protecting the user's informational self-determination considering the individual's capacities highlights the right to privacy's 'constitutive role' to maintain human dignity and protect human identity.⁶¹¹ However, what does the GDPR say about the social-cultural vulnerabilities created through the impact of algorithmic filtering in fashion on communication structures and self-identification? As stipulated in the Guidelines of Article 29 of the Data Protection Working Party:

Obtaining consent also does not negate or in any way diminish the controller's obligations to observe the principles of processing enshrined in the GDPR, especially Article 5 of the GDPR with regard to fairness, necessity and proportionality, as well as data quality. Even if the processing of personal data is based on consent of the data subject, this would not legitimise collection of data which is not necessary in relation to a specified purpose of processing and fundamentally unfair.⁶¹²

This consideration in Article 29 Data Protection Working Party guide imposes a significant elaboration on the data protection framework to address the issues of predictive analytics on users to act within the context of informed consent. It highlights that the data controller's obligation to respect an individual's informational self-determination is a continuous one, whereby user control does not end with the

concerning the respect for private life and the protection of personal data in electronic communications and repealing Directive 2002/58/EC (Brussels, 18 September 2019 (OR. en).

⁶⁰⁵ Regulation on Privacy and Electronic Communications, art 16, 4 (3) (f), Recital 32; compare with Recital 47 of the GDPR which states that 'the processing of personal data for direct marketing purposes may be regarded as carried out for a legitimate interest', cf General Data Protection Regulation, Recital 47.

⁶⁰⁶ Regulation on Privacy and Electronic Communications, art 8 (1) (d); the exception concerning web audience measuring is not defined in the proposals. Nevertheless, Article 29 Data Protection Working Party stipulates that 'analytics are statistical audience measuring tools for websites, which often rely on cookies. These tools are notably used by website owners to estimate the number of unique visitors, to detect the most preeminent search engine keywords that lead to a webpage or to track down website navigation issues.' See Article 29 Data Protection Working Party, 'Opinion 04/2012 on Cookie Consent Exemption' (adopted 7 June 2012) 00879/12/EN WP 194, page 10.

⁶⁰⁷ On the other hand, it is important to note that the E-Privacy Regulation does not replace the GDPR and the latter does still preclude "take-it-or-leave-it" approaches. Nevertheless, this is an important criticism that the E-Privacy Regulation does not include an explicit prohibition of cookie walls; see The European Data Protection Board, 'Statement 03/2021 on the ePrivacy Regulation' (adopted on 9 March 2021), page 4.

⁶⁰⁸ The European Data Protection Board, 'Statement 03/2021 on the ePrivacy Regulation' (n 607) pages 3- 4.

⁶⁰⁹ For an outlook on the types of vulnerability to express informed consent see, Merlyn A Griffiths, 'Consumer acquiescence to informed consent: The influence of vulnerability, motive, trust and suspicion' (2014) 13 (3) Journal of Customer Behaviour 207, 214.

⁶¹⁰ General Data Protection Regulation, arts 3, 13-14.

⁶¹¹ JC Buitelaar, 'Child's best interest and informational self-determination: what the GDPR can learn from children's rights' (2018) 8 (4) IDPL 293, 298.

⁶¹² Article 29 Data Protection Working Party, 'Guidelines on Consent under Regulation 2016/679' (n 593) pages 4-5.

individual's affirmative action prior data processing activities.⁶¹³ For instance, the data controller may not use a user's consent to the use of his or her personal data, which may be shared with and combined with data from third party websites to establish detailed profiles about individual, having a disproportionate impact on the user's privacy.⁶¹⁴

Data controllers usually intend to fulfil the data protection requirements regarding the notion of consent using privacy notices.⁶¹⁵ However, the individual, being exposed through the algorithms' dynamic content moderation, is required to navigate through the amount of information formulated in privacy policies, which are often complicated and/or incomprehensible for the average user.⁶¹⁶ There are still practical problems to obtain informed consent from the data subject, notwithstanding some solutions to establish privacy notices which enable a more dynamic consent from the user.⁶¹⁷ Fred H Cate and Victor Mayer Schönberger highlight that the current structure of consent gives individual limited control over the control of their personal information based on the 'dramatic increases in the volume and velocity of information flows nor desirable because of the burden they place on individuals to understand the issues, make choices, and then engage in oversight and enforcement'.⁶¹⁸

In other words, procedural effectiveness does not necessarily support user capacity providing informed consent in the context of big data. It follows that we need a stronger account of the contextual vulnerabilities of informed consent regarding filter bubbles and echo chambers.⁶¹⁹ The following Section will elaborate on how individuals are faced with significant challenges to managing his or her

⁶¹³ For instance, the data controller can not simply take the user's consent before data collection and allow unnecessary personal data processing using the 'legitimate interest' ground in the GDPR; Article 29 Data Protection Working Party, 'Guidelines on Consent under Regulation 2016/679' (n 593) page 22.

⁶¹⁴ This has been announced by the German Bundeskartellamt who imposed restrictions on 'Facebook' and stipulated that 'With regard to Facebook's future data processing policy, we are carrying out what can be seen as an internal divestiture of Facebook's data. In future, Facebook will no longer be allowed to force its users to agree to the practically unrestricted collection and assigning of non-Facebook data to their Facebook user accounts. The combination of data sources substantially contributed to the fact that Facebook was able to build a unique database for each individual user and thus to gain market power. In future, consumers can prevent Facebook from unrestrictedly collecting and using their data. The previous practice of combining all data in a Facebook user account, practically without any restriction, will now be subject to the voluntary consent given by the users. Voluntary consent means that the use of Facebook's services must not be subject to the users' consent to their data being collected and combined in this way. If users do not consent, Facebook may not exclude them from its services and must refrain from collecting and merging data from different sources', taken from 'Bundeskartellamt prohibits Facebook from combining user data from different sources' (7 February 2019) < <https://webgate.ec.europa.eu/multisite/ecn-brief/en/content/bundeskartellamt-prohibits-facebook-combining-user-data-different-sources#:~:text=Bundeskartellamt%20prohibits%20Facebook%20from%20combining%20user%20data%20from,far-reaching%20restrictions%20in%20the%20processing%20of%20user%20data.>> accessed 12 March 2021.

⁶¹⁵ González and De Hert, 'Understanding the legal provisions that allow processing and profiling of personal data—an analysis of GDPR provisions and principles' (n 573) 601.

⁶¹⁶ *ibid* 601; Schermer, Custers and van der Hof (n 501) 177; Politou, Alepis and Patsakis (n 602) 5.

⁶¹⁷ Christopher Kuner, Dan Jerker B Svantesson, Fred H Cate, Orla Lynskey and Christopher Millard, 'Machine learning with personal data: is data protection law smart enough to meet the challenge?' (2017) 7 (1) IDPL 1, 2.

⁶¹⁸ Cate and Mayer-Schönberger (n 501) 68-69; see also, Viktor Mayer-Schönberger, 'Beyond Privacy, Beyond Rights-Toward a 'Systems' Theory of Information Governance' (2010) 98 (6) CLR 1853, 1859.

⁶¹⁹ As stipulated in the Guidance on Article 29 of the Data Protection Working Party, there are limits to the notion of consent that have been identified regarding 'the Working Party has explored the limits of consent in situations where it cannot be freely given. This was notably the case in its opinions on electronic health records (WP131), on the processing of data in the employment context (WP48), and on processing of data by the World Anti-Doping Agency (WP162).' See Article 29 Data Protection Working Party, 'Opinion 15/2011 on the definition of consent' (n 583) page 13; cf European Data Protection Board, 'Guidelines 8/2020 on the targeting of social media users' (Adopted on 2 September 2020) page 6.

autonomy through the consent model regarding algorithmic filtering. As noted by Bart Willem Schermer, Bart Custers, and Simone van der Hof, there is a ‘current crisis of consent’ that relates to the practical effectiveness of the ‘notice and consent’ model in the era of big data analytics.⁶²⁰ An individual’s lack of awareness, including consciousness of the extent to his or her behaviour leaves ‘digital footprint’, coupled with incomprehensive privacy policies, signifies that a person is not likely to give informed consent under these circumstances.⁶²¹ Thus, in the age of big data, the question is not so much whether an individual should disclose information in the first place, but rather, whether an individual has the information to exercise an informed choice regarding data processing activities.⁶²² As pointed out by Gabriela Zanfir-Fortuna, ‘if the notice and consent’ privacy law puts the entire burden of privacy protection on the person and then it doesn’t really give them any choice’.⁶²³

2. Fashion identity in data points: some challenges of the consent model

Lilian Edwards and Michael Veale use the argument of asymmetric access of knowledge on the information flow, arguing that the ‘notice and consent’ model does not provide ‘any semblance of informational self-determination but merely legitimises the extraction of personal data from unwitting data subjects’.⁶²⁴ Thus, if an individual’s authorisation of data processing activities does not illustrate an informed choice within the context of algorithmic filtering context; then, what are the conditions for determining an individual’s capacity of consent, including informational privacy?

Answering this question is important considering so-called ‘dark patterns’, which are design choices that persuades, or nudges users reflected in privacy notices.⁶²⁵ Dark patterns can illustrate an interface design ‘such as the placement and colour of interfaces, how text is worded, and more direct interventions such as putting pressure on users by stating that the product or service they are looking at is about to be sold out’.⁶²⁶ Moreover, an individual’s choice of consent can be influenced by highlighted default

⁶²⁰ Schermer, Custers and van der Hof (n 501) 171.

⁶²¹ Frauke Kreuter, Georg-Christoph Haas, Florian Keusch, Sebastian Bähr and Mark Trappmann, ‘Collecting Survey and Smartphone Sensor Data With an App: Opportunities and Challenges Around Privacy and Informed Consent’ (2020) 38 (5) *Social Science Computer Review* 533.

⁶²² Sheng Yin Soh, ‘Privacy Nudges: An Alternative Regulatory Mechanism to Informed Consent for Online Data Protection Behaviour’ (2019) 5 (1) *EDPL* 65; Shirin Elahi, ‘Privacy and consent in the digital era’ (2009) 14 (3) *Information Security Technical Report* 113.

⁶²³ Gabriela Zanfir -Fortuna, ‘10 reasons why the GDPR is the opposite of a ‘notice and consent’ type of law’ (*Medium*, 13 March 2019) <<https://medium.com/@gzf/10-reasons-why-the-gdpr-is-the-opposite-of-a-notice-and-consent-type-of-law-ba9dd895a0f1>> accessed 16 September 2020.

⁶²⁴ Edwards and Veale ‘Slave to the Algorithm? Why a ‘Right to an Explanation’ Is Probably Not the Remedy You Are Looking For’ (n 353) 64; see also, Hugh Radojev, ‘Consent not a ‘silver bullet’ for GDPR, says Information Commissioner’ (*Civil Society news*, 17 August 2017) <www.civilsociety.co.uk/news/consent-is-not-silver-bullet-for-gdpr-says-information-commissioner.html> accessed 5 May 2020.

⁶²⁵ Ari Ezra Waldman, ‘Cognitive biases, dark patterns, and the ‘privacy paradox’’ [2020] 31 *Current opinion in psychology* 105.

⁶²⁶ Norwegian Consumer Council, ‘Device by Design: How tech companies use dark patterns to discourage us from exercising our rights to privacy’ (Forbrukerradet, 27 June 2018) <<https://fil.forbrukerradet.no/wp-content/uploads/2018/06/2018-06-27-deceived-by-design-final.pdf>> accessed 12 November 2020, page 7; cf Sebastian Rieger and Caroline Sindors who underline that ‘Dark patterns do not always have to refer to individual design elements. It can also be entire website architectures or

options (i.e. a ‘select all’ option) and the proliferation of click-through rates to maximise user consent, contrary to the GDPR requiring user consent for specific purposes and uses of personal data.⁶²⁷ As reported by the European Data Protection Supervisor:

It has been reported that many digital service providers are deploying “design tactics” or “dark patterns” to manipulate or deceive consumers into “consenting” to the new contractual term, although “consent” under data protection is a distinct legal basis for data processing which must be informed and freely given and, in the case of sensitive data, explicit.⁶²⁸

Whilst I will elaborate on the specific privacy concerns of nudges and risks of manipulation in the fashion domain elsewhere (Chapter 5), it is important to highlight how dark patterns can influence the informational conditions for an individual’s informed consent.⁶²⁹ In particular, dark patterns raise new contextual vulnerabilities encouraging information disclosure precluding any ‘reflective engagement with data disclosures that are at the heart of the notice and choice privacy framework’.⁶³⁰

Indeed, these considerations shed a different light on the problems of algorithmic filtering I enumerated in Section III.1 of this Chapter (4). In particular, if informational conditions of informed consent are not safeguarded in the big data context, then we need a different approach in how procedural safeguards can secure an individual’s informational self-determination.

A different understanding of control needs to apply regarding algorithms’ filtering content, which should relate to the significance of the information shared by the user. In other words, a consent and notice model does not adequately inform a user about the actionable insights the assumed attributes on fashion identity can produce on individual behaviour. The current concept of consent assumes that data processing activities can be made transparent to the user which is an assumption that only allows information to be presented in an abstract manner.⁶³¹ In this respect, we need to note that the notion of

combinations of different design patterns where, for example, a cancellation option is hardly to be found and thus complicates the cancellation process’, see Sebastian Rieger and Caroline Sindors, ‘Dark Patterns: Regulating Digital Design: How digital design practices undermine public policy efforts & how governments and regulators can respond’ (Stiftung Neue Verantwortung: Think Thank at the Intersection of Technology and Society May 2020) < www.stiftung-nv.de/sites/default/files/dark.patterns.english.pdf> accessed 12 February 2021, page 11.

⁶²⁷ Taken from very interesting empirical research in Machuletz and Böhme (n 576) 481; see also, Christine Utz, Florian Schaub, Martin Degeling, Thorsten Holz and Sascha Fahl, ‘(Un)informed Consent: Studying GDPR Consent Notices in the Field’ (Proceedings of the 2019 ACM SIGSAC Conference on Computer and Communications Security, CCS 2019, London, UK, November 11-15, 2019).

⁶²⁸ European Data Protection Supervisor, ‘EDPS Opinion 8/2018 on the legislative package “A New Deal for Consumers”’ (5 October 2018) page 16; see also, Christoph Bösch, Benjamin Erb, Frank Kargl, Henning Kopp and Stefan Pfattheicher, ‘Tales from the Dark Side: Privacy Dark Strategies and Privacy Dark Patterns’ [2016] 4 Proceedings on Privacy Enhancing Technologies 237.

⁶²⁹ On the manipulation of user perception and use of dark patterns for profit, see Shruthi Sai Chivukula, Chris Watkins, Lucca McKay and Colin M Gray, ‘Nothing Comes Before Profit: Asshole Design in the Wild’ (CHI 2019, Glasgow, Scotland, UK, May 4–9, 2019, Glasgow, Scotland, UK).

⁶³⁰ Deirdre K Mulligan, Priscilla M Regan and Jennifer King, ‘The Fertile Dark Matter of Privacy takes on the Dark Patterns of Surveillance’ (2020) 30 (4) Journal of Consumer Psychology 767, 768.

⁶³¹ Kuner, Svantesson, Cate, Lynskey and Millard (n 617) 2; Henry Pearce, ‘Online data transactions, consent, and big data: technological solutions to technological problems?’ (2015) 21 (6) C.T.L.R 149, 151; Van Ooijen and Vrabec (n 580) 96; Michaela Padden and Andreas Öjehag-Pettersson, ‘Protected how? Problem representations of risk in the General Data

user consent needs to be considered in relation to a process that informs the user's exposure to personalised content as well as the social aspects of fashion in the filter bubble and echo chamber. By way of illustration, let us take the requirement that the privacy notice needs to be in an intelligible and easily accessible form, using clear and plain language'.⁶³² Whilst it would be easy to specify what information is collected, it is difficult to capture the granularity of data processing activities in an accessible form, considering the requirements in Articles 13-14 GDPR.⁶³³

Accordingly, the GDPR notion of consent needs to go further than merely asserting individual control and need to consider that a user is a decentred subject in the Infosphere.⁶³⁴ A user's consent does not sustain an individual's management of multiple senses of identity, nor does it incorporate the preferences in how an individual's identity is maintained in a social practice including the readings that frame an individual's inference of self. The notion of consent envisages that data subjects need to be informed about the risks of data processing activities; however, the individual is often put into the position to consent to the personalised and filtered content not knowing the dimension of a filter bubble and echo chamber in the fashion domain. As highlighted by Solon Barocas and Helen Nissenbaum:

[T]he value of a particular individual's withheld consent diminishes the more effectively one can draw inferences from the set of people that do consent, when this set approaches a representative sample. Once a dataset reaches this threshold, analysts can rely on readily observable data to draw probabilistic inferences about an individual, rather than seeking consent to obtain these details.⁶³⁵

Therefore, what I suggest is that consent is not a problem representation of the consequences of data processing activities, but a tool to define how data subjects are constituted within the algorithmic processes. In this respect, I propose that the aim of consent should support the individual's conscious and autonomous evaluation of risk perception of data processing activities.⁶³⁶ This understanding of consent goes further than ensuring the user's manifestation of autonomy to exercise rights, such as access, erasure and/or objection to data processing activities and focus on new common values addressing contextual vulnerabilities in the algorithmic sphere. In addition, this idea would support important design choices which focus on user vulnerabilities and develop opt-in and opt-out choices that

Protection Regulation (GDPR)' [2021] *Critical Policy Studies* 1, 11; Adam J Andreotta, Nin Kirkham and Marco Rizzi, 'AI, big data, and the future of consent' [2021] *AI & Society* 1, 4-5; Eoin Carolan, 'The continuing problems with online consent under the EU's emerging data protection principles' (2016) 32 (3) *The computer law and security report* 462, 466.

⁶³² General Data Protection Regulation, art 7 (2).

⁶³³ *ibid* art 13, art 14.

⁶³⁴ Clarke, 'The digital persona and its application to data surveillance' (n 380) 77; Niels van Dijk, 'Profiles of Personhood: On Multiple Arts of Representing Subjects' in Emre Bayamiloglu, Irina Baraliuc, Lisa Albertha Wilhelmina Janssens and Mireille Hildebrandt (eds), *Being Profiled: Cogitas Ergo Sum: 10 Years of Profiling the European Citizen* (Amsterdam University Press 2018) 128.

⁶³⁵ Solon Barocas and Helen Nissenbaum, 'Big data's end run around procedural privacy protections' (2014) 57 (11) *Communications of the ACM* 31, 32; see also, Politou, Alepis and Patsakis (n 602) 7.

⁶³⁶ Indeed, ex post controls are also important, focusing on Article 22 GDPR, which I will discuss in **Chapter 5**; General Data Protection Regulation, art 22.

do not unduly focus on the positive aspects of personalised advertising.⁶³⁷ I will come back to this argument in Section V.5 of this Chapter (4) when discussing the role of individual perception and self-relationality for the design of privacy notices.

To summarise the points above, the notice and consent model does not protect an individual's informational self-determination who has no control of the parameters of self-presentation including disclosure of "fashion identity." Furthermore, the notice and consent does not account on the extent assumptions on a user's fashion identity is related to appearance perception, such as the operation of algorithmic personalisation systems to filter content and tracking user behaviour. Thus, the notice and consent model illustrates an insufficient basis to establish a protective space regarding an individual's privacy and fashion identity.

The following sections focus on alternative pathways to circumvent the problems of the consent model outlined above. Indeed, an individual's consent implies that the user has a genuine choice to agree as well as refrain from receiving personalised advertising.⁶³⁸ In addition, consent as a ground for processing personal data is not the only lawful basis in the GDPR and a data controller may rely on the legitimate interest ground in Article 6(1) (f).⁶³⁹ After consulting both options, I will focus how personalisation can be tailored to contextual vulnerabilities to reduce the risks of filter bubbles and echo chambers in the fashion domain. In doing so, I propose a conceptual framework reconfiguring an individual's positionality in the algorithmic landscape and that is incorporated in the design of algorithmic filtering systems user consent interfaces (Section V.5 of Chapter 4).

3. Informational self-determination for non-personalised advertising

One possibility to emphasise an individual's informational self-determination regarding the control of personal data is to enable the user to withdraw consent without detriment.⁶⁴⁰ Withdrawing consent could signify that the data controller should offer alternatives for the organisation of data points.⁶⁴¹ The Article

⁶³⁷ As highlighted by Joyee De Sourya and Abdessamad Imine 'Explanations do not highlight with equal importance, the benefits as well as the privacy risks of opting in or opting out. Especially in the pop-up, only positive sides of agreeing to the data processing are highlighted'; Joyee De Sourya and Abdessamad Imine, 'Consent for targeted advertising: the case of Facebook' (2020) 35 (4) *AI & Society* 1055, 1061.

⁶³⁸ According to the European Data Protection Board '[t]he element "free" implies real choice and control for data subjects. As a general rule, the GDPR prescribes that if the data subject has no real choice, feels compelled to consent or will endure negative consequences if they do not consent, then consent will not be valid'; European Data Protection Board, 'Guidelines 05/2020 on consent under Regulation 2016/679' (n 591) para 13.

⁶³⁹ General Data Protection Regulation, article 6 (1) (f); However, as stipulated by Article 29 Data Protection Working Party 'the controller cannot swap from consent to other lawful bases. For example, it is not allowed to retrospectively utilise the legitimate interest basis in order to justify processing, where problems have been encountered with the validity of consent'. Article 29 Data Protection Working Party, 'Guidelines on Consent under Regulation 2016/679' (n 593) page 23.

⁶⁴⁰ General Data Protection Regulation, Recital 42.

⁶⁴¹ For example, The Dutch Data Protection Authority (Autoriteit Persoonsgegevens) in a reasoning regarding enforcement actions on smart televisions, suggests that users should be given the possibility to choose between personalised and non-personalised recommendation services in interactive television services; Kristina Irion and Natali Helberger, 'Smart TV and

29 Data Protection Working Party guide provides a useful example on how this idea could work in practice:

A data subject subscribes to a fashion retailer's newsletter with general discounts. The retailer asks the data subject for consent to collect more data on shopping preferences to tailor the offers to his or her preferences based on shopping history or a questionnaire that is voluntary to fill out. When the data subject later revokes consent, he or she will receive non-personalised fashion discounts again. This does not amount to detriment as only the permissible incentive was lost.⁶⁴²

Accordingly, withdrawing consent or rejecting personalised services could ensure that user consent is freely given, provided there are viable alternatives to receive access to services with non-personalised content.⁶⁴³ Note that the Article 29 Data Protection Working Party guide is focusing on one particular service whereby the negative consequences would include the limited performance of the service, rather than its overall quality.⁶⁴⁴

It is difficult to imagine a distinction of personalised and non-personalised advertising in the context of social media analytics. One consideration is the 'network effects' of social media platforms.⁶⁴⁵ As argued by Zuiderveen, Kruikemeier, Boernman *et al*, sometimes a company is in a more dominant position, leaving little room for negotiation and sometimes it is not feasible for the individual to change services, such as in instances of social network sites.⁶⁴⁶ In this respect, social media platforms, such as Facebook including Instagram, are characterised by their value of a strong user base, which attracts fashion brands including content providers on these platforms.⁶⁴⁷ As reported by the UK Competition Market Authority, 'users are not able to turn off personalised advertising when using Facebook and Instagram'.⁶⁴⁸ In addition, social media platforms, such as Facebook, possess of broad 'ecosystems', which includes 'messaging, devices as well as retail'.⁶⁴⁹ These considerations highlight that a user's control of their personal data is determined by the contours of the platforms' services, which makes it very difficult for the individual to reject a service and opt-in for non-personalised advertising.⁶⁵⁰

the online media sector: User privacy in view of changing market realities' (2017) 31 (3) Telecommunications Policy 170, 176-177; Eskens (n 437) 161.

⁶⁴² Article 29 Data Protection Working Party, 'Guidelines on Consent under Regulation 2016/679' (n 593) page 11.

⁶⁴³ Eskens (n 437) 161.

⁶⁴⁴ Article 29 Data Protection Working Party, 'Guidelines on Consent under Regulation 2016/679' (n 593) page 11.

⁶⁴⁵ Competition & Markets Authority, 'Online platforms and digital advertising' (Market study final report, 1 July 2020) <https://assets.publishing.service.gov.uk/media/5efc57ed3a6f4023d242ed56/Final_report_1_July_2020_.pdf> accessed 1 November 2020 at page 12.

⁶⁴⁶ Zuiderveen Borgesius, Kruikemeier, Boerman and Helberger, 'Tracking walls, take-it-or-leave-it choices, the GDPR, and the ePrivacy Regulation' (n 501) 374.

⁶⁴⁷ Seunga Venus Jin and Ehri Ryu, 'Celebrity fashion brand endorsement in Facebook viral marketing and social commerce: Interactive effects of social identification, materialism, fashion involvement, and opinion leadership' (2019) 23 (1) Journal of Fashion Marketing and Management 104.

⁶⁴⁸ Competition & Markets Authority 'Online platforms and digital advertising' (n 645) pages 14, 26.

⁶⁴⁹ *ibid* page 18.

⁶⁵⁰ *ibid* page 26.

4. ‘Legitimate interest’ basis as an alternative?

Indeed, a practical alternative regarding to the issues of consent outlined above, is for data controllers to rely on a different legal basis within the GDPR, such as ‘legitimate interests’ under Article 6 (1) (f) of the GDPR.⁶⁵¹ Article 6 (1) (f) of the GDPR provides that:

[P]rocessing is necessary for the purposes of the legitimate interests pursued by the controller or by a third party, except where such interests are overridden by the interests or fundamental rights and freedoms of the data subject which require protection of personal data, in particular where the data subject is a child.⁶⁵²

This legal basis may be applied in several circumstances, one example being direct marketing.⁶⁵³ In this respect, the Article 29 Data Protection Working Party guide states that personalised recommendations using individual’s preferences may constitute a ‘legitimate interest’.⁶⁵⁴ The ground ‘legitimate interest’ seems to be more flexible than user consent, being focused on the particular purpose regarding data collection activities.

However, whilst this legal ground of processing appears to be flexible in terms of its application, the application article 6 (1) (f) GDPR requires a case-by-case assessment.⁶⁵⁵ In particular, the wording of Article 6 (1) (f) GDPR suggests that the data controller needs to consider overall information asymmetries inherent in data processing activities. As suggested by the Article 29 Data Protection Working Party guidance ‘[i]t is important to assess the effect of actual processing on particular individuals’.⁶⁵⁶

Accordingly, a data controller or third party, defining the ‘interests’ of data processing activities, need to clearly highlight the overall benefit of the processing.⁶⁵⁷ This point, suggesting that an interest needs to be clearly articulated is relevant for the ‘balancing exercise’ to take into account the interests and fundamental rights of the data subject.⁶⁵⁸ In this respect, the balancing exercise rules out activities that

⁶⁵¹ General Data Protection Regulation, art 6 (1) (f).

⁶⁵² *ibid*, arts 6 (1) (f), arts, 13(1)(d), arts 14(2)(b).

⁶⁵³ *ibid*, Recital 47; Recitals 48-50

⁶⁵⁴ Of course, adequate safeguards need to be in place, such as the possibility to object to such processing, see Article 29 Data Protection Working Party, ‘Opinion 06/2014 on the notion of legitimate interests of the data controller under Article 7 of Directive 95/46/EC’ (9April 2014) 844/14/EN WP 217, pages 25-26.

⁶⁵⁵ Alvaro Tejada-Lorente, Juan Bernabe-Moreno, Julio Herce-Zelaya, Carlos Porcel and Enrique Herrera-Viedma, ‘Adapting Recommender Systems to the New Data Privacy Regulations’ (Volume 303: New Trends in Intelligent Software Methodologies, Tools and Techniques, 2018) 378; Kate Brimsted and Tom Evans, ‘Legitimate interests under the GDPR: flexibility but at a cost’ (2018) 29 (4) PLC Magazine 12.

⁶⁵⁶ Article 29 Data Protection Working Party, ‘Opinion 06/2014 on the notion of legitimate interests of the data controller under Article 7 of Directive 95/46/EC’ (n 654), page 41; General Data Protection Regulation, art 6 (1) (f); see also, González and de Hert, ‘Understanding the legal provisions that allow processing and profiling of personal data—an analysis of GDPR provisions and principles’ (n 573) 605.

⁶⁵⁷ Damian Clifford and Jef Ausloos, ‘Data Protection and the Role of Fairness’ (2018) 37 (1) YEL 130, 167-169.

⁶⁵⁸ *ibid* 168; Article 29 Data Protection Working Party, ‘Opinion 06/2014 on the notion of legitimate interests of the data controller under Article 7 of Directive 95/46/EC’ (n 654) page 3.

unduly favours the data controller or third parties' interests, such as practices of price discrimination.⁶⁵⁹ In addition, a data controller may for the secondary use of personal data only rely on the data subject's consent.⁶⁶⁰

Moreover, the 'necessity test' underpinning article 6 (1) (f) GDPR limits the flexibility of the legitimate interests ground, being a concept of own independent meaning in EU law.⁶⁶¹ The 'necessity test', suggesting that it should be investigated whether less intrusive means available to achieve the purpose, signifies that a broadly formulated economic interest does not entail a valid interest.⁶⁶² Whilst the 'necessity test' does not require that the processing is indispensable, it is important to note that the requirement requires careful balancing with the principles in article 5 GDPR.⁶⁶³ Data subjects do possess the right to object to the processing when the data controller can not 'demonstrate compelling legitimate grounds for the processing which override the data subject's interests'.⁶⁶⁴ Accordingly, whilst the ground in article 6 (1) (f) GDPR allows data controllers or third parties to invoke some commercial interests regarding the use of data personalisation and predictive analytics in fashion, the application of 'legitimate interests' has to be viewed with a grain of salt, based on the premise that the scope of application of article 6 (1) (f) of the GDPR has to be constructed narrowly.⁶⁶⁵

5. Interpersonal values and 'contextual integrity'

The main solution needs to concentrate how to improve the consent model regarding its potential uses in the context of algorithmic filtering in fashion, recognising the limitations of the alternative pathways above. Again, as highlighted by Solon Barocas and Helen Nissenbaum the notion of consent in data protection law should:

[N]ot bear, and should never have borne, the entire burden of protecting privacy. Recognizing their limits allows us to assess better where and under what conditions they may perform the work for which they are well suited.⁶⁶⁶

⁶⁵⁹ On a general note, see the discussion on the influence of big data on price discrimination in Istvan Borocz, 'Clash of Interests - Is Behaviour-Based Price Discrimination in Line with the GDPR' [2015] 153 *Studia Iuridica Auctoritate Universitatis Pecs Publicata* 37, 45-47.

⁶⁶⁰ Article 29 Working Party, 'Opinion 02/2010 on Online Behavioural Advertising' [2010] 00909/10/EN WP 171, page 20.

⁶⁶¹ Case C-524/06 *Heinz Huber v Bundesrepublik Deutschland* [2008] ECR I-09705, para 52; Article 29 Data Protection Working Party, 'Opinion 06/2014 on the notion of legitimate interests of the data controller under Article 7 of Directive 95/46/EC' (n 654) page 11.

⁶⁶² González and De Hert, 'Understanding the legal provisions that allow processing and profiling of personal data—an analysis of GDPR provisions and principles' (n 573) 606.

⁶⁶³ *ibid*; Information Commissioner's Office, 'How do we apply legitimate interests in practice?' < https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/legitimate-interests/how-do-we-apply-legitimate-interests-in-practice/#why_LIA > accessed 14 October 2019.

⁶⁶⁴ General Data Protection Regulation, art 21 (1); see also Lilian Edwards, 'Data Protection: Enter the General Data Protection Regulation' in Lilian Edwards (ed), *Law, Policy and the Internet* (Hart Publishing 2019) 100-101.

⁶⁶⁵ Article 29 Data Protection Working Party, 'Opinion 1/2008 on data protection issues related to search engines' (4 April 2008) 00737/EN WP 148, page 18

⁶⁶⁶ Barocas and Nissenbaum (n 635) 33.

We need further research identifying user expectations of privacy, which should help developing a reasoning sustaining user engagement in a consent model. These considerations need to be further incorporated into the design of interfaces allowing for dynamic adjustments of the notion of consent considering an individual's perception and self-relationality. The notions of individual perception and self-relationality, being values going beyond privacy management, are human values which need to be integrated in a new conceptual framework and embedded in the design of these systems.⁶⁶⁷

In doing so, we need to develop conditions that envisage a contextual approach grounded in individual perception and self-relationality in fashion identity. I will focus on the value-sensitive design approach to incorporate norms of individual perception and self-relationality. Value-sensitive design is 'working at the intersection of technology and society to make insightful investigations into technological innovation in ways that foreground the well-being of human beings'.⁶⁶⁸ Whilst formalising an ethics-by-design approach using human values is not uncontested in scholarship, the value-sensitive design approach is a useful starting point to take individual perception and self-relationality into an engineering context.⁶⁶⁹

I consciously leave out the Data Protection by Design and Default framework under the GDPR which deals with organisational and technical measures securing data protection compliance.⁶⁷⁰ Article 25 (1) and (2) of the GDPR establishes a set of measures for data controllers to evidence their compliance with the GDPR.⁶⁷¹ The data controller's organisational and technical responsibilities are an important tool to implement a mechanism of accountability, such as effectively implementing data protection principles into the system's interaction with the user.⁶⁷² Nevertheless, my aim is to consider how we can mediate interactions in a filter bubble and echo chamber based on an understanding of shared values, which

⁶⁶⁷ cf would be Data Protection Impact Assessment, which however is not always compulsory under the GDPR. On the guidance on which processing operations are subject to a DPIA, Article 29 Data Protection Working Party, 'Guidelines on Data Protection Impact Assessment (DPIA) and determining whether processing is "likely to result in a high risk" for the purposes of Regulation 2016/679' (adopted 4 April 2017, revised 4 October 2017) 17/EN WP 248 rev.01, pages 8-12.

⁶⁶⁸ Batya Friedman and David G Hendry, *Value Sensitive Design: Shaping Technology with Moral Imagination* (MIT Press 2019) 3.

⁶⁶⁹ See Steven Umbrello who asks a number of questions regarding the value-sensitive design approach, such as 'What are values? Where do values come from? Which values are socio-culturally unique and which values universal? Which values can be integrated into the design of technological innovations? How do we balance apparently conflicting values such as autonomy and security? Should moral values always be given precedence over values that are non-moral?'; Steven Umbrello, 'The moral psychology of value sensitive design: the methodological issues of moral intuitions for responsible innovation' (2018) 5 (2) *Journal of Responsible Innovation* 186, 191.

⁶⁷⁰ General Data Protection Regulation, art 25 (1); art 25 (2); art 5 (2); see also, Article 29 Data Protection Working Party, 'Opinion 3/2010 on the principle of accountability' (adopted 13 July 2010), para 72-75.

⁶⁷¹ General Data Protection Regulation, art 25 (1); art 25 (2).

⁶⁷² Lachlan Urquhart, Tom Lodge and Andy Crabtree, 'Demonstrably doing accountability in the Internet of Things' (2019) 27 (1) *IJLIT* 1, 9-10.

could ultimately strengthen the mechanism of accountability in data protection law including the GDPR.⁶⁷³

Referring to our interpretation of relational autonomy (Section III.1 of Chapter 4), an individual's control of personal information can relate to the flow of information. Helen Nissenbaum developed the theory of contextual integrity to reconfigure the disruptions of information flow to respect user privacy.⁶⁷⁴ What is significant about the theory of contextual integrity is that it directly addresses the flaws of the consent model which signifies 'procedural mechanism divorced from the particularities of relevant online activity'.⁶⁷⁵ Accordingly, Helen Nissenbaum's concept of 'contextual integrity' allows us to move away from the minimalistic notice and consent approach and focus on developing norms on 'information flow' that is governed by the type of information, the actors involved and transmission principles or the restrictions under which the information flows.⁶⁷⁶

Helen Nissenbaum's 'contextual integrity' has been implemented in research on privacy regarding social networking sites.⁶⁷⁷ In a paper by Yan Shvartzshnaider, Noah Apthorpe, Nick Feamster *et al* the application of 'contextual integrity' regarding privacy policies in Facebook's privacy policies revealed that the policies 'allow readers to interpret the missing parameters according to their own expectations, which may not match the actual practices of the company.'⁶⁷⁸ These considerations, focusing on the application of 'contextual integrity' in privacy policies, highlight the need to correspond their 'goals, purposes, and ends', to allow individuals to reconfigure their choices in light of the value of their personal data.⁶⁷⁹ In this respect, the notion of 'contextual integrity' regarding the collection, processing and storage of persona data intends to highlight broader user engagement beyond the notion of 'informed consent', requiring a method that investigates the contextuality of data points and abstract entities within the filter bubble or echo chamber in the fashion domain.⁶⁸⁰

⁶⁷³ This statement is based on the finding that both Data Protection by Design and Default and Value-sensitive design are important areas of research in Human Computer Interaction; see also Lachlan Urquhart, 'Ethical dimensions of user centric regulation' (2017) 1 (1) *Orbit Journal* 1, 3-4.

⁶⁷⁴ Helen Nissenbaum, 'Respecting Context to Protect Privacy: Why Meaning Matters' (2018) 24 (3) *Science and engineering ethics* 831, 834; see also, Luke Hutton and Tristan Henderson, 'Beyond EULA: Improving Consent for Data Mining' in Tania Cerquitelli, Daniele Quercia and Frank Pasquale (eds), *Transparent Data Mining for Big and Small Data* (Springer 2017) 151.

⁶⁷⁵ Helen Nissenbaum, 'A Contextual Approach to Privacy Online' (2011) 140 (4) *Daedalus* 32, 35.

⁶⁷⁶ Helen Nissenbaum, *Privacy in Context: Technology, Policy and the Integrity of Social Life* (Stanford Law Books 2010) 2; see also Solon Barocas and Helen Nissenbaum, 'Big Data's End Run around Anonymity and Consent' in Julia Lane, Victoria Stodden, Stefan Bender and Helen Nissenbaum (eds), *Privacy, Big Data, and the Public Good* (CUP 2014) 47.

⁶⁷⁷ Gordon Hull, Heather Richter Lipford and Celine Latulipe, 'Contextual gaps: privacy issues on Facebook' (2011) 13 (4) *Ethics and Information Technology* 289; see also Chris Noval and Tristan Henderson, 'Contextual Consent: Ethical Mining of Social Media for Health Research' (Arxiv, 26 January 2017) <<https://arxiv.org/abs/1701.07765>> accessed 17 June 2020.

⁶⁷⁸ Yan Shvartzshnaider, Noah Apthorpe, Nick Feamster, and Helen Nissenbaum, 'Analyzing Privacy Policies Using Contextual Integrity Annotations' (Arxiv, 2018) <<https://arxiv.org/abs/1809.02236>> accessed 17 June 2020 at page 2.

⁶⁷⁹ Helen Nissenbaum, *Privacy in Context: Technology, Policy and the Integrity of Social Life* (Stanford Law Books 2010) 134.

⁶⁸⁰ Richard Mortier, Hamed Haddadi, Tristan Henderson, Derek McAuley and Jon Crowcroft, 'Human-Data Interaction: The Human Face of the Data-Driven Society' (ArXiv, 6 January 2015) <<https://arxiv.org/pdf/1412.6159.pdf>> accessed 1 November 2020.

Another implication of my analysis in Section III.1 (of Chapter 4) is that some socio-technical assumptions need to be re-defined to safeguard an individual's autonomy and the flow of information. We need to translate the values of self-relationality and individual perception into a design framework. That is, we need a methodology to design interfaces operating regarding predictive and social media analytics in fashion which can code the meaning of 'informed consent' in the fashion context. There is a myriad of HCI methodologies supporting privacy enhancing technologies, whereby one comprehensive approach illustrates the 'value-sensitive design' methodology.⁶⁸¹ The value-sensitive design approach entails a third part framework using 'conceptual, empirical and technical investigations' to embed values in AI systems.⁶⁸² It has been employed in systems assessing informed consent regarding Information Systems,⁶⁸³ as well as persuasive technology.⁶⁸⁴

Our definition of "fashion identity and privacy" can offer a holistic view on the presiding norms that should govern the application of data personalisation algorithms in the fashion context that are based on a person's autonomy to manage his or her fashion identities. In this respect, a crucial element is to identify the way user expectations are formed with regarding to the sharing of personal data including aspects of 'fashion identity.' This may entail two things; one is enabling the individual re-configuring choices and consent considering the use of data in tandem with subjective perception, rather than shared fashion narratives in the filter bubble; and second, is the need of empirical research to identify shared cues on user expectations of privacy that operate when shared vulnerabilities are identified.

Let me outline these steps with an example: Imagine a notification service that intends to offer personalised advertising regarding fashion products using personal data, inferred data and aggregated data to identify preferences and trends for algorithmic filtering. To investigate the social norms in sharing data on social media sites on 'fashion' we need to establish a dynamic consent interface investigating the individuals' social selves of fashion identity. For example, an individual with a strong desire for differentiation might be willing to share data inferring cultural norms versus a user with strong inclination to conformity wants to consent only to tracking of geolocation data. Both options require a dynamic and transparent user interface. The aim of a conceptual and empirical investigation is to define the shared parameters to help to maintain an individual's informed consent in a filter bubble or echo chamber in a filter bubble.

⁶⁸¹ For an outline of the various approaches see Colin MGray, Shruthi Sai Chivukula and Ahreum Lee, 'What Kind of Work Do "Asshole Designers" Create? Describing Properties of Ethical Concern on Reddit' (DIS '20, Eindhoven, Netherlands, July 6–10, 2020).

⁶⁸² Steven Umbrello and Ibo van de Poel, 'Mapping value sensitive design onto AI for social good principles' [2021] *AI and Ethics* 1, 2.

⁶⁸³ See research by Batya Friedman, Peter H Kahn, Alan Borning and Alina Huldtgren, 'Value Sensitive Design and Information Systems' in Neelke Doorn, Daan Schuurbiens, Ibo van de Poel, Michael E Gorman (eds), *Early engagement and new technologies: Opening up the laboratory* (Springer 2013) 69.

⁶⁸⁴ See Batya Friedman and David G Henry, *Value Sensitive Design: Shaping Technology with Moral Imagination* (MIT Press 2019) 106.

In this context, the value-sensitive approach can illustrate the ‘technical investigation’ to embed the values of self-relationality and individual perception within individual autonomy in algorithmic filtering systems. In this respect, an important question is ‘how existing technological properties and underlying mechanisms support or hinder human values’ such as an individual informational self-determination.⁶⁸⁵ Accordingly, the investigation needs to consider the limitations of predictive and social media analytics in fashion identifying shared narratives to establish a value hierarchy, whereby perception and self-relationality should outweigh the importance of shared fashion narratives in the algorithmic model under a set of conditions. The trade-off that would need to be measured is individual autonomy to control aspects of fashion identity (i.e. privacy and informed consent) and group identification in the filter bubble and echo chamber in fashion (shared fashion narratives).⁶⁸⁶

VI. Do changes in communication structures manipulate individual behaviour?

Chapter 4 gave us important insights into how algorithmic personalisation systems can shape communication structures in the online sphere. I highlighted that filter bubbles and echo chambers in the fashion domain not only affect *what* I see but also *how* I see fashion products, having important implications for an individual’s self-identification. In this respect, I further elaborate that individual perception and self-relationality need to underpin an individual’s informational self-determination and consent to achieve meaningful control of aspects of fashion identity in the online sphere.

Chapter 4 also an important question that requires further analysis, which is if algorithms can effectively shape information structures and an individual’s process of self-identification, can we argue that personalisation systems in fashion can issue behavioural interventions to ‘nudge’ individual’s within that information structure?⁶⁸⁷ I already mentioned in Section V.2 (of Chapter 4) how website applications can use dark patterns to influence the way user’s consumer content, such as dedicating more time, money as well as attention to certain fashion products.⁶⁸⁸ Chapter 5 elaborates on the way fashion brands can shape consumer choice and deals with the contours of algorithmic personalisation in fashion to push or manipulate individuals within a socio-legal landscape.

⁶⁸⁵ Friedman, H Kahn, Borning, ‘Value Sensitive Design and Information Systems’ (n 683) 73.

⁶⁸⁶ This trade-off between individual privacy and group awareness is typical for a technical investigation in value-sensitive design, taken from Friedman, H Kahn, Borning, ‘Value Sensitive Design and Information Systems’ (n 683) 73

⁶⁸⁷ See for example, Alex Hern, ‘Study finds growing government use of sensitive data to ‘nudge’ behaviour’ *The Guardian* (London, 8 September 2021) < www.theguardian.com/technology/2021/sep/08/study-finds-growing-government-use-of-sensitive-data-to-nudge-behaviour> accessed 12 September 2021

⁶⁸⁸ Sidney Fussell, ‘The Endless, Invisible Persuasion Tactics of the Internet: Online shopping turns your brain against you, but you can fight back’ (*The Atlantic*, 2 August 2019) < www.theatlantic.com/technology/archive/2019/08/how-dark-patterns-online-manipulate-shoppers/595360/> accessed 22 October 2021.

Chapter 5

Fashion recommender systems and interactive value creation⁶⁸⁹

Algorithmic processes engage in a process of interactive value creation based on the creation of an imaginary that affects the individual's subjective experience of self, and a person's identification of the self in a social context. This chapter focuses on the notion of individual perception and self-relationality in the context of fashion recommender systems and nudges. In doing so, I claim that fashion recommender systems shape the expression of inter-personal values and impact an individual's conditions to exercise autonomy. I test the argument's legal significance in two ways; one focusing on unfair commercial practices and second, examining the notion of transparency in the GDPR.

I. Introduction

'We need maps to navigate the world of work, health and relationships. Maps that help people to reach their destinations, prevent them getting lost'.⁶⁹⁰

The main task of the following analysis is to answer, what are the boundaries of acceptable and unacceptable nudges and how is the issue to differentiate between algorithmic interventions into human decision-making exacerbated with regard to fashion recommender systems? The concept of 'nudges' suggests that individual choices need to be organised and translated into actionable options promoting individual wellbeing.⁶⁹¹ Therefore, nudges, being an important tool in behavioural economics, are important means to push individuals making the right choices, whilst maintaining freedom of choice.⁶⁹² Take an example of a GPS system that warns the user about speed bumps or traffic steering 'people in a certain direction, but people are at liberty to select their own route instead'.⁶⁹³ Fashion recommender

⁶⁸⁹ I confirm that significant parts of this chapter are from my own published work; see Daria Onitiu, 'Determining your 'fashion identity' in fashion recommender systems and issues surrounding the right to privacy' [2021] 12 (1) European Journal of Law and Technology: BILETA Special Issue 25.

⁶⁹⁰ Taken from 'Sunstein: "To be free, don't content yourselves with the present": Law professor Cass R. Sunstein explains: "present bias" is the tendency to be satisfied with a small reward today rather than waiting for a greater reward in the future, for example by investing in ourselves and our education' (*Morning Future*, 23 October 2020) <www.morningfuture.com/en/article/2020/10/23/freedom-choice-nudge/1047/> accessed 12 November 2020.

⁶⁹¹ Cass R Sunstein, *Human Agency and Behavioral Economics: Nudging Fast and Slow* (Palgrave Macmillan 2017) 18; Kahneman (n 366).

⁶⁹² *ibid.*

⁶⁹³ Cass R Sunstein, 'Nudging: A very Short Guide' [2014] 37 JCP 583, 584; Richard H Thaler, 'Do you need a nudge? Richard Thaler outlines how principles from behavioral economics can help policymakers and managers achieve better outcomes' (*Yale Insights*, 4 November 2009) <<https://insights.som.yale.edu/insights/do-you-need-nudge>> accessed 12 November 2020; Richard H Thaler and Cass R Sunstein, 'Libertarian Paternalism is not an Oxymoron' (2003) PUBLIC LAW AND LEGAL THEORY WORKING PAPER NO. 43, 2 <https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1184&context=public_law_and_legal_theory> accessed 12 November 2020.

systems, in contrast, utilise the notion of passive nudges, which builds on user responsiveness and unconscious associations with fashion identity. Algorithmic personalisation systems in fashion intend to give a holistic outlook on individual behaviour and shape the conditions of individual decision-making.

We need an enhanced understanding of the impact of fashion recommender systems on the conditions exercising autonomy. In this respect, recommender systems in the fashion domain may generate behavioural insights that may “nudge” users into a preferred choice architecture, having an impact on an individual’s autonomy.⁶⁹⁴ Referring to the concept of ‘hypernudging’, fashion recommender systems, add another dimension to the issues of autonomy, creating an imaginary which limits the gaze through which an individual interprets his or her understanding of “fashion” and place the complexity of identity-building into a broader imaginary of pre-defined norms and values.⁶⁹⁵ Hence, fashion recommender systems raise issues for an individual’s autonomy, which necessitate a deeper understanding of conditions that shape the expression of inter-personal values.

Based on these considerations, how do we assess the boundaries of hypernudges in fashion recommender systems? ‘Fairness’ illustrates an important principle to examine the legality of commercial practices in the Unfair Commercial Practices Directive (UCP Directive).⁶⁹⁶ In addition, the GDPR introduces an important meaning to fairness which focuses on lawfulness and transparency.⁶⁹⁷ In both instances, fairness is an important (and overarching) principle to protect individual decision-making, whether that is through the ban of undue influence regarding commercial practices or transparency in data protection law.⁶⁹⁸ However, current efforts on the EU, which includes the proposal of the Digital Services Act, seem to be inclined to use consumer law for the regulation of recommender systems⁶⁹⁹ – which could act in both in harmony and disagreement with the GDPR when focusing on user transparency.

Therefore, we need to identify the meaning of misleading and aggressive practices in the UCP Directive and ask whether the terms in the UCP Directive can secure an individual’s informed choice in protecting against persuasion in fashion recommender systems. Here, I reiterate that the imaginary created by the

⁶⁹⁴ Yeung, ““Hypernudge”: Big Data as a Mode of Regulation by Design’ (n 357)118.

⁶⁹⁵ *ibid.*

⁶⁹⁶ See Inge Graef, Damian Clifford and Peggy Valcke who outline that ‘under the Unfair Terms Directive and the Unfair Commercial Practices Directive, fairness acts as the substantive standard against which the legality of contract terms and commercial practices are tested, respectively.’ Inge Graef, Damian Clifford and Peggy Valcke, ‘Fairness and enforcement: bridging competition, data protection, and consumer law’ (2018) 8 (3) IDPL 200, 204.

⁶⁹⁷ Gianclaudio Malgieri, ‘The concept of fairness in the GDPR: A linguistic and contextual interpretation’ (FAT* ’20: Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency, New York, United States, 27-30 January 2020) pages 155-156.

⁶⁹⁸ On the interplay between data protection and consumer law see, Graef, Clifford and Valcke, ‘Fairness and enforcement: bridging competition, data protection, and consumer law’ (n 696) 206.

⁶⁹⁹ Proposal for a Regulation of the European Parliament and of the Council on a Single Market for Digital Services (Digital Services Act) and amending Directive 2000/31/EC [2020] COM/2020/825 final; see also, Artificial Intelligence Act proposal.

algorithm is neither true nor false as it is not creating any deceptive impressions on the wearer but rather it is the process of situational and dispositional attributions that impacts an individual's presumed assumptions including informed choice. Therefore, I suggest that we need a different concept of the 'average consumer' to protect the individual against these types of harm. Another suggestion entails the clarification of 'aggressive practices', which only cover instances that are strictly evidenced by the manipulation of user incentives, which do not contain the new forms of vulnerability based on the fashion recommender's interactive value creation.⁷⁰⁰

Interpretability and explainability of the algorithmic process could illustrate the first step in ensuring an individual's control over aspects of identity-building and to specify the control regarding acceptable and unacceptable nudges in fashion recommender systems. There are inherent challenges to ensuring transparency in fashion recommender systems. One consideration is that attentional models for ensuring interpretability for neural networks do not guarantee explainability of the algorithmic process. That being said, focusing on the so-called "right to explanation" in the GDPR,⁷⁰¹ we need a clearer account of the parameters of the right to privacy regulating the impact of fashion recommender systems. Therefore, I suggest that a right to explanation needs to focus on the comprehensibility of algorithmic decisions regarding the system's functionality to close the gap between issues of interpretability and explainability in fashion recommender systems.

II. The concept of a "nudge": a little push to make the right decisions

Let us unpack the concept of "nudges" and why this theory is important to understand and shape human decision-making. Richard H Thaler and Cass R Sunstein suggest that individual decision-making needs to be shaped based on a notion of liberal paternalism which takes the contours of the decision-making (i.e. choice architect).⁷⁰² We need to elaborate the operation of nudges and what are the available means to steer people's choices in the context of technology and algorithms.

We need to make a distinction between informational and passive nudges. On the one hand, we have informational nudges, which aim to direct an individual's preference structure without undermining the person's explicit preferences. On the other hand, passive nudges are focused on the users' cognitive bias, including implicit preferences. It is the latter type of nudge's addressing an individual's

⁷⁰⁰ Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council (Unfair Commercial Practices Directive) [2005] OJ L149/22.

⁷⁰¹ General Data Protection Regulation, art 22.

⁷⁰² Richard Thaler and Cass R Sunstein, *Nudge: Improving decisions about health, wealth and happiness* (Penguin 2008).

deficiencies which can prove controversial to maintain an individual's freedom of choice in a technological context, whereby smart wearables and interactive devices in fashion intend to gain a holistic view of individual behaviour.

1. Nudges: working definitions

What are the parameters and conditions of a better choice? For Sunstein and Thaler tweaking human behaviour and inducing soft behavioural changes are important solutions to improve individual and collective wellbeing.⁷⁰³ Their main argument is that an organising idea, which is called a choice environment can 'nudge' individuals adopting a certain behaviour, without precluding any other options.⁷⁰⁴ Take their cited example of a cafeteria which organises their fruits in the front row and places all the sweet deserts in the back row.⁷⁰⁵ Whilst an individual's choice architecture is not restricted to only-fruits options, the person is 'nudged' to adopt a healthier style of living.⁷⁰⁶ Sunstein's and Thaler's is significant, shedding light the importance of navigating principles (i.e. nudges) to secure agency and choice. 'Freedom of choice in itself is not enough'.⁷⁰⁷

The main idea behind the concept of 'nudges' is a framework intended to give a more realistic view of individual decision-making.⁷⁰⁸ Their work is largely inspired by the work of Daniel Kahneman and Amos Tversky, illustrating a departure from the rational actor model exemplifying human behaviour, and endorsing a perspective on human decision-making overlapping with psychological research.⁷⁰⁹ According to this conception on behavioural economics, many simple judgments are based on an individual's irrationality or heuristics.⁷¹⁰ Individuals do not engage in rational decision-making relying on complete information, and their behaviour appears to be 'dynamically inconsistent'.⁷¹¹ As suggested by Thaler and Sunstein:

⁷⁰³ 'The Harvard academic and bestselling author talks to AIQ about the power of social conformity and what behavioural economics can teach us about tackling climate change' (*Avivainvestors*, 20 January 2020) <www.avivainvestors.com/en-gb/views/aiq-investment-thinking/2020/01/nudge-an-interview-with-cass-r--sunstein/> accessed 12 November 2020.

⁷⁰⁴ Mark Egan, *An analysis of Richard H Thaler and Cass R Sunstein's Nudge: Improving decisions about health, wealth and happiness* (Macat International Limited 2017) 3.

⁷⁰⁵ Thaler and Sunstein, *Nudge: Improving decisions about health, wealth and happiness* (n 702) 1-6.

⁷⁰⁶ *ibid*; see also, the 'SUPA Sports Bra', which is an example of smart clothing in fashion and gives a user an insight into his or her exercise habits, does not force a person to change calorie consumption, but 'nudges' the user to optimise the training process, see Sophie Charara, 'This Supa Powered smart sports bra is a mash up of neon, heart rate and AI' (*Wearable*, May 2017) < www.wearable.com/sport/supa-powered-smart-sports-bra-features-price-release-date-8888> accessed 16 September 2020.

⁷⁰⁷ 'Sunstein: "To be free, don't content yourselves with the present": Law professor Cass R. Sunstein explains: "present bias" is the tendency to be satisfied with a small reward today rather than waiting for a greater reward in the future, for example by investing in ourselves and our education' (n 690).

⁷⁰⁸ Egan (n 704) 7.

⁷⁰⁹ Amos Tversky and Daniel Kahneman, 'Judgement under Uncertainty: Heuristics and Biases: Biases in judgments reveal some heuristics of thinking under uncertainty' (1974) 185 (4157) *Science* 1124; Egan (n 704) 4; See also, Elina Halonen, 'Research Heroes: Richard Thaler' (:InDecision: Inside decision-making science, 15 January 2013) < <https://indecisionblog.com/2013/01/15/research-heroes-richard-thaler/>> accessed 12 November 2020.

⁷¹⁰ See Amos Tversky and Daniel Kahneman who argue that 'people rely on a limited number of heuristic principles which reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations.' Taken from Tversky and Kahneman (n 709) 1124.

⁷¹¹ Thaler and Sunstein, *Nudge: Improving decisions about health, wealth and happiness* (n 702) 44.

in many cases, people make pretty bad decisions—decisions they would not have made if they had paid full attention and possessed complete information, unlimited cognitive abilities, and complete self-control.⁷¹²

Against this background, the concept of nudge endorses interventions with human decision-making to preserve an individual's free choice. Thaler and Sunstein's concept of nudge is based on the notion of 'libertarian paternalism'⁷¹³, which seems to incorporate two contradictory ideas but is intended to illustrate an 'attractive policy alternative'.⁷¹⁴ "Nudges" are important to address issues of self-control, such as relating to the consumption of 'sinful goods' (e.g. smoking, eating unhealthy food) or problems to translate experiences into real-time choices (e.g. choosing a mutual fund for a retirement portfolio).⁷¹⁵ The 'choice architect' is required to channel those demands, interpreting the stimuli in an interactive environment.⁷¹⁶ In this respect, any choice architecture needs to be based on improving the individuals' welfare, preserving an individual's free choice to subject him or herself to other options. 'Weak choices' are not blocked off but that the environment offers the conditions to act self-consciously for good choices.⁷¹⁷

It is important to reiterate the ideological assumptions of Thaler and Sunstein's theory of nudges to highlight the significance of free choice. Sunstein often highlighted the importance of 'navigability' which addresses the structure of human judgement at its externality and enhances an individual's self-consciousness.⁷¹⁸ He uses the example of a GPS device which according to Sunstein promotes individual agency and choice by 'making it easier for people to get to their own preferred destination'.⁷¹⁹ In this respect, an individual's agency and choice is exercised within the choice architecture.⁷²⁰ Referring to the cited example, an individual's autonomy is exercised within the certain context or a pre-defined arrangement, being informed to reach his or her destination, receiving a warning on certain hazards on the street, or being educated or reminded about speeding limits.⁷²¹ Accordingly, nudges intend to steer

⁷¹² *ibid* 5.

⁷¹³ Thaler and Sunstein, *Nudge: Improving decisions about health, wealth and happiness* (n 702) 5.

⁷¹⁴ Thaler, 'Do you need a nudge? Richard Thaler outlines how principles from behavioral economics can help policymakers and managers achieve better outcomes' (n 693); Thaler and Sunstein, 'Libertarian Paternalism is not an Oxymoron' (n 693) page 2.

⁷¹⁵ Thaler and Sunstein, *Nudge: Improving decisions about health, wealth and happiness* (n 702) 80, 83.

⁷¹⁶ See Richard H Thaler who stipulates that 'When a professor teaches a course, he is the choice architect. When somebody puts this magazine together, they will decide in what order the articles appear and what illustrations and photos accompany them that may or may not attract people's attention', taken from Thaler, 'Do you need a nudge? Richard Thaler outlines how principles from behavioral economics can help policymakers and managers achieve better outcomes' (n 693).

⁷¹⁷ *ibid*; see also, Yang Wang, Pedro Giovanni Leon, Kevin Scott, Xiaoxuan Chen, Alessandro Acquisti and Lorrie Faith Cranor, 'Privacy Nudges for Social Media: An Exploratory Facebook Study' (WWW '13 Companion: Proceedings of the 22nd International Conference on World Wide Web, Rio de Janeiro, Brazil, May 2013).

⁷¹⁸ Hettie O'Brien, 'Cass Sunstein and the rise and fall of nudge theory' *The New Statesman* (London, 22 May 2019) < www.newstatesman.com/politics/economy/2019/05/cass-sunstein-and-rise-and-fall-nudge-theory> accessed 12 December 2020.

⁷¹⁹ Cass Robert Sunstein, 'Nudges, Agency, Navigability, and Abstraction: A Reply to Critics' (2015) 6 (3) *Review of Philosophy and Psychology* 511, 512.

⁷²⁰ *ibid*.

⁷²¹ See the statement by Cass R Sunstein 'Any store has a design; some products are seen first, and others are not. Any menu places the options at various locations. Television stations come with different numbers, and strikingly, lower numbers are better, even when the costs of switching are vanishingly low; people are more likely to choose a station numbered 2 or 3 than

individual choices as ‘judged by themselves’, such as bringing to their own preferred destination or at least identified as a ‘collective action’ (i.e. reducing speed is in line with the authorities’ effort to limit environmental harms).⁷²² Thus, nudges allow an individual to navigate within a pre-defined social context, preserving an individual’s autonomy and freedom of choice.⁷²³

Hence, an important aspect of ‘nudges’ is their degree of persuasion, including approach to shape individual choices. The fundamental argument of Thaler and Sunstein’s theory of ‘nudges’ is that paternalism does not entail coercion.⁷²⁴ Yet their conception of libertarian paternalism received criticism which is precisely because nudges can illustrate a coercive intervention with human decision-making.⁷²⁵ Take Sunstein’s example to nudge individual to stop smoking, using pictures on cigarette packages that show the negative side effects of cigarette consumption.⁷²⁶ How do we assess the conditions of freedom of choice? Can an individual exercise his or her agency and choice through narrow coercion or deliberation (i.e. some people might be discouraged to buy cigarettes with certain graphic images),⁷²⁷ or do graphic images on cigarette packages illustrate a nudge that informs and discourages individuals of the negative effects of smoking? (i.e. individuals can still choose to buy cigarettes).⁷²⁸ We need to elaborate on the operation of ‘nudges’ and what are the available means to steer people’s choices in the context of technology and algorithmic decision-making.

2. Wearing ‘nudges’ under your skin

Digital tracking and analytics illustrate important means to intervene in future behaviour.⁷²⁹ This Section will use the study of wearable technology to investigate the concept of nudges as an interventionist approach into notions of health, as well as lifestyle and (unhealthy) preferences.⁷³⁰ I am choosing

one numbered 150 or 200. Any website has a design, which will affect what and whether people will choose. Streets, street signs, computers, cell phones, and ballots offer choice architecture of their own’ taken from Sunstein, ‘Nudges, Agency, Navigability, and Abstraction: A Reply to Critics’ (n 719) 512.

⁷²² Thaler and Sunstein, *Nudge: Improving decisions about health, wealth and happiness* (n 702) 5; Sunstein, ‘Nudges, Agency, Navigability, and Abstraction: A Reply to Critics’ (n 719) 522.

⁷²³ Sunstein, ‘Nudges, Agency, Navigability, and Abstraction: A Reply to Critics’ (n 719) 512.

⁷²⁴ Thaler and Sunstein, ‘Libertarian Paternalism is not an Oxymoron’ (n 693) page 7.

⁷²⁵ See for example, Bryan Caplan, ‘Why No Slippery Slope? Because Paternalists Start at the Bottom’ (*EconLog: The Library of Economics and Liberty*, 10 August 2013) < www.econlib.org/archives/2013/08/why_no_slippery.html> accessed 15 December 2020; David Henderson, ‘Sunstein Goes Straight to Coercion’ (*EconLog: The Library of Economics and Liberty*, 17 August 2013) < https://www.econlib.org/archives/2013/08/time_out_from_p.html> accessed 14 December 2020.

⁷²⁶ Sunstein, ‘Nudges, Agency, Navigability, and Abstraction: A Reply to Critics’ (n 719) 514-515; Cass R Sunstein, ‘Cigarette Warnings Are About to Get Really Scary’ (*Bloomberg Opinion*, 24 March 2020) < www.bloomberg.com/opinion/articles/2020-03-24/cigarette-warnings-are-about-to-get-scarier-thanks-to-the-fda> accessed 12 November 2020.

⁷²⁷ This is indeed the argument of David Henderson, taken from David Henderson, ‘Sunstein Goes Straight to Coercion’ (*EconLog: The Library of Economics and Liberty*, 17 August 2013) < https://www.econlib.org/archives/2013/08/time_out_from_p.html> accessed 14 December 2020.

⁷²⁸ *ibid*; see also, Cass R Sunstein, ‘Cass R. Sunstein: The FDA’s new graphic cigarette labels are smart’ *Pittsburgh Post-Gazette* (Pittsburgh, 19 April 2019) < www.post-gazette.com/opinion/Op-Ed/2019/08/20/Cass-R-Sunstein-FDA-cigarette-labels-health-risks-smoking/stories/201908200017> accessed 12 November 2020.

⁷²⁹ Natasha Dow Schüll, ‘Data for life: Wearable technology and the design of self-care’ (2016) 11 (3) *BioSocieties* 317, 319.

⁷³⁰ See for example Marijn Sax, Natali Helberger and Nadine Bol who investigate the concept of nudge and autonomy regarding mHealth Apps, see Sax, Helberger and Bol (n 349) 103; see also, Rachel Metz, ‘A Health-Tracking App You Might Actually

wearable technology as a case study as it is a convenient way to elaborate on the working definitions above, before moving to the more abstract and complex application of nudges in the context of fashion recommender systems.

Wearable or situated technology, such as placed in a store, your living room, or on the user's body, being relevant in the fashion domain⁷³¹ enhances user sensibility with 'nudges'.⁷³² Nudges can be informational, directing an individual's preference structure without undermining the person's explicit preferences. Conversely, passive nudges are focused on the user's cognitive bias including implicit preferences. Thus, we need to elaborate on the nature of passive nudges to identify how algorithmic personalisation systems shape the traditional assumptions on agency and choice.

Computational and technological advances in detection and interpreting user behaviour lead to a plethora of advances to stimulate positive user engagement and change certain health decisions or lifestyle choices.⁷³³ In this respect, many examples employ soft nudges, emphasising the user's management of his or her own conditions, and providing information for educational or motivational purposes.⁷³⁴ For example, the applications 'MapMyFitness' and 'Google Fit' allows their user to track their walking and running steps and illustrates the data in user comprehensible form.⁷³⁵ Furthermore, the 'UA Record' application allows the user to interpret correlations regarding his or her sleeping or nutrition and workout performance.⁷³⁶ These examples are set to improve the user's decision-making by interpreting or rating the wearer's habits, such as prompting the user's reaching their own fitness target or reducing calorie consumption without specifically recommending the individual to go to the gym or

Stick With: Researchers built a mobile health app that tracks your activity and eating habits so it can nudge you with goals that fit your routine' (*MIT Technology Review*, 28 July 2015) < www.technologyreview.com/2015/07/28/248266/a-health-tracking-app-you-might-actually-stick-with/> accessed 16 September 2020.

⁷³¹ **Chapter 1** talks a bit about the relevance of smart environments and smart mirrors in the fashion domain. In addition, see very interesting analysis about this by Nello Barile and Satomi Sugiyama who assess the significance of wearable technologies in light of fashion studies, see Nello Barile and Satomi Sugiyama, 'Wearing Data: from McLuhan's "Extended Skin" to the Integration Between Wearable Technologies and a New Algorithmic Sensibility' (2018) 24 (2) *Fashion Theory: The Journal of Dress, Body and Culture* 211.

⁷³² For a general outlook see Reza Rawssizadeh, Elaheh Momeni, Chelsea Dobbins, Pejman Mirza-Babei and Ramin Rahnamoun, 'Lesson Learned from Collecting Quantified Self Information via Mobile and Wearable Devices' (2015) 4 (4) *Journal of Sensor and Actuator Networks* 315.

⁷³³ A report on an event organised by the European Commission back in 2015 endorses the important of smart wearables to induce self-improvement, see 'Information and Stakeholders' Day on Smart Wearables Organised by the European Commission, Directorate General for Communications Networks, Content and Technology, DG CONNECT' 11th December 2015, Brussels, Belgium < https://ec.europa.eu/information_society/newsroom/image/document/2016-11/report_on_smart_wearables_information_and_stakeholders_day_14540.pdf> accessed 12 December 2020; David Pogue, 'Wearable Devices Nudge You to Health' *The New York Times* (New York City, 26 June 2013) < <https://www.nytimes.com/2013/06/27/technology/personaltech/wearable-devices-nudge-you-to-a-healthier-lifestyle.html> > accessed 12 December 2020; see also Sofia Ranchordas, 'Nudging citizens through technology in smart cities' (2020) 34 (3) *International Review of Law, Computers & Technology* 254, 255.

⁷³⁴ See for example the 'Nudge Health Tracking' application which helps to 'self-report some information about your food and beverage intake, unhealthy indulgences, and energy levels. The app helps you track how much coffee, water, alcohol, cigarettes, vegetables, and fried food you consume, so you can track both your healthy and unhealthy habits', taken from Sarah Mitroff, 'Nudge gives you a simple snapshot of your health' (*CNet*, 11 July 2014) < www.cnet.com/news/nudge-app-fitness-fitbit/> accessed 19 December 2020.

⁷³⁵ Rachel Daily, 'Google Fit + MapMyFitness' (*mapmyrun*, 16 June 2015) < <https://blog.mapmyrun.com/google-fit-mapmyfitness/>> accessed 12 November 2020.

⁷³⁶ Kieran Alger, 'UA Record: How to use Under Armour's app to become a better runner' (*Wearable*, 14 April 2017) < www.wearable.com/apple/under-armour-record-guide-560> accessed 12 December 2020.

do another workout. Often these technologies are innocuous to the wearer and beholder's eye, adapting to the individual's appearance and style in the shape of a watch, a ring, a crystal pendant, or within a garment.⁷³⁷ Thus, wearable technologies using 'soft nudges' whilst envisaging to frame the wearer's choice architecture towards a healthier lifestyle, is intended to preserve the individual's explicit preferences.

Other examples employ nudges framing the user's information management.⁷³⁸ Augmented reality technology in smart mirrors can influence human behaviour, based on the tools' emphasis on the individual's self-awareness.⁷³⁹ For instance, the 'CareOS' smart mirror not only enables user interaction with the fashion product but operates with AI techniques giving 'beauty tips, fitness coaching and vision tests.'⁷⁴⁰ In addition, the 'Mirror' tool, establishing a biometric profile on the user, interacts with and encourages the individual during his or her workout.⁷⁴¹ Furthermore, smart wearables can provide 'alerts' inducing the wearer to actively manage stress or habits, such as providing reminders for relaxation.⁷⁴² These tools capacities do not simply augment individual habits but proactively shape the choice architecture in light of the pre-existing circumstances, such as issuing reminders, warnings or providing encouragement to users during their daily activities.

It follows that we should make a distinction between informational and passive nudges. The former type of nudges is merely monitoring user behaviour and provides outcomes to softly 'nudge' the consumer adopting a certain behaviour. This kind of 'nudge' suits with the concept of 'navigability'. Just take the example of the 'MapMyFitness' application which allows the user to track the steps on an interactive map to follow the exercise by measuring pace, monitoring heart rate, and counting calories burnt during the workout.⁷⁴³ Thus, the nudges inform the user whether he or she is on the 'right track' regarding their

⁷³⁷ 'Semi-precious: The best smart jewelry Rings, bracelets, necklaces and clip-ons with hidden tech talents' (*Wearable*, 16 October 2018) < www.wearable.com/fashion/semi-precious-the-best-smart-jewelry-582> accessed 16 December 2020.

⁷³⁸ See for example, Moises Humberto Gallegos, "'Nudges" in health: Lessons from a fitness tracker on how to motivate patients' (*Stanford Medicine*, 7 January 2015) < <https://scopeblog.stanford.edu/2015/01/07/nudges-in-health-lessons-from-a-fitness-tracker-on-how-to-motivate-patients/>> accessed 12 December 2020.

⁷³⁹ On the impact of mirrors on self-reflection and recognition see this line of research in the field of psychology and behavioural science, Nicholas Epley and Erin Whitchurch, 'Mirror, Mirror on the Wall: Enhancement in Self-Recognition' (2008) 34 (9) *Personality and Social Psychology Bulletin* 1159; C Neil Macrae, Galen V Bodenhausen and Alan B Milne, 'Saying No to Unwanted Thoughts: Self-Focus and the Regulation of Mental Life' (1998) 74 (3) *Journal of Personality and Social Psychology* 578; see also, Natali Angier, 'Mirrors Don't Lie. Misdread? Oh, Yes' *New York Times* (New York City, 22 July 2008) < www.nytimes.com/2008/07/22/science/22angi.html?_r=2&auth=login-google&oref=slogin&pagewanted=all&ref=science> accessed 12 November 2020

⁷⁴⁰ Vince Tabora, 'A Review of CES 2019: The Latest, Greatest, Interesting Things In Technology Today' (*Medium*, 15 January 2019) < <https://medium.com/hd-pro/a-review-of-ces-2019-7863cd14e425>> accessed 12 December 2020.

⁷⁴¹ *ibid.*

⁷⁴² Christina Farr, 'Livongo will work with Apple Watch and other wearables to nudge you into healthy habits' (*CNBC*, 26 June 2019) < www.cnbc.com/2019/06/25/livongo-health-nudges-coming-to-apple-watch-fitbit-samsung-watches.html#close> accessed 12 November 2020.

⁷⁴³ Natt Garun, 'How to sync all your fitness activities with Google Fit' (*The Verge*, 11 August 2019) < www.theverge.com/2019/8/11/20792300/how-to-sync-fitness-apps-google-fit-runkeeper-strava-runtastic-headspace> accessed 12 December 2020; also see the paper Maya Bar-Hillel and Cass R Sunstein for an excellent illustration of these kind of nudges using the Grand Hotel in Stockholm, Sweden, Maya-Bar Hillel and Cass R Sunstein, 'Baffling Bathrooms: On Navigability and Choice Architecture' (2019) The Federmann Center for the Study of Rationality Discussion Paper # 726 < <http://ratio.huji.ac.il/sites/default/files/publications/dp726.pdf>> accessed 12 December 2020.

fitness, allowing the individual to navigate within his or her preferences (for example, burning the right amount of calories).

Now let us imagine that the ‘MapMyFitness’ application is synched with the user’s running shoes, providing personalised coaching tips during his or her exercise.⁷⁴⁴ Here the emphasis of the ‘nudge’ is passive as it only prompts with specific user guidance when the runner would need help to improve, such as giving suggestions ‘how to gauge the runner’s fatigue’.⁷⁴⁵ This example highlights the implicit usefulness of nudges in that whilst it does not intend to influence the explicit preference of the runner (i.e. the individual’s aim to complete a workout to burn calories) it addresses the wearer’s irrationality (for example, running the same pace when suffering from fatigue) in order to reach the end-goal of the workout (i.e. adjusting coaching tips based on the runner’s data in the smart shoes).⁷⁴⁶ Thus, both types of nudges are similar in their parameters (such as addressing the runner’s wellbeing and health), whereby the nudges are different to secure the conditions to maintain the user’s preferences (i.e. informational nudges focuses on explicit preferences, while passive nudges are focused on the runners’ cognitive bias including implicit preferences).

It is the second type of nudge addressing an individual’s deficiencies which can prove controversial to maintain an individual’s freedom of choice. Take the new application called the ‘DNA Nudge’ which is a new project promising to nudge the individual into healthier choices when shopping.⁷⁴⁷ The provider uses the individual’s genes to determine conditions, such as type-two diabetes, and provide ‘nudges’ to buy products with a specific nutritional profile.⁷⁴⁸ In this respect, the digital DNA is stored in a specific capsule linked to the smartphone and wristband, which works with the consumer profile stored in the cloud.⁷⁴⁹ The application based on the user’s unique profile is then able to send reminders ‘to get active’ or explain which skincare or food products are healthy decisions.⁷⁵⁰

As their mission to personalise one’s own lifestyle the organisation announces that:

⁷⁴⁴ ‘Running Without Your Phone’ (*mapmyfitness*, 24 November 2020) < <https://support.mapmyfitness.com/hc/en-us/articles/115005904646-Running-Without-Your-Phone>> accessed 12 November 2020.

⁷⁴⁵ Marc Lindsay, ‘How Smart Shoes Can Help Runners Improve’ (*mapmyrun*, 27 November 2019) < <https://blog.mapmyrun.com/how-smart-shoes-can-help-runners-improve/>> accessed 12 December 2020.

⁷⁴⁶ See also the analysis in Till Grüne Yanoff and Ralph Hertwig, ‘Nudge Versus Boost: How Coherent are Policy and Theory?’ (2016) (1-2) *Minds and Machines* 149, 153.

⁷⁴⁷ ‘Who are DnaNudge Ltd?’ (Imperial College London) < www.imperial.ac.uk/nudgeomics/aspire-dna-clinical-trial/who-are-dnanudge-ltd/> accessed 1 November 2021.

⁷⁴⁸ Peter Littlejohns, ‘What is DnaNudge? The company that uses biology to personalise healthy lifestyles’ (*NS Medical Devices*, 16 October 2020) < www.nsmedicaldevices.com/analysis/what-is-dnanudge/> accessed 12 December 2020.

⁷⁴⁹ *ibid.*

⁷⁵⁰ *ibid.*; In this respect, ‘if the product is not good, the app will display a range of personalised recommended alternatives, for example a breakfast cereal with less sugar’, taken from Joanna Wilson, ‘Imperial startup launches flagship store in the heart of London’ (*Imperial College London*, 6 November 2019) < www.imperial.ac.uk/news/193750/imperial-startup-launches-flagship-store-heart/> accessed 12 December 2020.

Behavioural change. It's hard. But what if the answer is in your own DNA? No more impossible diets or best intentions, just realistic, actionable, personal DNA-based recommendations when you're shopping. This is DnaNudge.⁷⁵¹

...[e]ach one of us is genetically unique and our DNA determines what foods are good or bad for us. One size does not fit all, and generalised recommendations may not be right for you. At DnaNudge we enable you to use your own DNA, your own biology, to inform your everyday choices – it makes health personal.⁷⁵²

How does this approach of a passive nudge significantly differ from Thaler and Sunstein's theoretical outlook as well as the practical role of nudges? The first consideration is that the concept of DNA nudge establishes user profiles based on a set of anticipated modes of behaviour. In this respect, the 'physical inactivity monitor' will allow the application to adjust personalised suggestions based on the inactivity of the wearer.⁷⁵³ It does not intend to direct the user to their desired outcome self-consciously.⁷⁵⁴

The second aspect is more controversial for both the practical application and theoretical implications of nudges regarding an individual's agency and choice. The concept of DNA nudge intends to 'provide a complete new approach to eat healthy', 'using genetic insight into well-understood health risk factors and combining this with lifestyle "nudges"'.⁷⁵⁵ Accordingly, the concept sets the parameters to increase wellbeing and health by stipulating the choice architecture and conditions to direct the user's lifestyle choices. It is the manipulation of individual choices through the choice architecture that has been criticised regarding Thaler and Sunstein's concept of nudge.⁷⁵⁶ The problem is that once we seek to address issues of self-control, such as engaging with a healthy lifestyle, the aim is both, to influence self-conscious decisions in the short-term as well as human motivations in the long-term.⁷⁵⁷

By way of illustration, if I need to lose weight, I need to engage with the goal of eating more healthy products as well as develop an attitude to refrain from unhealthy choices to increase my wellbeing. Nevertheless, what kind of psychological interventions and nudges in my lifestyle are necessary to combat my unhealthy habits? Would that be limited to the consumption of calories or does that transcend to other daily activities, such as sleeping and resting patterns, or less scientific areas, such as the choice

⁷⁵¹ 'About us: DNA Nudge' < www.dnanudge.com/en/about-us > accessed 17 December 2020.

⁷⁵² *ibid.*

⁷⁵³ Wilson 'Imperial startup launches flagship store in the heart of London' (n 750).

⁷⁵⁴ Thaler and Sunstein, 'Libertarian Paternalism is not an Oxymoron' (n 693) page 4.

⁷⁵⁵ Wilson 'Imperial startup launches flagship store in the heart of London' (n 750).

⁷⁵⁶ Ryan Calo, 'Code, Nudge, or Notice?' (2014) 99 (2) *Iowa L.Rev.* 773, 785-786; Pelle Guldborg Hansen and Andreas Maaloe Jespersen, 'Nudge and the Manipulation of Choice: A Framework for the Responsible Use of the Nudge Approach to Behaviour Change in Public Policy' (2013) 4 (1) *EJRR* 3, 4-5; Frank Furedi, 'Defending moral autonomy against an army of nudgers' (*Spiked*, 10 January 2011) < www.spiked-online.com/2011/01/20/defending-moral-autonomy-against-an-army-of-nudgers/ > accessed 12 December 2020; Julia M Puaschunder, 'Nudging in the Digital Big Data Era' (2017) 4 (4) *European Journal of Economics, Law and Politics* 18, 22.

⁷⁵⁷ See for example, Luc Bovens who criticises the effectiveness of nudges in their long-term effects, he argues that '[n]ow it may be the case that repeated Nudging in public health and pension funds may have short-term positive effects at best. Nudging may not create sustainable effects on people's behaviour for the long-term; as time goes on, the level of Nudging required to retain this effect may increase', see Luc Bovens, 'The Ethics of Nudge' in Mats J Hansson and Till Grüne-Yanoff (eds), *Preference Change: Approaches from Philosophy, Economics and Psychology* (Springer 2008) 10-11.

of clothing? It seems that re-configuring the conditions and parameters of nudges seems to be increasingly difficult in technological tools aiming to give a broad or holistic view of human behaviour. As the following Sections will show, this could have several implications on how we define the ideological basis of ‘nudges’ to maintain an individual’s agency and choice.

In doing so, the next Section will elaborate on the practical role of nudges in the context of algorithms, claiming that the role of nudges is of persuasion, rather than maintaining the individual’s preference structure. Focusing on the role of fashion recommender systems re-configuring an individual’s decisional environment, algorithmic personalisation systems operate on the basis of so-called ‘hypernudges’, which entails the dynamic and untransparent adjustment of preferences structures based on implicit data feedback. Hypernudges do not operate on a pre-defined context but rather operate on a series of qualitative attributes on individual behaviour. Hence, algorithmic personalisation significantly changes the meaning of the traditional meaning of “nudges” as a tool to maintain explicit preferences, being concerned with techniques to actively shape an individual’s decisional environment.

III. ‘Hypernudges’ in fashion recommender systems

We need to re-think the parameters and mechanisms to maintain an individual’s autonomy and choice. It could be argued that algorithmic personalisation systems are designed along the lines of a networked sphere of ‘hypernudges’.⁷⁵⁸ Karen Yeung, contrary to Thaler and Sunstein’s conception of ‘static nudges’, emphasises that the personalised algorithmic process constantly adapts its recommendations relative to the user’s implicit feedback, such as location, changing preferences, and attitudes.⁷⁵⁹ This way, hypernudges operate in a complex way, because the systematic interventions operate as a form of a performative change of values that is both invisible for the observer and pre-emptive regarding the formation of an individual’s perception.⁷⁶⁰

Hypernudges in fashion recommender systems can make use of several variables within clothing attributes that can shape an individual’s associations for appearance perception, based on the user’s emotions, self-perception, motives, as well as the perception of others. These inherent social associations with the nature of “fashion”, being responsible for the relationship between the self and the environment and shaping the personalised algorithmic output, constrain an individual’s options for reflective choice, leading to a process of alienated subjectivity. Yet, fashion recommender systems and persuasion add another dimension to the impact of autonomy and authenticity noted above, based on the

⁷⁵⁸ Yeung, “‘Hypernudge’: Big Data as a Mode of Regulation by Design” (n 357) 122.

⁷⁵⁹ *ibid* 121-122.

⁷⁶⁰ *ibid* 122; see also, Gordon Hull, ‘Hypernudges as Subjectification’ (*New APPS: Art, Politics, Philosophy, Science*, 23 May 2018) < www.newappsblog.com/2018/05/hypernudges-as-subjectification.html > accessed 12 March 2021.

interpretation of the gaps and effects of an individual's personal understanding of "fashion". In other words, fashion recommender systems inherently limit the gaze through which an individual interprets his or her understanding of "fashion" and place the complexity of identity-building into a broader imaginary of pre-defined norms and values.

1. 'Hypernudges' and the "one-size-fits not all" approach

'Hypernudges' are a powerful means to alter an individual's preference structure.⁷⁶¹ Karen Yeung introduced the concept of 'hypernudges' with reference to algorithmic personalisation and profiling technologies intensifying 'nudges' as a 'form of design-based regulation'.⁷⁶² Hypernudges operate in a sophisticated way, because the systematic interventions are refined as a form of a performative change of values, which is both invisible for the observer and pre-emptive regarding the formation of an individual's perception.⁷⁶³

Nudging technologies in the context of algorithmic personalisation illustrate dynamic pre-emptions influencing individual behaviour. As suggested by Yeung, these so-called 'hypernudges' illustrate:

A deceptively simple design-based mechanism of influence – 'nudge.' By configuring and thereby personalizing the user's informational choice context, typically through algorithmic analysis of data streams from multiple sources claiming to offer predictive insights concerning the habits, preferences and interests of targeted individuals (such as those used by online consumer product recommendation engines), these nudges channel user choices in directions preferred by the choice architect through processes that are subtle, unobtrusive, yet extraordinarily powerful.⁷⁶⁴

Accordingly, 'hypernudges' differ from the 'ordinary' nudges in several respects.⁷⁶⁵ An important difference is that nudges operate based on a considerable breadth of data to build personalised consumer profiles.⁷⁶⁶ Individual behaviour and cognitive biases are effectively established in light of correlations in multiple data sources including the analysis of data to convene the user's implicit feedback.⁷⁶⁷ In addition, 'hypernudges' build on sophisticated algorithmic models to gain insight on individual behaviour.⁷⁶⁸ Hence, what makes 'hypernudges' different from the 'static' approach in traditional

⁷⁶¹ Yeung, "'Hypernudge': Big Data as a Mode of Regulation by Design' (n 357) 119- 120.

⁷⁶² *ibid* 120; Hull (n 760); see also Markus Weinmann, Christoph Schneider and Jan vom Brocke who stipulate that 'digital nudging is the use of user-interface design elements to guide people's behavior in digital choice environments', see Markus Weinmann, Christoph Schneider and Jan vom Brocke, 'Digital Nudging' (2016) 58 (6) *Business & Information Systems Engineering* 433.

⁷⁶³ Yeung, "'Hypernudge': Big Data as a Mode of Regulation by Design' (n 357) 122.

⁷⁶⁴ *ibid* 118.

⁷⁶⁵ *ibid* 121-122; others would refer to 'digital nudging' to exemplify this distinction, see Weinmann, Schneider and Vom Brocke, 'Digital Nudging' (n 762) 433; Christoph Schneider, Markus Weinmann, Jan vom Brocke, 'Digital Nudging: Guiding Online User Choices through Interface Design' (2018) 61 (7) *Communications of the ACM* 67.

⁷⁶⁶ Henrik Skaug Saetra, 'When nudge comes to shove: Liberty and nudging in the era of big data' [2019] 59 *Technology in Society* 1, 3.

⁷⁶⁷ Yeung, "'Hypernudge': Big Data as a Mode of Regulation by Design' (n 357) 122; see also, Ranchordas (n 732) 255.

⁷⁶⁸ Skaug Saetra (n 766).

nudging technologies⁷⁶⁹ is that with algorithms, nudges will be more closely working with the individual, entailing the dynamic adjustment of the choice architecture considering behavioural changes, rather than the goal to maintain a certain preference structure. Accordingly, algorithms allow to ‘individualise nudging efforts’ allowing to influence the individual even before he or she is able to determine to solidify any preferences and choices.⁷⁷⁰ This is possible through the combination between behavioural mechanisms and quantitative insights on individual behaviour.⁷⁷¹

Recommender engines are a complex of ‘hypernudges’ intervening with individual decision-making. Take the example of a recommender engine that interacts with the user before check-out and stipulates additional recommendations suiting with the items of the consumer’s shopping cart. The recommender systems will ultimately rank certain items and order content, which resembles a passive nudge to distribute content according to the implicit usefulness and perceived relevance to the user.⁷⁷² Following the same considerations, some items will be hidden from the user and not be displayed in the user’s online environment.⁷⁷³ The sophistication of recommender engines suggests that the parameters to insert nudges will consistently change and shape the conditions of the individual’s preference structure.

Let us continue with the example of recommender engines to elaborate on the relevance of quantitative measurement of personalisation algorithms in the fashion domain. The individual as a unique entity is placed within the conceptual spaces resembling the product attributes and item interaction in fashion recommender systems. This configuration of incomplete abstractions of individual behaviour in fashion recommender systems leads to a certain dilemma. How can a passive nudge operate on several unique entities?⁷⁷⁴ Some individuals might interact with fashion recommender systems to find make-up suiting the colour of the skin, while another consumer might search for a jumper for the upcoming Christmas dinner. Algorithmic personalisation systems in fashion allow for the possibility to operate ‘hypernudges’ when there is a pre-defined context. In other words, fashion recommender systems allow for the application of persuasion techniques on a massive scale based on the behavioural profiles about the individual (i.e. inferring that the individual searches for make-up to boost his or her confidence, and the other consumer searching for a jumper hiding his or her body shape).

⁷⁶⁹ Yeung, ‘“Hypernudge”: Big Data as a Mode of Regulation by Design’ (n 357)118.

⁷⁷⁰ Mary Wolff, ‘Machine Learning in Behavioral Science — A Nudge in the Right Direction’ (*Medium*, 9 April 2020) < <https://medium.com/@marybrwolff/machine-learning-in-behavioral-science-a-nudge-in-the-right-direction-992d08f44386> > accessed 12 December 2020.

⁷⁷¹ Machine learning integrates quantitative models to analyse behavioural insights regarding individual behaviour, see Ori Plonsky, Reut Apel, Eyal Ert, Moshe Tennenholtz, David Bourgin, Joshua C. Peterson, Daniel Reichman, Thomas L. Griffiths, Stuart J. Russell, Evan C. Carter, James F. Cavanagh and Ido Erev, ‘Predicting human decisions with behavioral theories and machine learning’ (ArXiv, 15 April 2019) at page 42 <<https://arxiv.org/abs/1904.06866>> accessed 12 December 2020.

⁷⁷² Mathias Jesse and Dietmar Jannach, ‘Digital Nudging with Recommender Systems: Survey and Future Directions’ (ArXiv, 6 November 2020) at page 2 < <https://arxiv.org/pdf/2011.03413.pdf> > accessed 12 December 2020.

⁷⁷³ *ibid.*

⁷⁷⁴ Chris Risdon poses a similar question: How do we nudge a snowflake to follow the math? And then, how do we sustainably nudge a million snowflakes? The answer may be machine learning; taken from, Chris Risdon, ‘Scaling Nudges with Machine Learning’ (*Behavioural Scientist*, 25 October 2017) < <https://behavioralscientist.org/scaling-nudges-machine-learning/> > accessed 12 December 2020.

Based on these considerations, we can summarise that hypernudges differ significantly from the conditions and parameters of nudges, being concerned with persuasion. Persuasion is about the approximation of individual behaviour to a range of presented options, while nudges are about maintaining an individual's options within a choice architecture and a given context.⁷⁷⁵ However, we need to identify what it means to stay within a pre-defined context in the fashion domain. Indeed, there is a connection between the algorithms' stimulation of social norms in fashion and an individual's agency and choice regarding hypernudges in fashion recommender systems.

2. Fashion recommender systems and the creation of an imaginary of the self

We can use fashion psychology to theorise what might cause behavioural changes in individual behaviour regarding fashion recommender engines. So far, the literature focused on the structure of algorithmic personalisation systems as a subtle influence into one's own values, beliefs, and attitudes.⁷⁷⁶ Moving beyond the algorithm's parameters to manipulate aspects of the self, I will examine an individual's perception and individuality shaped by hypernudges fashion recommender systems.

A common view is that persuasion can exert 'hidden influence' on an individual's decision-making.⁷⁷⁷ Key with this argument is that the mechanism entails some invisible force to manipulate an individual's decision-making, such as 'exploiting the consumer's vulnerabilities', being beyond our 'conscious awareness.'⁷⁷⁸ Thus, not every persuasion mechanism is manipulative or even deceptive, as it requires a targeted act to manipulate, including exploit an individual's decision-making or the creation of false beliefs. Additionally, this mechanism to undermine an individual's agency and choice suggests the

⁷⁷⁵ Randi Karlsen and Anders Andersen make this excellent distinction between digital nudging and persuasion, Randi Karlsen and Anders Andersen, 'Recommendations with Nudge' (2019) 7 (2) *Technologies* 1, 13.

⁷⁷⁶ For instance, several reports indicate that Facebook's model to employ algorithms for 'emotion manipulation.' Accordingly, an algorithm can direct advertisers to show specific content in moments when a person needs a 'confidence boost' or to manipulate the shown content when an individual feels 'anxious' or 'stressed', taken from Sam Machkovech, 'Report: Facebook helped advertisers target teens who feel "worthless"' (*Ars Technica*, 1 May 2017) <<https://arstechnica.com/information-technology/2017/05/facebook-helped-advertisers-target-teens-who-feel-worthless/>> accessed 16 September 2020; see also, 'Why we're concerned about profiling and micro-targeting in elections' (Privacy International, 30 April 2020) <<https://privacyinternational.org/news-analysis/3735/why-were-concerned-about-profiling-and-micro-targeting-elections>> accessed 16 September 2020; Michael Brandt, 'Can Facebook influence an election result?' (*The Conversation*, 27 September 2016) <<https://theconversation.com/can-facebook-influence-an-election-result-65541>> accessed 16 September 2020; Furthermore, see the investigation conducted by The Guardian and how 'how YouTube's algorithm distorts truth', see Paul Lewis, 'Fiction is outperforming reality': how YouTube's algorithm distorts truth' *The Guardian* (London, 2 February 2018) <www.theguardian.com/technology/2018/feb/02/how-youtubes-algorithm-distorts-truth> accessed 12 December 2020.

⁷⁷⁷ The authors distinguish this concept from 'persuasion' and interpret this as a tool of manipulation. However, this narrow distinction fails to acknowledge that any interventionist nudge needs to be hidden to some extent in order to have an impact on the user's cognitive bias; Susser, Roessler and Nissenbaum, 'Technology, autonomy, and manipulation' (n 411) 4.

⁷⁷⁸ Susser, Roessler and Nissenbaum, 'Technology, autonomy, and manipulation' (n 411) 4; see also, AM Thomas, J Parkinson, P Moore, A Goodman, F Xhafa, L Barolli who argue that some persuasion techniques illustrate 'a form of 'subtle manipulation', as manipulation is seldom subtle, and has the potential to alienate decision makers', taken from AM Thomas, J Parkinson, P Moore, A Goodman, F Xhafa, L Barolli, 'Nudging Through Technology: Choice architectures and the mobile information revolution' (2013 Eighth International Conference on P2P, Parallel, Grid, Cloud and Internet Computing, Compiègne, France, 28-29 October 2013).

existence of a bad motive contrary to the individuals' interests, such as a purely political goal or a questionable and disproportionate commercial interest.⁷⁷⁹ Obvious examples are large-scale user profiling for emotional manipulation or boosting the spread of false misinformation.⁷⁸⁰

Indeed, persuasion techniques and the risks of manipulation of the individual's decision-making can cause issues of agency and choice.⁷⁸¹ As rightly identified by Daniel Susser, Beate Roessler and Helen Nissenbaum 'manipulation thus disrupts our capacity for self-authorship,' disturbing the process on how we reflect on our own values, attitudes and beliefs.⁷⁸² Similarly, Marjn Sax, Natali Helberger and Nadine Bol suggest that hypernudges can manipulate individual decision-making, having an impact on an individual's independence to maintain which 'the values, desires, and goals'.⁷⁸³ Both interpretations closely resemble Joseph Raz's view stipulating that manipulation illustrates the 'perversion of individual sense-making', whereby the formation of values, beliefs and goals are adopted as one's own.⁷⁸⁴ Following these considerations, the notion of autonomy implies the ability to make choices including the sphere to maintain one's values and beliefs.

Nevertheless, we need to go further than merely asserting the hidden influence of persuasive strategies. In particular, the hidden influence of hypernudges assumes an individual's level of passivity that is disjointed from the user's subjective experience of self. Chris Risdon makes a significant assertion on the role of persuasion entailing a 'two-step challenge' to 'augment a person's rational self and to control a person's irrational self'.⁷⁸⁵ Accordingly, we need to define persuasion in fashion recommender systems and how it alludes to the multiple facets of sense-making. One level concerns the unconscious associations and sense-making pertaining to the influence of hypernudges on individual perception. Another layer relates to the individual's self-relationality and assessment of his or her individuality. In other words, persuasion will allude to the causality of my perception as well as my association within my own management of appearance. Thus, the ambiguity of manifestations in fashion recommender systems pertains to my unspoken thoughts and desires to express my attitudes as well as the intentionality to establish my own values and preferences. Following this reasoning, manipulation is not based on its hidden character beyond conscious awareness but rather, the observance of individual sense-making which includes the individual's irrationality and rationality.

⁷⁷⁹ As suggested by Thomas Hill manipulation is 'intentionally causing or encouraging people to make the decisions one wants them to make by actively promoting their making the decisions in ways that rational persons would not want to make their decisions', Thomas E Hill, *Autonomy and Self-Respect* (CUP 1991) 33; see also TM Wilkinson, 'Nudging and Manipulation' (2013) 61 (2) *Political Studies* 341, 345.

⁷⁸⁰ These examples suit with the definition that manipulation is 'being made someone's 'puppet on a string'', taken from TM Wilkinson, 'Nudging and Manipulation' (2013) 61 (2) *Political Studies* 341, 342; cf Philipp Lorenz-Spreen, Stephan Lewandowsky, Cass R Sunstein and Ralph Hertwig, 'How behavioural sciences can promote truth, autonomy and democratic discourse online' [2020] 4 *Nature Human Behaviour* 1102.

⁷⁸¹ The same is true for deception. However, the focus is here on manipulation since it is more difficult to identify including define.

⁷⁸² Susser, Roessler and Nissenbaum, 'Technology, autonomy, and manipulation' (n 411) 4.

⁷⁸³ Sax, Helberger and Bol (n 349) 109, 115.

⁷⁸⁴ Joseph Raz, *The Morality of Freedom* (Clarendon Press 1986) 377.

⁷⁸⁵ Risdon (n 774).

Elaborating on this argument, it is important to note that persuasive strategies in fashion recommender systems focus on the individual's unconscious associations, which are the gaze through which fashion narratives form the basis of one's fashion identity. Suppose now a common situation when individuals' make their choices to buy a clothing item, such as a black t-shirt, and proceeding to the check-out option, he or she is confronted with additional suggestions, which are intended to awaken the consumer's curiosity to continue shopping. For example, the individual buying a black t-shirt for a night out with friends is induced to buy further products based on his current mood, requiring a confidence boost. In this respect, most data scientists agree that a fashion recommender system will effectively recommend an item suiting with the selected black t-shirt, rather than suggesting a range of similar-looking items.⁷⁸⁶ How should we interpret this type of persuasion to influence the individual's shopping experience? What exactly then bypasses an individual's exercise of autonomy in fashion recommender systems is its creation of an imaginary on the subjective experience of self, undermining an individual's process inference of knowledge of self and self-relationality.

Let me elaborate on the meaning of an imaginary within fashion discourse. Just think about Oobah Butler, a journalist who pretended to be a designer, faking his way into the community in the Paris Fashion Week in 2017 and selling a 'knock off brand as the creation of Giorgio Pevani'.⁷⁸⁷ The imaginary created by Oobah Butler of 'let's just say streetwear is a religion, and Peviani constantly sins' effectively corresponded and created a certain attitude, which is that of an idealised fashion designer from the elite, expensive outfits and a 'populist or haute couture design'.⁷⁸⁸

A fashion recommender system can be manipulative when impacting the individual's causality to form user perception on his or her fashion identity. For instance, a fashion recommender system may infer that an individual requires a confidence boost suggesting an item the individual believes is an accurate reflection of his or her personality, or attitude (i.e. a black t-shirt as an accurate statement of the individual's "femininity" and "simple elegance").⁷⁸⁹ A fashion recommender system may the user's process of dispositional attribution, whereby an individual may infer his or her preference based on the recommendation process, which may reveal an individual's disposition of low confidence.⁷⁹⁰

⁷⁸⁶ Daolio (n 103); however, similar recommendations might be effective during the search process when the recommendations differ in shape, colour or texture but are of similar style, see 'Similar recommendation engine for fashion' (*Blog Wideeyes AI*, 4 September 2018) < <https://blog.wideeyes.ai/2018/09/04/similar-recommendation-engine-for-fashion/>> accessed 12 December 2020.

⁷⁸⁷ Oobah Butler, 'I Bullshitted My Way to the Top of Paris Fashion Week: And in doing so, made a market stall jeans brand the toast of PFW' (*Vice*, 11 October 2017) < www.vice.com/en_uk/article/59d8v5/i-bullshitted-my-way-to-the-top-of-paris-fashion-week> accessed 12 March 2020.

⁷⁸⁸ *ibid*; Efrat Tseelon, 'fashion tales: How we make up stories that construct brands, nations and gender' (2018) 9 (1) *Critical Studies in Fashion & Beauty* 3, 4.

⁷⁸⁹ This would be a description of the individual's engagement with dispositional attribution regarding clothing and human behaviour. The theory of dispositional attribution is a concept in (social) psychology as well as fashion psychology, see Sharron J Lennon and Leslie L Davies, 'Clothing and Human Behavior from a Social Cognitive Framework Part I: Theoretical Perspectives' (1989) 7 (4) *Clothing and Textiles Research Journal* 41, 44.

⁷⁹⁰ This would be a description of the individual's engagement with dispositional attribution regarding clothing and human behaviour. The theory of dispositional attribution is a concept in (social) psychology as well as fashion psychology, see Lennon and Davies (n 789) 44.

Accordingly, an individual might choose a fashion style that will increase his or her body image, such as referring to the variables on aesthetics to maintain an “hour-glass” figure.

Furthermore, the individual might receive advertising based on his or her personal context. That is, the individual identifies his or her preferences based on the recommendations’ context, which has an effect on an individual’s low confidence.⁷⁹¹ Here, the individual, being of low confidence and searching for an outfit for a night out with friends, might be influenced by the advertising of images showing a “confident female wearing an outfit enhancing her body shape”. A fashion recommender system may impact the process of situational attributions, based on the social connotations of dress that shape an individual’s embodied experience of the body and self, such as the recommendation of a “provocative dress” that seems to be suitable for a “confident personality”.

These scenarios highlight that the external stimuli, such as aspects of an individual’s personality or a situational aspect, can shape the expression of one’s own aspects of fashion identity, including the individual’s inference of knowledge to the self. This external stimuli, including the nudge pertain to an individual’s causality, rather than an individual’s cognitive weaknesses. It is not an individual’s irrationality but the artificial construction of causality⁷⁹² tweaking an individual’s autonomous decision-making process in the direction preferred by the choice architect. Hence, fashion recommender systems seem to interpret the gaps of the personal aspect of “fashion” as a given reality, rather than a process of interaction that allows an individual to define and explore his or her understanding of “fashion” and “self”.

This degree of influence, suggesting the nature of hypernudges to shape an individual’s self-knowledge, contributes to the individual’s interpretation of fashion narratives on style. Fashion recommender systems can make use of a variety of fashion narratives to shape an individual’s associations with an individual’s self-concept, such as own emotions,⁷⁹³ self-perception,⁷⁹⁴ motives.⁷⁹⁵ Just think about a recommender engine which filters suggestions considering an individual’s mood or demographic location, such as recommending outfits with bright colours or of urban style. The problem is not the revealing nature of algorithms of an individual’s attitudes or values (i.e. positive attitude with bright

⁷⁹¹ This would be a scenario of situational attribution, see Lennon and Davies (n 789) 43.

⁷⁹² Contrast this example with Karen Yeung’s illustration of rational persuasion. She writes that ‘consider, for example two contrasting ways in which a garment shop owner might seek to increase sales. He might, through sensitive and appropriate use of flattery and charm, persuade me that a suit that I have tried on in his shop makes me look tall and slender. I know full well that he is flattering me, given my short stature and rather dumpy figure. Nonetheless, his technique is one of rational persuasion, playing on my emotion and ego no doubt, but I am nonetheless fully aware of his purposes and the means by which he seeks to effect them.’ Taken from Karen Yeung, ‘Nudge as Fudge’ (2012) 75 (1) MLR 122, 136.

⁷⁹³ See for example, Markus A Maier, Andrew J Elliot, Borah Lee, Stephanie Lichtenfeld, Petra Barchfeld and Reinhard Pekrun, ‘The influence of red on impression formation in a job application context’ (2013) 37 (3) Motivation and Emotion 389.

⁷⁹⁴ See Bettina Hannover and Ulrich Kühnen who investigate how ‘different clothing styles can influence self-descriptions by priming certain trait categories’, Bettina Hannover and Ulrich Kühnen, “The Clothing Makes the Self” Via Knowledge Activation’ (2002) 32 (12) Journal of Applied Social Psychology 2513.

⁷⁹⁵ Kim Johnson, Sharron J Lennon and Nancy Rudd, ‘Dress, body and self: research in the social psychology of dress’ (2014) 1 (1) Fashion and textiles 1, 14.

colours) but rather, that an individual's associations can be manipulated based on the meanings attached to clothing. By way of illustration, a brightly coloured dress can be interpreted as a provoking clothing item for thin-looking individuals based on the algorithms' incorporation of fashion narratives on "aesthetics" in product attributes. The degree to which algorithms can manipulate the meaning of fashion narratives adapts to and shapes an individual's consciousness, such as the own relationality to his or her own body, appearance, and perception.

It follows that the degree of persuasion in fashion recommender systems is one of interactive value creation that places the notions of identity building based on a networked environment, rather than with reference to the self. Fashion recommender systems inevitably affect an individual's association process regarding the inference of self, based on the creation of an imaginary that has an impact on the individual's subjective experience of his or her presence within a social context, as well as a person's understanding of the self and the body. The individual's lack of autonomy is not only witnessed in the user's lack of controlling the actions and formation of desires, but in the process of associating appearance perception with appearance management. That said, fashion recommender systems have an impact on the content of inferences, which undermines an individual to identify the roots of unconscious thought. These considerations indicate that fashion recommender systems have an impact on an individual's autonomy, which not only pertains to appearance perception including the formation of desires but the unconscious experience to create the associations for the inference of knowledge to the self.

An important question arising from the analysis above is how our concept of autonomy (including our understanding of individual perception and self-relationality) can shape a fashion brand's use of persuasive strategies regarding algorithmic personalisation systems. In this respect, consumer law, including the UCP Directive, seeks to assess the contours of commercial practices and the regulation of unfair commercial practices to maintain consumer autonomy.⁷⁹⁶ Accordingly, it makes sense to address some key points in the UCP Directive to define whether our behavioural approach is actually incorporated into EU consumer law, notwithstanding the thesis' overall focus on the right to privacy.

⁷⁹⁶ Sax, Helberger and Bol (n 349) 104.

IV. EU Consumer law: fashion recommender systems and persuasion

As highlighted by Anne-Lise Sibony and Geneviève Helleringer, '[c]onsumer law is one of the first areas where lawyers have become aware of the relevance of behavioural insights'.⁷⁹⁷ Indeed, consumer law allows us to 'assess the complicated balance between empowering and encouraging the consumer to take autonomous decisions, and protecting consumers from situations in which they are unable to protect themselves'.⁷⁹⁸ The UCP Directive intends to harmonise commercial practices in Europe and provide adequate protection to consumers.⁷⁹⁹ Important questions are, what level of compulsion departs from the 'average consumer' in consumer law; and do an individual's conscious and unconscious associations regarding 'fashion identity' illustrate a relevant parameter to secure the consumer's informed choice?⁸⁰⁰

Furthermore, and having regard to the UCP Directive requires us to account for other sectoral legislation that is relevant to fashion recommender systems. The proposal for the Digital Services Act, whilst not replacing the UCP Directive, intends to strengthen consumer protection based on 'clear transparency obligations and information requirements'.⁸⁰¹ In this respect, the proposal for the Digital Services Act makes an important contribution to the systematic risks of recommender systems, issuing additional safeguards for maintaining user control and autonomy.⁸⁰²

1. The UCP Directive and 'fairness' in consumer law

Article 2 (1) (d) of the UCP Directive stipulates its wide application to 'business-to-consumer commercial practices' which includes 'any act, omission, course of conduct or representation, commercial communication including advertising and marketing, by a trader, directly connected with

⁷⁹⁷ Anne-Lise Sibony and Geneviève Helleringer, 'EU Consumer Protection and Behavioural Sciences: Revolution or Reform?' in Alberto Alemanno and Anne-Lise Sibony (eds), *Nudge and the law: a European Perspective* (Hart Publishing 2015) 209; See also the creation of the Foresight and Behavioural Insights Unit, at the Joint Research Centre of the European Commission in 2014 who enumerates a number of policy recommendations regarding behavioural insights and nudges, Joana Sousa Lourenco, Emanuele Ciriolo, Sara Rafael Almeida and Xavier Troussard, 'Behavioural Insights Applied to Policy European Report 2016' (Joint Research Centre) <https://publications.jrc.ec.europa.eu/repository/bitstream/JRC100146/kjna27726enn_new.pdf> accessed 12 December 2020 at page 8; Jan Trzaskowski, 'Behavioural Economics, Neuroscience, and the Unfair Commercial Practices Directive' (2011) 34 (3) JCP 377, 378-379.

⁷⁹⁸ Sax, Helberger and Bol (n 349) 104.

⁷⁹⁹ Bram B Duivenvoorde, *The Unfair Commercial Practices Directive* (Springer 2015) 1; however, consider also reforms regarding the 'New Consumer Agenda', European Commission, 'COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL New Consumer Agenda Strengthening consumer resilience for sustainable recovery' (2020) COM/2020/696 final.

⁸⁰⁰ The average consumer test has been originally incorporated by the CJEU in Case S-210/96 *Gut Springenheide GmbH and Rudolf Tusky v Oberkreisdirektor des Kreises Steinfurt - Amt für Lebensmittelüberwachung* [1998] ECR- I-04657, para 31; some elaboration on this benchmark is provided in the UCP Directive, Unfair Commercial Practices Directive, art 5 (2), art 5 (3).

⁸⁰¹ Digital Services Act, Recital 32.

⁸⁰² European Data Protection Supervisor, 'Opinion 1/2021 on the Proposal for a Digital Services Act (10 February 2021), page 3.

the promotion, sale or supply of a product to consumers'.⁸⁰³ In this respect, the UCP Directive establishes a series of conditions to protect an individual's freedom of choice, which include a set of specific prohibitions of practices deemed unfair in all circumstances⁸⁰⁴ as well as some general rules of unfair practices.⁸⁰⁵

Focusing on article 5 (2) of the UCP Directive regarding the general prohibitions, 'a commercial practice shall be unfair if it is contrary to the requirements of professional diligence, and it materially distorts or is likely to materially distort the economic behaviour with regard to the product of the average consumer whom it reaches or to whom it is addressed, or of the average member of the group when a commercial practice is directed to a particular group of consumers'.⁸⁰⁶ In addition, the UCP Directive establishes an important distinction between misleading and aggressive practices, which can include the provision of omission of information, false information or the exercise of pressure or undue influence on an individual's decision-making.⁸⁰⁷

There is an intersection between consumer law and informational privacy including data protection principles on fairness, based on the Directive's aim to secure an individual's 'informed choice'.⁸⁰⁸ Whilst a close scrutiny of the intersection between consumer and data protection law is beyond the scope of this discussion, it is important to underline this connection between data protection and consumer law when 'assessing the overall unfairness of commercial practices'.⁸⁰⁹ As argued in a report by the European Data Protection Supervisor:

⁸⁰³ Unfair Commercial Practices Directive, art 2 (1) (d); Joined cases C-261/07 and C-299/07 *VTB-VAB NV v Total Belgium NV (C-261/07) and Galatea BVBA v Sanoma Magazines Belgium NV (C-299/07)* [2009] ECR I- 02949, para 49.

⁸⁰⁴ Unfair Commercial Practices Directive, Annex I; the Consumer Directive adds to these prohibitions in Recital 20 which includes hidden advertising and fake reviews, see Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules (Text with EEA relevance) (Consumer Directive) [2019] OJ L328/18, Recital 20.

⁸⁰⁵ Unfair Commercial Practices Directive, art 5 (5); See also European Commission, 'Guidance on the Implementation/Application of Directive 2005/29/EC on Unfair Commercial Practices' COM (2016) 320 final, at 5.2.8; Trzaskowski (n 797) 380.

⁸⁰⁶ Unfair Commercial Practices Directive, art 5 (2); Trzaskowski (n 797) 380; see also, Eliza Mik, 'The erosion of autonomy in online consumer transactions' (2016) 8 (1) *Law, Innovation and Technology* 1, 32- 33.

⁸⁰⁷ Unfair Commercial Practices Directive, arts 6-9.

⁸⁰⁸ *ibid* Recital 6; Zuiderveen Borgesius 'Improving privacy protection in the area of behavioural targeting' (n 151) 156; Nicolò Zingales, 'Between a rock and two hard places: WhatsApp at the crossroad of competition, data protection and consumer law' (2017) 33 (4) *C.L.S.Rev* 553, 557-558; cf Clifford, Graef and Valcke, 'Pre-formulated Declarations of Data Subject Consent—Citizen-Consumer Empowerment and the Alignment of Data, Consumer and Competition Law Protections' (n 591) 719; see also Marco Botta and Klaus Widermann who argue that 'Competition, consumer, and data protection law share the overarching aim of protecting the welfare of individuals in the modern market economy', taken from Marco Botta and Klaus Widermann, 'The Interaction of EU Competition, Consumer, and Data Protection Law in the Digital Economy: The Regulatory Dilemma in the Facebook Odyssey' (2019) 64 (3) *The Antitrust Bulletin* 428, 434.

⁸⁰⁹ 'COMMISSION STAFF WORKING DOCUMENT GUIDANCE ON THE IMPLEMENTATION/APPLICATION OF DIRECTIVE 2005/29/EC ON UNFAIR COMMERCIAL PRACTICES' (2016) COM(2016) 320 final < <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52016SC0163&from=EN>> accessed 12 December 2020; it is important to note that based on the economic value of personal data, there are also crossings between data protection and competition law. See for example, 'Bundeskartellamt launches sector inquiry into comparison websites' (Bundeskartellamt, 24 October 2017) < https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2017/24_10_2017_Vergleichsportale.html> accessed 12 December 2020.

The scope for abuse of market dominance and harm to the consumer through refusal of access to personal information and opaque or misleading privacy policies may justify a new concept of consumer harm for competition enforcement in the digital economy.⁸¹⁰

Accordingly, the concerns about profiling, advertising, and personalisation raise pressing issues regarding consumer harm and an individual's informational self-determination.⁸¹¹ 'Fairness' pertains to the protection of informed choice regarding the collection and processing of personal data, which is reflected in the 'consent requirement' in the GDPR as well as Articles 6 and 7 of the UCP Directive.⁸¹² Moreover, Recital 42 of the GDPR explicitly refers to the Unfair Terms Directive (UCT), stipulating that 'a declaration of consent pre-formulated by the controller should be provided in an intelligible and easily accessible form, using clear and plain language and it should not contain unfair terms'.⁸¹³

In addition, there is 'ex post empowerment of a consumer's agency and choice' which is reflected in consumer law.⁸¹⁴ Giancaludio Malgieri and Giovanni Comandè refer to the notion of transparency in the GDPR and the UCP Directive, envisaging that the 'pervasive manipulation of consumer's consumer's vulnerability'⁸¹⁵ can 'significantly affect the data subject' within the terms of Article 22 (1) of the GDPR.⁸¹⁶ A deeper appreciation of the value of personal data shows that data protection and consumer law do increasingly intertwine to maintain consumer welfare.⁸¹⁷ Accordingly, the European Commission's Guidance underlines that:

[D]ata protection violations should be considered when assessing the overall unfairness of commercial practices under the UCP directive, particularly in the situation where the trader processes consumer data

⁸¹⁰ European Data Protection Supervisor, 'Privacy and competitiveness in the age of big data: The interplay between data protection, competition law and consumer protection in the Digital Economy' (March 2014), page 26; see also the UK Competition Market Authority who argues that the ability to engage in potentially exclusionary and persuasive behaviour is based on market power, meaning that consumers are less in the position to 'make active choices', having limited knowledge on the extent of data processing activities; see Competition & Markets Authority, 'Online platforms and digital advertising' (n 645) pages 165- 179; Another example is the the EU Commission's recent Google Search (Shopping) case, which is a decision on the abuse of power under EU anti-trust laws, highlights Google's position to engage in exclusionary behaviour, based on their use of algorithms would demote rival shopping comparison services, *Google Search (Shopping)* (Case AT.39740) Commission Decision 2018/C 9/08 [2017] OJ C 9/11.

⁸¹¹ The EU Commission's 'Facebook/WhatsApp' decision dealing with the possibility to match Facebook ID's with the users' WhatsApp mobile numbers including Facebook's misleading information about the linking of data is a good example highlighting the need for coordinated action with regarding unfair practices, including unfair terms pressuring users to subscribe to digital services. Facebook/WhatsApp (Case M.8228) MERGER PROCEDURE REGULATION (EC) 139/2004 [2017] C(2017) 3192 final; Graef, Clifford and Valcke, 'Fairness and enforcement: bridging competition, data protection, and consumer law' (n 696) 202.

⁸¹² Unfair Commercial Practices Directive, art 6, art 7; 'COMMISSION STAFF WORKING DOCUMENT GUIDANCE ON THE IMPLEMENTATION/APPLICATION OF DIRECTIVE 2005/29/EC ON UNFAIR COMMERCIAL PRACTICES' (n 809).

⁸¹³ General Data Protection Regulation, Recital 42; Damian Clifford, 'Citizen-consumers in a personalised Galaxy: Emotion influenced decision-making, a true path to the dark side?' (2014) CiTiP Working Paper 31/2017, 26 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3037425> accessed 12 January 2020.

⁸¹⁴ Graef, Clifford and Valcke, 'Fairness and enforcement: bridging competition, data protection, and consumer law' (n 696) 206.

⁸¹⁵ Giancaludio Malgieri and Giovanni Comandè, 'Why a Right to Legibility of Automated Decision-Making Exists in the General Data Protection Regulation' (2017) 7 (4) IDPL 243, 253; see also, Valerie Verdoodt, Damian Clifford and Eva Lievens, 'Toying with children's emotions, the new game in town? The legality of advergames in the EU' [2016] 32 Computer Law & Security Review 599, 607; 'COMMISSION STAFF WORKING DOCUMENT GUIDANCE ON THE IMPLEMENTATION/APPLICATION OF DIRECTIVE 2005/29/EC ON UNFAIR COMMERCIAL PRACTICES' (n 809).

⁸¹⁶ General Data Protection Regulation, art 22 (1).

⁸¹⁷ European Data Protection Supervisor, 'Privacy and competitiveness in the age of big data: The interplay between data protection, competition law and consumer protection in the Digital Economy' (n 810) page 26.

in violation of data protection requirements, i.e. for direct marketing purposes or any other commercial purposes like profiling, personal pricing or big data applications.⁸¹⁸

To summarise the points above, it can be argued that ‘with the integration of more and more data into consumer products, many data protection issues also become consumer issues, and vice versa’.⁸¹⁹ The outlook on fairness provides two important findings regarding an individual’s autonomy in the big data sphere. One, persuasion and profiling raise significant issues of transparency, undermining an individual’s ability to anticipate the extent of commercial practices. This behavioural intervention into a consumer’s conscious awareness about profiling activities can be analysed from both, the enhanced transparency obligations in the Digital Services Act and the GDPR (see Section IV.3 and VI of Chapter 5 respectively). Second, persuasion undermines an individual’s ability to make an informed choice based on the presented options in the recommendation process. Again, we can analyse this concern from a data protection and consumer law perspective, whereby I intend to leave out the notion of consent in the GDPR in the present analysis. Instead, I will focus on the meaning of misleading and aggressive practices in the UCP Directive, highlighting the narrow conception of the ‘average consumer’ and vague notion of aggressive practices (Section IV.2 of Chapter 5).

2. The UCP Directive: consumer vulnerability in recommender engines

Misleading practices under the UCP Directive are generated based on the false impressions generated to the consumer.⁸²⁰ In this respect, the information provided by the trader is either false or the ‘overall presentation deceives or is likely to deceive the average consumer, even if the information is factually correct’.⁸²¹ Article 6 of the UCP Directive provides a set of information which need to be provided to the consumer, such as the nature and main characteristics of the product.⁸²² The newly amended Consumer Rights Directive adds to the requirements of misleading omissions focusing on online sales, whereby marketplaces must disclose ‘the ranking of products presented to the consumer as a result of the search query and the relative importance of those parameters’.⁸²³

In this respect, a misleading practice has to move beyond a purely informational nudge to be deemed unfair and needs to explicitly address an individual’s implicit assumptions about a certain product or

⁸¹⁸ ‘COMMISSION STAFF WORKING DOCUMENT GUIDANCE ON THE IMPLEMENTATION/APPLICATION OF DIRECTIVE 2005/29/EC ON UNFAIR COMMERCIAL PRACTICES’ (n 809).

⁸¹⁹ Natali Helberger, Frederick Zuiderveen Borgesius and Agustin Reyna, ‘The perfect match? a closer look at the relationship between eu consumer law and data protection law’ (2017) 54 (5) CML Rev. 1427, 1428.

⁸²⁰ A misleading act can be based on an act or an omission; Unfair Commercial Practices Directive, art 6, art 7; see also, Radka MacGregor Pelikánová, ‘Harmonization of the protection against misleading commercial practices: ongoing divergences in Central European countries’ (2019) 10 (2) Oeconomia Copernicana 239, 244.

⁸²¹ Unfair Commercial Practices Directive, art 6 (1).

⁸²² *ibid* art 6 (1).

⁸²³ Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules (Text with EEA relevance) [2019] OJ L328/18, art 3 (4) (b).

service deceiving the consumer. For instance, if a personalised recommendation system would falsely claim that it would cure existing illnesses that would fall under the list of banned commercial practices of Annex I of the directive.⁸²⁴ Similarly, a service issuing a claim that its use “will lead to a happy life” would illustrate a misleading practice under the UCP Directive.⁸²⁵ That said, a consumer receiving so-called “hidden” advertising about a fashion product, needs to be aware of the general parameters of the ranking in the search results, which does not entail; however, a detailed outlook on the ‘functioning of the ranking mechanism’ including algorithms.⁸²⁶

Nevertheless, what happens if a personalised recommendations service, claiming to predict and assess the emotional aspect of fashion choices, would give the consumer impression that using that service will direct to improve his or her fashion choices? As an example, an article in ‘Medium’ reporting on ‘Facebook’s’ intention to develop an AI-stylist program for their users suggests that:

Facebook is embarking on a practical use case for AI that could help people become more fashionable. Its latest experiment called Fashion++ uses a deep image-generation neural network to suggest ways that people can improve their outfits by adding or swapping items. It will even offer suggestions like tucking in a shirt or rolling up sleeves to tweak existing clothing.⁸²⁷

It seems that employing a system that suggests ‘minimal adjustments for outfit improvement’⁸²⁸ would need to fulfil certain conditions to illustrate a service that is not misleading to their consumers according to the UCP Directive. The European Commission’s Guidance stipulates that ‘the use of default settings (i.e. choices consumers are presumed to make unless they expressly indicate otherwise) or providing unnecessarily complex information may be considered misleading’.⁸²⁹ That said, we are concerned not only with the way information is presented but also the value of information for personalised recommendations. Hiding the value of consumer information for personalised recommendations can illustrate a misleading practice under the Consumer Rights Directive.⁸³⁰ That said, we need to clarify

⁸²⁴ Unfair Commercial Practices Directive, Annex I.

⁸²⁵ Sax, Helberger and Bol (n 349) 121.

⁸²⁶ The Recital of the Consumer Directive stipulates that ‘Traders should not be required to disclose the detailed functioning of their ranking mechanisms, including algorithms. Traders should provide a general description of the main parameters determining the ranking that explains the default main parameters used by the trader and their relative importance as opposed to other parameters, but that description does not have to be presented in a customised manner for each individual search query’; see Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules (Text with EEA relevance) (Consumer Rights Directive) [2019] OJ L328/18, Recital 23.

⁸²⁷ Nirjon Rahman, ‘Facebook Experiments with AI-Powered Styling Program’ (*Medium*, 22 September 2019) <<https://medium.com/@nirjonrahman/facebook-experiments-with-ai-powered-styling-program-e50134e5017b>> accessed 12 December 2020; see also, Maghan McDowell, ‘Facebook experiments with AI-powered styling program’ (*Vogue Business*, 20 September 2019) <www.voguebusiness.com/technology/facebook-ai-fashion-styling> accessed 12 December 2020.

⁸²⁸ Wei-Lin Hsiao, Isay Katsman, Chao-Yuan Wu, Devi Parikh, Kristen Grauman, ‘Fashion ++: Minimal Edits for Outfit Improvement’ (Proceedings of the International Conference on Computer Vision (ICCV) 2019).

⁸²⁹ ‘COMMISSION STAFF WORKING DOCUMENT GUIDANCE ON THE IMPLEMENTATION/APPLICATION OF DIRECTIVE 2005/29/EC ON UNFAIR COMMERCIAL PRACTICES’ (n 809).

⁸³⁰ Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules (Text with EEA relevance) (Consumer Rights Directive) [2019] OJ L328/18, Recitals 21-23.

whether the trader would have to define the computability of ‘fashionability’ in the deep learning model to secure an individual’s free choice and whether such information is material within the UCP Directive and Consumer Rights Directive, respectively. On the one hand, we could argue that not disclosing the notion of ‘fashionability’ would induce a false impression regarding the nature of the service (i.e. the consumer will believe that the stylist will actually improve his or her fashion sense).⁸³¹ On the other hand, a trader is not obliged to provide a customised description of whether and how the personalisation system relates to the individual’s fashion identity and autonomous decision-making.⁸³²

In addition, and moving to further requirements in the UCP Directive, the problem with classifying hypernudges in algorithmic personalisation systems as misleading refers to the rigidity of the average consumer test. To clarify, the UCP Directive distinguishes between the average and the vulnerable consumer, whereby the latter category only includes a ‘clearly identifiable group of consumers’.⁸³³ Nevertheless, there is no research that allows me to confirm that fashion recommender systems give rise to a new category of vulnerable consumers who share similar characteristics, though we could certainly argue that fashion brands can (and do) make use of personalisation and advertising strategies targeted at a young audience, who are possibly more vulnerable to comprehend the patterns of persuasion.⁸³⁴ It would be interesting to engage into further empirical research on this matter in how the concept of vulnerability applies to influencers including the “Generation Z” consumer in the fashion domain and whether it creates a distinctive categorical consumer harm.⁸³⁵

Moreover, the average consumer test provides a perspective on the individual who is ‘reasonably well informed, and reasonably observant and circumspect’ and which includes ‘social, cultural and linguistic factors’.⁸³⁶ This perspective of the ‘average consumer’, not only has it been criticised of not reflecting views in behavioural economics and consumer psychology that the consumer not always acts ‘in

⁸³¹ Unfair Commercial Practices Directive, art 7 (1), art 7 (2); In addition, and in relation to article 5 of the UCT Directive, the European Commission guidance endorses that ‘marketing of such products as ‘free’ without telling consumers how their preferences, personal data and user-generated content are going to be used, could in some circumstances be considered a misleading practice’ taken from ‘COMMISSION STAFF WORKING DOCUMENT GUIDANCE ON THE IMPLEMENTATION/APPLICATION OF DIRECTIVE 2005/29/EC ON UNFAIR COMMERCIAL PRACTICES’ (n 809).

⁸³² See again, Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules (Text with EEA relevance) (Consumer Rights Directive) [2019] OJ L328/18, Recital 23.

⁸³³ Unfair Commercial Practices Directive, art 5 (3).

⁸³⁴ For example, research on the perception of young adults regarding luxury fashion might support this statement; Seung Hwan Lee and Sean Luster, ‘The social network implications of prestigious goods among young adults: evaluating the self vs others’ (2015) 32 (3) *The Journal of Consumer Marketing* 199; see also, Unfair Commercial Practices Directive, art 5 (3); Recital 19.

⁸³⁵ Tracy Francis and Fernanda Hoefel, ‘The influence of Gen Z—the first generation of true digital natives—is expanding’ (*McKinsey & Company*, 12 November 2018) < www.mckinsey.com/industries/consumer-packaged-goods/our-insights/true-gen-generation-z-and-its-implications-for-companies > accessed 16 November 2021.

⁸³⁶ Rossella Incardona, Cristina Poncibo, ‘The average consumer, the unfair commercial practices directive, and the cognitive revolution’ (2007) 30 (1) *JCP* 21, 21-22; Geraint Howells, Christian Twigg-Flesner and Thomas Wilhelmsson, *Rethinking EU Consumer Law* (Routledge 2018) 37, 48, 59; references to, Case C-220/98 *Estée Lauder Cosmetics GmbH & Co. OHG v Lancaster Group GmbH* [2000] I-00117, para 27; Case C-220/98 *Estée Lauder Cosmetics GmbH & Co. OHG v Lancaster Group GmbH* [2000] I-00117, Opinion Advocate General Fennelly, para 25; Martijn W Hesselink, ‘European Contract Law: a Matter of Consumer Protection, Citizenship, or Justice?’ (2006) Centre for the Study of European Contract Law Working Paper Series No. 2006/04, 6 < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=946727 > accessed 12 January 2020.

accordance with rational expectations’,⁸³⁷ but underscores the capacities of hypernudges to dynamically adapt to user incentives, as well as vulnerabilities.⁸³⁸ However, a re-interpretation of the average consumer taking into account findings in behavioural economics is not fully reflected in the UCP Directive,⁸³⁹ nor in the interpretation by the CJEU.⁸⁴⁰ The issue here is not a new category of ‘informational vulnerability’ regarding misleading practices,⁸⁴¹ but rather how (fashion) recommender systems affect the parameters of the autonomous consumer in the big data sphere.

In other words, I am more concerned about the way the recommendation process can give rise to new forms of misleading practices generally based on the process of dispositional and situational attributions shaping user engagement with fashion. An imaginary created by the algorithm is neither true nor false as it is not creating any deceptive impressions on the consumer, but rather it is the process of situational and dispositional attributions that has an impact on an individual’s presumed assumptions including informed choice (see also my analysis above in Section III Chapter 5). This form of stimuli on an individual’s choice regarding fashion recommender systems needs to inform the average consumer test in the future.

Furthermore, we can not define the impact on algorithmic personalisation systems in fashion as a form of ‘psychological pressure’ including aggressive practices in articles 8- 9 of the UCP Directive.⁸⁴² An aggressive commercial practice can entail uses of coercion, undue influence and/or harassment.⁸⁴³ Article 8 of the UCP Directive stipulates that an aggressive commercial practice needs to ‘significantly impair or is likely to significantly impair the average consumer's freedom of choice or conduct with regard to the product and thereby causes him or is likely to cause him to take a transactional decision that he would not have taken otherwise’.⁸⁴⁴ In this respect, an aggressive commercial practice can entail undue influence, which is defined as the ‘exploiting a position of power about the consumer to apply

⁸³⁷ Howells, Twigg-Flesner and Wilhelmsson (n 836) 85.

⁸³⁸ *ibid*; Hans-W Micklitz, Lucia A Reisch, Kornelia Hagen, ‘An Introduction to the Special Issue on “Behavioural Economics, Consumer Policy, and Consumer Law”’ [2011] 34 JCP 271, 275-276; Trzaskowski (n 797) 385.

⁸³⁹ The European Commission document does stipulate that ‘Insights from behavioural economics show that not only the content of the information provided, but also the way the information is presented can have a significant impact on how consumers respond to it’. However, the CJEU has not yet referred to this reasoning in their case law, ‘COMMISSION STAFF WORKING DOCUMENT GUIDANCE ON THE IMPLEMENTATION/APPLICATION OF DIRECTIVE 2005/29/EC ON UNFAIR COMMERCIAL PRACTICES’ (n 809); Trzaskowski (n 797) 391.

⁸⁴⁰ In *Gut Springenheide GmbH and Rudolf Tusky v Oberkreisdirektor des Kreises Steinfurt - Amt für Lebensmittelüberwachung* the court stipulated that ‘to determine whether a statement or description designed to promote sales of eggs is liable to mislead the purchaser, in breach of Article 10(2)(e) of Regulation No 1907/90, the national court must take into account the presumed expectations which it evokes in an average consumer who is reasonably well-informed and reasonably observant and circumspect. However, Community law does not preclude the possibility that, where the national court has particular difficulty in assessing the misleading nature of the statement or description in question, it may have recourse, under the conditions laid down by its own national law, to a consumer research poll or an expert's report as guidance for its judgment’, taken from *Gut Springenheide GmbH and Rudolf Tusky v Oberkreisdirektor des Kreises Steinfurt - Amt für Lebensmittelüberwachung* (n 800) para 37.

⁸⁴¹ Sax, Helberger and Bol (n 349) 129; see also, Peter Cartwright, ‘Understanding and Protecting Vulnerable Financial Consumers’ (2015) 38 (2) JCP 119, 120.

⁸⁴² Unfair Commercial Practices Directive, art 8, art 9.

⁸⁴³ *ibid* art 8.

⁸⁴⁴ *Ibid*.

pressure, even without using or threatening to use physical force, in a way which significantly limits the consumer's ability to make an informed decision'.⁸⁴⁵ Thus, an aggressive practice is evidenced by a lack of options, rather than lack of information giving a detailed account of the consumer's expectations of a service.

For instance, article 9 (c) of the UCP Directive prohibits practices entailing 'the exploitation by the trader of any specific misfortune or circumstance of such gravity as to impair the consumer's judgement, of which the trader is aware, to influence the consumer's decision with regard to the product'.⁸⁴⁶ This perspective of what constitutes an aggressive practice, coupled with the concept of the average consumer as a deciding factor, leaves some open questions about the factors that help to inform an individual's degree of informed choice. We would agree that a trader's use of persistent persuasion techniques to exploit specific psychological weaknesses, such as an individual's insecurity or low confidence, could fall within article 9 of the UCP Directive.⁸⁴⁷ In other instances, however, further clarification is needed defining how a trader's exploitation of power imbalances can illustrate an aggressive practice under the UCP directive. As argued by Sax, Helberger and Bol, aggressive practices could illustrate a form of 'persuasion power' whereby the trader could exercise pressure 'in the form of detailed knowledge of the user, her wishes, fears, preferences, and biases but also the ability to serve users with personali[s]ed recommendations'.⁸⁴⁸

However, an important limitation of the UCP Directive is that it only covers the manipulation of user incentives, rather than individual sense-making regarding aggressive commercial practices.⁸⁴⁹ In other words, an aggressive commercial practice still assumes a level of conscious awareness of the individual based on the Article 8 requirement of a 'factual context',⁸⁵⁰ leaving out the vulnerabilities which are induced by the context of fashion recommender systems. By way of illustration, a consumer may want to find a specific clothing based on low confidence or self-esteem but a hypernudge will try to adapt the personalised recommendations so that the user will unconsciously shop for an entire outfit that suits a particular body type. What this example highlights is that the trader uses new forms of pressure building on the role of dress to shape the interpretation of fashion narratives as well as attitudes influencing future behaviour.⁸⁵¹ Therefore, an aggressive commercial practice in the context of fashion recommender systems would cause the consumer him or her a transactional decision as if not taken otherwise.⁸⁵²

⁸⁴⁵ *ibid* art 2 (j).

⁸⁴⁶ Howells, Twigg-Flesner and Wilhelmsson (n 836) 66.

⁸⁴⁷ Unfair Commercial Practices Directive, art 9.

⁸⁴⁸ Marijn Sax, Natali Helberger and Nadine Bol who investigate the concept of nudge and autonomy regarding mHealth Apps, see Sax, Helberger and Bol (n 349) 124.

⁸⁴⁹ Unfair Commercial Practices Directive, art 9.

⁸⁵⁰ *ibid* art 8.

⁸⁵¹ On the role of the social meaning of dress in fashion psychology see Johnson, Lennon and Rudd (n 795) 1.

⁸⁵² Unfair Commercial Practices Directive, art 8.

To summarise, concepts on misleading, aggressive practices and the average or vulnerable consumer in the UCP directive fail to acknowledge the nature of unconscious associations that are influenced by hypernudges in fashion recommender systems to manage one's expectations and attitudes regarding an informed choice on the use of a service. Nevertheless, we need to acknowledge that the EU Commission is extending the breadth of consumer protection regarding algorithmic personalisation systems. Recital 62 of the Digital Services Act highlights that:

A core part of a very large online platform's business is the manner in which information is prioritised and presented on its online interface to facilitate and optimise access to information for the recipients of the service. ... [s]uch recommender systems can have a significant impact on the ability of recipients to retrieve and interact with information online.⁸⁵³

Therefore, we need whether the EU's rhetoric to enhance consumer protection makes a significant contribution regarding the 'risks of profiling and micro-targeting in the context of recommender systems or online advertising'.⁸⁵⁴

3. The Digital Services Act and AI in fashion: moving towards consumer harm?

The question of whether we should examine the socio-legal challenges of nudges in algorithmic personalisation systems in fashion from the perspective of consumer protection, rather than privacy law is an important one⁸⁵⁵ – considering the effort of the European Parliament 'to develop the European provision on artificial intelligence in the area of ecommerce and digital services' which includes a reform of the Directive on Electronic Commerce (E-Commerce Directive) and the introduction of the Digital Services Act.⁸⁵⁶ Here, enhanced protection of the consumer may provide 'protection of the weaker party, regulated autonomy, and non-discrimination'.⁸⁵⁷

An interesting aspect of the aforementioned legislation regarding consumer protection is that these provide enhanced information duties and rights to individuals. Article 5 (1) (c) of the E-Commerce

⁸⁵³ Digital Services Act, Recital 62.

⁸⁵⁴ European Data Protection Supervisor, 'Opinion 1/2021 on the Proposal for a Digital Services Act' (n 802) para 73.

⁸⁵⁵ See also new AI Act proposal which states that 'other manipulative or exploitative practices affecting adults that might be facilitated by AI systems could be covered by the existing data protection, consumer protection and digital service legislation that guarantee that natural persons are properly informed and have free choice not to be subject to profiling or other practices that might affect their behaviour', Artificial Intelligence Act proposal, at 5.2.2.

⁸⁵⁶ Dino Pedreshi and Ioanna Miliou, 'Artificial Intelligence (AI): new developments and innovations applied to e-commerce' Policy Department for Economic, Scientific and Quality of Life Policies Directorate-General for Internal Policies, European Parliament, May 2020) < [www.europarl.europa.eu/RegData/etudes/IDAN/2020/648791/IPOL_IDA\(2020\)648791_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2020/648791/IPOL_IDA(2020)648791_EN.pdf)> accessed 23 August 2021, page 25; Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce') [2000] OJ L 178 ; Digital Services Act.

⁸⁵⁷ Agnieszka Jabłowska, Maciej Kuziemski, Anna Maria Nowak, Hans-W. Micklitz, Przemysław Pałka and Giovanni Sartor, 'Consumer law and Artificial Intelligence Challenges to the EU Consumer Law and Policy Stemming From the Business' Use of Artificial Intelligence' (2018) EUI Working Paper LAW 2018/11, 5 <https://cadmus.eui.eu/bitstream/handle/1814/57484/WP_2018_01.pdf?sequence=1&isAllowed=y> accessed 23 August 2021.

Directive provides that the consumer may receive the following information which includes ‘the details of the service provider, including his electronic mail address, which allow him to be contacted rapidly and communicated with in a direct and effective manner’.⁸⁵⁸ The Digital Services Act can ‘amend or even replace’ the E-Commerce Directive.⁸⁵⁹ In this respect, the Digital Services Act intends to provide enhanced transparency, including information rights to the consumer, which can be seen in its draft provision Article 29.⁸⁶⁰ Article 29 specifically refers to recommender systems stipulating that:

very large online platforms that use recommender systems shall set out in their terms and conditions, in a clear, accessible and easily comprehensible manner, the main parameters used in their recommender systems, as well as any options for the recipients of the service to modify or influence those main parameters that they may have made available, including at least one option which is not based on profiling, within the meaning of Article 4 (4) of Regulation (EU) 2016/679’⁸⁶¹

...where several options are available pursuant to paragraph 1, very large online platforms shall provide an easily accessible functionality on their online interface allowing the recipient of the service to select and to modify at any time their preferred option for each of the recommender systems that determines the relative order of information presented to them.⁸⁶²

This provision sets up important contours in how personal autonomy is constructed regarding recommender systems in fashion considering its incentive to secure less self-regulation of online platforms⁸⁶³ and collective control including oversight of the practices of personalisation (i.e. advertising and nudging) of big tech companies.⁸⁶⁴ Indeed, this provision gains further significance when read in conjunction with Recital 62 of the Digital Services Act considering hypernudges (and filter bubbles) in fashion.⁸⁶⁵ Accordingly, it could be argued these transparency guarantees act as an added safeguard to the user control of personal data within the GDPR, which will be discussed in Section VI in Chapter 5. We arguably move towards an enhanced understanding of user control, entailing ‘consumer harm’ regarding fashion recommender systems in fashion.

⁸⁵⁸ Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (‘Directive on electronic commerce’) [2000] OJ L 178, art 5 (1) (c).

⁸⁵⁹ Hans Schulte-Noelke, Ida Rueffer, Carlos Nobrega and Aneta Wieworowska-Domagalska, ‘The legal framework for e-commerce in the Internal Market’ (Policy Department for Economic, Scientific and Quality of Life Policies Directorate-General for Internal Policies, European Parliament, May 2020) <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652707/IPOL_STU\(2020\)652707_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652707/IPOL_STU(2020)652707_EN.pdf)> accessed 23 August 2021, at 2.8.

⁸⁶⁰ Digital Services Act, art 29.

⁸⁶¹ *ibid*, art 29 (1); General Data Protection Regulation, art 4 (4).

⁸⁶² Digital Services Act, art 29 (2).

⁸⁶³ Jeff Ausloos, Paddy Leerssen and Pim ten Thije, ‘Operationalizing Research Access in Platform Governance: What to learn from other industries?’ (25 June 2020) < www.ivir.nl/publicaties/download/GoverningPlatforms_IViR_study_June2020-AlgorithmWatch-2020-06-24.pdf> accessed 23 August 2021, page 10.

⁸⁶⁴ ‘Submission by AlgorithmWatch On the European Commission’s “Digital Services Act” (DSA)’ (September 2020) < https://algorithmwatch.org/en/submission-digital-services-act-dsa/#_ftn5> accessed 23 August 2021.

⁸⁶⁵ Recital 62 highlights that algorithmic personalisation is not simply about ‘showing’ or ‘recommending’ but entails ‘algorithmically suggesting, ranking and prioritising information, distinguishing through text or other visual representations, or otherwise curating information provided by recipients’, Digital Services Act, Recital 62; see also, European Data Protection Supervisor, ‘Opinion1/2021 on the Proposal for a Digital Services Act’ (n 802) para 71.

However, some open questions need to be addressed about Article 29 of the Digital Services Act. One issue is the scope of Article 29 (1) which pertains to ‘very large open platforms’.⁸⁶⁶ Article 25 (1) clarifies the operational threshold and suggests that very large open platforms are ‘online platforms which provide their services to a number of average monthly active recipients of the service in the Union equal to or higher than 45 million’.⁸⁶⁷ This number is not a fixed threshold and is calculated using the methodology in Article 25 (2) - (4).⁸⁶⁸ Indeed, it is possible to argue that the risks of ‘harm increases with the size of online platforms in terms of their number of users’.⁸⁶⁹ However, we could equally argue that we need to protect an individual’s autonomy not only from big economic operators, but from the informational infrastructures and computational models exhibiting “persuasion power.”⁸⁷⁰

Moreover, Article 29 (2) of the Digital Services Act talks about the existence of ‘several options are available’ to service providers considering Article 29 (1).⁸⁷¹ Nevertheless, the draft proposal does not clarify the meaning of such options; such as, whether that is a technical question (i.e. technical choices discussing collaborative versus content-based filtering algorithms) or how does user freedom of choice within paragraph (1) need to be aligned to fundamental rights (i.e. privacy and data protection). In other words, if the recipient can choose non-personalised recommendations, can the online platform refuse this request based on the lack of options? Perhaps the provider could escape the obligation in Article 29 altogether by informing the user that the recommender system is fully or partially automated.⁸⁷² Further guidance is needed so that the Digital Service Act proposal does not illustrate an illusionary safeguard of an individual’s free choice.

The European Data Supervisor commented on Article 29 (1) of the Digital Service Act ‘strongly recommend[ing] to modify the requirement to opt-in rather than opt-out, making the option not based on profiling the default one’.⁸⁷³ Nevertheless, I suggest that more guidance is needed to clarify the extent of disclosure and contours of enforcement of enhanced transparency obligations, beyond a binary framework of personalisation based on Article 4 (4) of the GDPR.⁸⁷⁴ Such an opt-out approach to ensure

⁸⁶⁶ Digital Services Act, art 29 (1).

⁸⁶⁷ *ibid*, art 25 (1).

⁸⁶⁸ *ibid*, art 25 (2) –(4).

⁸⁶⁹ Caroline Cauffman and Catalina Goanta, ‘A New Order: The Digital Services Act and Consumer Protection’ [2021] EJRR 1, 13.

⁸⁷⁰ See also a recommendation made by a human rights organisation who underline that ‘strengthening transparency obligations on all platforms and providing greater choice to users on how they access content online is a crucial first step to addressing concerns on the impact of recommender systems’, see ‘Regulation of recommender systems in the EU’s Digital Services Act: ARTICLE 19’s recommendation to lawmakers’ (14 May 2021) < www.article19.org/wp-content/uploads/2021/05/Regulation-of-recommender-systems-in-the-EU-1.pdf > accessed 23 August 2021.

⁸⁷¹ Digital Services Act, art 29 (1), art 29 (2).

⁸⁷² This is actually recommended by the European Data Protection Supervisor, suggesting that ‘additional requirements in Article 29 of the Proposal... [need] to inform the platform user whether the recommender system is an automated decision-making system and, in that case, the identity of the natural or legal person liable for the decision’, see European Data Protection Supervisor, ‘Opinion 1/2021 on the Proposal for a Digital Services Act’ (n 802) para 93.

⁸⁷³ European Data Protection Supervisor, ‘Opinion 1/2021 on the Proposal for a Digital Services Act’ (n 802) para 74.

⁸⁷⁴ Article 4 (4) provides that ‘profiling’ means any form of automated processing of personal data consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict aspects

user transparency is not realistic considering the nature of fashion recommender systems relying on the algorithmic constructions of user preferences, interests, and behaviour to personalise an individual's shopping experience.⁸⁷⁵

I intend to offer a different approach in how the GDPR can offer enhanced transparency and co-exist with consumer law, including the Digital Service Act. My main claim is that more explainability requires more interpretability of fashion narratives in recommender engines to effectively ensure user control of personal data.

V. Preliminary conclusion

The previous discussion examined the concept of hypernudges regarding fashion recommender systems. Algorithmic personalisation systems generate assumptions on individual behaviour that illustrate an incomplete picture of the meaning of “fashion”. Accordingly, fashion recommender systems influence the unconscious associations that generate an imagery on the individual's personal and social understanding of “fashion” and “identity”.

Section IV (of Chapter 5) provides an interdisciplinary account of hypernudges in fashion recommender systems focusing on consumer protection. The discussion also clarified that more guidance is needed to effectively protect an individual's autonomy and consider new EU legislation, the Digital Services Act. I will now examine the concept of hypernudges focusing on the GDPR's transparency requirements.

VI. GDPR: explainability and transparency in fashion recommender systems

An important safeguard of an individual's informational privacy is how an individual's preferences including behaviour are assessed in the algorithmic process.⁸⁷⁶ One step, which could protect an individual's informational privacy, is to ensure transparency of the personalised algorithmic process. As argued by Silvia Milano, Mariarosaria Taddeo and Luciano Floridi, ‘explaining how personalised recommendations generated for individual users could be valuable for users to understand why some suggestions are provided by the engine’.⁸⁷⁷ In addition, the notions of explainability and transparency in algorithmic personalisation systems allow users to challenge the accuracy of the algorithmic decision-

concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or movements’, General Data Protection Regulation, art 4 (4).

⁸⁷⁵ see also Section V.3 in **Chapter 4** on my comments about consent and non-personalised advertising.

⁸⁷⁶ Hildebrandt, *Smart technologies and the end(s) of law: novel entanglements of law and technology* (n 150) 102.

⁸⁷⁷ Milano, Taddeo and Floridi (n 432) 962.

making process.⁸⁷⁸ Finally, explainability and transparency should respect an individual's autonomy, protecting users against deceptive practices in algorithmic personalisation systems, and establish a reference point for acceptable nudging and questionable "hypernudging" practices.

1. Interpretability in fashion recommender systems

There are inherent challenges to incorporate notions of explainability and transparency in fashion recommender systems. Neural networks pose issues of interpretability based on the operation of hidden weights that do not outline how the weights are adjusted and evaluated.⁸⁷⁹ These issues of interpretability underline the challenges to provide explainable decisions.⁸⁸⁰ Despite the issues of transparency in fashion recommender systems, attentional models provide for improved interpretability.⁸⁸¹ Current efforts and challenges regarding issues of transparency in fashion recommender systems have to be viewed in light of the so-called 'right to explanation' in the GDPR. The application of the 'right to explanation' has been extensively criticised regarding its scope regarding the articles 13-15 of the GDPR as well as its feasibility in the first place.⁸⁸² Focusing on the nature of fashion recommender systems and the impact on informational privacy, a 'right to explainability' needs provide an account of the system's logic to close the gap between issues of interpretability and explainability.

Current research, acknowledging the challenges of non-interpretability of recommender systems using deep learning, focuses on two important tasks, which are to develop methods that allow users to understand the factors contributing to predictions and to enable practitioners to gain a clearer picture about the inner workings of the model.⁸⁸³ In this respect, a 'neural attentional model' is argued to solve issues of non-interpretability, based on the mechanism's task to provide implicit feedback on each user-item interaction and inferring the importance of weights within a recommendation.⁸⁸⁴ In addition, there is increasing interest to make post-hoc models that are intended to make recommender systems

⁸⁷⁸ Rashmi Sinha and Kirsten Swearingen, 'The role of transparency in recommender systems' (CHI EA '02: CHI '02 Extended Abstracts on Human Factors in Computing Systems, April 2002).

⁸⁷⁹ Dan McQuillan, 'Data Science as Machinic Neoplatonism' (2018) 31 (2) *Philosophy & technology* 253, 256.

⁸⁸⁰ Shuai Zhang, Lina Yao, Aixin Sun, Yi Tay, 'Deep Learning based Recommender System: A Survey and New Perspectives' (2019) 52 (1) *ACM computing surveys* 1.

⁸⁸¹ *ibid*; Yi Tay, Luu Anh Tuan and Siu Cheung Hui, 'Latent Relational Metric Learning via Memory-based Attention for Collaborative Ranking' (WWW 2018, Lyon, France, 23-27 April 2018); Yatong Sun, Guibing Guo, Xu Chen, Penghai Zhang and Xingwei Wang, 'Exploiting review embedding and user attention for item recommendation' (2020) 62 (8) *Knowledge and information systems* 3015.

⁸⁸² General Data Protection Regulation, arts 13-15; Sandra Wachter, Brent Mittelstadt and Luciano Floridi, 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' (2017) 7 (2) *IDPL* 76; Andrew D Selbst and Julia Powles, 'Meaningful information and the right to explanation' (2017) 7 (4) *IDPL* 233, Joanna Mazur and Kristin Henrard, 'Right to Access Information as a Collective Based Approach to the GDPR's Right to Explanation in European Law' (2018) 11 (3) *Erasmus Law Review* 178.

⁸⁸³ Zhang, Yao, Sun, Tay, 'Deep Learning based Recommender System: A Survey and New Perspectives' (n 880) 26.

⁸⁸⁴ Tay, Anh Tuan and Cheung Hui, 'Latent Relational Metric Learning via Memory-based Attention for Collaborative Ranking' (n 881); Sun, Guo, Chen, Zhang and Wang, 'Exploiting review embedding and user attention for item recommendation' (n 881) 3016.

explainable, providing ‘user-centred explanations’.⁸⁸⁵ For instance, matrix factorization methods can be developed in such a way that recommendations are accompanied by an explanation sentence for the suggested item.⁸⁸⁶ Another example is using a CNN approach with an attentional mechanism where the model provides for user/item feature explanations.⁸⁸⁷

These approaches of explainability and interpretability suffer from drawbacks. Attention models, being a scheme visualise relational representations of user-item interactions, do not create human-readable explanations, or in other words, these models do not necessarily provide for explainability.⁸⁸⁸ Accordingly, the work by Yujie Lin, Penjie Ren, Zhumin Chen *et al*, which uses user feedback within the neural attention mechanism to generate outfit explanations for recommendations, underlines that the model highlights the difficulty to explain why an outfit did not match with the user.⁸⁸⁹ Based on these considerations, there is still a gap between the extent of interpretability and providing explainable recommendations to users.

2. Fashion recommender systems and the ‘right to explanation’

Articles 13-15 of the GDPR are notification duties for the data controller to provide the data subject with information regarding the collection of personal data as well as a data subject’s right to access his or her personal information.⁸⁹⁰ Whilst Article 13 outlines the notification duties for data controllers regarding data collection, Article 14 GDPR specifies the duties for data collected from a third party.⁸⁹¹ Following these considerations, the data controller has a duty to take appropriate measures meaning that any changes with regard to the content or conditions of privacy notices need to be communicated to the data subject.⁸⁹²

⁸⁸⁵ Edwards and Veale ‘Slave to the Algorithm? Why a ‘Right to an Explanation’ Is Probably Not the Remedy You Are Looking For’ (n 353) 19.

⁸⁸⁶ Yongfeng Zhang and Xu Chen, ‘Explainable Recommendation: A Survey and New Perspectives’ (2020) 14 (1) Foundations and Trends in Information Retrieval 1, 8.

⁸⁸⁷ Sungyong Seo, Jing Huang, Hao Yang and Yan Liu, ‘Interpretable Convolutional Neural Networks with Dual Local and Global Attention for Review Rating Prediction’ (RecSys ’17: Proceedings of the Eleventh ACM Conference on Recommender Systems, August 2017).

⁸⁸⁸ Leilani H Gilpin, David Bau, Ben Z Yuan, Ayesha Bajwa, Michael Specter and Lalana Kagal, ‘Explaining Explanations: An Overview of Interpretability of Machine Learning’ (ArXiv, 31 May 2018) < <https://arxiv.org/abs/1806.00069> > accessed 12 November 2020.

⁸⁸⁹ Yujie Lin, Penjie Ren, Zhumin Chen, Zhaochun Ren, Jun Ma, Maarten De Rijke, ‘Explainable Outfit Recommendation with Joint Outfit Matching and Comment Generation’ (2020) 32 (8) IEEE Transactions on Knowledge and Data Engineering 1502, 1514.

⁸⁹⁰ General Data Protection Regulation, arts 13-15.

⁸⁹¹ *ibid* art 13, art 14; Wachter, Mittelstadt and Floridi, ‘Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation’ (n 882) 82.

⁸⁹² Emma L Flett and Eleanor Harley, ‘Crystal clear or still a crystal maze? WP29 shines a light on the GDPR transparency requirements’ (2018) 24 (4) C.T.L.R 84, 85.

Nevertheless, the right to access information in Article 15 and the duty of notification in Articles 13 and 14 of the GDPR may include additional safeguards subject to article 22 of the GDPR.⁸⁹³ Articles 13(2)(f), 14(2)(g) and 15(1)(h) provide that, when automated decision-making and profiling take place, the data subject can receive ‘meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject’.⁸⁹⁴ Within this context, Sandra Wachter, Brent Mittelstadt and Luciano Floridi make an important distinction between the duties in articles 13-14 and article 15, underlining that the former includes ex-ante notification about the extent of data processing or automated profiling from the beginning, whereby the latter provision stipulates an ex-post obligation to provide information on a data processing activity including the decisions that are taken about a particular individual.⁸⁹⁵

In this respect, article 22(1) of the GDPR provides that ‘the data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her’.⁸⁹⁶ Article 22(3), referring to article 22(2)(a) and 22(2)(b) GDPR, highlight that a data controller needs to implement suitable safeguards, which may entail a ‘right to obtain human intervention, to express his or her point of view, to obtain an explanation of the decision reached after such assessment and to challenge the decision’, in accordance to Recital 71.⁸⁹⁷ Based on these considerations, the existence of automated processing including profiling gives individuals an ex-ante protection to receive information on the system’s functionality, as well as an ex-post protection to receive information upon the individual’s specific request.

However, these provisions led to a series of criticisms. One consideration is that article 22(1) of the GDPR directs to not be subject to ‘a decision based solely on automated processing’ which may constrain the provision’s scope to a limited number of circumstances.⁸⁹⁸ Fashion recommender systems are semi-automated in that algorithms will evaluate the matching criteria and relative probability a user will choose a style, which sometimes requires manual intervention to fill the gaps or sparse matrix, circumventing the classic problems in collaborative filtering systems.⁸⁹⁹ In this respect, the prohibition

⁸⁹³ General Data Protection Regulation, arts 15, 13-14; Bryce Goodman and Seth Flaxman, ‘European Union Regulations on algorithmic decision-making and a “right to explanation”’ (2016) 38 (3) AI Magazine 1, 6.

⁸⁹⁴ General Data Protection Regulation, arts 13(2)(f), 14(2)(g); 15(1)(h).

⁸⁹⁵ Wachter, Mittelstadt and Floridi, ‘Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation’ (n 882) 78-79.

⁸⁹⁶ General Data Protection Regulation, art 22(1).

⁸⁹⁷ Ibid arts 22(3), 22(2)(a), 22(2)(b), Recital 71.

⁸⁹⁸ Ibid art 22(1); Wachter, Mittelstadt and Floridi, ‘Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation’ (n 882) 79.

⁸⁹⁹ ‘Algorithms Tour: How data science is woven into the fabric of Stitch Fix’ (Stich Fix) < <https://algorithms-tour.stitchfix.com/#recommendation-systems> > accessed 12 November 2020; Indeed, this point is recognised in the proposal of the Digital Services Act which defines a recommender system the following way; ‘recommender system’ means a fully or partially automated system used by an online platform to suggest in its online interface specific information to recipients of the service, including as a result of a search initiated by the recipient or otherwise determining the relative order or prominence of information displayed’, Digital Services Act, art 2 (o).

of article 22(1) of the GDPR does not apply when there is meaningful human oversight, rather than a token gesture.⁹⁰⁰ For instance, it could be argued that a fashion recommender system using a CNN methodology and causing issues of verifiability and interpretability of output could serve as an indicator that significant human oversight over the algorithmic personalisation process cannot be guaranteed. Nevertheless, how much human oversight is meaningful is not sufficiently clarified in the GDPR.

The second consideration is that the decision needs to ‘produce legal effects concerning him or her or similarly significantly affects him or her’.⁹⁰¹ Thus, the Article 29 Data Protection Working Party guidance specifies that the decision needs to have an impact on an individual’s legal rights or legal status, or it produces an effect that is of an equivalent impact.⁹⁰² In this respect, it underlines that the extent of data processing seems to be of ‘sufficiently great or important to be worthy of attention’ when the activity ‘significantly affects the circumstances, behaviour or choices of the individuals concerned’, when it ‘has a prolonged or permanent impact on the data subject’, or the decision ‘leads to the exclusion or discrimination of individuals’.⁹⁰³ In this respect, the guidance refers to behavioural advertising from a ‘mainstream fashion outlet’ may significantly affect the user, depending on the intrusiveness of the profiling process or the expectations of the individual concerned and considering the particular vulnerability of the data subject targeted.⁹⁰⁴ That said, advertising or marketing strategies as such do not enter the scope of Article 22.⁹⁰⁵

However, a dividing line that is based on a simple demographic profile, and a clear discriminatory practice is not a helpful distinction with regard to fashion recommender systems which work with pre-defined values resembling aspects of an individual’s ambivalence of conformity and differentiation, and behavioural parameters influencing the individual’s personal understanding of ‘‘fashion’’, both aspects having an impact on an individual’s individual autonomy. In addition, the distinction does not give added value to the relationship between decisions that produce a legal effect on the status of the individual and those algorithmic processes that have a similar influence. Hypernudging practices are not designed by virtue of the vulnerability of a specific individual as such, but their operation amplifies unconscious associations on an individual inference of self. Thus, it is difficult to define the point fashion recommender systems and hypernudging practices produce a prolonged effect on individual behaviour, as it pertains directly how expectations are formed.

⁹⁰⁰ Article 29 Data Protection Working Party, ‘Guidelines on Automated individual decision-making and profiling for the purposes of regulation 2016/679’ (adopted 3 October 2017, revised 6 February 2018) WP251 rev 01, page 21.

⁹⁰¹ General Data Protection Regulation, art 22 (1).

⁹⁰² Article 29 Data Protection Working Party, ‘Guidelines on Automated individual decision-making and profiling for the purposes of regulation 2016/679’ (n 900) page 21.

⁹⁰³ *ibid.*

⁹⁰⁴ *ibid.*, page 11.

⁹⁰⁵ *ibid.*

In addition to the points raised above, there is a lack of clarity regarding the safeguards available in article 22(3) GDPR, which is whether the GDPR introduces the so-called legally binding ‘right to explanation’.⁹⁰⁶ Wachter, Mittelstadt, Floridi, doubting the existence and feasibility of a ‘right to explanation’, highlight that Recitals are not guidance regarding the interpretation of the provisions, and therefore, Articles 22 and 13-15 of the GDPR do not seem to mandate an “explanation” of the decision reached concerning automated processing, but rather, an ex-ante obligation on the ‘right to be informed’.⁹⁰⁷ However, Andrew D Selbst and Julia Powles argue that requesting ‘meaningful information about the logic involved’ mandates a right to explanation to ensure the effective compliance with Article 22(3) of the GDPR.⁹⁰⁸

It follows that the focus is not on whether the right to explanation is expressly provided in the GDPR but to assess the feasibility of such a right in the first place.⁹⁰⁹ Malgieri and Comandé argue that an important safeguard for individual would illustrate to inform users ‘as much as possible about the existence and the logic involved in such algorithmic decision-making, both as for system functionality and for specific decisions’.⁹¹⁰ Of course, this safeguard does not signify full transparency about the algorithmic process. One consideration is that a company has a legitimate interest in ensuring the proprietary information or trade secret regarding the underlying work of the algorithms.⁹¹¹ Moreover, it is argued that full transparency is not even desirable, in that once individuals comprehend what signs are suggestive for individual behaviour, these signs may lose its predictive value.⁹¹² Accordingly, a ‘right to explanation’ is a mechanism that acts as both, an ex-ante and ex-post obligation, defining the scope of an algorithmic process, as well as the consequential implications of these tools on the individual’s right to privacy.

3. Setting the parameters for transparency in fashion recommender systems

A ‘right to explanation’ could operate as an accountability mechanism for the design and implementation of interpretable fashion recommender systems. In practical terms, this means that the GDPR needs to take a clearer stance on the operation algorithmic personalisation systems, which even though not fully automated, do cause issues of transparency as highlighted in light lack of interpretability and explainability in recommender systems. Indeed, the opinion by the UK Information Commissioner’s

⁹⁰⁶ General Data Protection Regulation, art 22(3).

⁹⁰⁷ Wachter, Mittelstadt and Floridi, ‘Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation’ (n 882) 79.

⁹⁰⁸ Selbst and Powles (n 882) 236.

⁹⁰⁹ Mazur and Henrard (n 882) 178.

⁹¹⁰ Malgieri and Comandé, ‘Why a Right to Legibility of Automated Decision-making exists in the General Data Protection Regulation’ (n 815) 244.

⁹¹¹ General Data Protection Regulation, Recital 63; Lilian Edwards and Michael Veale, ‘Enslaving the Algorithm: From a “right to explanation” to a “right to better decisions”?’ (2018) 16 (3) IEEE Security & Privacy 46.

⁹¹² Joshua A Kroll, Joanna Huey, Solon Barocas, Edward W Felten, Joel R Reidenberg, Davig G Robinson, Harlan Y, ‘Accountable Algorithms’ (2017) 165 (3) U.Pa.L.Rev. 633, 657-658.

Office that article 22(1) of the GDPR needs to be interpreted to include processes where there is minimal, but not ‘real influence on the outcome of the decision-making process’.⁹¹³ Similarly, Recital 71 of the GDPR, stipulating that ‘profiling consists of any form of automated processing of personal data evaluating the personal aspects relating to a natural person’, including ‘personal preferences or interests’, indicates that there is a legitimate interest to protect individuals from persuasive practices that are manipulative.⁹¹⁴

Nevertheless, further efforts to secure an unambiguous interpretation of article 22(1) of the GDPR need to the character of fashion recommender systems and their impact on an individual’s autonomy and informational privacy. A ‘right to explanation’ can not only refer to specific vulnerabilities created by marketing or nudging strategies but needs to be assessed considering the parameters of the right to privacy. Privacy, being instrumental for the protection of an individual’s autonomy, does not only comprise the essential independence from unwarranted intrusions but the conditions that enable an individual the autonomous construction and expression of self.⁹¹⁵ In other words, a ‘right to explanation’ needs to assess the contours of the created imaginary of fashion recommender systems. That requires an ex-ante obligation to outline the logic of the algorithmic association processes regarding situational and dispositional attributions in the recommendation process. An ex-post obligation needs to contextualise the rationale of the decision considering the functionality of the decision-making process, which would be an outline of the relevance of “fashion narratives” regarding the person’s user-item interactions.

As a first step, this requires interpretability of the recommendation process. In this respect, a neural attentional model can help to ensure the interpretability of fashion recommender systems and provide the relevant guidance to fulfil the notification duties considering articles 13(2)(f) and 14(2)(g) of the GDPR.⁹¹⁶ As a second step, attentional neural models need to provide for explainability concerning a decision taken regarding the data subject within article 15(1)(h) of the GDPR.⁹¹⁷ That said, providing comprehensibility in algorithmic decisions regarding the system’s functionality intends to close the gap between issues of interpretability and explainability in fashion recommender systems. Therefore, providing interpretable and explainable decisions in algorithmic processes requires an account of the system’s functionality regarding the system’s logic and to a certain extent its general functionality to provide the representations of data on the workings regarding user-item interactions. This way, ensuring

⁹¹³ Information Commissioner’s Office, ‘Feedback request – profiling and automated decision-making’ (2017) < <https://ico.org.uk/media/about-the-ico/consultations/2013894/ico-feedback-request-profiling-and-automated-decision-making.pdf> > accessed 29 September 2020; Information Commissioner’s Office, ‘Automated Decision-Making and Profiling’ (2018) < <https://ico.org.uk/media/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/automated-decision-making-and-profiling-1-1.pdf> > accessed 29 September 2020; Malgieri and Comande, ‘Why a Right to Legibility of Automated Decision-making exists in the General Data Protection Regulation’ (n 815) 243.

⁹¹⁴ Malgieri and Comande, ‘Why a Right to Legibility of Automated Decision-making exists in the General Data Protection Regulation’ (n 815) 243; General Data Protection Regulation, Recital 71.

⁹¹⁵ Cohen, ‘Examined Lives: Informational privacy and the subject as object’ (n 146) 1427-1428.

⁹¹⁶ General Data Protection Regulation, arts 13(2)(f), 14(2)(g).

⁹¹⁷ *ibid.*, art 15(1)(h).

transparency of algorithmic processes should enhance an individual's autonomy to understand the parameters of interactive value creation in fashion recommender systems. Effective explainability and interpretability of fashion recommender systems will provide an account of an individual's autonomy, protecting users against manipulative practices in algorithmic personalisation systems, and establish the reference point for acceptable nudging and questionable hypernudging practices.

VII. Transparency: also a question focusing on algorithmic bias

Chapter 5 focused on the way fashion recommender systems influence an individual's free choice, focusing on the concept of nudges and persuasion. An important finding is that algorithmic personalisation systems engage in a process of interactive value-creation, shaping the expression of one's own aspects of fashion identity, including the individual's inference of knowledge to the self. Chapter 5 also focuses on how fashion recommender systems shape the conditions of an individual's autonomy-focusing on the undue influence of commercial practices and the lack of transparency of data processing activities.

Nevertheless, transparency is not only a valuable notion giving an individual control of acceptable and unacceptable hypernudging practices, but it also can uncover algorithmic bias.⁹¹⁸ Algorithmic decision-making can produce real-world consequences of unfair treatment of individual's raising questions about the fairness of algorithmic decision-making.⁹¹⁹ Accordingly, we are not only concerned with extent of algorithmic personalisation to shape decision-making but also the depth of algorithmic constructions to classify individual behaviour. In this respect, we must not make the mistake of believing that algorithmic bias only about the fairness of individual decisions as it produces structural problems of privacy, non-discrimination, raising broader concerns of equality.⁹²⁰ Chapter 6 will uncover the socio-legal issues of bias in fashion recommender systems in greater detail.

⁹¹⁸ Mareike Möhlmann, 'Algorithmic Nudges Don't Have to Be Unethical' (*Harvard Business Review*, 22 April 2021) <<https://hbr.org/2021/04/algorithmic-nudges-dont-have-to-be-unethical>> accessed 21 September 2021.

⁹¹⁹ Thomas B Nachbar, 'Algorithmic Fairness, Algorithmic Discrimination' (2021) 48 (2) *Fla.St.U.L.Rev.* 509.

⁹²⁰ see also, Fausto Giunchiglia, Jahna Otterbacher, Styliani Kleanthous, Khuyagbaatar Batsuren, Veronika Bogin, Tsvi Kuflik and Avital Shulner Tal, 'Towards Algorithmic Transparency: A Diversity Perspective' (ArXiv, 12 April 2021) <<https://arxiv.org/abs/2104.05658>> accessed 21 September 2021.

Chapter 6

Defining algorithmic bias in fashion recommender systems

Algorithmic bias in fashion recommender systems affects the expression and contours of human decision-making. This chapter claims that our concern with algorithmic bias is based on its statistical proposition about the world, as well as the contours through which I make my inferential judgment concerning my fashion identity. I use the notion of individual perception and self-relationality to test the assumptions about algorithmic bias in the existing literature, such as penetrating algorithmic decisions to reveal unfair treatment and the issues regarding social sorting. I develop my own assumptions on how bias in fashion recommender systems causes unfair differentiation and how we need an interdisciplinary account, testing the impact of algorithmic personalisation on the ambivalences of personal and social aspects of fashion identity. Referring to ECtHR and CJEU case law, as well as EU anti-discrimination law and the GDPR, I conclude with key findings that endorse a deconstructed notion of privacy and new guidance on equality to address algorithmic bias in fashion.

I. Introduction

‘Profiling...lead[s] to de-individualisation, which can be defined as a tendency of judging and treating people on the basis of group characteristics instead of on their own individual characteristics and merits’.⁹²¹

Imagine going to a conference and one of the presenters at the university is giving a talk in a pair of sneakers, while another is wearing formal shoes. Whilst you are rightly convinced that the individual’s appearance does not say anything about the quality of their presentation, you may infer some social and personal attributes, such as the university department the individual is working at or even their personality.⁹²² You might assume at some point that one of the presenters is more competent and reliable, and might associate different traits and properties with their colleague’s less formal attire.⁹²³ Research in fashion psychology and theory, as well as, social psychology confirms that implicit bias is an aspect

⁹²¹ Lita van Wel and Lamber Royackers, ‘Ethical issues in web data mining’ [2004] 6 Ethics and Information Technology 129, 133.

⁹²² You might even think that his appearance shows that he is more competent and reliable, and I might associate different traits and properties with his colleagues wearing less formal attire; see Daniel J Gurney, Neil Howlett, Karen Pine, Megan Tracey and Rachel Moggridge, ‘Dressing up posture: The interactive effects of posture and clothing on competency judgements’ (2017) 108 (2) *The British Journal of Psychology* 435, 437- 438; Neil Howlett, Karen Pine, Ismail Orakçioğlu, Ben Fletcher, ‘The influence of clothing on first impressions: Rapid and positive responses to minor changes in male attire’ (2013) 17 (1) *Journal of fashion marketing and management* 38.

⁹²³ Gurney, Howlett, Pine, Tracey and Moggridge (n 922) 437- 438; Howlett, Pine, Orakçioğlu, Fletcher (n 922).

of impression formation that is engrained in our social cognition.⁹²⁴ This being noted, the present investigation opens, in Section II.1 of this Chapter, by looking at why we are concerned with algorithmic bias, the operation of which introduces a new area of own subjectivity affecting our value-laden judgements.

Our own bias effectively sets the scene for algorithmic bias and the structural inequalities caused by fashion recommender systems. In Section II.2 (of Chapter 6) I highlight two points shaping the debate on algorithmic bias in fashion recommender systems. On the one hand, algorithmic bias is a simple extension of our own conscious human mind, similar to inaccurate and/or incomplete training data. On the other hand, algorithmic bias illustrates more than the replication of structural inequalities, circumventing our ability to verify our own biases, prejudices and sometimes stereotypes. The latter ultimately defines the problems of algorithmic bias in fashion recommender systems, that is the algorithms' incompleteness in assisting our own reasoning and inferential judgement.

Sections III and IV (of Chapter 6) place these findings in a socio-legal context. I start by outlining how fashion recommender systems cause refined issues of social sorting which need to be analysed through a privacy lens and the perspective of non-discrimination. Algorithmic bias in fashion recommender systems limits an individual's autonomy and informational self-determination to assess and re-assess aspects of their own identity. Further, it affects the contours through which we experience the parameters of social inclusion and exclusion, necessitating a closer look at non-discrimination law.

The question I intend to answer here is how does legal regulation deal with algorithmic bias in fashion recommender systems capturing the nuances of of fashion identity? The answer entails a combination of the advantages of privacy for incorporating aspects of individual perception regarding algorithmic bias and the limitations of non-discrimination law being tied to protected characteristics. The diverse meanings attached to personal autonomy at the ECtHR could provoke new case law to incorporate the impact of algorithmic bias in fashion on direct discrimination, precisely based on the case law's focus on the tangible and external constraints of fashion identity. However, the nuances of fashion recommender systems in shaping individual perception require us to uncover the relational and correlated factors of algorithmic bias shaping identity. I suggest that there are significant limitations in non-discrimination law with regard to providing a contextual view of the experience of multiple identities and unjust treatment. Whilst I outline some recommendations in the existing literature to shape policy on non-discrimination, I highlight that simply introducing intersectional discrimination claims is not enough without addressing the ambivalence of the personal and social aspects of fashion identity.

⁹²⁴ Jeff Stone and Grodon B Moskowitz, 'Non-conscious bias in medical decision making: what can be done to reduce it?' (2011) 45 (8) *Medical Education* 768; Andrew Rivers, Jeffrey W Sherman, Heather R Rees, Regina Reichardt and Karl C Klauer, 'On the Roles of Stereotype Activation and Application in Diminishing Implicit Bias' (2020) 46 (3) *Personality & social psychology bulletin* 349; Johnson, Lennon and Rudd (n 795) 1.

Hence, I suggest a departure from existing socio-legal approaches to revising non-discrimination law and propose that we need a new perspective on equality in the digital age. Section V (of Chapter 6) provides some hints on how we could start this debate in practice, focusing on the development of ‘fairness metrics’.⁹²⁵

Another issue I underline in my discussion on algorithmic bias and social sorting is individual control and informational self-determination regarding the algorithms’ construction of bias. This is something I will elaborate on in section VII. I (of Chapter 6) argue that conceptual weaknesses in the GDPR’s defining of personal data will hinder a coordinated response to the normative impact of fashion recommender systems on an individual’s autonomy and informational self-determination.

II. Algorithmic bias in fashion: definition and problems

Why are we concerned about algorithmic bias? Take the famous example of Microsoft’s chatbot ‘Tay’, which, after learning from the behaviour of other Twitter users, started to post racist tweets.⁹²⁶ The developers did not explicitly model the chatbot to be racist; on the contrary, they used advanced NLP and NLU so that the tool could understand conversational intent, individual emotions, and the user’s mood.⁹²⁷ This section makes two claims that contribute to our understanding of algorithmic bias. First, there are similarities between cognitive bias and algorithmic bias. Implicit bias penetrates virtually every aspect of individual decision-making, influencing self-perception. However, algorithmic bias is not simply an extension of the human mind, it operates independently from my own scrutiny and inferential judgment. Therefore, the second claim is that we need to consider the sources of bias because fashion recommender systems operate in areas that are far from neutral.

Drawing from knowledge of fashion psychology and cognitive psychology, this investigation will inform the approach we use to examine the sources of algorithmic bias in section II.2. Here, I take as a case study the ‘AI stylist’, which can decide which outfit looks more ‘fashionable’ on the user. The AI stylist is a deep learning image and facial recognition tool called ‘Rekognition’ which received a lot of

⁹²⁵ On a short outlook on the meaning of fairness metrics see, Kevin Hartnett, ‘How to Force Our Machines to Play Fair’ (*Quantamagazine*, 23 November 2016) < www.quantamagazine.org/making-algorithms-fair-an-interview-with-cynthia-dwork-20161123/> accessed 17 November 2021.

⁹²⁶ James Vincent, ‘Twitter taught Microsoft’s AI chatbot to be a racist asshole in less than a day’ (*The Verge*, 24 March 2016) < www.theverge.com/2016/3/24/11297050/tay-microsoft-chatbot-racist> accessed 13 June 2021.

⁹²⁷ Elle Hunt, ‘Tay, Microsoft’s AI chatbot, gets a crash course in racism from Twitter’ *The Guardian* (London, 24 March 2016) < www.theguardian.com/technology/2016/mar/24/tay-microsofts-ai-chatbot-gets-a-crash-course-in-racism-from-twitter> accessed 12 June 2021; Similarly, Google’s advanced computer vision application ‘Vision Cloud’ showed bias decision-making. According to Google, the output was a consequence of a ‘mis-labelling of objects’ whereby ‘image[s] of a dark-skinned hand holding a thermometer was labelled “gun”’; see Nicol Turner Lee, ‘Detecting racial bias in algorithms and machine learning’ (2018) 16 (3) *Journal of information, communication & ethics in society* 252, 252-253; Nicolas Kayser-Bril, ‘Google apologizes after its Vision AI produced racist results’ (*Algorithm Watch*, 7 April 2020) < <https://algorithmwatch.org/en/google-vision-racism/>> accessed 12 June 2021.

media attention⁹²⁸ as well as interest from Amazon for acquisition.⁹²⁹ From it we can draw some key findings regarding algorithmic bias in fashion, including recommender engines – that is, that bias is not a simple ‘garbage in and garbage out’ problem of training data⁹³⁰ and is based on the correlation between personal attributes and fashion narratives of fashion and identity.

1. Inherent human bias versus objective statistical observation

‘We often make a snap judgement of people within five seconds of seeing them’.⁹³¹ Just think about the example of an employee wearing clothing that gives the impression that he or she is authoritative and possesses qualities of leadership.⁹³² Now think about a different example where you associate clothing and ethnicity with your perception of the individual’s attitude.⁹³³ A study by Nicholas J Livingston and Regan AR Gurung outlines that ‘African Americans wearing formal clothing was associated with positive perceptions, while African Americans wearing “baggy grey sweatshirt, a grey headband, and a black baseball cap, worn to the side” was at times perceived as being stereotypical for “gang” behaviour’.⁹³⁴ We often want to escape our prejudices and sometimes we might even get defensive about ‘the notion that we might hold biases’.⁹³⁵ Yet, researchers in social psychology have concluded on several occasions how inherent bias is manifested in our social cognition.⁹³⁶

⁹²⁸ Khari Johnson, ‘Amazon’s Echo Look fashion assistant lacks critical context’ (*Venturebeat*, 3 August 2018) < <https://venturebeat.com/2018/08/03/amazons-echo-look-fashion-assistant-lacks-critical-context/> > accessed 12 August 2021; Tom Orlik, Justin Jimenez and Cedric Sam, ‘World-Dominating Superstar Firms Get Bigger, Techier, and More Chinese’ (*Bloomberg*, 21 May 2021) < www.bloomberg.com/graphics/2021-biggest-global-companies-growth-trends/ > accessed 12 August 2021.

⁹²⁹ Oliver Myers and Woody Borraccino, ‘Enable scalable, highly accurate, and cost-effective video analytics with Axis Communications and Amazon Rekognition’ (*AWS Machine Learning Blog*, 27 August 2021) < <https://aws.amazon.com/blogs/machine-learning/enable-scalable-highly-accurate-and-cost-effective-video-analytics-with-axis-communications-and-amazon-rekognition/> > accessed 9 September 2021.

⁹³⁰ See Ron Schmelzer, ‘The Achilles’ Heel Of AI’ (*Forbes*, 7 May 2019) < www.forbes.com/sites/cognitiveworld/2019/03/07/the-achilles-heel-of-ai/?sh=4983ea677be7 > accessed 12 August 2021; see also, Kate Crawford, ‘Artificial Intelligence’s White Guy Problem’ *New York Times* (New York City, 26 June 2016) < www.nytimes.com/2016/06/26/opinion/sunday/artificial-intelligences-white-guy-problem.html?auth=login-google > accessed 17 October 2020.

⁹³¹ Regan A. R. Gurung, ‘Undressing Racism: Clothing and Prejudice’ (*Psychology Today*, 7 July 2020) < www.psychologytoday.com/us/blog/the-psychological-pundit/202007/undressing-racism-clothing-and-prejudice > accessed 12 December 2020.

⁹³² See research by Michael L Slepian, Simon N Ferber, Joshua Gold and Abraham M Ruthchick that formal clothing ‘enhances abstract cognitive processing’, see Michael L Slepian, Simon N Ferber, Joshua Gold and Abraham M Ruthchick, ‘The Cognitive Consequences of Formal Clothing’ (2015) 6 (6) *Social Psychological and Personality Science* 661; see also, Gurung (n 928).

⁹³³ Referring to Gordon Moskowitz’s analysis of human stereotyping, he stipulates that: ‘when a white person sees an African American man it triggers an image of this group that he or she has learned. This happens without one realizing it and without one even needing to believe this image is correct. Here lies the danger for policing: our culture stereotypes black men with qualities that unknowingly trigger the concept of threat (criminality, danger, violence, super athleticism and strength).’ ‘A psychological perspective on police violence’ (*Lehigh News*, 11 December 2014) < www2.lehigh.edu/news/a-psychological-perspective-on-police-violence > accessed 12 January 2020.

⁹³⁴ Nicholas J Livingston and Regan AR Gurung, ‘Trumping Racism: The Interactions of Stereotype Incongruent Clothing, Political Racial Rhetoric, and Prejudice Toward African Americans’ (2019) 24 (2) *PSI CHI Journal of Psychological Research* 52, 53; see also, ‘How Neighbourhoods, Clothing, and Suspect Race Impact Decisions to Shoot’ (*Society for Personality and Social Psychology*, 26 March 2018) < www.spsp.org/news-center/blog/neighborhoods-clothing-impact > accessed 12 December 2020.

⁹³⁵ ‘#LehighMLK: Gordon Moskowitz on recognizing inherent bias’ (*Lehigh News*, 23 January 2014) < www2.lehigh.edu/news/lehighmlk-gordon-moskowitz-recognizing-inherent-bias > accessed 11 January 2020.

⁹³⁶ Gordon Moskowitz, ‘Are we all inherently biased?’ (Lehigh University) < www1.lehigh.edu/research/consequence/are-we-all-inherently-biased > accessed 11 January 2020; there is extensive literature on this subject from social psychology, all which

In addition, researchers in fashion psychology are interested in the way appearance can shape individual perception, as well as implicit cognitive bias.⁹³⁷ They tend to look at the meaning attached to clothing (such as the social and cultural connotations of “dress”) and how that can influence individuals’ social encounters.⁹³⁸ For example, we can use the meaning of ‘colour’ to analyse an individual’s beliefs on visual aesthetics and social connotations attached to gender.⁹³⁹ In any event, fashion psychologists can not ‘read someone’s mind’.⁹⁴⁰ Their approach is to examine how implicit biases can be triggered and influence an individual’s perception and reactions towards the social world including self-perception.⁹⁴¹ For example, Jody Furlong, who selected models for fashion campaigns, has revealed ‘how out of touch many brands are with their target demographic, citing casting memos that aimed to reach “trendy, young, urbanites” but which resulted in line-ups consisting of purely white models’.⁹⁴²

These findings put us in a difficult position for defining algorithmic bias. On the one hand, we might argue that algorithms are well placed to make judgements and take decisions about people as they produce a statistical outlook on the world, contrary to individuals who possess implicit subconscious bias.⁹⁴³ On the other hand, we might highlight that when algorithms make decisions that are stereotypical and even discriminatory, their operation results from human-made biases. This proposition is not entirely false, as I will show in section II.2 (Chapter 6). In any event, we definitely need to justify why regulators and society are concerned about algorithmic bias.

We are very concerned with algorithmic bias and fairness based on its statistical proposition about the world and the way it affects our value-laden judgements. Algorithms operate in instances that are far from neutral – ranging from decisions affecting our freedom and liberty (such as predictive algorithms in a policing context) to judgements influencing our access to goods and/or benefits (for instance, using

can not be discussed in this session. For some input highlighting the complexity of this issue, see for instance, Meghan G Bean, Jeff Stone, Gordin B Moskowitz, Terry A Badger, Elizabeth S Focella, ‘Evidence of nonconscious stereotyping of Hispanic patients by nursing and medical students’ (2013) 62 (5) *Nursing Research* 362; R Richard Banks, Jennifer L Eberhardt, Lee Ross, ‘Discrimination and Implicit Bias in a Racially Unequal Society’ (2006) 94 (4) *CLR* 1169, 1182; Gordon B Moskowitz, Irmak Olcaysosy Okten and Cynthia M Gooch, ‘On Race and Time’ (2015) 26 (11) *Psychological Science* 1783, 1782-1784; Mike Noon, ‘Pointless Diversity Training: Unconscious Bias, New Racism and Agency’ (2018) 32 (1) *Work, Employment and Society* 198, 199; Turner Lee (n 927) 254; see also, Anthony G Greenwald and Mahzarin R Banaji who suggest that ‘the identifying feature of implicit cognition is that past experience influences judgment in a fashion not introspectively known by the actor’. Taken from Anthony G Greenwald and Mahzarin R Banaji, ‘Implicit social cognition: Attitudes, self-esteem, and stereotypes’ (1995) 102 (1) *Psychological Review* 4.

⁹³⁷ See for example, Slepian, Ferber, Gold and Rutchick (n 932) 228.

⁹³⁸ *ibid.*

⁹³⁹ Duje Kodozam, ‘THE PSYCHOLOGY OF CLOTHING: Meaning of Colors, Body Image and Gender Expression in Fashion’ (2019) 2 (2) *Textile and Leather Review* 90, 91.

⁹⁴⁰ ‘What is fashion psychology and why does it matter?’ (*Hajinski*, 2019) < <https://hajinsky.com/articles/therapy-a-la-gucci> > accessed 10 August 2021.

⁹⁴¹ See for example, Gemma Corby, ‘Why your outfit could make or break your day at school: References’ *The Times Educational Supplement* (London, 22 November 2019) < <https://www.proquest.com/docview/2323829444?accountid=10673> > accessed 17 November 2021.

⁹⁴² Taken from ‘White-Washed Runways: The Effects of Racism in the Fashion Industry’ (*The Fashion Law*, 3 May 2017) < www.thefashionlaw.com/is-racism-stifling-creativity-in-the-fashion-industry/ > accessed 12 January 2020.

⁹⁴³ Rieder (n 425) 43; cf Theo Araujo, Natali Helberger, Sanne Kruikemeier, Claes H De Vresse, ‘In AI we trust? Perceptions about automated decision-making by artificial intelligence’ [2020] *AI & Society* 611, 613.

AI techniques to rank performance for employment).⁹⁴⁴ Accordingly, fashion recommender systems illustrate a case study that is compelling regarding the analysis of diversity in algorithms, which may treat individuals differently based on their ‘personal data’⁹⁴⁵ as well as configuring individual behaviour in relation to ‘fashion’ and ‘identity’.

The next task is to test the above assumptions using a practical application of a fashion recommender system to highlight the sources of algorithmic bias. Algorithms establish common representations regarding individual attributes – the ‘relevant nodes and relationships, such as the links, interactions and associations between the actions, sentiments, and values.’⁹⁴⁶ Section II.2 of this Chapter (6) looks more closely at the entanglement of correlations with bias and notions pertaining to identity in fashion recommender systems.

2. Algorithmic bias in fashion recommender systems

Let us focus on a brief case study, the AI stylist, to expose the sources of algorithmic bias. Researchers developed an algorithm to predict ‘fashionability’.⁹⁴⁷ Their paper argues that their algorithm can give:

[r]easons about several fashionability factors such as the type of outfit and garments the user is wearing, the type of the user, the photograph’s setting (e.g., the scenery behind the user), and the fashionability score.’ Moreover, the authors describe that their ‘model is able to give rich feedback back to the user, conveying which garments or even scenery she/he should change in order to improve fashionability.’⁹⁴⁸

Within this context, one of the tools the researchers are using is a deep learning image and facial recognition tool called the ‘Rekognition API engine’, which ‘cannot simply recognise faces or objects but can categorise all aspects in an image accurately’.⁹⁴⁹ Using this, the researchers:

Compute user specific features encoding the logarithm of the number of fans that the particular user has as well as the output of a pre-trained neural network-based face detector enhanced to predict additional face-related attributes. In particular, we use rekognition2 which computes attributes such as ethnicity, emotions, age, beauty, etc.⁹⁵⁰

⁹⁴⁴ Yochai Benkler, ‘Don’t let industry write the rule for AI’ (2019) 569 (7755) *Nature* 161.

⁹⁴⁵ Natalia Criado and Jose M Such, ‘Digital Discrimination’ in Karen Yeung and Martin Lodge (eds), *Algorithmic Regulation* (Oxford Scholarship Online 2019) 82.

⁹⁴⁶ Li Zhao and Chao Min, ‘The Rise of Fashion Informatics: A Case of Data Mining-Based Social Network Analysis in Fashion’ (2019) 37 (2) *Clothing and Textiles Research Journal* 87, 90.

⁹⁴⁷ Edgar Simo- Serra, Sanja Fidleer, Francesc Moreno-Noguer, Raquel Urtasun, ‘Neuroaesthetics in Fashion: Modeling the Perception of Fashionability’ [2015] *IEEE Computer Society* 869; Erin Silver, ‘U of T scientists create software to analyze outfits’ *Toronto Star* (Ontario, 20 July 2015) <www.thestar.com/life/fashion_style/2015/07/20/u-of-t-scientists-create-software-to-analyze-outfits.html> accessed 12 December 2020.

⁹⁴⁸ Simo- Serra, Fidleer, Moreno-Noguer, Urtasun (n 947) 869.

⁹⁴⁹ *ibid* 872; This tool has been developed by a California-based start-up, Nikita Johnson, ‘A Personal AI System of the People, by the People, for the People’ (*RE WORK*, 10 February 2015) <<https://blog.re-work.co/deep-learning-orbeus-phototime/>> accessed 12 December 2020; As reported by Bloomberg this technology has been acquired by Amazon though there is no official statement about the acquisition, Jack Clark, ‘Amazon Acquires Image Analysis Startup Orbeus’ (*Bloomberg*, 5 April 2016) <www.bloomberg.com/news/articles/2016-04-05/amazon-said-to-acquire-ai-based-image-analysis-startup-orbeus> accessed 12 January 2020.

⁹⁵⁰ Simo- Serra, Fidleer, Moreno-Noguer, Urtasun (n 947) 875.

This is an interesting case study – just consider the discontinued Amazon Echo Look which used the Rekognition tool to analyse an individual’s features.⁹⁵¹ Accordingly, we can use the AI stylist as a representative example of bias within fashion recommender systems to highlight the role of algorithms as a benchmark for the analysis of social, cultural, and personal norms attached to ‘fashion’. Algorithms in fashion cannot be detached from the conditions in which they have been developed and the context to which they have been applied.⁹⁵²

Let us start with the first source of bias which relates to the training data. In this scenario, the training data is complex, ranging from the collection of data on social media platforms to the labelling of the data for the deep learning model.⁹⁵³ Sometimes, the examples employed in the model can be inconclusive, inaccurate or imperfect.⁹⁵⁴ For example, analysing millions of images including posts on social media to ‘predict visual aesthetics relating to fashion as well as trends applicable to different age groups’ cannot possibly provide a representative view of all perceptions of fashion or sentiment about trends but rather, the findings are focused on the selected participants in the online sphere.⁹⁵⁵

The problem here is one of selection bias, as it may imply the under-representation of groups in the training set.⁹⁵⁶ Indeed, fashion as a global industry only recently started to challenge pre-existing codes including the ‘idealised notion’ of the body and clothing through the lens of inclusivity, such as by embracing the participation of ‘plus-size models in the modelling industry’ as well as any form of self-expression that does not fit the industry’s judgements, for example individuals of any age, religion, and/or gender.⁹⁵⁷ These considerations, highlighting the lack of diversity in the training data of fashion recommender systems, amplify biased predictions, including the systematic omission of a group or classes of individuals in the training set.⁹⁵⁸

This problem of selection bias illustrates more than a problem of bad training data. Just consider the problems with FaceApp, which has been found to lighten skin tones and change facial features of

⁹⁵¹ Brian Barrett, ‘Amazon’s ‘Echo Look’ Could Snoop a Lot More Than Just Your Clothes’ (*WIRED*, 20 May 2014) < www.wired.com/2017/04/amazon-echo-look-privacy/> accessed 13 August 2021.

⁹⁵² As argued by R Stuart Geiger ‘my argument is ontological, one about existence and essence: bots are a vivid reminder that what software is as software cannot be reduced to code and divorced from the conditions under which it is developed and deployed’, R Stuart Geiger, ‘Bots, bespoke, code and the materiality of software platforms’ (2014) 17 (3) *Information, Communication & Society* 342, 346.

⁹⁵³ Simo- Serra, Fidleer, Moreno-Noguer, Urtasun (n 947) 872-873.

⁹⁵⁴ Barocas and Selbst (n 424) 677, 684.

⁹⁵⁵ As argued by Andrea Jones-Rooy, ‘using data from Twitter posts to understand public sentiment about a particular issue is flawed because most of us don’t tweet—and those who do don’t always post their true feelings. Instead, a collection of data from Twitter is just that: a way of understanding what some people who have selected to participate in this particular platform have selected to share with the world, and no more.’ Taken from, Jones-Rooy (n 388).

⁹⁵⁶ More a general outlook on problems of selection bias in the data collection phase, see Barocas and Selbst (n 424) 717-718.

⁹⁵⁷ Joanne Entwistle, Caryn Frankling, Natalie Lee and Alyson Walsh, ‘Fashion Diversity’ (2019) 23 (2) *Fashion Theory: The Body: Fashion and Physique* 309; see also, Radhika Seth, ‘4 Models On How Fashion Can Become Truly Inclusive’ (*Vogue*, 19 May 2019) < <https://www.vogue.co.uk/article/inclusivity-in-fashion>> accessed 15 October 2020.

⁹⁵⁸ See also, Erica Kochi, ‘How to Prevent Discriminatory Outcomes in Machine Learning’ (*Medium*, 22 March 2018) < <https://medium.com/@ericakochi/how-to-prevent-discriminatory-outcomes-in-machine-learning-3380ffb4f8b3>> accessed 18 October 2020.

African Americans to fit the ‘European beauty standard’.⁹⁵⁹ Not only was the neural networks’ output caused by the training set bias,⁹⁶⁰ but the problem of algorithmic bias adds an important perspective to the interpretation of narratives on style in the fashion domain.⁹⁶¹ By way of illustration, Alicia Pérez uses the example of how a programmer may label the product data, specifying that cream colours correspond to formal occasions (for example, a wedding), whereby bright colours are used for less formal occasions (for example, a summer holiday).⁹⁶² An algorithm will learn these labels to predict the wearing occasion and interpret whether the image is “fashionable”. As highlighted by the author, the algorithm might score ‘traditional white dress’ highly for a wedding but have difficulty in recognising the clothing typical for Indian weddings, where outfits are commonly brightly coloured.⁹⁶³ It is the algorithm, using the statistical validation of the labelling that makes the normative proposition regarding the relationship between the item and the individual. Hence, algorithmic bias is a problem found in both the training data and the interpretation of fashion narratives in the recommender engine.

We can identify a second source of bias based on the importance of fashion narratives in defining social and cultural connotations in the fashion domain. That is, algorithmic bias can derive from the data scientists’ choice of target variable and the labelling of examples.⁹⁶⁴ The target variable requires the data scientist to specify the problem or the interest that needs to be within a predictive model.⁹⁶⁵ Stipulating the target variable is seen to illustrate ‘a subjective exercise’.⁹⁶⁶ Referring to the example above, ‘defining “fashionability”’ is not likely to be a binary problem⁹⁶⁷ and may require the ‘creation of new classes’.⁹⁶⁸ Here, the problem may relate to several things, such as whether ‘fashionability’ refers to the popularity of images, or ‘likes’, as well as metrics that can predict ‘fashion’ on a higher level, such as personal taste, the composition of style and style features in clothing.⁹⁶⁹

⁹⁵⁹ Turner Lee (n 927) 252; see also in general, Shane Ferreo, ‘Here’s Why Facial Recognition Tech Can’t Figure Out Black People’ *Huffingtonpost* (2 March 2016) < https://www.huffingtonpost.co.uk/entry/heres-why-facial-recognition-tech-cant-figure-out-black-people_n_56d5c2b1e4b0bf0dab3371eb > accessed 12 January 2020.

⁹⁶⁰ As highlighted in a news article on BBC News ‘It is an unfortunate side-effect of the underlying neural network caused by the training set bias, not intended behaviour’, taken from ‘FaceApp sorry for ‘racist’ filter that lightens skin to make users ‘hot’ (*BBC News*, 25 April 2017) < www.bbc.co.uk/news/newsbeat-39702143 > accessed 12 January 2020.

⁹⁶¹ Several authors highlight how the fashion industry is reinforcing bias, such as by reinforcing standards on gender and cultural aspects of fashion identity; see Kelly L Reddy- Best, Laura Kane, Jennifer Harmon and Nika R Gagliardi, ‘Critical perspectives on fashion textbooks: representations of race, gender, and body’ (2018) 11 (1) *International Journal of Fashion Design, Technology and Education* 63; Entwistle, Frankling, Lee and Walsh, (n 957) 312; Anshuman Prasad and Pushkala Prasad, ‘“One mirror in another”: Managing diversity and the discourse of fashion’ (2010) 64 (5) *Human Relations* 703, 715-716.

⁹⁶² Alicia Perez, ‘Fashion, Tech, Fairness & Bias’ (*Style Sage*, 2020) < <https://stylesage.co/blog/fashion-tech-fairness-bias/> > accessed 12 December 2020.

⁹⁶³ *ibid.*

⁹⁶⁴ This is a type of bias relating to the ‘problem specification’; see Sina Fazelpour and David Danks, ‘Algorithmic bias: Senses, sources, solutions’ [2021] *Philosophy Compass* 1, 4.

⁹⁶⁵ Fazelpour and Danks (n 964) 4; Sandra G Mayson, ‘Bias In, Bias Out’ (2019) 129 (8) *Yale L.J.* 2218, 2224.

⁹⁶⁶ Barocas and Selbst (n 424) 715.

⁹⁶⁷ As argued by Barocas and Selbst ‘a given instance either is or is not fraud or spam, and the definitions of fraud or spam are, for the most part, uncontroversial’, see Barocas and Selbst (n 424) 678; see also, Frederik Zuiderveen Borgesius, ‘Discrimination, artificial intelligence, and algorithmic decision-making’ (Council of Europe 2018) < <https://rm.coe.int/discrimination-artificial-intelligence-and-algorithmic-decision-making/1680925d73> > accessed 15 October 2020, at page 10.

⁹⁶⁸ As argued by Barocas and Selbst ‘a given instance either is or is not fraud or spam, and the definitions of fraud or spam are, for the most part, uncontroversial’, see Barocas and Selbst (n 424) 679.

⁹⁶⁹ Simo- Serra, Fidleer, Moreno-Noguer, Urtasun (n 947) 872-873.

In addition, the data scientist needs to label examples of what constitutes a “fashionable” outfit, which, according to the researchers of the AI stylist, includes appearances expressing a style that is ‘business or casual, elegant or sporty, sexy but not slutty, and of course trendy, particularly so when putting their picture online’.⁹⁷⁰ Here, the very notions of “fashion” and “fashionability” are a problem that cannot be directly measured. The aim is to compute a score that expresses an individual’s degree of “style”.

The very nature of choices regarding the selection of target variables and class labels may produce an adverse impact on protected classes, exacerbating differential treatment. Two considerations are relevant to defining algorithmic bias in this context depending on (i) the ranking of characteristics determining fashionable and less fashionable style, and (ii) the definition of the abstract problem itself, which here is ‘fashionability’.

One consideration is that the target variables may implicitly rank some outcomes higher than others leading to an uneven distribution of characteristics that correlate with protected groups.⁹⁷¹ The AI stylist will make some assumptions regarding what constitutes a ‘fashionable’ and ‘less stylish’ outfit.⁹⁷² For instance, stipulating that ‘business’ is a class label for “fashionable” may imply that an image depicting an individual wearing a pair of leggings and a blazer in a rural area might be rated negatively by the algorithm. If we assume that individuals from an older age group and lower socio-economic background may, on average, not stay in urban areas and have jobs requiring ‘smart clothing’, that class label may put a group of people at a disadvantage. The subjective metric of “fashionability” in the target variable as well as the class label ‘business’ creates an implicit bias against individuals of a certain age and socio-economic background.

This scenario brings us to a particular dilemma. Indeed, one may arrive at the assumption that if the target variable correlates with a protected characteristic (i.e. age) or may lead to unfair outcomes (i.e. it is directed at individuals of certain socio-economic status), then a solution might be to choose different target variables. However, a second consideration regarding the choice of target variables and class labels is that they involve the prediction of an abstract problem. ‘Fashionability’ must be defined in the target variables and will illustrate the fashion brand’s interpretation of ‘fashion identity’ for their consumers. For example, Farfetch, an online luxury fashion shopping website, uses an approach in recommender systems employing colour flow and style trends which is fed into the CNN methodology to compose fashion outfits that respect ‘Farfetch’s style identity’ as a luxury brand serving high-end

⁹⁷⁰ *ibid* 869.

⁹⁷¹ Samir Passi and Solon Barocas, ‘Problem Formulation and Fairness’ (ArXiv, 2019) < <https://arxiv.org/abs/1901.02547>> accessed 12 January 2020.

⁹⁷² Simo- Serra, Fidleer, Moreno-Noguer, Urtasun (n 947) 869.

consumers.⁹⁷³ Hence, the target variables and class labels need to be based on ‘measurable outcomes’⁹⁷⁴ such as popularity and/or style that are ‘classic, modern, as well as experimental and romantic’.⁹⁷⁵ These observable criteria for style (low-quality cotton and printed patterns do not reflect the demands of high-end luxury fashion), however, are constantly adapted by the classifiers, including the neural network. That is, it is difficult to conclude whether target variables will accurately predict all future preferences, including individual perception of the social, cultural, and personal connotations of fashion. In other words, at what point can a data scientist conclude that the target variables lead to bias against a group with protected characteristics? Whilst the data scientist may recognise that certain criteria correlate with protected characteristics (i.e. using “business” as a metric for fashionability correlating with demographics), they may not identify the degree of bias contributing to an unequal outcome (i.e. does “business” include formal clothing with a simple pattern or can it include garments with bright colours?).

Hence, stipulating the target variable and class labels not only exacerbates bias towards protected groups but poses serious issues regarding individual accountability.⁹⁷⁶ With advancements in AI techniques, such as neural networks and deep learning, the algorithms extract their own target variable from the various nodes and relationships in structured and unstructured data.⁹⁷⁷ This lack of control over ensuring an objective goal in algorithmic systems undermines our ability to define our *own* assumptions, including human-made biases concerning “fashion” and “identity”.⁹⁷⁸ Thus, the inherent bias in the target variables and class labels leads to a certain powerlessness to assess the relationships in neural networks in light of their falsity, rather than their imperfections regarding individual perception of ‘fashion identity’.⁹⁷⁹

The third source of bias relates to the selection of features.⁹⁸⁰ Defining ‘fashionability’ necessarily requires some metrics about ideal individual appearance. In this respect, feature selection can include

⁹⁷³ Ana Rita Magalhães, ‘The trinity of luxury fashion recommendations: data, experts and experimentation’ (RecSys ’19: Proceedings of the 13th ACM Conference on Recommender Systems, Copenhagen, Denmark, September 2019); Gonçalves and Brochado, ‘How to build a recommender system: it’s all about rocket science - Part 2’ (n 413); see also, Gonçalves D, Liu L and Magalhães AR, ‘How big can style be? Addressing high dimensionality for recommending with style’ (Arxiv, 2019) < <https://arxiv.org/abs/1908.10642>> accessed 21 July 2020.

⁹⁷⁴ Barocas and Selbst (n 424) 679.

⁹⁷⁵ Taken from Danielle Wightman-Stone, ‘Farfetch unveils new brand identity with a global campaign’ (*Fashion United*, 16 September 2020) < <https://fashionunited.com/news/business/farfetch-unveils-new-brand-identity-with-a-global-campaign/2020091635488>> accessed 12 January 2020.

⁹⁷⁶ Paul B de Laat, ‘Algorithmic Decision-Making Based on Machine Learning from Big Data: Can Transparency Restore Accountability?’ (2018) 31 (4) *Philosophy & Technology* 525, 529.

⁹⁷⁷ Louise Amoore, ‘Doubt and the Algorithm: On the Partial Accounts of Machine Learning’ (2019) 36 (6) *Theory, Culture & Society* 147, 151.

⁹⁷⁸ For example, on the operation of Google’s search engines it has been argued that ‘Google’s responses to racial stereotyping in its products is that it typically denies responsibility or intent to harm, but then it is able to “tweak” or “fix” these aberrations or “glitches” in its systems’, taken from Safiya Noble, ‘Google Has a Striking History of Bias Against Black Girls’ (*Time*, 26 March 2018) < <https://time.com/5209144/google-search-engine-algorithm-bias-racism/>> accessed 12 December 2020.

⁹⁷⁹ In this respect, Louise Amoore suggests that ‘I propose that in our contemporary culture, where the algorithm plays a major role in the calculability of doubts, the meaning of doubt should be reconsidered.’ See Amoore, ‘Doubt and the Algorithm: On the Partial Accounts of Machine Learning’ (n 977) 149.

⁹⁸⁰ Yash Kanoongo, ‘Addressing Bias in HR Algorithms’ (*Medium*, 18 March 2020) < <https://medium.com/@yashkanoongo/addressing-bias-in-hr-algorithms-2b0f9003ed64>> accessed 12 January 2020.

specific characteristics to measure the degree of ‘fashionability’, such as defining facial features (shape, skin tone etc.) in a facial recognition software and/or surrounding objects in the image recognition tool.⁹⁸¹ The data scientist’s feature selection may explicitly include characteristics of a protected class, such as ethnicity and gender. Without a doubt, any decision-making in classifying ‘fashionability’ according to protected characteristics risks exacerbating (unfair) distinctions between individuals based on their personal attributes.⁹⁸² Nevertheless, the data scientist’s choice of factors may disproportionately examine individuals of a protected class. For example, if there is not enough data about clothing culture in Japan, the data on Japanese customers is less reliable than the data describing European clothing styles.⁹⁸³ Accordingly, one may arrive at the conclusion that simply removing feature selections referring explicitly to protected characteristics, such as ethnicity, will not undermine biased decision-making. This is because machine learning attributes infer any absent attributes in the data and, therefore, might deduce aspects such as race and ethnicity ‘in any sufficiently rich feature space whether they are explicitly present or not’.⁹⁸⁴

Finally, I want to focus on the use of proxies as a source of algorithmic bias in fashion recommender systems.⁹⁸⁵ Challenges similar to those in reducing algorithmic bias in feature selection equally apply here in that bias in proxies cannot be mitigated by simply removing any specific references to protected characteristics.⁹⁸⁶ By way of illustration, proxies that are based on user interests, such as the individual’s preference for high heels, will create personalised recommendations directed towards a predominantly female audience. Moreover, eliminating some proxies might not even be desirable because they may consider useful information regarding an individual interest.⁹⁸⁷ For instance, demographic information to determine ‘fashionability’ in an image might serve as both a proxy for race and an interest that is relevant for providing personalised recommendations (i.e. suggesting winter jackets during the winter season in London).⁹⁸⁸

⁹⁸¹ See for example, Xiaofei Chao, Mark J Huiskes, Tommaso Gritti and Calina Ciuhu, ‘A framework for robust feature selection for real-time fashion style recommendation’ (MM09: ACM Multimedia Conference, Beijing, China, October 2009).

⁹⁸² Barocas and Selbst (n 424) 719.

⁹⁸³ This description of feature selection has been taken from Kroll, Barocas, Felten, Reidenberg, Robinson and Yu (n 912) 681.

⁹⁸⁴ Moritz Hardt, ‘How big data is unfair: Understanding unintended sources of unfairness in data driven decision making’ (*Medium*, 26 September 2014) < <https://medium.com/@mrtz/how-big-data-is-unfair-9aa544d739de>> accessed 12 January 2020.

⁹⁸⁵ Zuiderveen Borgesius, ‘Discrimination, artificial intelligence, and algorithmic decision-making’ (n 967) page 13.

⁹⁸⁶ Joseph Blass, ‘Algorithmic Advertising Discrimination’ (2019) 114 (2) *Northwest.U.L.Rev.* 415, 421; cf Mayson, ‘Bias In, Bias Out’ (n 965) 2240.

⁹⁸⁷ Kroll, Barocas, Felten, Reidenberg, Robinson and Yu (n 912) 681.

⁹⁸⁸ The use of demographic information, such as zip code, has been often interpreted as a proxy for race; see Kroll, Barocas, Felten, Reidenberg, Robinson and Yu (n 912) 681; see also Independent report by the Centre for Data Ethics and Innovation which argues that ‘For example, a model might consider an individual’s postcode. This is not a protected characteristic, but there is some correlation between postcode and race. Such a model, used in a decision-making process (perhaps in financial services or policing) could in principle cause indirect racial discrimination.’ Taken from Centre for Data Ethics, ‘Independent report: Review into bias in algorithmic decision-making’ (27 November 2020) < www.gov.uk/government/publications/cdei-publishes-review-into-bias-in-algorithmic-decision-making/main-report-cdei-review-into-bias-in-algorithmic-decision-making> accessed 13 January 2020.

Based on the analysis regarding sources of algorithmic bias, we can summarise some key points to inform our discussion on fashion recommender systems:

- Algorithms are only as good as their data. In other words, the training data necessarily consists of human-made biases. However, we must consider the importance of fashion narratives in tasks involving “fashion” and “clothing”, so simply more data will not automatically limit bias.
- Algorithms must entail measurable choices concerning an interest in a specific problem. Accordingly, a seemingly neutral target variable and the class label can reinforce subjective choices about fashion identity.
- Algorithms entail the dualism of legitimate user interests to receive personalised recommendations and correlation with sensitive attributes. Hence, feature selection and proxies may reinforce patterns that are based on similarities and patterns in data, leaving out an individual’s perception of fashion identity.

Thus, we can now adequately answer the question above about why we are so concerned with algorithmic bias. It is because we tend to fall into the trap of data objectivity in areas of normative judgements that are inherently value-laden and subject to our own implicit cognitive bias. We get tangled up in the imperfections of algorithms that produce bias in the training data, the target variable and class labels, feature selection, and proxies once we rely on these algorithmic judgements beyond our own scrutiny.

The next task is to place the aforementioned issues into a socio-legal context. In doing this, I am focusing on the dynamics of algorithms that categorise and segment individual behaviour, including the problems of ‘social sorting’.⁹⁸⁹ Algorithmic categorisation introduces risks of social sorting in the sense that ‘data gathered about us is relied upon to determine whether we are loyal or disloyal, innocent or criminal, eligible or ineligible, in line with the objectives of government and private agencies that own databases’.⁹⁹⁰ Section III will investigate how algorithmic bias in fashion recommender systems can raise issues of social sorting.

⁹⁸⁹ David Lyon, ‘Surveillance, Security and Social Sorting: Emerging Research Priorities’ (2007) 17 (3) *International Criminal Justice Review* 161.

⁹⁹⁰ Alex Goik, ‘From Surveillance to Dataveillance: Why discussions about surveillance need to change to reflect contemporary circumstances’ (*Medium*, 25 November 2019) < <https://alexgoik.medium.com/from-surveillance-to-dataveillance-10c47b1f8e3e>> accessed 12 November 2020.

III. Social sorting in fashion recommender systems: privacy and non-discrimination

An important consideration, which has already surfaced in my discussion, is that ‘big data is not used per se to discriminate but algorithms can have unintended consequences’.⁹⁹¹ Provided we do not use proxies that explicitly relate to protected characteristics, or training data that is skewed towards a group of individuals, a data scientist can only make an ex-post judgement that certain parameters led to unfair treatment.⁹⁹² This section elaborates on this form of unintentional discrimination towards protected classes and vulnerable groups and how algorithmic judgements can cause ‘social sorting’, a term that encapsulates the dynamics of algorithmic classification to segment individuals.⁹⁹³ Social sorting poses risks to privacy and informational privacy whereby algorithmic decision-making concerns knowledge production as a source of differentiation.⁹⁹⁴ Nevertheless, algorithmic classification is not merely an issue of personal freedom but also raises issues of ‘social justice’.⁹⁹⁵ We need to analyse both privacy considerations and issues of discrimination when discussing questions of autonomy and identity regarding fashion recommender systems. The findings illustrate the parameters of social inclusion and exclusion and will be relevant for the analysis of ECtHR and CJEU case law, as well as EU anti-discrimination law.

1. Social sorting I: issues of privacy

Fashion recommender systems are fundamental to the dynamics of individual segmentation. The power of algorithmic personalisation systems, from fine-grained tracking of individual behaviour to constant adaptations of individual profiles, is to ‘allocate opportunities based on the classification of consumer attributes’.⁹⁹⁶ A fashion retailer can decide to target a user with certain content or marketing campaigns or exclude the consumer from particular offers.⁹⁹⁷ For instance, the apparel retailer Gap uses several

⁹⁹¹ Derina Holtzhausen, ‘Datafication: threat or opportunity for communication in the public sphere?’ (2016) 20 (1) *Communication in the public sphere* 21, 25; see also, Maddalena Favaretto, Eva De Clercq and Bernice Simone Elger, ‘Big Data and discrimination: perils, promises and solutions. A systematic review’ (2019) 6 (1) *Journal of Big Data* 1, 6.

⁹⁹² See previous Section. Of course, there are various methods to minimise unintended consequences focusing on procedural fairness. However, these methods will not remove unintentional discrimination and thus, we need a clearer account to address the social consequences of algorithmic bias. For an authoritative approach in procedural fairness see paper by Michael Veale and Reuben Binns; Michael Veale and Reuben Binns, ‘Fairer machine learning in the real world: Mitigating discrimination without collecting sensitive data’ (2017) 4 (2) *Big Data & Society* 1; In addition, see my discussion in Section V of **Chapter 6**.

⁹⁹³ Lyon, ‘Surveillance, Security and Social Sorting: Emerging Research Priorities’ (n 989)161.

⁹⁹⁴ See also, Monique Mann and Tobias Matzner, ‘Challenging algorithmic profiling: The limits of data protection and anti-discrimination in responding to emergent discrimination’ (2019) 6 (2) *Big Data & Society* 1, 3.

⁹⁹⁵ Lyon, ‘Surveillance as social sorting: computer codes and mobile bodies’ (n 433) 1; Nigel Morgan and Annette Pritchard, ‘Security and social ‘sorting’’ (2005) 5 (2) *Tourist Studies* 115, 123.

⁹⁹⁶ Oscar H Gandy Jr, *The Panoptic Sort: A Political Economy Of Personal Information* (1st ed, Routledge 1993) 15; Neil M Richards, ‘The Dangers of Surveillance’ [2013] 126 *Harv.L.Rev.* 1934, 1957.

⁹⁹⁷ See FJ Zuiderveen Borgesius who states that ‘behavioural targeting makes social sorting easier and more effective: firms can categorise people as targets and waste, and treat them accordingly’ taken from, Zuiderveen Borgesius ‘Improving privacy protection in the area of behavioural targeting’ (n 151) 120.

pricing strategies for consumer markets.⁹⁹⁸ In this respect, their Old Navy retail collection is positioned as being for consumers who are ‘fun, family-oriented and who buy affordable and classic trends’, while the Banana Republic segment is targeted at the ‘sophisticated fashion consumer buying affordable luxury clothing’.⁹⁹⁹ Predictive analytics, allowing for more individual segmentation of the consumer, enables fashion brands to predict frequent changes in buying behaviour and classify the individual accordingly.¹⁰⁰⁰ For example, a consumer previously falling in the segment for the Old Navy collection, might be suitable for targeted advertising for the Banana Republic collection due to changes in their economic background. This highlights the need to consider the social consequences flowing from predictive analytics and how individual segmentation impacts the dynamics of inclusivity and exclusivity in the technological and informational landscape.¹⁰⁰¹

Legal commentators and surveillance scholars describe the effects of algorithmic bias allocating opportunities as ‘social sorting’.¹⁰⁰² The term refers to the large-scale observation of individual behaviour, enabling the profiling of social groups.¹⁰⁰³ David Lyon, one of the first to coin this concept, suggests that social sorting is the increasing proliferation in surveillance technologies of security measures and racial profiling after the 9/11 terrorist attacks in September 2001.¹⁰⁰⁴ Within this context, he argues that the algorithms ‘are coded to categorize personal data such that people thus classified may be treated differently’.¹⁰⁰⁵ Accordingly, the vast collection and processing of personal data is systematic, as well as focused on managing risks or directing targets.¹⁰⁰⁶

In this sense, social sorting signifies how algorithms amplify decision-making that disproportionately affects vulnerable groups.¹⁰⁰⁷ At the core of the problems associated with individual segmentation and

⁹⁹⁸ Genessa M Fratto, Michelle R Jones and Nancy L Cassill, ‘An investigation of competitive pricing among apparel retailers and brands’ (2006) 10 (4) *Journal of Fashion Marketing and Management* 387, 396.

⁹⁹⁹ *ibid* 398.

¹⁰⁰⁰ See also, Fred Fontes Gerards, Chris Goodin, Bryan Logan and Jennifer Schmidt, ‘Powerful pricing: The next frontier in apparel and fashion advanced analytics’ (*McKinsey*, 13 December 2018) < www.mckinsey.com/industries/retail/our-insights/powerful-pricing-the-next-frontier-in-apparel-and-fashion-advanced-analytics> accessed 12 January 2020.

¹⁰⁰¹ Oscar H. Gandy Jr, ‘Data mining and surveillance in the post-9.11 environment’ (Political Economy Section, IAMCR, July 2002, Barcelona, Spain) < <https://web.asc.upenn.edu/usr/ogandy/IAMCRdatamining.pdf>> accessed 19 January 2020 at page 13.

¹⁰⁰² Lyon, ‘Surveillance as social sorting: computer codes and mobile bodies’ (n 433); Torin Monahan, ‘Editorial: Surveillance and Inequality’ (2008) 5 (3) *Surveillance & Society* 217, 219-220.

¹⁰⁰³ Liliana Arroyo Moliner and Philippe M Frowd, ‘Social Sorting’, *The SAGE encyclopaedia of surveillance, security, and privacy* (2018) < <https://sk.sagepub.com/reference/the-sage-encyclopedia-of-surveillance-security-privacy/i10880.xml> > accessed 20 October 2020.

¹⁰⁰⁴ Lyon, ‘Surveillance, Security and Social Sorting: Emerging Research Priorities’ (n 989)161.

¹⁰⁰⁵ *ibid* 162.

¹⁰⁰⁶ As argued by David Lyon ‘The two examples, from marketing and from policing, clearly indicate how searchable databases have become central to surveillance. If surveillance is understood as a systematic attention to personal details, with a view to managing or influencing the persons and groups concerned...’ taken from, Lyon, ‘Surveillance as social sorting: computer codes and mobile bodies’ (n 433) 16; see also, Richards, ‘The Dangers of Surveillance’ (n 996) 1937.

¹⁰⁰⁷ Mann and Matzner (n 994) 2; see also, Shmyla Khan who argues that ‘Social sorting presupposes difference; in that sense it reifies pre-existing differences in society and preserves the status quo’, taken from Shmyla Khan, ‘Social Sorting as a Tool for Surveillance’ (*Heinrich Böll Stiftung, Gunder Werner Institute Feminism and Gender Democracy*, 21 January 2019) < www.gwi-boell.de/en/2019/01/21/social-sorting-tool-surveillance> accessed 13 January 2020.

social sorting is decisional privacy or ‘the freedom to exercise one’s mind’.¹⁰⁰⁸ The algorithms’ fine-grained tracking and sophisticated analytics interfere with the process of individual sense-making, such as the right to make decisions relating to personal development and autonomy, as well as the space to protect aspects of identity from outside scrutiny. Furthermore, social sorting highlights problems with informational privacy, being associated with an individual’s informational self-determination with regard to controlling aspects that reveal fashion identity as well as the parameters concerning one’s identity.¹⁰⁰⁹ In both instances, social sorting challenges the ‘visibility and invisibility of self’ when subject to algorithmic classifications and taking decisions without knowing the extent of algorithmic segmentation.¹⁰¹⁰

Fashion recommender systems cause ‘refined opportunities for dynamic sorting’,¹⁰¹¹ leading to the creation of knowledge that curtails the way algorithmic classifications define and refine my own inferential judgement regarding the management of appearance of identity. Thus, fashion recommender systems pose issues of transparency, as programmers and individuals would have great difficulty testing the algorithmic assumptions of fashion narratives applicable to an individual’s ambivalence of social and personal self of fashion identity.¹⁰¹² I would further argue that fashion recommender systems do not simply cause the individual’s inability to verify the algorithms’ consequential decisions in the recommendation process;¹⁰¹³ an algorithm’s non-transparent intervention in an individual’s fashion identity means that I cannot verify, nor scrutinise my biased assumptions about the relevance of social and personal aspects fashion. Therefore, algorithmic bias and social sorting in fashion recommender systems pose problems of transparency and individual control of the algorithmic process, as well as refining the parameters through which an individual’s own bias is assessed.

Let me refer to a practical example to elaborate on this argument. Imagine a female engaging with a virtual style assistant to search for and buy an outfit for a date. The recommender engines suggests items such as a pair of Levi Strauss jeans from the brand’s Signature collection for ‘value-conscious’ consumers.¹⁰¹⁴ The individual does not know why she has received these suggestions; whether her browsing behaviour on websites such as Target or Wal-Mart¹⁰¹⁵ or her demographic background and the model’s inference of her socio-economic background were factors that defined her as the ‘typical’

¹⁰⁰⁸ Koops, Clayton Newell, Timan, Skorvanek, Chokrevski and Galic (n 540) 533; compare with the concept of ‘intellectual privacy’ in the US tradition, which is catered as a negative freedom, Neil M Richards, ‘Intellectual Privacy’ (2008) 87 (2) *Tex.L.Rev* 387, 426.

¹⁰⁰⁹ See also my discussion in **Chapter 2**.

¹⁰¹⁰ Mireille Hildebrandt, ‘Who is Profiling Who? Invisible Visibility’ in Serge Gutwirth, Yves Poulet, Paul de Hert, Cecile de Terwangne and Sjaak Nouwt (eds), *Reinventing Data Protection?* (Springer 2009) 242.

¹⁰¹¹ *ibid* 242.

¹⁰¹² See also discussion in Brent Daniel Mittelstadt, Patrick Allo, Mariarosaria Taddeo, Sandra Wachter and Luciano Floridi, ‘The ethics of algorithms: Mapping the debate’ (2016) 3 (2) *Big Data & Society* 1, 7.

¹⁰¹³ James Burrell, ‘How the machine “thinks”: Understanding opacity in machine learning algorithms’ (2016) 3 (1) *Big Data & Society* 1.

¹⁰¹⁴ Fratto, Jones and Cassill (n 998) 399.

¹⁰¹⁵ According to the findings of Genessa M Fratto, Michelle R Jones and Nancy L Cassill this collection is available at discount stores, such as Target or Wal-Mart, Fratto, Jones and Cassill (n 998) 399.

consumer preferring casual and affordable clothing. She will probably not be able to identify which factors (i.e. her explicit feedback on various items on the website or the implicit feedback of her browsing behaviour) were relevant to the recommendation process. Moreover, she will not know whether her browsing behaviour relates to her own preferences to find the perfect outfit for a date or whether it simply correlates with that of other consumers likely to buy clothing from Target or Walmart. According to this example, social sorting occurs in the algorithms' non-transparent assessment of individual attributes, risking the reinforcement and imposition of defined expectations regarding 'fashion' (such as conceptions about the way socio-economic factors can define social and personal aspects of fashion relating to individual attributes and style) and an individual's management of appearance. The lack of transparency, as well as the lack of understanding of the reasoning during the decision-making process, are considerations that limit an individual's autonomy to control notions of appearance as well as reflective choice regarding the parameters of individual perception.¹⁰¹⁶

2. Social sorting II: issues of discrimination

In addition to the issues of privacy underlined above, social sorting and individual segmentation cause problems of refined discrimination. As highlighted by David Lyon:

Privacy laws rightly protect an individual's right to privacy of movement, home and communication in a democratic society. But we need a radical new direction, prompted by our knowing how data analytics, algorithms, machine learning, and artificial intelligence are reshaping our social environment. The analysis and uses of the data have to be addressed, invoking new categories such as digital rights and data justice.¹⁰¹⁷

Social sorting highlights deep issues, which go beyond issues of one's 'personal privacy' and include questions regarding the exercise of collective identity and the experience of identity.¹⁰¹⁸ We must consider algorithmic bias and social sorting beyond 'written opacity or transparency rights'.¹⁰¹⁹ Problems of social sorting not only concern the outcome of algorithmic decisions but extend to the way one 'experiences identity within the assigned categories'.¹⁰²⁰ These issues go further than the impact of algorithmic personalisation on an individual's autonomy and control of data-processing activities,

¹⁰¹⁶ On the impact of algorithmic personalisation systems on reflective choice see also Sofia Grafanaki who argues that 'when diverse groups start seeing only points of view matching their characteristics, mutual understanding between groups becomes harder, and, according to social scientists, can lead to "group polarization;" a term which refers to the phenomenon of like-minded groups engaged in deliberation, ending in a strengthening of the original position and a move towards a more extreme point', see Sofia Grafanaki, 'Drowning in Big Data: Abundance of Choice, Scarcity of Attention and the Personalization Trap, a Case for Regulation' [2017] 24 Richmond Journal of Law & Technology 1, 23.

¹⁰¹⁷ David Lyon, 'The coronavirus pandemic highlights the need for a surveillance debate beyond 'privacy'' (*The Conversation*, 24 May 2020) < <https://theconversation.com/the-coronavirus-pandemic-highlights-the-need-for-a-surveillance-debate-beyond-privacy-137060>> accessed 12 January 2020.

¹⁰¹⁸ Lyon, 'Surveillance as social sorting: computer codes and mobile bodies' (n 433) 1; see also, Priscilla M Regan and Jesse Jolene, 'Ethical challenges of edtech, big data and personalized learning: twenty-first century student sorting and tracking' (2019) 21 (3) *Ethics and Information Technology* 167, 176.

¹⁰¹⁹ Mireille Hildebrandt, 'Who is Profiling Who? Invisible Visibility' (n 1010) 244.

¹⁰²⁰ De Vries (n 327) 83.

dealing with how algorithmic personalisation systems affect the identification process with my own characteristics, such as values, attitudes, and beliefs.¹⁰²¹

As argued by Neil M Richards, ‘the power of sorting can bleed imperceptibly into the power of discrimination’.¹⁰²² Profiling technologies may create the impression ‘that staying in one’s own category is always the best option’, such as the ‘correct’ identification of personal preferences as a reflection of style.¹⁰²³ Therefore, we can expand on the impact of algorithmic personalisation systems on an individual’s privacy, autonomy, and inferential judgement by considering how algorithmic classifications shape my reference to the self.

Consider the example of a fashion brand issuing promotion codes to young college students for the ‘uniquely American classically styled’ collection by the designer brand Polo Ralph Lauren.¹⁰²⁴ How do we consider an individual’s identification with that particular fashion brand when classifications are being constantly being recreated and redefined, such as through his or her own relationality to other college students or young adults, or other individuals adopting the ‘American college style’? The power of fine-grained tracking and analytics in algorithmic personalisation illustrates the danger of directing how ‘the individual is comprehended based on connections with others identified by the algorithm’.¹⁰²⁵ These considerations risk exacerbating structural divisions and reinforce social disadvantages disproportionately affecting vulnerable groups, such as individuals who do not fit into the criteria of the ‘American college student’.¹⁰²⁶ In addition, we can see that new structural divisions can be created by the fashion narratives defining the ‘young college student’ and correlating with pre-defined notions of style, sensitive attributes (such as gender) and appearance.

Thus, social sorting and individual segmentation raise issues of discrimination, based on the algorithms’ classifications, which do not recognise an individual’s interrelationships or the co-existence of fashion identities. By way of illustration, a fashion recommender system may infer a user’s race based on correlations within the data including the individual’s demographics. In this respect, the fashion recommender system, reinforcing notions on ‘race’, ‘income’, and ‘location’, might recommend clothing that is affordable and popular in the user’s neighbourhood.¹⁰²⁷ However, what if the user’s

¹⁰²¹ Accordingly, social sorting does not only pertain to the collection and (non-transparent) use of personal data but raises important issues concerning the experience of identity within the information sphere; see also, Mireille Hildebrandt, ‘Who is Profiling Who? Invisible Visibility’ (n 1010) 244.

¹⁰²² Richards, ‘The Dangers of Surveillance’ (n 996) 1957.

¹⁰²³ As argued by Katja de Vries ‘For example, a large range of different categorizations, or even ‘personalizations’, creates the illusion that staying in one’s own category is always the best option, i.e., that one is constantly and correctly ‘understood’ by the Ambient Intelligent device.’ Taken from, De Vries (n 327) 83.

¹⁰²⁴ This example reflects Genessa M Fratto, Michelle R Jones and Nancy L Cassill’s interpretation of the Ralph Lauren collection of the ‘Chapsa *Licensed’ retail section, Fratto, Jones and Cassill (n 998) 400.

¹⁰²⁵ Mittelstadt, Allo, Taddeo, Wachter and Floridi (1012) 8.

¹⁰²⁶ See also, Linnet Taylor, ‘What is data justice? The case for connecting digital rights and freedoms globally’ (2017) 4 (2) *Big Data & Society* 1, 3.

¹⁰²⁷ See also, Michele Lamont and Virag Moolnar studying the use of ‘clothing’ as an aspect of social identity of African-Americans’ regarding the consumer culture in the United States, and stating that ‘white people gain more respect through

social identity is not like that of the individuals in their neighbourhood but is a distinctive reflection of his or her management of appearance and perception? The problem with individual segmentation is that it refines individual perceptions of fashion identity in light of the proxies (i.e. race, location, income) that are comparable to other individuals sharing similar characteristics. In other words, this example highlights the danger of limiting ‘race’ to situations of ‘income’ and ‘location’, leaving out the personal, social, and cultural experiences shaping the individual’s perception of fashion identity. Thus, fashion recommender systems facilitate social exclusion and discrimination against groups with shared protected characteristics.

Considering that fashion recommender systems solidify existing social disparities, there is a risk that algorithmic personalisation systems in fashion will also create new inequalities that go beyond protected characteristics and sensitive attributes. Once normative judgements of ‘fashion identity’ are placed within a statistical framework, there is a risk that pre-existing notions or fashion narratives will shape the contours of appearance perception.

For instance, a fashion recommender system may define product features as ‘formal’, which is an attribute of ‘*being female*’. In this respect, the algorithm may identify a pattern where a ‘formal’ style correlates with other features, such as attributes of a ‘female gender’. The issue with this example is that ‘*being female*’ is not necessarily a characteristic of an individual’s gender, but can illustrate an attitude or a personality trait.¹⁰²⁸ The complex configuration of algorithmic systems signifies that shared correlations define the process of selective behaviour, as well as the differences that nurture an individual’s appearance perception in fashion identity. This has significant consequences, reinforcing existing structural disadvantages, which may go beyond conceptions of gender, and include a broader conception of unfair treatment based on the individual’s loss of identity and dignity. Thus, algorithmic categorisation causes individual segmentation at a group level, as well as the individual level of fashion identity, having an impact on the way one identifies with ‘being female’ and on the perception of gender, attitudes, and beliefs. Accordingly, there is a risk that algorithmic personalisation systems create new socio-cultural dimensions that proclaim a synthetic diversity judged by appearance.

To summarise, we now need an interdisciplinary account of how bias in fashion recommender systems solidifies and creates social disparities. The debate on social sorting highlights two important issues, raising (i) questions about the algorithms’ assessment of aspects of identity, and (ii) questions about how identity itself is shaped by algorithmic categorisations. Therefore, section IV (of Chapter 6) intends

purchases, whereby a person of colour wearing a “Rolex” will be stereotyped as engaging in conspicuous consumption or showing of’, see Michele Lamont and Virag Molnar, ‘How Blacks Use Consumption to Shape their Collective Identity’ (2001) 1 (1) *Journal of Consumer Culture* 31, 36; see also, Angelica Noelle Morris, ‘Fashion, social media, and identity expression : an intersectional approach to understanding the fashion consumption patterns of black middle-class women’ (PhD Thesis, The University of Texas at Austin 2017) 9.

¹⁰²⁸ See for example, Julia Felsenthal, ‘Grace Jones Explores Androgyny in a New Memoir’ (*Vogue*, 28 September 2015) < www.vogue.com/article/grace-jones-memoir> accessed 17 October 2020.

to answer the question: how does legal regulation deal with algorithmic bias in fashion recommender systems capturing the nuances of appearance management of fashion identity?

IV. ECHR and CJEU: scrutinising algorithmic bias in fashion

Sections IV.1-2 (of Chapter 6) discuss how we can relate the impact of algorithmic personalisation systems in fashion on individual perception to ECtHR case law on Article 14 in conjunction with Article 8 ECHR.¹⁰²⁹ Rory O’Connell describes Article 14 as a ‘Cinderella provision’ which only has ‘bite’ when read in conjunction with other rights in the Convention, such as Article 8.¹⁰³⁰ Indeed, non-discrimination did achieve some relative autonomy with the ratification of Protocol 12,¹⁰³¹ as well as the ECtHR reasoning in some case law.¹⁰³² However, non-discrimination as a right is autonomous to the extent that ‘it suffices that the facts of a case fall within the ambit of another substantive provision of the Convention or its Protocols’.¹⁰³³ Accordingly, my interest in assessing the contours of algorithmic bias refers to the procedural and material scope of non-discrimination including its interplay with notions of privacy, autonomy, and identity. I show that new legislation could include the tangible frictions of recommender systems with an individual’s appearance management of fashion identity, considering the interplay of Articles 8 and 14 ECHR in direct discrimination claims. I further recognise that we need an account of the algorithmic classifications of ‘fashion identity’, which raise issues of both indirect and intersectional discrimination.

Turning to the limitations of current non-discrimination law in covering intersectional discrimination claims, I focus on EU sectoral legislation and CJEU case law to identify the hurdles to changing policy

¹⁰²⁹ Convention for the Protection of Human Rights and Fundamental Freedoms (European Convention on Human Rights, as amended) (ECHR), art 14, art 8; see also, Bart van der Sloot, ‘Where is the Harm in a Privacy Violation? Calculating the Damages Afforded in Privacy Cases by the European Court of Human Rights’ (2017) 8 (4) JIPITEC 322, 347.

¹⁰³⁰ Rory O’Connell, ‘Cinderella comes to the Ball: Art 14 and the right to non-discrimination in the ECHR’ (2009) 29 (2) Legal Studies 211, 212; see also, in *Molla Salli v Greece*, which stipulates that ‘[t]he Court has consistently held that Article 14 of the Convention complements the other substantive provisions of the Convention and the Protocols thereto. Article 14 has no independent existence since it has effect solely in relation to “the enjoyment of the rights and freedoms” safeguarded thereby’, *Molla Salli v Greece* (2020) 71 E.H.R.R. SE3, para 123.

¹⁰³¹ The subsequent ratification of Protocol 12 makes non-discrimination a free-standing right. Protocol 12 of the ECHR Convention has been currently ratified by ten states; Protocol No. 12 to the Convention for the Protection of Human Rights and Fundamental Freedoms (entry into force 1 April 2005); see also *Sejdić and Finci v Bosnia and Herzegovina* (n 528) para 53; see *Savez Crkava “Rijec Zivota” and Others v Croatia* where the court stipulates that ‘it is important to note that Article 1 of Protocol No. 12 extends the scope of protection not only to “any right set forth by law”, as the text of paragraph 1 might suggest, but beyond that. This follows in particular from paragraph 2, which further provides that no one may be discriminated against by a public authority. According to the Explanatory Report on Article 1 of Protocol No. 12, the scope of protection of that Article concerns four categories of cases’, *Savez Crkava “Rijec Zivota” and Others v Croatia* App no 7798/08 (ECHR, 9 March 2011), para 104.

¹⁰³² In some instances, a violation of non-discrimination was not dependent on the violation of another substantive provision, see *Carson and Others v The United Kingdom* App no 42184/05 (ECHR, 16 March 2010), para 63; *Baczkowski v Poland* (2009) 48 E.H.R.R. 19, paras 93-101; cf *Emel Boyraz v Turkey* where the court examined article 14 in conjunction with article 8 of the ECHR, even though the applicant only invoked article 14 in the particular case; *Emel Boyraz v Turkey* App no 61960/08 (ECHR, 2 March 2015), paras 31-33; Conversely, in *Oliari and Others v Italy* the court focused on article 8 of the ECHR based on the failure of the state to provide non-discrimination legislation protecting the applicants’ sexual orientation, see *Oliari and Others v Italy* App nos 18766/11 and 36030/11 (ECHR, 21 October 2015).

¹⁰³³ *Sidabras and Dziutas v Lithuania* (n 311) paras 70-76.

in this area. In section IV.3 (of Chapter 6) I weigh up several possibilities for promoting a contextual approach to non-discrimination and conclude that we need to adapt international standards of equality to address structural bias in algorithmic personalisation systems in fashion.

1. Article 14 and 8 ECHR: Appearance management of fashion identity

The ECHR establishes the state obligation of the right to non-discrimination under Article 14. This article, which applies to direct and indirect discrimination,¹⁰³⁴ implies that one shall not discriminate on grounds, such as sex and race unless such a measure is justified.¹⁰³⁵

The ECtHR describes direct discrimination as ‘differences in treatment based on an identifiable characteristic’, whereby ‘there must be a difference in the treatment of persons in analogous, or relevantly similar, situations’.¹⁰³⁶ Focusing on the interplay of Article 14 with Article 8 of the ECHR, it is interesting to see how the effects of a discriminatory practice can inhibit unwarranted interferences with an individual’s aspects of identity. In *Emel Boyraz v Turkey*, the court found Article 8 of the Convention applicable as the dismissal of the applicant ‘on the sole ground of sex has adverse effects on a person’s identity, self-perception and self-respect and, as a result, his or her private life’.¹⁰³⁷

The decision in *Beizaras and Levickas v Lithuania*, a case dealing with direct discrimination based on the grounds of gender and sexual orientation, highlights the state’s adoption of measures that secure non-discrimination on the grounds of and protection of the applicant’s sexual orientation and gender identity, as well as maintaining the applicant’s ‘psychological well-being and dignity’.¹⁰³⁸ The ECtHR’s reasoning nicely highlights how systematic differential treatment, as well as blanket bans,¹⁰³⁹ can induce direct discrimination including interference with an individual’s expression of identity.

I can see the potential for Articles 8 and 14 of the ECHR, including the diverse meanings attached to autonomy and privacy, to provoke new case law dealing with direct discrimination based on algorithmic bias in fashion. The court’s reasoning offers us an important understanding of how algorithmic bias could be regulated in the future, which has implications for fashion recommender systems causing tangible friction in the expression of identity correlating with protected characteristics. By way of illustration, these considerations could apply when the use of proxies for protected characteristics in personalised recommendations, such as notions of gender or skin colour for an AI stylist, unduly define

¹⁰³⁴ Zuiderveen Borgesius, ‘Strengthening legal protection against discrimination by algorithms and artificial intelligence’ (n 6) 1577.

¹⁰³⁵ O’Connell (n 1030) 211.

¹⁰³⁶ *Biao v Denmark* App no 38590/10 (ECHR, 24 May 2016), para 89.

¹⁰³⁷ *Emel Boyraz v Turkey* App no 61960/08 (n 1032) para 44.

¹⁰³⁸ *Beizaras and Levickas v Lithuania* (n 335) paras 109-117; see also, *Pajić v Croatia* (2018) 67 E.H.R.R. 12, para 61.

¹⁰³⁹ *Pajić v Croatia* (n 1038) para 84.

the individual's access to products.¹⁰⁴⁰ In addition, bias training data using protected characteristics could raise issues of direct discrimination, provided the algorithmic judgements result in systematic differentiation including unfair treatment, such as on the basis of gender and sexual orientation. These considerations of the effects of unfair practices on the expression of identity are important elements that allow us to consider algorithmic bias as affecting an individual's appearance management of identity. Addressing the relational factors of algorithmic decisions and appearance management of fashion identity allows us to uncover broader concerns about opacity in fashion recommender systems including the link between algorithmic bias and an individual's perception of appearance.

2. Article 14 and 8 ECHR: limitations

Nevertheless, we need to consider that algorithmic bias occurs based on the systems' classification of "fashion identity" and, accordingly, (a) most discrimination is unintentional, and (b) most discrimination entails unfair treatment not tied to individual characteristics.¹⁰⁴¹

Consider the example of a fashion recommender system on an e-commerce website selling high-end clothing and outlet products. Suppose that the predictive model determines that individuals with a formal and elegant style are more likely to invest in fashionable but less pricey shoes, whereas individuals with a more casual style prefer the newest designer sneakers. The recommender system, whilst not making use of the sensitive attributes of 'gender' and 'race', will contain labelling examples using social media images to learn the meaning of 'formal clothing' (such as images recognising women wearing high heels) as well as proxies for the user's location (such as urban areas where the style is more casual). Assume now that the algorithm will (i) infer users' preferring casual style based on the social-cultural connotations of the "urban lifestyle" (including the characteristics of people living in densely populated areas) and thus, inadvertently targeting users' with a certain socio-economic background and ethnicity;¹⁰⁴² (ii) infer the women's interest in formal style based on user-item interactions showing an interest in "boutique brands" which advertise formal elegance using their new collection on "high heels", inadvertently leaving out women who adopt a formal style which does not correlate with an interest in "boutique brands".

The former scenario (i.e. point (a) and outcome (i)), shows how in indirect discrimination 'a difference in treatment may take the form of disproportionately prejudicial effects of a general policy or measure which, though couched in neutral terms, discriminates against a group'.¹⁰⁴³ Frederick Borgesius points

¹⁰⁴⁰ This could be an example of price discrimination, Valentino- De Vries, Singer-Vine and Soltani (n 429).

¹⁰⁴¹ Frederick Zuiderveen Borgesius, 'Discrimination, Artificial Intelligence and Algorithmic Decision-Making' (n 967).

¹⁰⁴² See also Joseph Blass who highlights 'specifying addresses in homogenous areas and setting small radii, advertisers had been able to create target audiences along a protected characteristic without ever specifying that characteristic'; Blass (n 986) 421.

¹⁰⁴³ *Biao v Denmark* (n 1036) para 103.

out that the ‘concept of indirect discrimination results in rather open-ended standards, which are often difficult to apply in practice’.¹⁰⁴⁴ In any event, the applicant needs to prove both procedurally and with regard to Article 14 ECHR that there has been a difference in treatment.¹⁰⁴⁵ This can be a high hurdle for the individual in theory and in practice. An algorithm’s neutral use of fashion narratives produces a *potential* rather than *tangible friction* with an individual’s perception based on the algorithm’s non-transparent intervention in the individual’s management of appearance.¹⁰⁴⁶ In this case, the victim will most likely produce statistical evidence proving the disparity of algorithmic judgements on their fashion identity.¹⁰⁴⁷ Nevertheless, it needs to be noted that states have a wide margin of appreciation regarding economic strategies.¹⁰⁴⁸ The extent of interference with Article 14 of the ECHR would be judged not according to the statistical evidence provided by the applicant to establish a *prima facie* case, but the proportionality principle.¹⁰⁴⁹ The court will most likely not accept general justifications for the use of biased algorithms which might cause systematic differentiation.¹⁰⁵⁰

However, further guidance is needed on what factors influence the application of the proportionality principle, which could be either the user’s location as an ingredient for personalised recommendations or whether the variable on “urban lifestyle” requires a nuanced assessment of proportionality considering the use of fashion narratives (casual and formal style) within the predictive model. Therefore, the claimant in this scenario will have difficulty succeeding in an indirect discrimination claim as there are chances that it will be rebutted based on the economic interests connected to fine-grained online personalisation.

With regard to the latter scenario (i.e. point (b) and outcome (ii)), the ECtHR stipulates that non-discrimination applies when based on protected characteristics, which would make outcome (ii) fall outside of non-discrimination law, because ‘high-heels’ are not a strong attribute for the female gender.¹⁰⁵¹ Nevertheless, the grounds listed in Article 14 ECHR are non-exhaustive and could potentially

¹⁰⁴⁴ Zuiderveen Borgesius, ‘Discrimination, Artificial Intelligence and Algorithmic Decision-making’ (n 967) page 34.

¹⁰⁴⁵ Convention for the Protection of Human Rights and Fundamental Freedoms (European Convention on Human Rights, as amended) (ECHR), art 34; see also, *Tanase v Moldova* where the ECtHR held that ‘to be able to lodge a petition by virtue of Article 34, a person, non-governmental organisation or group of individuals must be able to claim to be the victim of a violation of the rights set forth in the Convention’, *Tanase v Moldova* (2011) 53 E.H.R.R. 22, para 104; regarding article 14, a difference in treatment is evidenced by a comparator (i.e. showing a difference in treatment with another person in a similar situation), see for example, *Carson and Others v The United Kingdom* (n 1032).

¹⁰⁴⁶ Indeed, the *Hugh Jordan v The United Kingdom* decision highlights that a neutral rule can have ‘disproportionately prejudicial effects on a particular group’ which indicates that the practice does not need to produce a negative impact as such. However, the reasoning suggests that the practice must be of such a manner that it *may* produce an adverse impact on a particular group, see *Hugh Jordan v The United Kingdom* App no 24746/94 (ECHR, 4 August 2001), para 154.

¹⁰⁴⁷ The victim may use statistical evidence ‘of indirect discrimination in order to facilitate the victims’ task of adducing prima facie evidence’ *D.H and Others v The Czech Republic* App no 57325/00, para 187; see also, Zuiderveen Borgesius, ‘Discrimination, Artificial Intelligence and Algorithmic Decision-making’ (n 967) page 34.

¹⁰⁴⁸ *Carson and Others v The United Kingdom* (n 1032) para 61; cf *Biao v Denmark* (n 1036) para 94.

¹⁰⁴⁹ Zuiderveen Borgesius, ‘Discrimination, Artificial Intelligence and Algorithmic Decision-making’ (n 967) page 35.

¹⁰⁵⁰ I derived the emphasis from the *Hoogendijk v Netherlands* decision where the court underlines that ‘where a general policy or measure has disproportionately prejudicial effects on a particular group, it is not excluded that this may be regarded as discriminatory notwithstanding that it is not specifically aimed or directed at that group’, *Hoogendijk v Netherlands* (2005) 40 E.H.R.R. SE22 189, at 207.

¹⁰⁵¹ *Molla Sali v Greece* (n 1030) para 134.

expand to include new grounds of discrimination.¹⁰⁵² In this respect, the ECtHR has ruled on claims constituting several grounds of discrimination.¹⁰⁵³ These so-called scenarios of multiple or intersectional discrimination cover situations where ‘the influence of various grounds [of discrimination] cannot be disentangled’.¹⁰⁵⁴ The court’s decision in *N.B v Slovakia*, which dealt with the applicant’s claim that their forced sterilisation was discriminatory on the grounds of race, ethnic origin, and sex, concluded that ‘the practice of sterilisation of women without their prior informed consent affected vulnerable individuals from various ethnic groups’.¹⁰⁵⁵ In *Carvalho Pinto de Sousa Morais v Portugal* the court again considered several grounds of discrimination with regard to Articles 8 and 14 ECHR and highlighted that ‘stereotyping of a certain group in society lies in the fact that it prohibits the individualised evaluation of their capacity and needs’.¹⁰⁵⁶

However, the court does not clarify how a holistic approach to non-discrimination law could be adjudicated in practice, for example whether we would have to extend Article 14 to include new grounds of discrimination. The ECtHR in *Carvalho Pinto de Sousa Morais v Portugal* considered that the dimensions of sexuality and age applied to the individual’s circumstances and how traditional conceptions of female sexuality undermine the ‘physical and psychological relevance for the self-fulfilment of women as people’.¹⁰⁵⁷ This is an interesting approach and sheds an unprecedented light on how we could assess non-discrimination cases in the future by considering an individual’s privacy, autonomy, and identity. With regard to the present scenario and outcome (ii), the court could emphasise the extent to which conceptions of gender can define the individualised notion of ‘being female’ as preferring formal style within a specific socio-cultural convention on clothing (i.e. the connotation of being female within lifestyle outside “brand culture”). Indeed, this reasoning is entirely theoretical and would require the creation of new grounds of discrimination considering the way an individual can experience multiple identities (such as the ambivalence of gender within the social and personal aspects of fashion identity). As the court does not explicitly recognise multiple discrimination claims and only does so implicitly according to individual circumstances, it is difficult to ascertain whether there is any leeway to include fashion narratives including algorithmic correlations as a factor in raising multiple and intersectional discrimination claims before the ECtHR.

¹⁰⁵² *Clift v United Kingdom* (2010) 7 WLUK 387, para 55.

¹⁰⁵³ *Carvalho Pinto de Sousa Morais v Portugal* App no 17484/15 (ECHR, 25 October 2017); *N.B v Slovakia* App no 29518/10 (ECHR, 12 September 2012); ‘Guide on Article 14 of the European Convention on Human Rights and on Article 1 of Protocol 12 to the Convention: Prohibition of discrimination’ (updated 31 December 2020) <www.echr.coe.int/Documents/Guide_Art_14_Art_1_Protocol_12_ENG.pdf> accessed 1 September 2021, paras 44-49.

¹⁰⁵⁴ Susanne Burri and Dagmar Schiek, ‘Multiple Discrimination in EU Law Opportunities for legal responses to intersectional gender discrimination?’ (European Network of Legal Experts in the Field of Gender Equality 2009) <https://eige.europa.eu/docs/3028_multipliediscriminationfinal7september2009_en.pdf> accessed 22 January 2020 at page 3.

¹⁰⁵⁵ The court held that there was a violation of articles 8 and 3 and did not examine article 14 separately. *N.B v Slovakia* (n 1053) paras 111, 121.

¹⁰⁵⁶ *Carvalho Pinto de Sousa Morais v Portugal* (n 1053) para 46.

¹⁰⁵⁷ *ibid* par 52.

Thus, an important limitation in the ECtHR's interpretation of discrimination claims is that it produces a distinction between tangible and intangible frictions with an individual's identity. I have shown that we can elaborate on the extent to which algorithmic bias in fashion produces systematic disparity in an individual's appearance management using the court's reasoning regarding direct discrimination. However, simply removing sensitive attributes from the training data (see also Section II.2 of Chapter 6) will not hinder algorithmic bias and we need to consider the extent to which non-discrimination applies to algorithmic classifications correlating with protected attributes and creating new grounds for unfair treatment (scenarios (a) and (b)). These intangible frictions with an individual's perception of identity (outcomes (i) and (ii)), whilst partly identified by the ECtHR in regard to intersectional discrimination claims, are not covered by the current legal landscape as it does not clarify how classifications relate to the individual's experience of identity and unjust treatment.

Current discrimination claims suggest that problems of unfair treatment relate to the experience of identity within and beyond identifiable characteristics *in relation to others in comparable situations*. This concept of discrimination is problematic – fashion recommender systems operate on the basis of fashion narratives correlating with an individual's attributes (i.e. formal style of clothing correlating with an individual's gender including user-item interactions), rather than an individual's personal characteristics (i.e. individual X's gender). No obligation is in place that encompasses disparities induced by algorithmic classifications and those discrepancies that affect the ambivalence of social and personal aspects of my identity in fashion.

3. EU anti-discrimination law: and more limitations

The EU Charter, similarly to the ECHR, includes a non-exhaustive list of grounds protected against discrimination: 'Any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation shall be prohibited.'¹⁰⁵⁸ However, EU discrimination law also consists of a plethora of sectoral legislation including directives that, whilst applying directly to the conduct of public and private entities, establish exhaustive criteria regarding their scope of application.¹⁰⁵⁹ Indeed, secondary legislation must be interpreted in relation to the EU Charter.¹⁰⁶⁰

¹⁰⁵⁸ Charter of Fundamental Rights of the European Union [2012] OJ C326/391, art 21.

¹⁰⁵⁹ Council Directive 2000/43/EC of 29 June 2000 implementing the principle of equal treatment between persons irrespective of racial or ethnic origin (Racial Equality Directive) [2000] OJ L189/0022, art 3; see also, Directive 2006/54/EC of the European Parliament and of the Council of 5 July 2006 on the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation (recast) [2006] OJ 204/23, art 1; Council Directive 2004/113/EC of 13 December 2004 implementing the principle of equal treatment between men and women in the access to and supply of goods and services [2004] OJ L 373/37, art 3; Council Directive 2000/78/EC of 27 November 2000 establishing a general framework for equal treatment in employment and occupation [2000] OJ L303/0016, art 3.

¹⁰⁶⁰ Sandra Wachter, 'Affinity Profiling and Discrimination by Association in Online Behavioural Advertising' (2020) 35 (2) Berkley Technology Law Journal 1, 25.

These considerations pose some problems for creating new grounds of discrimination from a practical point of view. One issue is the varying scope of directives in EU discrimination law. For example, the Racial Equality Directive applies in the context of access to goods and services, whereby the Gender Access Directives only apply in the context of employment.¹⁰⁶¹ Moreover, only Recital 14 of the Racial Equality Directive, as well as Recital 3 of Directive 2000/78 make reference to issues of multiple discrimination.¹⁰⁶² Accordingly, the fact that EU anti-discrimination law is composed of separate Directives of varying scope produces practical hurdles for intersectional discrimination claims.¹⁰⁶³

The CJEU, whilst recognising multiple discrimination claims which are based on a combination of protected grounds, still endorses the relative independence of these grounds.¹⁰⁶⁴ In *David L Parris v Trinity College Dublin and Others* the claimant submitted that the university's pension scheme is discriminatory on the grounds of sexual orientation and age.¹⁰⁶⁵ The CJEU, whilst not excluding the possibility that discrimination may be based on several grounds, emphasised that 'no new category of discrimination resulting from the combination of more than one of those grounds, such as sexual orientation and age, ... may be found to exist where discrimination on the basis of those grounds taken in isolation has not been established.'¹⁰⁶⁶ Thus, 'where a national rule creates neither discrimination on the ground of sexual orientation nor discrimination on the ground of age, that rule cannot produce discrimination on the basis of the combination of those two factors'.¹⁰⁶⁷ Multiple discrimination claims, whilst recognised by the court, are tied to the separate existence of protected grounds in the law.¹⁰⁶⁸

¹⁰⁶¹ Council Directive 2000/43/EC of 29 June 2000 implementing the principle of equal treatment between persons irrespective of racial or ethnic origin (Racial Equality Directive) [2000] OJ L189/0022, art 1; Council Directive 2004/113/EC of 13 December 2004 implementing the principle of equal treatment between men and women in the access to and supply of goods and services (Gender Access Directive) [2006] OJ L 153/294, art 1.

¹⁰⁶² Racial Equality Directive, Recital 14; Council Directive 2000/78/EC of 27 November 2000 establishing a general framework for equal treatment in employment and occupation [2000] OJ L303/ 16, Recital 3.

¹⁰⁶³ Sandra Fredman, 'Intersectional discrimination in EU gender equality and non-discrimination law' (European network of legal experts in gender equality and non-discrimination, May 2016) < <https://op.europa.eu/en/publication-detail/-/publication/d73a9221-b7c3-40f6-8414-8a48a2157a2f>> accessed 29 January 2020 at page 62; cf Dagmar Schiek, 'On uses, misuses and non-uses of intersectionality before the Court of Justice (EU)' (2018) 18 (2-3) *International Journal of Discrimination and the Law* 82, 89; see also, Gay Moon, 'Multiple Discrimination: Justice for the Whole Person' [2009] 2 *Journal of the European Roma Rights Centre* 5, 8.

¹⁰⁶⁴ On the CJEU restrictive view regarding intersectional discrimination claims see, Sandra Wachter, Brent Mittelstadt and Chris Russell, 'Why Fairness Cannot Be Automated: Bridging the Gap Between EU Non-Discrimination Law and AI' (ArXiv, 12 May 2020) < <https://arxiv.org/abs/2005.05906>> accessed 27 January 2020; Alina Tryfonidou, 'Another failed opportunity for the effective protection of LGB rights under EU law: Dr David. L. Parris v. Trinity College Dublin and Others' (*EU Law Analysis*, 1 December 2016) < <http://eulawanalysis.blogspot.com/2016/12/another-failed-opportunity-for.html>> accessed 12 January 2020; Shreya Attrey, 'Illuminating the CJEU's Blind Spot of Intersectional Discrimination in Parris v Trinity College Dublin' (2018) 47 (2) *ILJ* 278.

¹⁰⁶⁵ Case C-443/15 *David L. Parris v Trinity College Dublin and Others*, paras 15-29.

¹⁰⁶⁶ *ibid* para 80.

¹⁰⁶⁷ *ibid* para 81; see also, Shreya Attrey, 'Illuminating the CJEU's Blind Spot of Intersectional Discrimination in Parris v Trinity College Dublin' (2018) 47 (2) *ILJ* 278, 282.

¹⁰⁶⁸ See also *Z v A Government department and The Board of management of a community school* where the court examined the grounds of discrimination based on sex and disability separately, Case C-363/12 *Z v A Government department and The Board of management of a community school* [2014] 3 C.M.L.R. 20, paras 79-91; Xenidis (n 428) 741.

One possibility would be for the CJEU to expand on anti-discrimination law based on the EU Charter.¹⁰⁶⁹ However, case law seems to refute that possibility.¹⁰⁷⁰ In *Fag og Arbejde (FOA) v Kommunernes Landsforening* the court analysed whether differential treatment based on the applicant's obesity constituted a self-contained discrimination ground or whether it had to fall within the concept of disability.¹⁰⁷¹ The court, clearly dismissing the argument that discrimination on the ground of 'obesity' is prohibited based on Article 21 of the Charter of Fundamental Rights of the European Union, focused on the Employment Equality Directive, which does not include obesity as a ground of discrimination.¹⁰⁷² Accordingly, the court refused to engage with a contextual approach to non-discrimination and extend the Employment Equality Directive beyond the grounds listed in Article 1.¹⁰⁷³

We could also suggest that developing intersectional claims in EU anti-discrimination law requires us to consider the nodes and relationships between grounds, rather than the extension of the protected grounds as such.¹⁰⁷⁴ Indeed, Dagmar Schiek suggests that we should reconstruct non-discrimination law around nodes surrounding gender, disability, and race, which illustrate a 'heteronomous process' dynamically interacting with each other and forming the 'ascription of difference' in unjust treatment.¹⁰⁷⁵ Similarly, Sandra Fredman elaborates on how we can reconsider non-discrimination as an organising idea 'delineating groups at the intersection'.¹⁰⁷⁶ Both approaches have the potential to shape policy and recognise specific forms of intersectional discrimination, such as discrimination experienced by women in a particular socio-cultural context.¹⁰⁷⁷ However, we would need to adapt the definition of equality, shaping it around the structure of relationships rather than identifiable characteristics. These approaches to promoting intersectionality in EU law are interesting but require different parameters dealing with algorithmic bias in fashion. Section V (of Chapter 6) will offer some key recommendations for adapting the notion of equality with regard to fashion recommender systems but drawing from computer science and political theory so that we can apply non-discrimination law to non-linear relationships and ambivalent aspects of identity which do not demand closed nodes of subjectivity in fashion recommender systems.¹⁰⁷⁸

¹⁰⁶⁹ Charter of Fundamental Rights of the European Union [2012] OJ C326/391, art 21.

¹⁰⁷⁰ See for example, Case C-310/10 *Ministerul Justiției și Libertăților Cetățenești v Ștefan Agățitei and Others* [2014] I - 05989, para 36; Case C-303/06 S. *Coleman v Attridge Law and Steve Law* [2008] ECR I-05603, para 46; Case C-354/13 *Fag og Arbejde (FOA) v Kommunernes Landsforening* [2014] ECR I- 2463, par 36.

¹⁰⁷¹ Case C-354/13 *Fag og Arbejde (FOA) v Kommunernes Landsforening* [2014] ECR I- 2463, para 30.

¹⁰⁷² *ibid* para 39.

¹⁰⁷³ *ibid* para 36.

¹⁰⁷⁴ Fredman, 'Intersectional discrimination in EU gender equality and non-discrimination law' (n 1063) page 66; Schiek, 'On uses, mis-uses and non-uses of intersectionality before the Court of Justice (EU)' (n 1063) 87-88.

¹⁰⁷⁵ Schiek, 'On uses, mis-uses and non-uses of intersectionality before the Court of Justice (EU)' (n 1062) 87-88.

¹⁰⁷⁶ Fredman, 'Intersectional discrimination in EU gender equality and non-discrimination law' (n 1063), page 66.

¹⁰⁷⁷ UN Committee on the Elimination of Discrimination against Women, 'General recommendation No. 28 on the core obligations of States parties under article 2 of the Convention on the Elimination of All Forms of Discrimination against Women' (10 December 2010) CEDAW/C/GC/28, paras 9-18.

¹⁰⁷⁸ See also my discussion on fashion recommender systems and "subjective neutrality" in **Chapter 3**.

4. ‘Discrimination by association’ as an alternative?

We could consider ‘discrimination by association’ as an alternative route towards expanding the scope of protected characteristics in anti-discrimination law, focusing on the assumed interests of the applicant correlating with the sensitive attribute of a third party. The CJEU and the ECtHR both recognise ‘discrimination by association’ as an abstract norm for considering protected characteristics.¹⁰⁷⁹ In the *S. Coleman v Attridge Law and Steve Law* decision the CJEU accepted the ground of discrimination by association with regard to direct discrimination, underlining that the prohibition of direct discrimination not only applies to individuals who are perceived to fall within the protected characteristics but includes protection against their corresponding interests, which are impacted by the adverse consequences affecting a particular protected group.¹⁰⁸⁰ The ECtHR in the *Skorjanec v Croatia* case further confirmed that a victim can suffer unfair treatment based on their assumed ties with a group identity rather than their own ethnic background.¹⁰⁸¹ Of course, these developments highlight interesting aspects of the value of equality when addressing algorithmic bias in personalisation systems, such as reconsidering non-discrimination law to address ambivalences in an individual’s interest (for instance, in feminine clothing style) correlating with protected attributes (such as the individual’s affinity correlating with gender) in personalisation systems.¹⁰⁸²

Nevertheless, the current interpretation of the concept ‘discrimination by association’ does not leave much leeway to address algorithmic bias in personalisation systems in non-discrimination. Firstly, a victim submitting a claim based on ‘discrimination by association’ still needs to show that they suffered a particular disadvantage (see the issues raised regarding indirect discrimination in Section IV.2 above).¹⁰⁸³ However, they only need to establish a reference point for their having suffered disadvantage. For example, an individual who is not part of a collective group identifying with a certain race or gender,

¹⁰⁷⁹ *Molla Salli v Greece* (n 1030) para 81; *Guberina v Croatia* (2018) 66 E.H.R.R. 11, paras 58, 69; *Skorjanec v Croatia* (2018) 66 E.H.R.R. 14, para 56; *Weller v Hungary* App no 4439/05 (ECHR, 30 June 2009), paras 33-37; Case C- 83/14 *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia* [2016] 1 CMLR 14; see also, *S. Coleman v Attridge Law and Steve Law* (n 1070).

¹⁰⁸⁰ *S. Coleman v Attridge Law and Steve Law* (n 1070) para 56; see also, *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia* (n 1079) para 109; Michael Malone, ‘The concept of indirect discrimination by association: too late for the UK?’ (2017) 46 (1) ILJ 144, 145; Claude Chan, ‘Court of Justice of the EU Rules Collective and Inaccessible Electrical Metres Discriminate against Roma: *chez Razpredelenie Bulgaria ad v. Komisia za zashtita ot diskriminatsia* (C-83/14)’ (2016) 18 (1) V.L.R.(P.& M.) 112

¹⁰⁸¹ As stipulated by the court ‘it should be reiterated that under the Convention the obligation on the authorities to seek a possible link between racist attitudes and a given act of violence exists not only with regard to acts of violence based on the victim’s actual or perceived personal status or characteristics but also with regard to acts of violence based on the victim’s actual or perceived association or affiliation with another person who actually or presumably possesses a particular status or protected characteristic ... Indeed, some hate-crime victims are chosen not because they possess a particular characteristic but because of their association with another person who actually or presumably possesses the relevant characteristic. This connection may take the form of the victim’s membership of or association with a particular group, or the victim’s actual or perceived affiliation with a member of a particular group through, for instance, a personal relationship, friendship or marriage’, *Skorjanec v Croatia* (n 1079) para 66.

¹⁰⁸² As argued by Sandra Wachter the ‘key question that will face courts and scholars going forward is this: do affinity groups have equivalent legal status to protected groups? For example, would the affinity group ‘interested in Muslim culture’ have equivalent legal status to the group ‘religion’?’, see Wachter, ‘Affinity Profiling and Discrimination by Association in Online Behavioural Advertising’ (n 1060) 371.

¹⁰⁸³ *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia* (n 1079) paras 5, 56-60.

can still suffer unfavourable treatment based on the identification of the individual with the group's characteristics.¹⁰⁸⁴ That said, the reference point or comparator is not fully detached from the protected characteristic.¹⁰⁸⁵ That reference point can be a practice, such as 'racist attitudes' which does not necessarily induce obvious discrimination but still creates a situation of unfair treatment for the claimant.¹⁰⁸⁶ Second, whilst a claim of discrimination by association does not require a close relationship with a protected group, there has to be some connection that shows the existence of some form of 'collateral damage' linked to a protected characteristic.¹⁰⁸⁷ Hence, we are moving from a conception that relies on a personal link between the victim and the suffering of harm to an approach that requires the claimant to challenge the measure that infringes one of the protected grounds in anti-discrimination law.¹⁰⁸⁸ Sandra Wachter rightly points out the unclear 'legal status of affinity groups under non-discrimination law' and how 'we should acknowledge the potential relationship between assumed interests and sensitive personal traits'.¹⁰⁸⁹

I doubt that we can offer a comprehensive method to address algorithmic bias based on the legal status of 'affinity groups' correlating with an 'explicit protected attribute'.¹⁰⁹⁰ A protected attribute in non-discrimination law assumes a strong correlation with an attribute *defining* either the expression or the individual ties with aspects of identity. On the one hand, we can assume that an individual's interest in feminine clothing can correlate with the protected attribute of '*being* female' as a form of gender. In this case, setting affinity groups equal to a protected characteristic could help the victim to establish the necessary link with the protected characteristics.

However, as I mentioned elsewhere (Section III.2 of Chapter 6), algorithmic bias derives from assumptions about an individual's fashion identity, which would be the algorithms' correlation of '*being*' female with the individual's preference for clothing of a 'feminine style'. Here, a correlation with an individual perception of the social and personal aspects of fashion identity is assumed, rather than ties with a protected attribute. In this case, the claimant will not be able to prove collateral damage, which is based on the algorithms' process of personalisation, rather than the correlation with a style targeted towards women. Even if we accept the need to recognise an individual's affinity with protected

¹⁰⁸⁴ As stipulated by the CJEU in *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia* 'persons who, although not themselves a member of the race or ethnic group concerned, nevertheless suffer less favourable treatment or a particular disadvantage on one of those grounds', *ibid* para 56.

¹⁰⁸⁵ *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia* (n 1079) para 129.

¹⁰⁸⁶ *Skorjanec v Croatia* (n 1079) para 66; *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia* (n 1079) para 129.

¹⁰⁸⁷ Case C- 83/14 *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia* [2016] 1 CMLR 14, Opinion of AG Kokott, paras 58.

¹⁰⁸⁸ As argued by AG Kokott 'the existence of such a personal link is certainly not the only conceivable criterion for regarding a person as suffering 'discrimination by association'. The fact that the measure at issue is discriminatory by association may be inherent in the measure itself, in particular where that measure is liable, because of its wholesale and collective character, to affect not only the person possessing one of the characteristics mentioned in Article 21 of the Charter of Fundamental Rights and in the anti-discrimination directives, but also — as a kind of 'collateral damage' — includes other persons.', taken from, *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia*, Opinion of AG Kokott (n 1087) paras 58.

¹⁰⁸⁹ Wachter, 'Affinity Profiling and Discrimination by Association in Online Behavioural Advertising' (n 1060) 372.

¹⁰⁹⁰ *ibid*.

characteristics, we could debate whether such a link would be useful at all regarding recommender engines where protected characteristics are only one weighed attribute in the personalisation context, and a strong assumed interest producing strong ties with a collective identity (such as a group identity with socio-cultural connotations) only occurs in isolated examples.¹⁰⁹¹ Rather, algorithmic judgements are strong generalisations about collective narratives on identity without forming a strong tie with a specific narrative as such. Therefore, what we need is a different conception of non-discrimination law that encompasses the ambivalence between ‘being’ and ‘female’ and includes the damage arising from the context through which an individual’s references to the personal and social aspects of fashion identity are disturbed by personalisation systems.

V. Algorithmic bias in fashion: provoking alternative pathways of thinking

Sections III-IV of Chapter 6 have identified that we need more substantive guidance on how to develop an interdisciplinary account of algorithmic bias to protect individual autonomy and ensure equality more broadly. The aim of this discussion is to determine what regulatory steps are necessary to address the extent to which the correlations in algorithms’ processes cause new nuances of discrimination, undermining the possibility of challenging algorithmic classifications in recommender systems. The solutions entail the introduction of guidelines for implementing appearance perception as indicated in the previous Sections. This Section illustrates a starting point for articulating substantive changes in practice using literature on algorithmic fairness and developing a (new) perspective on equality in the digital age.

I will first define algorithmic fairness and existing approaches to shaping categorical distributions in algorithms. The abstract idea of algorithmic fairness can be summarised as a set of criteria that intend to ensure the fair distribution of outcomes.¹⁰⁹² The importance of algorithmic fairness in addressing the social and legal issues of algorithmic bias is that it incorporates the ‘reflexive social processes that are engaged by algorithmic metrics’.¹⁰⁹³

¹⁰⁹¹ For example, Monique Mann and Tobias Matzner argue that machine learning and algorithmic profiling give rise to ‘new forms of discrimination which do not pertain to known protected identities, but rather represent patterns that have little or no intuitive meaning to human experience.’ Mann and Matzner (n 994) 2.

¹⁰⁹² There is indeed no definition on algorithmic fairness, but some inspiration on its elements can be found here, Bruno Lepri, Nuria Oliver, Emmanuel Letouze, Alex Pentland and Patrick Vinck, ‘Fair, Transparent, and Accountable Algorithmic Decision-making Processes: The Premise, the Proposed Solutions, and the Open Challenges’ (2018) 31 (4) *Philosophy & Technology* 611, 615; Brian Hedden, ‘On statistical criteria on algorithmic fairness’ (2021) 49 (2) *Philosophy & public affairs* 209, 210; Richmond Alake, ‘Algorithm bias is the lack of fairness that emerges from the output of a computer system. The lack of fairness described in algorithmic bias comes in various form but can be summarised as the discrimination of one group based on a specific categorical distinction.’ (*Towards Data Science*, 28 April 2020 < <https://towardsdatascience.com/algorithm-bias-in-artificial-intelligence-needs-to-be-discussed-and-addressed-8d369d675a70>> accessed 12 November 2020.

¹⁰⁹³ Dan L Burk, ‘Algorithmic Legal Metrics’ (2021) 96 (3) *The Notre Dame law review* 1147.

Then, I will incorporate knowledge of algorithmic fairness to communicate my understanding of privacy and equality with regard to algorithmic bias in fashion. I claim that individual perception as a metric in algorithmic fairness needs a new understanding of equality to address the structural challenges of algorithmic bias in fashion recommender systems. I also suggest that individual perception should illustrate a metric for maintaining an individual’s autonomy and decision-making.

1. Some definitions of ‘fairness’ for measuring algorithmic bias

The first stream is ‘group fairness’, which envisages that the classification outcome is equally distributed among all groups. Fairness can be used to establish ‘demographic parity’ whereby different group attributes should not correlate with the output.¹⁰⁹⁴ For instance, we would like to identify whether *“individuals of black ethnicity receive similar recommendations to white people. Or, we could ask whether active users receive similar treatment like inactive users.”*¹⁰⁹⁵ In practice, however, we see that this notion of fairness in terms of parity can lead to unfairness for the individual.¹⁰⁹⁶ In addition, it is difficult to enforce in practice with regard to fashion recommender systems where we would accept that certain sensitive attributes, such as age and gender, are relevant for personalised recommendations.¹⁰⁹⁷

Another approach to ensure group fairness is the ‘equality by opportunity’ methodology, which defines fairness as the positive rate which should be similar across all groups.¹⁰⁹⁸ Using the same example as above, *the fashion recommender system would give similar recommendations regardless of ethnicity, provided both groups have a similar clothing style.*¹⁰⁹⁹ Accordingly, the philosophy of this approach is ‘that individuals who qualify for a desirable outcome should have an equal chance of being correctly

¹⁰⁹⁴ Moritz Hardt, Eric Price and Nathan Srebro, ‘Equality of Opportunity in Supervised Learning’ (ArXiv, 11 October 2016) <<https://arxiv.org/pdf/1610.02413.pdf>> accessed 14 June 2021 at page 2; see also, Harini Suresh and John V Guttag, ‘A Framework for Understanding Unintended Consequences of Machine Learning’ (ArXiv, 7 February 2020) <<https://arxiv.org/pdf/1901.10002.pdf>> accessed 12 March 2020 at page 4.

¹⁰⁹⁵ Yunqi Li, Hanxiong Chen, Zuohui Fu, Yingqiang Ge, Yongfeng Zhang, ‘User-oriented Fairness in Recommendation’ (ArXiv, 21 April 2021) <<https://arxiv.org/abs/2104.10671>> accessed 12 June 2021.

¹⁰⁹⁶ this approach does have some downsides as argued by whereby Cynthia Dwork, Moritz Hardt, Toniann Pitassi *et al* ‘demonstrate its inadequacy as a notion of fairness through several examples in which statistical parity is maintained, but from the point of view of an individual, the outcome is blatantly unfair’. See Cynthia Dwork, Moritz Hardt, Toniann Pitassi, Omer Reingold and Richard Zemel, ‘Fairness Through Awareness’ (ArXiv, 29 November 2011) <<https://arxiv.org/pdf/1104.3913.pdf>> accessed 14 June 2021 at page 2.

¹⁰⁹⁷ Sirui Yao and Bert Huang, ‘Beyond Parity: Fairness Objectives for Collaborative Filtering’ (31st Conference on Neural Information Processing Systems (NIPS 2017), Long Beach, CA, United States, December 2017) page 2; see also, Sahin Cem Geyik, Stuart Ambler, Krishnaram Kenthapadi who suggest that ‘for example, in the case of gender, demographic parity would require that the top results always reflect the gender distribution over all candidates, irrespective of the specific search or recommendation task.’ See Sahin Cem Geyik, Stuart Ambler, Krishnaram Kenthapad, ‘Fairness-Aware Ranking in Search & Recommendation Systems with Application to LinkedIn Talent Search’ (KDD ’19, Anchorage, AK, USA, August 4–8, 2019), page 5; Nevertheless, in other areas the use of demographic disparity might be helpful, see Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kitchner, ‘Machine Bias: There’s software used across the country to predict future criminals. And it’s biased against blacks’ (*Pro Publica*, 23 March 2016) <<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>> accessed 14 June 2021.

¹⁰⁹⁸ Hardt, Price and Srebro (n 1094).

¹⁰⁹⁹ See also Preetam Nandy, Cyrus DiCiccio, Divya Venugopalan, Heloise Logan, Kinjal Basu and Noureddine El Karoui, ‘Achieving Fairness via Post-Processing in Web-Scale Recommender Systems’ (ArXiv, 5 February 2021) <<https://arxiv.org/pdf/2006.11350.pdf>> accessed 12 June 2021.

classified for this outcome'.¹¹⁰⁰ Nevertheless, 'group fairness' may not be effective in instances where individuals experience discrimination that is either 'intersectional' or not protected under anti-discrimination law.¹¹⁰¹ This is because statistical notions of group fairness only look at approximate parity across sub-groups, which 'do not bind the individual'.¹¹⁰² Accordingly, these fairness metrics could unintentionally be biased against individuals who lie at the intersection of multiple groups. For example, an algorithmic personalisation system in fashion could engage in advertising luxury products to consumers who, based on their socio-economic and cultural background, are not able to afford any of the products.¹¹⁰³

Perhaps the more suitable approach to addressing bias in fashion recommender systems is to focus on 'individual fairness' metrics, whereby similar individuals are treated similarly¹¹⁰⁴ In this approach the metric requires a probability distribution deciding on a similar output. But to do this, we must assume an objective that distinguishes similarity from dissimilarity. This is not easy to achieve in practice. In other words, *how do we set a standard definition of individual fairness with regard to fashion recommender systems?* Some works address individual fairness in terms of user¹¹⁰⁵ and/or item fairness in recommender engines.¹¹⁰⁶

Accordingly, there is no straightforward solution or magical mathematical formula for ensuring fairness in fashion recommender systems. I suggest taking a step back from technical trade-offs regarding group and individual fairness metrics and focusing on the human values that should be present in fashion recommender systems.¹¹⁰⁷ We can thus categorise fairness in terms of the 'harms' of algorithmic bias. Algorithmic fairness is concerned with representing two types of harm.¹¹⁰⁸ The first harm that can occur

¹¹⁰⁰ Moritz Hardt, 'Equality of Opportunity in Machine Learning' (*Google AI Blog*, 7 October 2016) <<https://ai.googleblog.com/2016/10/equality-of-opportunity-in-machine.html>> accessed 12 June 2021; see also, Hardt, Price and Srebro (n 1094); Thomas Kehrenberg, Zexun Chen and Novi Quadrianto, 'Tuning Fairness by Balancing Target Labels' [2020] 3 *Frontiers in Artificial Intelligence* 1, 3.

¹¹⁰¹ Reuben Binns, 'On the Apparent Conflict Between Individual and Group Fairness' (FAT* '20: Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency, Barcelona, Spain January 2020) at page 515.

¹¹⁰² This leads to the so-called problem 'fairness gerrymandering' taken from Michael Kearns, Seth Neel and Aaron Roth and Zhiwei Steven Wu, 'Preventing Fairness Gerrymandering: Auditing and Learning for Subgroup Fairness' (Proceedings of the 35 th International Conference on Machine Learning, Stockholm, Sweden, 2018).

¹¹⁰³ 'Combatting 'Fairness Gerrymandering' with Socially Conscious Algorithms' (*Medium: Penn Engineering*, 31 January 2018) <<https://medium.com/penn-engineering/combating-fairness-gerrymandering-with-socially-conscious-algorithms-17e3e63cddb1>> accessed 12 November 2020.

¹¹⁰⁴ Without going too much into detail, examples of individual fairness are 'fairness through awareness' as well as 'counterfactual fairness', see Matt J Kusner, Joshua R Loftus, Chris Russell and Ricardo Silva, 'Counterfactual Fairness' (ArXiv, 20 March 2017) <<https://arxiv.org/abs/1703.06856>> accessed 12 November 2020; see also, Reuben, 'On the Apparent Conflict Between Individual and Group Fairness' (n 1101) page 517; see also, Frederick Schauer, 'On treating unlike cases alike' (2018) 33 (3) *Constitutional Commentary* 437.

¹¹⁰⁵ Gourab K Patro, Arpita Biswas, Niloy Ganguly, Krishna P. Gummadi, Abhijnan Chakraborty, 'FairRec: Two-Sided Fairness for Personalized Recommendations in Two-Sided Platforms' (ArXiv, 25 February 2020) <<https://arxiv.org/abs/2002.10764>> accessed 12 June 2021.

¹¹⁰⁶ *ibid*; Asia J. Biega, Krishna P. Gummadi, Gerhard Weikum, 'Equity of Attention: Amortizing Individual Fairness in Rankings' (ArXiv, 4 May 2018) <<https://arxiv.org/abs/1805.01788>> accessed 12 November 2020.

¹¹⁰⁷ 'Defining fairness' (*DataKind UK*, 1 July 2019) <<https://medium.com/datakinduk/defining-fairness-1e12586d4b36>> accessed 12 March 2021.

¹¹⁰⁸ Kate Crawford, Keynote speech on The Trouble with Bias (NIPS2017) <https://www.youtube.com/watch?v=fMym_BKWQzk> accessed 17 June 2021.

based on the algorithmic categorisation is ‘distributional harm’.¹¹⁰⁹ This type of harm is effectively based on the allocation of resources, such as a loan or even an opportunity. In addition, we have a second type of harm, which is the representational harm arising from wrong categorisation and/or stereotyping.¹¹¹⁰ Whilst distributional harm can be quantified based on its measurable effects, it is representational harm that is often argued to illustrate an abstract idea, and which is difficult to formalise in fairness metrics.¹¹¹¹ Representational harm has long-term effects, and it seems we need a different definitional toolkit, which combines technical knowledge with research in humanities and philosophy, to move away from fairness in terms of the optimisation of utility and resources.¹¹¹² Instead, I propose a notion of fairness focusing on the optimisation of generalisations in the algorithmic process to investigate a notion of equality based on an individual’s perception. These are important steps in scrutinising algorithmic fairness and addressing concerns about individual autonomy and perception, as well as non-discrimination in future policy.

2. Representational harm of bias and fashion identity: a conversation starter

An emergent area of research intends to underline the need to address ‘the effects of structural injustice’ in algorithmic systems. There are many examples that illustrate how ‘what we consider fair does depend on the traits of individuals’¹¹¹³ and what algorithms do is over- and under- emphasise similar distributions. Just refer to the notion of ‘fashion’ with its socially constructed meanings of appearance. We often expect that individuals with similar attributes (such as the same gender) should have equal opportunities and receive a similar share. However, problems of social sorting require us to consider the roots of prejudice and address substantive unfairness exacerbated by algorithms, such as those aspects of injustice that go beyond identifiable characteristics.¹¹¹⁴

There is a trend of showing how fairness metrics are connected to egalitarian thoughts, such as in the writings of John Rawls and Ronald Dworkin.¹¹¹⁵ The focus is on the articulation of competing views to

¹¹⁰⁹ *ibid.*

¹¹¹⁰ For an example of semantic representation bias in gender see, Maria De-Arteaga, Alexey Romanov, Hanna Wallach, Jennifer Chayes, Christian Borgs, Alexandra Chouldechova, Sahin Geyik, Krishnaram Kenthapadi, Adam Tauman Kalai, ‘Bias in Bios: A Case Study of Semantic Representation Bias in a High-Stakes Setting’ (FAT*, Atlanta, GA, USA, January 29–31, 2019).

¹¹¹¹ Crawford, Keynote speech on The Trouble with Bias (n 1108).

¹¹¹² Niels van Berkel, Benjamin Tag, Jorge Goncalves and Simo Hosio, ‘Human-Centred artificial Intelligence: A contextual morality perspective’ [2020] *Behaviour & information technology* 1; Fazelpour and Danks (n 964) 3; Anna Lauren Hoffmann, ‘Where fairness fails: data, algorithms, and the limits of antidiscrimination discourse’ (2019) 22 (7) *Information, communication & society* 900, 908.

¹¹¹³ Virginia Dignum, ‘The Myth of Complete AI-Fairness’ (Arxiv, 6 April 2021) < <https://arxiv.org/pdf/2104.12544.pdf>> accessed 12 November 2020 at page 1.

¹¹¹⁴ See also Annette Zimmermann, Elena Di Rosa and Hohan Kim who argue that current fairness metrics apply to ‘procedural fairness’ leaving out ‘substantive fairness, Annette Zimmermann, Elena Di Rosa and Hohan Kim, ‘Technology Can’t Fix Algorithmic Injustice’ (*Bostonreview*, 9 January 2020) < <http://bostonreview.net/science-nature-politics/annette-zimmermann-elena-di-rosa-hochan-kim-technology-cant-fix-algorithmic>> accessed 12 November 2020.

¹¹¹⁵ John Rawls, *A Theory of Justice* (Belknap Press 1971) 14-15; Ronald Dworkin, *Sovereign Virtue: the theory and practice of equality* (Harvard University Press 2000); Ronald Dworkin, ‘What is Equality? Part 1: Equality of Welfare’ (1981) 10 (3) *Philosophy & Public Affairs* 185; Shira Mitchell, Eric Potash, Solon Barocas, Alexander D’Amour and Kristian Lum,

correct the outcome *inequalities*.¹¹¹⁶ For example, we could employ luck egalitarianism to judge algorithmic differentiation in terms of its fairness, such as asking whether a fashion recommender system recommends products based on the individual's interest in an artistic lifestyle.¹¹¹⁷ According to luck egalitarianism, we use personal choice and responsibility to measure deliberate and unfair inequalities, whereby 'the ideal solution should allow those inequalities resulting from people's free choices and informed risk-taking, but disregard those which are the result of brute luck'.¹¹¹⁸ Accordingly, if an individual cannot consciously shape or direct the algorithm's recommendation process, then we can conclude that the output is a matter of unfair distribution of possibilities.¹¹¹⁹

Focusing on inequalities and the way social injustices are produced obviously has many advantages when dealing with algorithmic bias in fashion recommender systems. Consider a fashion recommender system that introduces representational harm based on gender stereotypes caused by the use of fashion narratives, rather than protected characteristics of gender. An egalitarian view will try to identify why this is the case, and *could* envisage the elimination of stereotypes from the training data (such as skewed training data in which information about style supports a narrow, feminine style), defining equality within subgroups (i.e. women's intersectionality) and enabling maximising benefits (such as focusing on the best result for groups underrepresented in fashion narratives mirroring a 'feminine style') and/or free choice (i.e. leaving out distributions which are based on aspects such as gender, and maximising categorisations that are a result of personal choice). Accordingly, the egalitarian view certainly supposes that 'bias and fairness need to go beyond technical debiasing to include a wider social analysis of how AI is used in context'.¹¹²⁰

In other words, it allows us to move away from the narrow conception of bias as an optimisation problem and identify the meaning of fairness to eliminate 'prejudice'.¹¹²¹ Having these metrics helps us to identify which aspects of the algorithmic process enhance or disturb an individual's privacy, autonomy, and identity, as well as elaborate on an individual's experience of multiple identities suffering discrimination.

'Algorithmic Fairness: Choices, Assumptions, and Definitions' (2021) 8 (1) Annual review of statistics and its application 141, 146-147; Lepri, Oliver, Letouze, Pentland and Vinck (n 1092) 617 -618; see also, Anna Lauren Hoffmann, 'Beyond Distributions and Primary Goods: Assessing Applications of Rawls in Information Science and Technology Literature since 1990' (2017) 68 (7) Journal of the Association for Information Science and Technology 1601.

¹¹¹⁶ Reuben Binns, 'Fairness in Machine Learning: Lessons From Political Philosophy' (ArXiv, 23 March 2021) <<https://arxiv.org/abs/1712.03586>> accessed 12 June 2021 at page 2; see also Ronald Dworkin who underlines 'the equal distribution of resources' as a norm defining equality, 'Ronald Dworkin, 'What is Equality? Part 2: Equality of Resources' (1981) 10 (4) Philosophy & Public Affairs 283, 284.

¹¹¹⁷ On an outlook on the meaning of luck egalitarianism, Elizabeth S Anderson, 'What Is the Point of Equality?' (1999) 109 (2) Ethics 287, 289.

¹¹¹⁸ Binns, 'Fairness in Machine Learning: Lessons From Political Philosophy' (n 1116) page 7; Gustav Tinhoeg, David Andersson and Daniel Vaestfjaell, 'Are Individuals Luck Egalitarians? – An Experiment on the Influence of Brute and Option Luck on Social Preferences' [2017] 8 Frontiers in Psychology 460.

¹¹¹⁹ Binns, 'Fairness in Machine Learning: Lessons From Political Philosophy' (n 1116) page 7.

¹¹²⁰ Sarah Myers West, Meredith Whittaker and Kate Crawford, 'Discriminating Systems: Gender, Race, and Power in AI' (AI Now Institute, April 2019) <<https://ainowinstitute.org/discriminatingystems.pdf>> accessed 12 June 2021 at page 4.

¹¹²¹ Dignum (n 1113) pages 3-4.

The aim of the approach to address structural inequalities in algorithmic systems is to generate ‘trust[worthiness]’ in AI systems.¹¹²² Fairness entails moral categorisations that promote equality, such as personalised recommendations based on acceptable distinctions (i.e. user demographics) and less morally acceptable categorisations (i.e. socio-economic background) to increase final utility.¹¹²³ In this respect, fairness aims to not only promote equality in the strict sense but also equity.¹¹²⁴ In other words, formalisations of fairness accept an important ambivalence in that ‘the estimated prediction function stays fixed’ whilst overall interests can change based on equity.¹¹²⁵

I want to make two suggestions on how we should consider algorithmic bias in fashion recommender systems. In doing so, I use appearance perception in fashion identity to underline that (a) the notion of equality needs to be defined by virtue of the self and is not a predetermined norm, and (b) equality requires an essence of ambivalence working with appearance management of fashion identity.

The first suggestion is that we must limit the ‘being’ as little as possible to find a consensus on measurable values when considering categorical distributions based on inequality. Anette Zimmermann and Chad Lee-Stronach rightly point out that the algorithms’ interventions in an individual’s behaviour are ‘solely on the basis of objectionable joint statistical distributions of a predictor, a target variable, and a protected attribute, but not on the basis of individual features’.¹¹²⁶ There is a need to move on from a notion of fairness that is based on values of ‘distributive justice’ to an understanding that includes ‘dignitary dimensions of data and information in its social and political context’.¹¹²⁷

Accordingly, the first aspect of equality is to maintain an individual’s human dignity and ability to measure their participation in the algorithmic landscape. A fairness metric is a mapping space focusing on the ambivalence of personal and social aspects of fashion identity. By way of illustration, we could ask ourselves what makes my access to clothing of a female style different based on shared statistical distributions with other peoples’ behaviour? Is it (a) the concurrent preferences deriving from browsing behaviour or (b) similar differences based on the algorithms’ interpretation of product attributes? Examining this question using the interplay between options (a) and (b) in the personalisation context

¹¹²² Virginia Dignum refers to ‘trust’ in the broad sense but David Spielhalter rightly points out that the aim of algorithmic fairness is to ‘demonstrate trustworthiness’; see Dignum (n 1113) page 1; David Spiegelhalter, ‘Should We Trust Algorithms?’ (*HDSR MIT Press*, 31 January 2020) <<https://hdsr.mitpress.mit.edu/pub/56lnenzj/release/1>> accessed 12 June 2021.

¹¹²³ See Hoda Heidari, Krishna P Gummadi, Michele Loi and Andreas Krause, ‘A Moral Framework for Understanding Fair ML through Economic Models of Equality of Opportunity’ (FAT* ’19, Atlanta, GA, USA, January 29–31, 2019).

¹¹²⁴ Dignum (n 1113) page 2; see also, Jon Kleinberg, Jens Ludwig, Sendhil Mullainathan and Ashesh Rambachan, ‘Algorithmic Fairness’ (2018) 108 *AEA Papers and Proceedings* 22.

¹¹²⁵ Mullainathan and Rambachan (n 1123) 22-23; see also, Doaa Abu-Elyounes, ‘Contextual Fairness: A Legal and Policy Analysis of Algorithmic Fairness’ (2020) 1 *Journal of Law, Technology & Policy* 1, 16.

¹¹²⁶ Annette Zimmermann and Chad Lee-Stronach, ‘Proceed with Caution’ (2021) *Canadian Journal of Philosophy* 1, 13 (Forthcoming).

¹¹²⁷ Hoffmann, ‘Where fairness fails: data, algorithms, and the limits of antidiscrimination discourse’ (n 1112) 908.

helps us to issue a general mapping space in which metrics are more likely to enhance an individual's privacy, autonomy, and perception of fashion identity.

In addition, individual perception of fashion identity can navigate the boundaries of individual choice and may drive forward the debate on how data including the semantics in fashion within the social selves of 'fashion identity' reinforce prejudice.¹¹²⁸ A qualitative approach based on user experiences is vital to establishing the common factors relevant to sustaining 'fairness metrics' with reference to an individual's fashion identity.¹¹²⁹ Research to define fairness metrics needs to consider that (i) protected attributes are socially constructed, and (ii) individual attributes are contingent and separate from social constructions of identity. In light of these considerations, equality is a boundary defined by the self and individual choice, rather than an outcome based on distributional justice.

Hence, the second suggestion is that we need to shift the focus to the social and cultural notions of (fashion) identity as a form of ambivalence rather than consensus defining personal characteristics. The reasoning for this proposition is clear, which is that our efforts to formalise notions of substantive fairness will stagnate if we focus only on the meaning of inequalities to measure fair propositions about the world. As I have shown in my previous analysis, bias in fashion recommender systems has long-term effects on individual perception which are not readily felt, nor can they be summarised by protected classes of non-discrimination. In addition, I have argued that algorithmic bias risks creating new inequalities as the decision-making generates a thought process including cognitive bias that cannot be readily verified. Accordingly, reducing fairness to forms of equal distributions based on the forms of unequal outcomes risks measuring individual behaviour according to its outward expression, rather than inward perception. The result would be that the individual is reduced to their inherent qualities, rather than seen in terms of their potential to conduct impression management and use individual perception to verify algorithmic bias.

If we analyse the way the use of personal (and protected) attributes inform prejudices and bias then we submit ourselves to a process of indefinite extensions of what disturbs equality, which goes beyond tautology (i.e. referring to algorithmic correlations producing unintentional discrimination). Following this reasoning, defining representational harm would be paradoxical, defining indefinite features (i.e. fairness metrics) in light of a finite and bottomless concept called 'equality'. The notion of equality would be reduced to an individuals' personal attributes. What we need is a notion of equality that allows an individual to measure their abilities of impression management in relation to the diversity of social and personal aspects of fashion identity.

¹¹²⁸ See also Perez (n 962).

¹¹²⁹ A step into this direction, albeit in different context has been done by Min Kyung Lee; see Min Kyung Lee, 'Understanding perception of algorithmic decisions: Fairness, trust, and emotion in response to algorithmic management' (2018) 5 (1) *Big data & society* 1.

My reasoning raises the question: If everything is measured in accordance with unequal distributions and countering forces which assume equity within inequality, what then is the essence of equality? I argue that the essence is criteria of relevance that can be measured against fundamental values of autonomy and identity. This can lead to a certain paradox in that we need to translate both knowledge and potential loss of knowledge in the predictive model to protect human values defining equality in an algorithmic world. This can only be achieved by testing the fashion recommender system ‘on the ground’ and seeing how we can encode individual perception with its ambivalence in appearance management and the risks of algorithmic bias. Individual perception as a value will not achieve the descriptive exhaustiveness to be formalised in fairness metrics but parameters measuring ambivalences of appearance management and perception will be a first step in the right direction.

VI. Preliminary conclusion

The previous discussion effectively shows that fashion recommender systems impacts the extent we infer knowledge about fashion. Algorithmic profiles (i.e. the categorisations of individual behaviour) establish close relationships between individuals with similar characteristics without any reference to an individual’s perception and self-relationality, including ambivalence between the personal and social aspects of fashion. Problems of social sorting in fashion need to be addressed from a legal as well as technical perspective, taking into account the impact of fashion recommender systems to affect an individual’s own cognitive bias.

The same argumentation applies to EU data protection law including the distinction between personal and non-personal data in the GDPR.¹¹³⁰ In the next Section I claim that we certainly need to move away from an understanding of personal data, if we want to consider the normative and socio-legal impact of algorithmic bias in fashion, including algorithmic constructions *about* an individual’s fashion identity.

VII. GDPR: personal and non-personal data considering AI in fashion

The GDPR defines personal data as ‘any information relating to an identified or identifiable natural person by means reasonably likely to be used’.¹¹³¹ In this respect, the GDPR, introducing a notion of

¹¹³⁰ See for example, Mann and Matzner (n 994) 2.

¹¹³¹ General Data Protection Regulation, art 4; Article 29 Data Protection Working Party ‘Opinion 4/2007 on the concept of personal data’ [2007] 01248/07/EN WP136.

‘identifiability’ regarding ‘personal data’, clarifies that the definition in Article 4 includes direct and indirect identifiers, such as ‘name, an identification number, location data, an online identifier or one of several special characteristics, which expresses the physical, physiological, genetic, mental, commercial, cultural or social identity of these natural persons’.¹¹³² Furthermore, the notion of identifiability suggests that pseudonymous data, being information that pertains to an individual enters the scope of the GDPR.¹¹³³ Recital 26 of the GDPR further clarifies that ‘whether identifiable information constitutes personal data depends on the circumstances of the case, in particular ‘the means reasonably likely to be used, such as singling out, either by the controller or by another person to identify the natural person directly or indirectly’.¹¹³⁴ That said, anonymised data falls outside the scope of the GDPR.¹¹³⁵

The scope of the GDPR highlights the conceptual weakness of data protection law in protecting an individual’s informational self-determination regarding algorithmic classifications and bias. First, the GDPR uses a notion of identifiability as a factor to distinguish between personal and non-personal data, ignoring technical realities that enable the de-identification of data sets. Second, sensitive inferences, allowing for the reduction of non-personal to personal data, raise important questions in how we should change the scope of the GDPR to accommodate the normative effects of algorithms of segmenting and discriminately classifying individual behaviour.

1. The conceptual weakness in capturing algorithmic bias

The GDPR establishes important requirements regarding anonymisation and pseudonymisation. Recital 26 defines anonymisation as ‘...information which does not relate to an identified or identifiable natural person or to personal data rendered anonymous in such a manner that the data subject is not or no longer identifiable’.¹¹³⁶ Article 4(5) of the GDPR defines pseudonymisation as ‘the processing of personal data in such a way that the data can no longer be attributed to a specific data subject without the use of additional information, as long as such additional information is kept separately and subject to technical and organizational measures to ensure non-attribution to an identified or identifiable individual’.¹¹³⁷ Whilst pseudonymisation will not exempt data controllers from data protection obligations,¹¹³⁸ anonymised data enters beyond the scope of the GDPR altogether. For example, group profiles would not enter the scope of the GPDR as these are often based on anonymised data.¹¹³⁹ In addition, the GDPR

¹¹³² Lilian Mitrou, ‘Data Protection, Artificial Intelligence and Cognitive Services: Is the General Data Protection Regulation (GDPR) ‘Artificial Intelligence-Proof?’ (31 December 2018) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3386914> accessed 12 August 2019 at pages 28-29.

¹¹³³ General Data Protection Regulation, Recital 26.

¹¹³⁴ *ibid.*

¹¹³⁵ *ibid.*

¹¹³⁶ *ibid.*

¹¹³⁷ *ibid.* 4 (5).

¹¹³⁸ Nevertheless, the data controller will be subject to more relaxed standards, see *ibid.*, art 6 (4) (e).

¹¹³⁹ Padden and Öjehag-Pettersson (n 631) 13.

does not dictate specific measures for anonymisation and/or pseudonymisation.¹¹⁴⁰ Rather, it focuses on the objectives to mitigate privacy risks and breaches.¹¹⁴¹ Several tools are available to ensure anonymisation, such as k-anonymity and differential privacy, which aim to ensure that the individual cannot be ‘singled out’ within the definition in Article 4 of the GDPR.¹¹⁴²

This notion of identifiability as a defining feature for judging anonymisation techniques is heavily criticised and it is argued that the distinction between personal and non-personal data is obsolete regarding profiling technologies.¹¹⁴³ One important consideration is that anonymisation as such cannot be a defining feature shaping the notion of identifiability in the legal sense as there are many real-life cases that enable the technical de-identification of datasets.¹¹⁴⁴ For example, neither k-anonymity nor differential privacy offer full protection against inference attacks, which allow inferences of information regarding individuals and groups.¹¹⁴⁵ Second, a practical consideration is that ‘data can be either useful or perfectly anonymous but never both’.¹¹⁴⁶ This statement certainly applies to recommender engines whereby ‘aggressive anonymization can render the dataset useless’.¹¹⁴⁷ It follows that anonymisation as such does not protect against privacy risks and breaches and what we need is effective guidance on privacy management to inform the distinction between personal and non-personal data.

Nevertheless, even if we distinguish between personal and non-personal data with regard to risks of de-identification there are additional hurdles to consider. Recital 26 of the GDPR underlines that ‘...to ascertain whether means are reasonably likely to be used to identify the natural person, account should be taken of all objective factors, such as the costs of and the amount of time required for identification, taking into consideration the available technology at the time of the processing and technological developments’.¹¹⁴⁸ Nevertheless, Article 29 of the Data Protection Working Party admits that ‘a natural

¹¹⁴⁰ Nevertheless, Article 29 Working Party does discuss ‘noise addition, permutation, differential privacy, aggregation, k-anonymity, l-diversity and t-closeness. It explains their principles, their strengths and weaknesses, as well as the common mistakes and failures related to the use of each technique’. See Article 29 Data Protection Working Party, ‘Opinion 05/2014 on Anonymisation Technique’ (adopted 10 April 2013) 0829/14/EN WP216, page 3.

¹¹⁴¹ European Parliamentary Research Service, ‘The impact of the General Data Protection Regulation (GDPR) on artificial intelligence’ (June 2020) PE 641.530 <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641530/EPRS_STU\(2020\)641530_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641530/EPRS_STU(2020)641530_EN.pdf)> accessed 21 June 2021 at pages 46-47.

¹¹⁴² For a discussion of these tools see Article 29 Data Protection Working Party, ‘Opinion 05/2014 on Anonymisation Technique’ (n 1139) pages 15-16, 16-17; see also, Armin Gerl, Nadia Bennani, Harald Kosh and Lionel Brunie, ‘LPL Towards a GDPR- Compliant Privacy Language: Formal Definition and Usage’ in Abdelkader Hameurlian and Roland Wagner (eds), *Transactions on Large-Scale- Data- and Knowledge-Centred Systems XXXVIII* (Springer 2018) 44.

¹¹⁴³ Padden and Öjehag-Pettersson (n 631) 6.

¹¹⁴⁴ This has been recognised by the Matt Wes who is part of the International Association of Privacy Professionals (IAPP) and who states that perfect anonymization is mathematically impossible, see Matt Wes, ‘Looking to comply with GDPR? Here's a primer on anonymization and pseudonymization’ (*IAPP*, 25 April 2017) <<https://iapp.org/news/a/looking-to-comply-with-gdpr-heres-a-primer-on-anonymization-and-pseudonymization/>> accessed 12 November 2020.

¹¹⁴⁵ Article 29 Data Protection Working Party, ‘Opinion 05/2014 on Anonymisation Technique’ (n 1139) pages 15-16, 16-17.

¹¹⁴⁶ Paul Ohm, ‘Broken Promises of Privacy: Responding to the Surprising Failure of Anonymization’ (2010) 57 (6) *UCLA Law Review* 1701, 1704; see also, Andreas Buckenhofer, ‘Data privacy: anonymization and pseudonymization — Part 2’ (*Medium*, 5 November 2020) <<https://medium.com/daimler-tss-tech/data-privacy-anonymization-and-pseudonymization-part-2-2ee795a7cbda>> accessed 12 June 2021.

¹¹⁴⁷ Dimitris Paraschakis, ‘Recommender Systems from an Industrial and Ethical Perspective’ (RecSys '16: Proceedings of the 10th ACM Conference on Recommender Systems, New York, United States, 15-19 September 2016) page 465.

¹¹⁴⁸ General Data Protection Regulation, Recital 26.

person can be considered as “identified” when, within a group of persons, he or she is “distinguished” from all other members of the group. Accordingly, the natural person is “identifiable” when, although the person has not been identified yet, it is possible to do it...’.¹¹⁴⁹ The guidance, recognising the risks of indirect identification (i.e. using variables such as ‘age’ or ‘working occupation’ to infer information about an individual), raises questions concerning the exact parameters of effective anonymisation for the purpose of the scope of the GDPR. It follows that further parameters are needed to assess the risks of de-identification and to clarify the current relativist approach to it.¹¹⁵⁰

Therefore, the notion of identifiability illustrates a conceptional weakness of the GDPR in capturing algorithmic bias. In particular, the scope of the GDPR ‘incorrectly suggests that privacy cannot be violated without identifiability’.¹¹⁵¹ This issue is problematic in regard to algorithmic bias in fashion recommender systems, whereby social interactions are subject to algorithmic categorisations, making it difficult for individuals to stay fully unidentifiable. More clarification on defining the risks of de-identification is needed to ensure that data controllers do not escape accountability through using anonymised profiles to construct profiles and draw sensitive inferences.¹¹⁵²

As a first step, and focusing on the conceptual difficulties surrounding anonymisation techniques, more parameters are needed to close the ‘conceptual gap between legal and mathematical thinking’ regarding privacy management and security.¹¹⁵³ One measure would be to explore the boundaries of acceptable and unacceptable use of personal information in relation to anonymisation techniques, rather than focusing on notions of identifiability. The aim of such an approach would be to increase accountability and generate user trust and control regarding data processing activities.¹¹⁵⁴ Our informational privacy needs to be modelled in a way that bridges the gap between efforts at generalisation and aggregation and the legal conception of the risks leading to disclosure of personal information. Only in this way will we be able to fully assess the normative concerns of algorithmic categorisations in fashion recommender systems.

¹¹⁴⁹ Article 29 Data Protection Working Party, ‘Opinion 4/2007 on the concept of personal data’ (n 1131) page 12.

¹¹⁵⁰ Another example of the relativist approach which does not establish clear parameters is found in the guidance of the Information Commissioner’s Office. Here, it is stated that the ‘definition of personal data is based on the identification or likely identification of an individual. This means that, although it may not be possible to determine with absolute certainty that no individual will ever be identified as a result of the disclosure of anonymised data, this does not mean that personal data has been disclosed.’ See Information Commissioner’s Office, ‘Anonymisation: managing data protection risk code of practice’ (2012) <<https://ico.org.uk/media/1061/anonymisation-code.pdf>> accessed 22 June 2021, page 16.

¹¹⁵¹ Mittelstadt (n 420) 475, 478; Padden and Öjehag-Pettersson (n 631) 13.

¹¹⁵² Wachter and Mittelstadt (n 422) 55; Mann and Matzner (n 994) 2; Josep Domingo-Ferrer, ‘Personal Big Data, GDPR and Anonymization’ in Alfredo Cuzzocrea, Sergio Greco, Hendrik Lenging Larsen, Domenico Sacca, Troels Andreasen and Henning Christiansen (eds), *Flexible Query Answering Systems: 13th International Conference, FQAS 2019 Amantea, Italy, July 2-5, 2019 Proceedings* (Springer 2019) 8.

¹¹⁵³ Aloni Cohen and Kobbie Nissim, ‘Towards formalizing the GDPR’s notion of singling out’ (2020) 117 (15) *Proceedings of the National Academy of Sciences – PNAS* 8344.

¹¹⁵⁴ For example, Josep Domingo-Ferrer and Krishnamurty Muralidhar suggest that we need to recognize ‘permutation as an underlying principle’ to define a ‘privacy first’ approach that takes into account an individual’s informational self-determination. See Josep Domingo-Ferrer and Krishnamurty Muralidhar, ‘New Directions in Anonymization: Permutation Paradigm, Verifiability by Subjects and Intruders, Transparency to Users’ (ArXiv, 12 March 2018) <<https://arxiv.org/pdf/1501.04186.pdf>> accessed 12 June 2021 at page 3.

Similar problems, which highlight the discrepancy between the legal and technical perspectives on the nature of big data analytics, exist in terms of sensitive inferences. Algorithmic personalisation, relying on the correlations of several data points, infers personal data from non-personal data.¹¹⁵⁵ Here the question arises of whether the distinction between personal and non-personal data as a core concept in the GDPR is of legal relevance considering the complex nature of fashion recommender engines.

2. Discriminatory inferences and fashion identity

The GDPR does not define non-personal data as such but stipulates that personal data is ‘any information relating to an identified or identifiable natural person’.¹¹⁵⁶ This definition is intentionally broad enough to contravene any simple binary conception of personal and non-personal data. Assessing whether information is personal data depends on the notion of identifiability and on ‘all the means likely reasonably to be used either by the controller or by any other person to identify the said person’.¹¹⁵⁷ The CJEU in *Patrick Breyer v Bundesrepublik Deutschland* further stretched the notion of identifiability to instances where legal means are used to make data ‘identifiable’.¹¹⁵⁸ Furthermore, in *Peter Nowak v Data Protection Commissioner* (‘Nowak’) it held that ‘any information’ within Article 4(3) of the GDPR ‘potentially encompasses all kinds of information, not only objective but also subjective, in the form of opinions and assessments’.¹¹⁵⁹ Moreover, the court discussed the notion of information ‘relating to a data subject’, which generally includes personal data ‘when it is *about* that individual’.¹¹⁶⁰ However, the decision in *YS v Minister voor Immigratie, Integratie en Asiel and Minister voor Immigratie, Integratie en Asiel v M and S* (YS decision) clarified that the information needs to be ‘decisive’ with regard to ‘the specific case of the applicant’.¹¹⁶¹

Of course, stretching the notion of personal data will not achieve a clear dividing line with non-personal data, being counterproductive to legal certainty. Nadezhda Purtova suggests that ‘European data protection law is facing a risk of becoming “the law of everything”, meant to deliver the highest legal

¹¹⁵⁵ Michele Finck and Frank Pallas, ‘They who must not be identified—distinguishing personal from non-personal data under the GDPR’ (2020) 10 (1) IDPL 11.

¹¹⁵⁶ General Data Protection Regulation, art 4 (1); for example, the court in *Bodil Lindqvist* held that the ‘telephone number or information regarding their working conditions and hobbies, constitutes the processing of personal data’. Case C-101/01 *Bodil Lindqvist* [2003] ECR I-12971, para 27.

¹¹⁵⁷ General Data Protection Regulation, Recital 26.

¹¹⁵⁸ Case C–582/14 *Patrick Breyer v Bundesrepublik Deutschland* [2016] ECR I–779, para 49; it could be argued that the CJEU’s reasoning is within the spirit of the Article 29 Working Party Guidance which states that ‘the cost of conducting identification is one factor, but not the only one. The intended purpose, the way the processing is structured, the advantage expected by the controller, the interests at stake for the individuals, as well as the risk of organisational dysfunctions (e.g. breaches of confidentiality duties) and technical failures should all be taken into account’. See Article 29 Data Protection Working Party, ‘Opinion 4/2007 on the concept of personal data’ (n 1131) page 15.

¹¹⁵⁹ C-434/16 *Peter Nowak v Data Protection Commissioner* [2018] 2 C.M.L.R. 21, para 34.

¹¹⁶⁰ Article 29 Data Protection Working Party, ‘Opinion 4/2007 on the concept of personal data’ (n 1131) page 9.

¹¹⁶¹ Joined Cases C-141/12 and C-372/12 *YS v Minister voor Immigratie, Integratie en Asiel and Minister voor Immigratie, Integratie en Asiel v M and S* [2015] 1 C.M.L.R. 18, para 35.

protection under all circumstances, but in practice impossible to comply with'.¹¹⁶² Whilst the author is not against a broad conception of personal data as such, she clearly criticises the lack of clarity on circumstances when data protection would be triggered.¹¹⁶³ Conflicting judgements, such as the reasoning in the *YS decision* and *Nowak*, reinforce that need for clarity and legal certainty. The court in *Nowak* supported a broad conception of personal data, whereby the CJEU in the *YS decision* almost reversed previous reasoning, contrary to Article 29 Data Protection Working Party guidance which focuses on the 'effects' of information relating to the individual.¹¹⁶⁴ As highlighted by AG Sharpston in the *YS decision*, information should be limited to the 'facts' 'related to a particular identified or identifiable person or event'.¹¹⁶⁵

Current developments in EU legislation intend to address the problems above focusing on the notion of non-personal data. Indeed, the Free Flow of Non-Personal Data Regulation intends to focus on the "special nature" of non-personal data stipulating that:

The expanding Internet of Things, artificial intelligence and machine learning, represent major sources of non-personal data, for example as a result of their deployment in automated industrial production processes. Specific examples of non-personal data include aggregate and anonymised datasets used for big data analytics, data on precision farming that can help to monitor and optimise the use of pesticides and water, or data on maintenance needs for industrial machines.¹¹⁶⁶

In doing so, however, the Regulation effectively establishes a parallel regime to the GDPR focusing on electronic data.¹¹⁶⁷ Article 2 (2) of the Free Flow of Non-Personal Data Regulation exemplifies this conceptual muddle in that it applies to non-personal data 'in the case of a data set composed of both personal and non-personal data', whereby the GDPR would apply to 'personal data part of the dataset'.¹¹⁶⁸ That said, the Regulation, whilst acknowledging the possibility of 'mixed datasets', still maintains the default distinction between personal and non-personal data without clarifying how the latter may inform the former.¹¹⁶⁹

¹¹⁶² Nadezhda Purtova, 'The law of everything. Broad concept of personal data and future of EU data protection law' (2018) 10 (1) Law, Innovation and Technology 40, 41; Bert-Jaap Koops, 'The trouble with European data protection law' (2014) 4 (4) IDPL 250, 251-252.

¹¹⁶³ Purtova, 'The law of everything. Broad concept of personal data and future of EU data protection law' (n 1162) 42.

¹¹⁶⁴ The guidance stipulates that 'in order to consider that the data "relate" to an individual, a "content" element OR a "purpose" element OR a "result" element should be present'; Article 29 Data Protection Working Party, 'Opinion 4/2007 on the concept of personal data' (n 1131) page 10; more discussion regarding this area, see Benjamin Wong, 'Delimiting the concept of personal data after the GDPR' (2019) 39 (3) Legal Studies 517, 520. Frederik J Zuiderveen Borgesius, 'Singling out people without knowing their names – Behavioural targeting, pseudonymous data, and the new Data Protection Regulation' (2016) 32 (2) C.L.S.Rev 256, 260; D Hallinan and FJ Zuiderveen Borgesius, 'Opinions can be incorrect (in our opinion)! On data protection law's accuracy principle' (2020) 10 (1) IDPL 1, 6.

¹¹⁶⁵ Joined Cases C-141/12 and C-372/12 *YS v Minister voor Immigratie, Integratie en Asiel and Minister voor Immigratie, Integratie en Asiel v M and S* [2015] 1 C.M.L.R. 18, Opinion of AG Sharpston, para 53.

¹¹⁶⁶ Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a framework for the free flow of non-personal data in the European Union [2018] OJ L 303/59, Recital 9.

¹¹⁶⁷ *ibid* art 2.

¹¹⁶⁸ *ibid* art 2 (2); EU Commission, 'Communication From The Commission to The European Parliament and The Council Empty: Guidance on the Regulation on a framework for the free flow of non-personal data in the European Union' (29 May 2019) COM(2019) 250 final.

¹¹⁶⁹ The Regulation only stipulates that the GDPR applies when the personal and non-personal data become 'inextricably linked.' However, this statement assumes that at some point that non-personal data can be distinctive from personal data which

These considerations above only solidify concerns about whether the distinction between personal and non-personal data ensures effective user control regarding the *algorithmic constructions* of user profiles to differentiate between group similarities. User profiles in recommender engines make use of group characteristics, which do not relate to a particular individual, but which create information that is significant to an individual's social behaviour.¹¹⁷⁰ In this respect, fashion recommender systems work with a number of variables that do not define an individual's fashion identity but contribute to an understanding of the individual's social selves, material self, or intimate self. Based on these considerations, establishing broad categories of personal data without stipulating clear parameters does not offer a solid basis to protect a data subject's rights and interests impacted by algorithmic personalisation systems.¹¹⁷¹

Accordingly, another important criticism of the personal/non-personal data dichotomy is that it fails to recognise the normative impacts of algorithms in creating biases. Indeed, this line of argument is taken up by Sandra Wachter and Brent Mittelstadt who illuminate how individuals have limited control of their data including the inferences drawn about them.¹¹⁷² Therefore, 'continuing to rely on sensitivity and identifiability as metrics for the level of protection to grant data is misguided'.¹¹⁷³ In this respect, Wachter and Mittelstadt refer to case law of the CJEU to underline that data protection law addresses the input of personal data for processing, such as name, age or email address, whilst leaving out the output data from protection, such as inferences and opinions.¹¹⁷⁴ A key point in their analysis is that not only should the knowledge generated be classified as personal data, but the process as well as the reasoning leading to the inferences should receive similar protection.¹¹⁷⁵ To close this normative gap, the authors suggest that special protection is needed with regard to so-called high-risk inferences (i.e. inferences leading to disclosure of sensitive data) and/or inferences that are unverifiable: 'a right to reasonable inferences can be derived from the right to privacy when viewed as a mechanism intended to protect identity, reputation, and capacities for self-presentation'.¹¹⁷⁶ Furthermore,

this right would require ex-ante justification to be provided by the data controller to establish whether an inference is reasonable. This disclosure would address (1) why certain data is a relevant basis to draw inferences; (2) why these inferences are relevant for the chosen processing purpose or type of automated

is difficult to imagine in practice; Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a framework for the free flow of non-personal data in the European Union [2018] OJ L 303/59, art 2 (2).

¹¹⁷⁰ Koops, 'The trouble with European data protection law' (n 1162) 257.

¹¹⁷¹ Purtova, 'The law of everything. Broad concept of personal data and future of EU data protection law' (n 1162) 57; Mann and Matzner (n 994) 2.

¹¹⁷² Wachter and Mittelstadt (n 422) 572.

¹¹⁷³ *ibid.*

¹¹⁷⁴ *ibid* 521-527; referring to; *YS v Minister voor Immigratie, Integratie en Asiel and Minister voor Immigratie, Integratie en Asiel v M and S* (n 1161); *Peter Nowak v Data Protection Commissioner* (n 1159); Case C-28/08 *P European Commission v The Bavarian Lager Co. Ltd* [2010] I-06055; see also, Xavier Tracol, 'Back to basics: The European Court of Justice further defined the concept of personal data and the scope of the right of data subjects to access it' (2015)31 (1) C.L.S.Rev 112, 119.

¹¹⁷⁵ Wachter and Mittelstadt (n 422) 502; cf article 29 Working Party stipulates that data being 'likely to have an impact on a certain person's rights and interests' is sufficient for it to be treated as personal data.' Article 29 Data Protection Working Party, 'Opinion 4/2007 on the concept of personal data' (n 1131) page 11.

¹¹⁷⁶ Wachter and Mittelstadt (n 422) 580.

decision; and (3) whether the data and methods used to draw the inferences are accurate and statistically reliable.¹¹⁷⁷

The idea clearly shifts the normative concerns about high-risk inferences and algorithmic bias regarding an individual's informational privacy to a discourse on accuracy and objectively verifiable facts pertaining to identity.¹¹⁷⁸ This could illustrate a different avenue than that suggested in Section IV.1, allowing scrutiny of the way protected attributes are a relevant ingredient in the recommendation process. In other words, changing the scope of the GDPR as suggested above would allow us to verify the accuracy of the decision-making process and how aspects such as gender and race are inferred by a predictive model.¹¹⁷⁹ However, the problem in applying this approach to fashion recommender systems and bias is that whilst we can verify the overall generalisation of an algorithmic judgement, a statement on the accuracy of the personalised recommendation goes only so far as to confirm the inference of personal attributes. It does not clarify whether an algorithmic generalisation of fashion identity interferes with an individual's autonomy and informational self-determination.

Hence, I find this approach to be problematic in two respects. First, normative concerns about algorithmic bias are not based on the accurate observation of self-representation of identity (such as a 'reasonable' correlation between working occupation and gender) but the inherent appreciation of the individual as an object constituted by a group's similarity with shared attributes. Second, accuracy is not a defining feature of why normative viewpoints are built but is rather the space for refuting biases that guide impression management. Therefore, the problem with the notion of accuracy in this context is that it drives the discussion further into the realm of 'statistical correctness' rather than refutable bias and autonomy. Indeed, what we need is to reshape the contours of data protection law,¹¹⁸⁰ but around the premise of the social and cultural relevance of data points rather than the output of inferences as such, to address structural bias and representational harm in specific technologies such as fashion recommender systems.

As a result, more coordination is needed to identify the conceptual weaknesses of the GDPR regarding fashion recommender systems. On the one hand, we need to understand the risks of de-identification and develop technical solutions which are capable of defining the boundaries of acceptable and unacceptable use of personal information regarding algorithmic personalisation systems. This technical toolbox can be used to inform policy and alter the notion of identifiability in the GDPR. On the other

¹¹⁷⁷ Sandra Wachter and Brent Mittelstadt, 'A Right to Reasonable Inferences: Re-thinking Data Protection Law in the Age of Big Data and AI' (*Oxford Business Law Blog*, 9 October 2018) < <https://www.law.ox.ac.uk/business-law-blog/blog/2018/10/right-reasonable-inferences-re-thinking-data-protection-law-age-big>> accessed 22 June 2021.

¹¹⁷⁸ See also, Omer Tene and Jules Polonetsky, 'Big Data for All: Privacy and User Control in the Age of Analytics' (2013) 11 (5) *Northwestern Journal of Technology and Intellectual Property* 239, 270; cf *P European Commission v The Bavarian Lager Co. Ltd* (n 1174) para 49.

¹¹⁷⁹ Wachter and Mittelstadt (n 422) 580-581.

¹¹⁸⁰ *ibid* 571.

hand, we need a better idea of the normative impacts of fashion recommender systems and risks of sensitive inferences on user privacy and data protection. It is clear that personalisation is not about inaccurate inferences but the extent to which inferences shape social norms and bias. Thus, more guidance is needed on how we want to verify the extent of algorithmic personalisation, focusing on algorithmic generalisations of data points rather than inferences as such.

VIII. Shaping fashion identity and privacy: the right to not be reduced

Further efforts to identify algorithmic bias require a contextual approach to the use of algorithms, the relevance of personal attributes in sorting behaviour, and a proactive mindset to form a definition of equality shaping the algorithmic sphere. This discussion has identified the privacy concerns and issues of discrimination in fashion recommender systems and has provided an interdisciplinary approach to how we should protect an individual's autonomy, informational self-determination, and identity regarding bias in algorithmic systems. Similarly, Chapters 4-6 debated the significant gaps in the law in dealing with algorithmic personalisation systems affecting an individual's privacy, autonomy and identity. The solutions I provide are multifaced, ranging from suggestions that envisage a stronger account of individual perception and self-relationality in the law to better coordination for understanding the technical realities of algorithmic personalisation systems in fashion.

Accordingly, two contributions are relevant in the previous chapters. One, an interdisciplinary account of privacy shows the need for new values to protect notions of individual perception and self-relationality in the big data age. Second, the notions of individual perception and self-relationality require the identification of additional safeguards beyond existing law. Therefore, what we need is a promising set of standards to interpret and enforce these new values.

I perceive international human rights law as the adequate framework to fulfil this task. The right to not be reduced (see also Chapter 3) is a new value requiring a governance framework that is flexible and leaves room to develop new commitments for the protection of privacy in the digital age. In Chapter 7 I use international human rights law to issue new interpretative guidance, guidelines of governance and provide a normative basis of the right to not be reduced. In doing so, I offer key recommendations that can also inform my analysis in the previous chapters, including ECHR case law and data protection law.

Chapter 7

The “right to not be reduced” and international human rights law

The aim of this discussion is to identify how international human rights law ensures the effective protection and governance of international human rights standards in relation to algorithmic personalisation systems in fashion. Indeed, given the tension between AI and human rights, we need a comprehensive and international framework that addresses the need for new values and legislative guidance regarding algorithmic systems. This investigation tries to provide some suggestions for how we could undertake this big task in the future. For instance, we could use the “right to not be reduced” as a normative basis for a new General Comment on Article 17 of the International Covenant on Civil and Political Rights (ICCPR). In addition, I offer key recommendations on how we could use this normative basis to inform policy. I use two important existent regulatory frameworks – the EU Commission’s proposal for the AI Act and the United Nations Guiding Principles on Business and Human Rights (UN Guiding Principles)¹¹⁸¹ – to underline the importance of a rights-based approach and a solid basis for common values when governing AI in fashion.

I. Introduction

‘Insisting on human rights presupposes a certain set of philosophical debates has been settled: there are universal values, in the form of rights, and we roughly know which rights there are’.¹¹⁸²

The right to not be reduced is a human right based on the interpretation of Article 17 of the International Covenant on Civil and Political Rights (ICCPR).¹¹⁸³ The ICCPR is an international treaty as well as an elaborative effort concerning the recognition of the Universal Declaration of Human Rights (UDHR) on the international plane.¹¹⁸⁴ I intend to establish the right to not be reduced as a normative basis, alongside the substantive analysis of privacy in the previous chapters, by offering interpretative guidance. In doing so, I argue that an international law approach is suitable for incorporating the abstract values of individual perception and self-relationality with regard to the human rights impacts of algorithmic personalisation systems in fashion.

¹¹⁸¹ Artificial Intelligence Act proposal; UNCHR ‘Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy” Framework’ (2011) HR/PUB/11/04.

¹¹⁸² Mathias Risse, ‘Human Rights and Artificial Intelligence An Urgently Needed Agenda’ (Carr Center for Human Rights Policy, May 2018) <https://carrcenter.hks.harvard.edu/files/cchr/files/humanrightsai_designed.pdf> accessed 12 November 2020 at page 10.

¹¹⁸³ International Covenant on Civil and Political Rights (adopted 16 December 1966, entered into force 23 March 1976) 999 UNTS 171 (ICCPR), art 17.

¹¹⁸⁴ Paul M Taylor, *A Commentary on the International Covenant on Civil and Political Rights: The UN Human Rights Committee’s Monitoring of ICCPR Rights* (CUP 2020) 1-2.

The international human rights framework provides a basis for dealing with transboundary global problems as well as emerging challenges requiring comprehensive regulation. However, it does not replace the existing frameworks and recommendations in previous chapters; rather, it provides a stepping stone towards the incorporation of new values within a normative framework.

I propose a General Comment that will extend and clarify the right to privacy in Article 17 of the ICCPR.¹¹⁸⁵ A General Comment is a non-binding instrument, whereby a UN human rights expert committee can stipulate recommendations on the meaning of a treaty provision.¹¹⁸⁶ Focusing on Article 17 of the ICCPR, the committee responsible for monitoring the implementation of the ICCPR – the Human Rights Committee – can provide a means of interpreting the right to privacy as applied to present realities. The Human Rights Council, which is the principal UN mechanism for the protection of human rights, as well as the Special Rapporteur, who is an independent expert with a specific mandate,¹¹⁸⁷ can assist in the re-evaluation of the right to privacy focusing on the thematic issues surrounding the “right to not be reduced.”

In addition, private entities need to take an active role in assessing the adverse impact of AI techniques in fashion during their design and deployment. The UN Guiding Principles, which are a soft-law instrument concerning private entities’ obligation to protect and respect human rights,¹¹⁸⁸ effectively provide guidance on the resources for fashion brands to address specific harms, integrate external human rights expertise to recognise potential harm, and define common values to balance the risks of algorithmic personalisation systems in fashion. That said, we need to consider other significant regulatory developments at the EU level, including the EU Commission’s proposal for the AI Act.¹¹⁸⁹ The AI Act, whilst lacking common principles for a right-based approach, could illustrate a suitable mechanism for governance in the future. I intend to examine the values and the governance mechanisms in both regulatory tools to incorporate the right to not be reduced as a guiding norm for the design and use of algorithmic personalisation systems in fashion.

¹¹⁸⁵ International Covenant on Civil and Political Rights, art 17.

¹¹⁸⁶ Helen Keller and Leena Grover, ‘General Comments of the Human Rights Committee and their legitimacy’ in Helen Keller and Geir Ulfstein (eds), *UN Human Rights Treaty Bodies: Law and Legitimacy* (CUP 2012) 117.

¹¹⁸⁷ On more about the status and function of these bodies, please consult Eric Tistoune, *The UN Human Rights Council: A Practical Anatomy* (Edward Elgar Publishing 2020) 7 -13.

¹¹⁸⁸ Guiding Principles on Business and Human Rights.

¹¹⁸⁹ Artificial Intelligence Act proposal.

II. Setting the scene for the right to not be reduced

Massive international human rights violations still occur to this very day.¹¹⁹⁰ Nevertheless, the paradox of international human rights violations is that they provide a unifying framework through which we can promote the agenda of the effective protection of human rights.¹¹⁹¹ The international human rights regime is a tool through which we can renew commitments to universal values and establish new tools to safeguard an individual's human dignity.

Many international human rights are based on the UDHR and codified in international treaties and/or customary international law.¹¹⁹² The ICCPR and the International Covenant on Economic, Social and Cultural Rights (ICESCR) are both international human rights treaties, which establish state obligations to respect, protect, and fulfil peoples' rights.¹¹⁹³

The right to privacy is a traditional civil and political right in Article 17 ICCPR, whereas non-discrimination is stipulated in both the ICCPR and ICESCR.¹¹⁹⁴ There is a lot of discussion about the extent to which a state should protect civil and political as well as socio-economic rights. That is, there are considerable differences between state's obligations regarding civil-political and social, economic, and cultural rights, notwithstanding the conceptual similarities in assessing the state's duty to protect individuals against harms from private entities.¹¹⁹⁵

¹¹⁹⁰ The tragic incident regarding the Rana Plaza in Bangladesh factory in 2013 illustrates only one example of a global human rights challenge in the fashion industry, whereby common reported human rights abuses are child labour or low income and hazardous working conditions based on notions of productive efficiency in the apparel industry. A more recent example of the dynamics of exploitation and profit in the fashion industry is an article written by Vidhathi Matety for 'the Times' that uncovered the practices of a factory in the United Kingdom making clothes for the fashion brands 'Boohoo and Nasty Gal' which entailed the payment below minimum wage, as well as the lack of protective equipment for the employees and the employer forcing the employees to come to work during the Covid-19 pandemic; Vidhathi Matety, 'Boohoo's sweatshop suppliers: 'They only exploit us. They make huge profits and pay us peanuts' *The Times* (London, 5 July 2020) <www.thetimes.co.uk/article/boohoos-sweatshop-suppliers-they-only-exploit-us-they-make-huge-profits-and-pay-us-peanuts-lwj7d8fg2> accessed 12 January 2021; Furthermore, Annie Kelly writing for 'The Guardian' claims how many big fashion retailers receiving their cotton products from Northwestern China 'are complicit in the forced labour and human rights violations perpetuated' against the Uighur and other Muslim minorities working in prison camps and internment camps in the region Xinjiang; see Annie Kelly, 'Virtually entire' fashion industry complicit in Uighur forced labour, say rights groups' *The Guardian* (London, 23 July 2020) <www.theguardian.com/global-development/2020/jul/23/virtually-entire-fashion-industry-complicit-in-uighur-forced-labour-say-rights-groups-china> accessed 12 August 2020.

¹¹⁹¹ Thomas Buergenthal, 'The Normative and Institutional Evolution of International Human Rights' (1997) 19 (4) *Hum.Rts.Q.* 703, 712; see also, Rainer Arnold who suggests that 'universalism of human rights is well founded in the consciousness of the people all over the world, despite the many violations which continue to take place', Rainer Arnold, 'Introduction' in Rainer Arnold (ed), *The Universalism of Human Rights* (Springer 2013) xxii.

¹¹⁹² Universal Declaration of Human Rights (adopted 10 December 1948 UNGA Res 217 A(III) (UDHR).

¹¹⁹³ International Covenant on Civil and Political Rights; International Covenant on Economic, Social and Cultural Rights (adopted 16 December 1966, entered into force 3 January 1976) 993 UNTS 3 (ICESCR).

¹¹⁹⁴ International Covenant on Civil and Political Rights, art. 2, art 3, art 17, art 26; International Covenant on Economic, Social and Cultural Rights, art 2 (2), art 2 (3).

¹¹⁹⁵ Perhaps the justiciability is the most contentious issue regarding the nature of socio-economic rights; see Oliver de Schutter, *International Human Rights Law: Cases, Materials, Commentary* (3rd edn, Cambridge University Press 2019) 297; see also, ICESCR Committee in General Comment 9 which argues that '[w]hile the general approach of each legal system needs to be taken into account, there is no Covenant right which could not, in the great majority of systems, be considered to possess at least some significant justiciable dimensions', taken from, CESCR 'General Comment No. 9, The domestic application of the Covenant' (3 December 1998) UN Doc E/C.12/1998/24, para 10.

Providing a full historical context for the ICCPR and ICESCR is beyond the scope of this discussion; it is sufficient to state that the international human rights framework endorses a notion of practical universality regarding civil-political and socio-economic rights. International human rights standards are universal, indivisible, and interdependent, meaning that individuals are equally entitled to the effective enjoyment of human rights.¹¹⁹⁶ In this respect, international law allows us to assess the normative implications of human rights dynamically and devise the appropriate means for protection by moving away from procedural safeguards surrounding the right to privacy in isolation.

An international law approach can provide us with a dynamic understanding of the risks of algorithmic personalisation systems in fashion. The UDHR, including fundamental values of human dignity, can provide a rhetoric for debating the normative implications of AI, such as the impact of AI techniques on individual perception and self-relationality, requiring a common ground and new values for regulation. Thus, I believe that an international human rights law perspective on the notion of privacy with regard to fashion identity can foster new values whilst scrutinising the limits of positive law. Against this background, I use an international law human rights approach to establish interpretative guidance informing a normative basis of the right to not be reduced.

1. International law rhetoric with regard to global problems

There is evidence that international law rhetoric aims to cover the imminence of harm to social actors rather than the concrete damage inflicted by private entities on individuals. By way of illustration, the Human Rights, Big Data and Technology and Essex Business and Human Rights projects recently submitted evidence to the UN Working Group on Business and Human Rights, arguing that the precautionary principle needs to be adopted by businesses in the ‘collecting, analysing, repurposing and storing [of] data’.¹¹⁹⁷ The precautionary principle is a (controversial) requirement originating from international environmental law, envisaging the state’s efforts to address and limit transboundary harm.¹¹⁹⁸

¹¹⁹⁶ Universal Declaration of Human Rights, Preamble; see also, Lanse Minkler, and Shawna E Sweeney, ‘On the indivisibility and Interdependence of Basic Rights in Developing Countries’ (2011) 33 (2) Hum.Rts.Q. 351, 352.

¹¹⁹⁷ ‘Submission by the Human Rights, Big Data and Technology Project (‘HRBDT’) and the Essex Business and Human Rights Project (‘EBHR’) to the UN Working Group on Business and Human Rights (‘UNWG’) for the consultation process to inform its 2018 Report to the UN General Assembly’ (30 May 2018) <www.ohchr.org/Documents/Issues/Business/WGSubmissions/2018/Essex.pdf> accessed 19 August 2021.

¹¹⁹⁸ As famously held by the *Trial Smelter* Case on the role of international law to address transboundary problems in environmental matters, states are under the obligation to minimise and prevent harm to the environment of other states; *Trial Smelter Case* (United States, Canada) (1941) RIAA 1907; Indeed, there is much critical discussion deals about whether the precautionary approach is effective to address environmental harm and there is literature discussing how we can adapt the principle dealing with transboundary problems, Stephen Charest, ‘Bayesian approaches to the precautionary principle’ (2002) 12 (2) *Duke Env'tl L. & Pol'y F* 265, 267; Noah M Sachs, ‘Rescuing the strong precautionary principle from its critics’ (2011) 2011 (4) *U.Ill.L.Rev.* 1285, 1292-1295.

The submission offers the important takeaway of using international law to address abstract problems. That is, the international law framework is first and foremost an expression for substantiating the validity of (human rights) obligations in the context of emerging and global problems.¹¹⁹⁹ As highlighted by Michelle Bachelet, the UN High Commissioner for Human Rights, ‘[d]igital systems and artificial intelligence create centers of power, and unregulated centers of power always pose risks – including to human rights... [and] ... [w]e need a universal human response in defense of universal human rights’.¹²⁰⁰ The aim of a preventative approach to harm is to make sure that big data analytics align with fundamental human values, such as maintaining diversity and autonomy.

What are the benefits of using international (human rights) law rhetoric to address the widespread commercial use of algorithms in fashion? The main argument supporting an international human rights law approach with regard to predictive analytics emphasises the framework’s flexibility in developing coordinated responses to multidimensional problems. That is, an international human rights law approach is capable of developing robust responses to the socio-legal issues with algorithms with due consideration of states’ capacity to effectively enforce international obligations. I will return to this premise and the necessity of open-ended obligations using common principles when discussing governance in Section IV of this chapter (7).

Moreover, I believe that an international law approach is suitable for the applications of AI, which are currently under-regulated in the legal sphere. International law recognises that we need to take action regarding ‘morally unacceptable harm that is scientifically plausible but uncertain’.¹²⁰¹ In other words, what we are concerned with is finding regulatory responses to the unquantifiable risks posed by algorithmic personalisation systems to the enjoyment of human rights, such as the risks fashion recommender systems pose to individual perception and self-relationality. We do not see extensive commentary and/or news headlines on how algorithmic personalisation systems in fashion shape individual and collective values. On the contrary, regulators downplay the human rights risks of recommender systems, as illustrated by the new AI Act, which leaves the use of algorithms in social media analytics and recommendations almost untouched by legal scrutiny. The international human rights law framework includes the ‘objective reality’, focusing on the manifestation of human rights as well as ‘the discursive practices of states and UN bodies’ on the dimension of human rights standards.¹²⁰²

¹¹⁹⁹ Laurence Boisson de Chazournes, ‘New Technologies, the Precautionary Principle, and Public Participation’ in Therese Murphy (ed), *New Technologies and Human Rights* (OUP 2009) 162.

¹²⁰⁰ Human rights in the digital age - Can they make a difference? Keynote speech by Michelle Bachelet, UN High Commissioner for Human Rights Japan Society, New York, 17 October 2019 <www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=25158&LangID=E> accessed 29 October 2021.

¹²⁰¹ World Commission on the Ethics of Scientific Knowledge and Technology, ‘The Precautionary Principle’ (UNESCO 2005) <<https://unesdoc.unesco.org/ark:/48223/pf0000139578>> accessed 16 July 2021 at page 14; World Commission on the Ethics of Scientific Knowledge and Technology ‘Ethical Perspective on Science, Technology and Society: A Contribution to the Post-2015 Agenda’ SHS/YES/COMEST-8EXTR/14/3 <<https://unesdoc.unesco.org/ark:/48223/pf0000234527>> accessed 16 July 2021 at page 8; Joyeeta Gupta and Susanne Schmeier, ‘Future proofing the principle of no significant harm’ (2020) 20 (4) *International Environmental Agreements: Politics, Law and Economics* 731, 733.

¹²⁰² Steven Wheatley, *The idea of International Human Rights law* (OUP 2019) 190.

Indeed, there is an essence in international law rhetoric of addressing transboundary challenges to human rights, which constitutes the process of value alignment and theoretical universality. As well as practical universality, an important gap in human rights discourse is value alignment or how we can align debates on privacy in a specific context. We would have called this the problem of cultural relativism in earlier days and, today, we would describe it as a lack of a clear understanding of the nature of privacy in the digital age.¹²⁰³ Merely knowing and restating the value of the international human rights law framework does not address the adverse impacts of algorithmic personalisation systems in fashion. We need a common ground, given the elusive nature of the right to privacy, which allows us to consider universal values on the international plane. In addition, we need to defend the international framework's significance in order to incorporate new values. These tasks, to clarify the process of value alignment and theoretical universality, are important to developing new interpretative guidance regarding the "right to not be reduced."

2. Privacy I: the process of value alignment

The practical realities (and criticism) of universality create disagreement regarding the substance of international human rights norms. One of the most discussed issues in human rights scholarship is the cultural relativism of international human rights standards.¹²⁰⁴ The main claim is that there are different understandings and attitudes towards human rights and what deserves human rights protection.¹²⁰⁵ The right to privacy, in particular, is a human right whose substance may vary 'in the ways in which that need is met and regulated'.¹²⁰⁶ A cultural relativist conception of privacy certainly has a cost, as it demands the legitimacy of substantive human rights standards in the digital age. As rightly pointed out by Mathias Risse regarding the future of human rights in the age of big data, '[g]lobal support for these rights is rather substantial ... But we can be sure China will be among the leading AI producers and have little inclination to solve the value alignment problem in a human-rights minded spirit'.¹²⁰⁷

¹²⁰³ See also, Alexandara Regel, 'Privacy as an International Human Right and the Right to Obscurity in Cyberspace' (2014) 2 (2) Groningen Journal of International Law 33, 37; as well as my discussion in **Chapter 2**.

¹²⁰⁴ Michael Goodhart, 'Neither Relative nor Universal: A Response to Donnelly' (2008) 30 (1) Hum.Rts.Q. 183, 184; see also, Jack Donnelly, 'The Relative Universality of Human Rights' (2007) 29 (2) Hum.Rts.Q. 281.

¹²⁰⁵ Donnelly 'The Relative Universality of Human Rights' (2004) 285; For instance, the EU tradition supports an individualistic conception of the right to privacy, whereas academic scholars drawing from the US tradition examine the right to privacy from communitarian perspectives including family resemblances, Lee A Bygrave, 'Privacy Protection in a Global Context – A Comparative Overview' in Peter Wahlgren (ed), *IT law: Scandinavian Studies in Law Vol 47* (Stockholm Institute for Scandinavian Law 2004) 324-325; Amitai Entzoni, 'A Liberal Communitarian Conception of Privacy' (2012) 29 (3) The John Marshall Journal of Information Technology & Privacy Law 419, 420.

¹²⁰⁶ Subhajit Basu, 'Privacy Protection: A Tale of Two Cultures' (2012) 6 (1) Masaryk University Journal of Law and Technology 1, 2; see also, Daniel Miller who argues that '[w]e cannot be for or against privacy. It must be a question of the balance between care and surveillance', see Daniel Miller, 'Covid-19 and the cult of privacy' (*UCL Blog*, 30 April 2020) <<https://blogs.ucl.ac.uk/assa/2020/04/30/covid-19-and-the-cult-of-privacy/>> accessed 12 November 2020.

¹²⁰⁷ Taken from Risse (n 1182) page 10; cf Will Knight, 'Why does Beijing suddenly care about AI ethics? New guidelines on freedom and privacy protection signal that the Chinese state is open to dialogue about how it uses technology' (*MIT Technology Review*, 31 May 2019) <www.technologyreview.com/2019/05/31/135129/why-does-china-suddenly-care-about-ai-ethics-and-privacy/> accessed 12 November 2020.

Hence, whilst we agree on the effective basis of the right to privacy in international human rights law, we still need guidance on the enforcement of practical universality in practice.¹²⁰⁸ According to the former UN Special Rapporteur on the right to privacy, Joseph A Cannataci, ‘the existence and usefulness of [a] legal framework is ... seriously handicapped by the lack of a universally agreed and accepted definition of privacy’.¹²⁰⁹ In addition, he adds that we need ‘a fresh debate’ on how we should understand privacy considering the new dimensions of technological deployment in different contexts, which should not be ‘sidetracked by what may be perceived ... or cultural differences at the fringes of privacy’.¹²¹⁰ In this respect, we can use the overarching theme of my thesis, which concerns our definition of privacy in light of fashion identity, to elaborate on the notion of practical universality.

In addition, new interpretative guidance on the right to privacy is much needed as existing legal dimensions are not enough to capture the socio-legal problems of big data analytics and algorithmic personalisation systems in fashion. Indeed, Cannataci developed an action plan for the important task of going ‘beyond the existing legal framework to a deeper understanding of what it is that we have pledged to protect’.¹²¹¹ This is effectively an effort to define theoretical universality, whereby we derive common principles based on existing rights to clarify how we can create new meanings for the right to privacy. To illustrate my account of theoretical universality regarding my definition of privacy in fashion, I first need to clarify the notion of human dignity within international human rights discourse.

3. Theoretical universality and human dignity

An important feature of the international human rights regime is that universality is not specifically defined but rather an underlying value concerning the protection of human dignity.¹²¹² There must be a common dedication to the nature of human rights to secure an individual’s dignity and autonomy.¹²¹³ To achieve this, we must first clarify the status of human dignity in human rights discourse. From the outset, I consider the status of human dignity to be political, as in the EU’s effort to regulate AI to induce

¹²⁰⁸ The basis would be article 12 of the Universal Declaration of Human Rights and article 17 of the ICCPR. International Covenant on Civil and Political Rights, art 17; Universal Declaration of Human Rights, art 12; see also, Human Rights Council, ‘The right to privacy in the digital age’ (1 April 2015) A/HRC/RES/28/16.

¹²⁰⁹ Human Rights Council, ‘Report of the Special Rapporteur on the right to privacy, Joseph A Cannataci’ (8 March 2016) A/HRC/31/64, para 21.

¹²¹⁰ *ibid* paras 21-25,

¹²¹¹ *ibid* para 46.

¹²¹² Lutz Leisering, ‘The Calls for Universal Social Protection by International Organizations: Constructing a New Global Consensus’ (2020) 8 (1) *Social Inclusion* 90; see also, Jack Donnelly who argues that ‘the nature of international human rights including the notion of universality intends to cover ‘a distinctive set of social practices tied to the notion of human dignity’. Taken from Jack Donnelly, *Universal Human Rights: In Theory and Practice* (2nd edn, Cornell University Press 2003) 71.

¹²¹³ Donnelly, *Universal Human Rights: In Theory and Practice* (n 1212) 44; Steve On, ‘The “Relative Universality” of Human Rights: An Assessment’ (2005) 4 (3) *Perspectives on Global Development and Technology* 577, 585.

an ‘ecosystem of trust’ based on fundamental rights and human dignity.¹²¹⁴ Looking closer, we see how human dignity has a normative core for setting universal standards to regulate socio-legal processes.¹²¹⁵

Human dignity is not only a moral concern but also a value that establishes our position as human beings, whereby our positionality is inseparable from legal status. Some argue that human dignity is ‘an existential value’ conferred on the ‘identity of the person or the species’.¹²¹⁶ The ‘being’ that is my existence is already enough to confer human rights. As argued by Hannah Arendt, ‘human dignity is a right to have rights’.¹²¹⁷

Therefore, the first aspect of the normative core of human dignity is that it illustrates a justification for human rights. In this respect, The UDHR includes the notion of theoretical universality, and thus Article 2 states that:

everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.¹²¹⁸

International treaties such as the ICCPR and ICESCR give this proposition of human dignity normative strength.¹²¹⁹ On the one hand, the UDHR and its theoretical underpinnings underline that ‘all human beings are born free and equal in dignity and rights’ and clearly challenge the traditional ‘legal positivist view that only positive law is normatively binding’.¹²²⁰ On the other hand, the notion of universality strengthens the normativity of positive law, which is based precisely on no express references to the philosophical connotations of the human rights framework and the ratification of the provisions in the UDHR in the ICCPR and ICESCR.¹²²¹

¹²¹⁴ European Commission ‘On Artificial Intelligence- A European approach one excellence and trust’ (19 February 2020) COM (2020) 65 final, pages 3, 11; As argued by Robert D Sloane ‘theoretically, universal human rights imply, at a minimum, some set of "morally weighty" social norms that pre-empt, under all but the most exigent circumstances, other cultural value priorities’; Robert D Sloane, ‘Outrelativizing Relativism: A liberal defence at the universality of human rights’ (2001) 34 (3) *Vand.J.Transnat'l L.* 527, 531.

¹²¹⁵ George P Smith II, *Dignity as a Human Right?* (Lexigton Books 2019) 3.

¹²¹⁶ George Kateb, *Human Dignity* (Harvard University Press 2011) 10.

¹²¹⁷ Hannah Arendt, *The Origins of Totalitarianism* (Meridian Books 1958) 297-298; see also, Matthias Lutz-Bachmann, Amos Nascimento, Keith Breen, Dan Bulley, and Susan McManus, *Human Rights, Human Dignity, and Cosmopolitan Ideals: Essays on Critical Theory and Human Rights* (Ashgate 2014) 97

¹²¹⁸ Universal Declaration of Human Rights, art 2.

¹²¹⁹ Janelle M Diller, *Securing Dignity and freedom through human rights Article 22 of the Universal Declaration of Human Rights* (Martinus Nijhoff Publishers 2012) 12.

¹²²⁰ Ashid Samnoy, ‘Origins of the Universal Declaration’ in Gudmundur Alfredsson and Asbjorn Eide (eds), *The Universal Declaration of Human Rights: A Common Standard of Achievement* (Martinus Nijhoff Publishers 1999) 17.

¹²²¹ *ibid*; see also Richard Burchill and Sofia Cavandoli who argue that the Universal Declaration ‘covers procedure, substance and a normative basis’, taken from Richard Burchill and Sofia Cavandoli, ‘The contribution of the Universal Declaration of Human Rights to the promotion and protection of democracy in international law’ in Marc Odello and Sofia Cavandoli (eds), *Emerging Areas of Human Rights in the 21st century: The role of the Universal Declaration of Human Rights* (Routledge Research in Human Rights Law 2011) 45.

Another aspect of theoretical universality is that human dignity can signify the moral boundaries of law.¹²²² Accordingly, human dignity is not only a norm to defend human rights but includes aspirations to maintain the individual's inherent status.¹²²³ For instance, we can view personal autonomy and informational self-determination as both an expression of identity and as a capacity of the individual to maintain their identity based on the notion of human dignity. Viewing theoretical universality as an aspiration to maintain the expressive form of autonomy and informational self-determination requires us sometimes to move beyond the letter of law to respect individuals' human dignity. This is an important point that has been taken up recently by the European Group on Ethics in Science and New Technologies, which has recommended 'the formulation of a set of ethical guidelines that may serve as a basis for the establishment of global standards and legislative action' with regard to AI systems including emerging computational techniques, such as "autonomous" systems.¹²²⁴

Accordingly, it is important to recognise how theoretical universality can foster the articulation of new values to underpin the legislative and juridical context of human rights, such as the right to privacy. Human dignity can offer a more nuanced understanding of autonomy and identity based on emerging forms of surveillance, manipulation, and exclusion caused by algorithmic personalisation systems. As identified by Karen Yeung in her role as Rapporteur for the Council of Europe's MSI-AUT Expert Committee, 'opacity and asymmetry ... may substantially threaten collective values and interests that are not readily expressed in existing human rights discourse'.¹²²⁵ She adds that we must not fall into the trap of thinking that notions of human dignity and fundamental rights are not applicable with regard to the use of AI systems and should devise new modes of governance reflecting notions of accountability and responsibility regarding these practices.¹²²⁶

To summarise, the notion of universality recognises this double difficulty of finding compelling abstract values that protect individual interests with regard to algorithmic personalisation systems and incorporating fundamental values and thinking into a normative framework. That said, the human rights framework and the notion of universality in human rights discourse illustrate a symbiotic arrangement

¹²²² Juergen Habermas, 'The Concept of Human Dignity and the Realistic Utopia of Human Rights' (2010) 41 (4) *Metaphilosophy* 464.

¹²²³ Stephen Riley, *Human Dignity and Law: Legal and Philosophical Investigations* (Routledge 2018) 35.

¹²²⁴ The European Group on Ethics in Science and New Technologies adds that 'the EGE proposes a set of basic principles and democratic prerequisites, based on the fundamental values laid down in the EU Treaties and in the EU Charter of Fundamental Rights', European Group on Ethics in Science and New Technologies, 'Statement on Artificial Intelligence, Robotics and "Autonomous" Systems' (9 March 2018) < <https://op.europa.eu/en/publication-detail/-/publication/dfebe62e-4ce9-11e8-be1d-01aa75ed71a1> > accessed 22 August 2021, page 15.

¹²²⁵ Karen Yeung, 'A study of the implications of advanced digital technologies (including AI systems) for the concept of responsibility within a human rights framework' DGI (2019)05 < <https://rm.coe.int/a-study-of-the-implications-of-advanced-digital-technologies-including/168096bdab> > accessed 22 August 2021, page 8.

¹²²⁶ *ibid* page 36; By way of illustration, the Human Rights Council identified that big data undermines the 'dignity of [individuals] based on gender or gender identity and expression'. In this respect, the Human Rights Council in its report examined the relationship between gender, privacy and equality including algorithmic personalisation systems and how 'legislative reform, legal decisions by courts, community programs to educational resources' can incorporate a gendered perspective of privacy'. Human Rights Council, 'Right to privacy: Report of the Special Rapporteur on the right to privacy' (27 February 2019) /HRC/40/63, paras 6, 19, 100.

for shaping the future social world and producing value positioning in relation to technological innovation.

4. Privacy II: the need for new interpretative guidance

New interpretative guidance must address the harm of algorithmic personalisation systems using the notion of universality as the yardstick for shaping a normative definition of privacy in relation to fashion identity in international human rights discourse. In doing this, we need to concretise and extend current conceptions of privacy. Privacy would include appearance management of fashion identity to clarify the ambivalence of identity with regard to the social and personal aspects of fashion. Moreover, the clarification of the right to privacy needs to extend its protection to include individual perception and self-relationality. Here, I propose interpretative guidelines relating to:

- The ambivalence of appearance management and perception: using algorithmic personalisation systems in fashion gives rise to an investigative duty of private entities to define how data is connected, such as by employing methods of interpretability and fairness metrics. Member states and international organisations must entrench privacy to protect against algorithmic generalisations that disturb the ambivalence of fashion identity to enhance corporate profit, manipulation and unwarranted intrusions into an individual's personal autonomy to set the tone of the interactive experience in the algorithmic sphere. New legislation can recognise this ambivalence of fashion identity and provide guidance on how to protect notions of self-relationality and individual perception.
- Individual perception: a standard-setting exercise of conducting ex-ante and ex-post assessments of the tangible and intangible frictions in fashion identity concerning the deployment of the AI system.
- Self-relationality: this requires individual control of the hidden manifestations de-individualising self-relationality. Recognising the way fashion recommender systems can operate on an interpersonal level, there must be a compulsory duty to design algorithmic systems that align with user interests and scrutinise the inter-relationship between fashion narratives and personal and social aspects of fashion.

III. The normative basis of the “right to not be reduced”

The manifestation of interpretative guidance as highlighted above is not imminent; it requires a normative basis to assist international courts and bodies in incorporating new standards relevant to the big data age. If we achieve this, we could see a new international treaty that incorporates the “right to not be reduced”, including new standards of autonomy and identity. An alternative would be to develop

ethical principles guiding our own reasoning about human rights issues. Nevertheless, I argue that the most promising approach is to recognise Article 17 of the ICCPR as standard setting and issue interpretative guidance that reflects the contemporary meaning of privacy, autonomy, and identity.¹²²⁷ This has already been done in General Comment 16 regarding the gathering of personal information¹²²⁸ and we need for a similar statement concerning the relationship between privacy, autonomy, and identity.¹²²⁹

1. The right to not be reduced: a case of ethics or treaty law?

‘Ethical AI’ illustrates an expression of private entities for incorporating notions of corporate social responsibility in their business practices.¹²³⁰ Several ethical principles have been issued by private entities, such as Google’s ‘AI Principles’, as well as by international organisations, underlining that ‘policies show not only the need for ethical guidance but also the strong interest of these stakeholders to shape the ethics of AI’ to govern the design and use of algorithmic systems.¹²³¹ For example, the fashion retailer H&M intends to apply a checklist for ‘responsible AI’, which stipulates that algorithmic personalisation systems should be ‘focused, beneficial, fair, transparent, governed, collaborative, reliable, respecting human agency, and secure’.¹²³²

¹²²⁷ See also, Kasey L McCall-Smith, ‘Interpreting International Human Rights Standards: Treaty Body General Comments as a Chisel or a Hammer’ in Stéphanie Lagoutte, Thomas Gammeltoft-Hansen, and John Cerone (eds), *Tracing the Roles of Soft Law in Human Rights* (OUP 2017) 27.

¹²²⁸ UNCHR ‘CCPR General Comment No. 16: Article 17 (Right to Privacy) The Right to Respect of Privacy, Family, Home and Correspondence, and Protection of Honour and Reputation’ (1988) UN Doc HRI/GEN/1/Rev, para 10.

¹²²⁹ Indeed, the American Civil Liberties Union has raised the need for a new General Comment dealing with the right to privacy back in 2014, arguing that ‘the General Comment was written during the early phase of the HRC’s work, in 1988, and—while useful in its insights about the core concepts in Article 17—is just over two pages long. There is much room for elaboration’. However, their recommendations heavily draws from ECHR case law, see American Civil Liberties Union, ‘A Proposal for a New General Comment on the Right to Privacy under Article 17 of the International Covenant on Civil and Political Rights: A Draft Report and General Comment by the American Civil Liberties Union’ (March 2014) <www.aclu.org/sites/default/files/assets/jus14-report-icpr-web-rel1.pdf> accessed 25 August 2021, pages 8, 32-39.

¹²³⁰ Jordan Teicher, ‘Retailers: Here’s what you should be asking about AI’ (*Medium*, 16 January 2018) <<https://medium.com/@Jordan.Teicher/retailers-heres-what-you-should-be-asking-about-ai-4f042422abca>> accessed 12 November 2020; cf Nikki Baird, ‘Snapshot 2019: The State Of AI In Retail’ (*Forbes*, 14 February 2019) <www.forbes.com/sites/nikkibaird/2019/02/14/snapshot-2019-the-state-of-ai-in-retail/?sh=74f12c7f773b> accessed 12 November 2020; as argued by Reid Blackman ‘Just a few years ago discussions of “data ethics” and “AI ethics” were reserved for nonprofit organizations and academics. Today the biggest tech companies in the world — Microsoft, Facebook, Twitter, Google, and more — are putting together fast-growing teams to tackle the ethical problems that arise from the widespread collection, analysis, and use of massive troves of data, particularly when that data is used to train machine learning models, aka AI’. Taken from, Reid Blackman, ‘A Practical Guide to Building Ethical AI’ (*Harvard Business Review*, 15 October 2020) <<https://hbr.org/2020/10/a-practical-guide-to-building-ethical-ai>> accessed 12 November 2020.

¹²³¹ Taken from Anna Jobin, Marcello Ienca and Effy Vayena, ‘The global landscape of AI ethics guidelines’ [2019] 1 *Nature Machine Intelligence* 389, 390-391.

¹²³² Indeed, there is no guide in how these abstract principles should be fulfilled in practice; ‘Linda Leopold, Head of AI Policy’ (*H&M Group*, 26 June 2019) <<https://hmgroup.com/media/news/general-news-2019/meet-linda-leopold-head-of-ai-policy->> accessed 27 March 2021; In addition, the fashion supply chain process, intending to support transparency and address some environmental impacts of garment manufacturing; see Don-Alvin Adegeest, ‘Stella McCartney and Google Cloud partner to track supply chain data’ (*Fashion United*, 15 May 2019) <<https://fashionunited.uk/news/fashion/stella-mccartney-and-google-cloud-partner-to-track-supply-chain-data/2019051543172>> accessed 28 March 2020; see also, Sarah Kent, ‘Stella McCartney and Google Have a Plan to Fix Fashion’s Environmental Data Gap’ (*Business of Fashion*, 15 May 2019) <www.businessoffashion.com/articles/sustainability/exclusive-stella-mccartney-and-google-have-a-plan-to-fix-fashion-s-environmental-data-gap> accessed 12 November 2020; see also the ‘Farfetch fashion footprint tool’ to check the environmental impact of purchases, see ‘Want to shop more sustainably: use our fashion tool below to see how you can help the planet with your wardrobe’ (Farfetch) <www.farfetch.com/uk/fashionfootprinttool> accessed 20 November 2020.

However, it is important to contest the use of ethical AI as a standard-setting enterprise for the legal governance of AI systems.¹²³³ Ethical AI currently operates in a legal vacuum, even though there are international efforts to develop comprehensive recommendations on ethical standards for AI,¹²³⁴ or set EU-wide practice norms applying to the design of ‘human-centred’ and ‘socially beneficial’ AI.¹²³⁵ In other words, whilst we agree on certain norms and practices governing AI systems, such as fairness, transparency, human oversight, and limiting algorithmic bias, there is still too much leeway in how companies will utilise these principles in practice with regard to algorithmic personalisation systems. Whilst ethical principles can fulfil an important function for value creation, informing positive law,¹²³⁶ there is a risk of them resulting in empty promises in the absence of clear regulation.¹²³⁷

Existing international human rights standards can fulfil international expectations for providing a strong ethical basis to govern the design of AI systems.¹²³⁸ International human rights law can build on the equilibrium defining the socially acceptable and unacceptable design and use of algorithmic systems.¹²³⁹ Just take the notion of autonomy and informational self-determination, which are important values in privacy and tools in data protection to empower the user when interacting with algorithmic personalisation systems in fashion. Yet, algorithms challenge these foundations and we need to clarify the contours of decision-making, expression, and development of identity within the realities of algorithmic personalisation.

The real question, therefore, is can we use existing international legal standards or do we need new regulatory frameworks to deconstruct the right to privacy, as stipulated in the previous Sections? In this

¹²³³ cf Alan FT Winfield and Marina Jirotko, ‘Ethical governance is essential to building trust in robotics and artificial intelligence systems’ (2018) 376 (2133) *Philosophical transactions of the Royal Society of London* 1, 4.

¹²³⁴ Ad Hoc Expert Group (AHEG) for the Preparation of a Draft text of a Recommendation the Ethics of Artificial Intelligence, ‘First Draft of the Recommendation on the Ethics of Artificial Intelligence’ (2020) SHS/BIO/AHEG-AI/2020/4 REV.2 < <https://unesdoc.unesco.org/ark:/48223/pf0000373434>> accessed 18 July 2021; see also High-Level Expert Group on AI who aim ‘to foster research, reflection and discussion on an ethical framework for AI systems at a global level’, see High-Level Expert Group on Artificial Intelligence Set-Up By The European Commission, ‘Ethical Guidelines for Trustworthy AI’ (8 April 2019) < <https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai>> accessed 18 July 2021 at page 5.

¹²³⁵ Here I am referring to the AI Act proposal which will cause a lot of controversy and discussion in the following years; Eva Gaumond, ‘Artificial Intelligence Act: What Is the European Approach for AI?’ (*LAWFARE*, 4 June 2021) < www.lawfareblog.com/artificial-intelligence-act-what-european-approach-ai> accessed 18 July 2021.

¹²³⁶ Artificial Intelligence Act proposal; European Commission, ‘White Paper On Artificial Intelligence- A European Approach to Excellence and Trust’ (n 1214).

¹²³⁷ See also, Luciano Floridi, Josh Cowls, Monica Beltrametti *et al* who argue that ‘ethics’ ...can only function in an environment of public trust and clear responsibilities more broadly’; see Luciano Floridi, Josh Cowls, Monica Beltrametti *et al*, ‘AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations’ (2018) 28 (4) *Minds and Machines* 689, 694.

¹²³⁸ Marcus Duewelle, ‘Human Dignity and the Ethics and Regulation of Technology’ in Roger Brownsword, Eloise Scotford and Karen Yeung (eds), *The Oxford Handbook of Law, Regulation, And Technology* (OUP 2017) 118.

¹²³⁹ As argued by a report by the World Economic forum, ‘human rights and ethics approaches are complementary’, World Economic Forum, *Responsible Use of Technology* (White Paper, 2019) < http://www3.weforum.org/docs/WEF_Responsible_Use_of_Technology.pdf> accessed 12 November 2020 at page 6; see also, Independent High-Level Expert Group on Artificial Intelligence, ‘Ethics Guidelines for Trustworthy AI’ (European Commission 8 April 2019) < <https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai>> accessed 12 November 2020 at page 4.

respect, I perceive ‘ethical AI’ as an interdisciplinary means for refining the norms in international human rights law, based on the articulation of a set of abstract principles. For example, it allows us to develop a holistic framework directing the socially acceptable use of algorithmic personalisation systems in fashion, using the principle of protecting personal autonomy in law to include moral imperatives from fashion and cognitive psychology, philosophy, and social science.¹²⁴⁰ The question is not what comes first – ‘ethical AI’ or formal regulatory frameworks under international human rights law – but whether we can combine the two to effectively move towards a comprehensive framework incorporating human values in the governance of AI systems. Current academic discourse identifies several ways that this task can be achieved in practice, ranging from amending existing legislation to developing a new treaty on ‘digital rights’.¹²⁴¹

2. Amending existing treaty law

We could amend and/or extend existing legislation to include the human rights considerations regarding algorithmic personalisation systems in fashion. A report by David Leslie, Christopher Burr, Mhairi Aitken *et al* acknowledges this possibility of ‘modernis[ing] existing binding legal instruments’ to suit ‘the context of AI’.¹²⁴² In this respect, the report makes an interesting proposal which ‘could involve adding a protocol (a set of rights) to the existing [ECHR]’.¹²⁴³ Indeed, we could think about an additional protocol clarifying the right to privacy and adding the right to not be reduced shaped around individual perception and self-relationality. The advantage of this approach would be that enforcement would lie with the ECtHR and would not require a separate monitoring mechanism. The disadvantage, however, is that oversight would become ‘fragmented’ as ‘additional protocols are only binding on [s]tates that ratify them’, as noted by the authors in the report.¹²⁴⁴ I do see that an additional Protocol could stimulate states’ enhanced protection of existing human rights standards; however, the extent to which states could agree on such a statement requires a strong political will to have a uniform and general consensus on how existent protection can be strengthened to address future harm including the balance between AI regulation and innovation. Nevertheless, we may want to consider the way international law can give rise to a new set of binding rules to address the new challenges of algorithmic personalisation systems in fashion of privacy.

¹²⁴⁰ Human-centric regulation includes the preservation of human dignity through ethical values, the law and technical robustness; Independent High-Level Expert Group on Artificial Intelligence, ‘Ethics Guidelines for Trustworthy AI’ (n 1239) pages 4-5, 12.

¹²⁴¹ See for example, Nani Jansen Reventlow, ‘Digital Rights are Human Rights’ (*Medium*, 10 December 2017) <<https://nanijansenreventlow.medium.com/digital-rights-are-human-rights-aba7fa62eb48>> accessed 12 March 2021.

¹²⁴² David Leslie, Christopher Burr, Mhairi Aitken, Josh Cows, Mike Katell and Morgan Briggs, ‘Artificial Intelligence, Human Rights, Democracy, And The Rule of Law: A Primer’ (The Council of Europe 2021) <https://www.turing.ac.uk/sites/default/files/2021-03/cahai_feasibility_study_primer_final.pdf> accessed 19 July 2021, page 28.

¹²⁴³ *ibid.*

¹²⁴⁴ *ibid.*

Another possibility entails adopting a new legal instrument, such as an international treaty establishing rules surrounding AI.¹²⁴⁵ Indeed, this idea has been taken up by non-profit organisations, as in the initiatives of the Digital Freedom Fund to conceive a ‘Universal Declaration of Digital Rights’.¹²⁴⁶ Moreover, state practice suggests that a new international instrument constituting hard law or a multilateral treaty is necessary to deal with privacy in the digital age, as suggested by the Special Rapporteur on the right to privacy and exemplified in the MAPPING Project, an EU-financed programme proposing a ‘Draft Legal Instrument on Government-led Surveillance and Privacy’, amongst other things.¹²⁴⁷ The aim of a new international instrument is to strengthen the existent human rights framework by finding alternative ways to ‘protect, respect and promote human dignity’ in the digital age.¹²⁴⁸ The advantage of this approach would be that we could implement the interpretative guidance in an international human rights framework, whereby the state’s duty would be to respect the ambivalence of appearance management and perception of identity, as well as issue new guidance regarding individual perception and self-relationality for non-state actors.

However, a downside of this approach is enforcement. With regard to the Draft Legal Instrument on Government-led Surveillance and Privacy, the strategy to develop a universal framework on government surveillance has not been successful, possibly due to states’ lack of political will or complex political dynamics, whereby a multilateral solution entailing the transfer of sovereign power to an international body is not realistic.¹²⁴⁹ Moreover, and taking into account the complex power structures of non-state actors including big tech companies on the international plane, I would add that a multilateral solution entailing a new international treaty would not strengthen but rather weaken the protection of international human rights standards as it would stretch state discretion in how the right to privacy is implemented in practice.

Thus, I doubt that a new international treaty is a pragmatic approach to addressing the commercial uses of AI by the same corporate actors who reluctantly identify and enforce existing human rights

¹²⁴⁵ *ibid.*

¹²⁴⁶ Jansen Reventlow (n 1241); ‘The Universal Declaration of Digital Rights’ (Article 19, 24 March 2017) <www.article19.org/resources/internetofrights-creating-the-universal-declaration-of-digital-rights/> accessed 12 March 2021; In addition, there is the initiative proposing the ‘Charta der Digitalen Grundrechte der Europäischen Union’, see CHARTER OF FUNDAMENTAL DIGITAL RIGHTS OF THE EUROPEAN UNION (Zeit Stiftung 2018) <<https://digitalcharta.eu/sprachen/>> accessed 12 July 2021; see also, ‘the Charter of Human Rights and Principles for the Internet’ (Internet Governance Forum, November 2019) <www.ohchr.org/Documents/Issues/Opinion/Communications/InternetPrinciplesAndRightsCoalition.pdf> accessed 12 March 2021 at page 4.

¹²⁴⁷ ‘Draft Legal Instrument on Government-led Surveillance and Privacy’ (10 January 2018) <www.ohchr.org/Documents/Issues/Privacy/DraftLegalInstrumentGovernmentLed.pdf> accessed 24 August 2021; ‘Final Report Summary - MAPPING (Managing Alternatives for Privacy, Property and INternet Governance)’ (last updated 11 December 2018) <<https://cordis.europa.eu/project/id/612345/reporting/de>> accessed 24 August 2021; Human Rights Council, ‘Report of the Special Rapporteur on the right to privacy’ (25 October 2018) A/HRC/37/62, paras 17, 114-115.

¹²⁴⁸ ‘Draft Legal Instrument on Government-led Surveillance and Privacy’ (n 1247); cf Stefan Talmon, ‘No need for legal instrument on electronic surveillance and privacy’ (*German Practice In International Law*, 5 June 2018) <<https://gpil.jura.uni-bonn.de/2018/06/no-need-legal-instrument-electronic-surveillance-privacy/>> accessed 23 August 2021.

¹²⁴⁹ Oskar Josef Gstrein, ‘Mapping power and jurisdiction on the internet through the lens of government-led surveillance’ (2020) 9 (3) *Internet Policy Review* 1, 10-11,

standards.¹²⁵⁰ We therefore need a regulatory framework that can regulate AI-based commercial personalisation rather than the technology as such, which can be achieved through other regulatory avenues that envisage complementary responsibilities of states and private entities. The aim is to embed human rights norms into AI technology, rather than try to fit the algorithmic landscape into a new regulatory landscape with the risk that this new framework would lose legitimacy given the rapid advancements of AI and constant changes in power structures among state and non-state actors.

3. A new General Comment on the “right to not be reduced”

A sensible approach to achieving this would be to formulate another General Comment clarifying the right to privacy in Article 17 ICCPR, as well as considering other human rights standards including socio-economic rights when redefining the state’s obligation to ‘respect, protect and fulfil’ human rights. Deconstructing the right to privacy will give the right to not be reduced the necessary breadth to incorporate new values in human rights discourse, without causing legal uncertainty and an overhaul of the entire international human rights framework. In practical terms, the Human Rights Committee would need to replace General Comment 16 referring to article 17 of the ICCPR.¹²⁵¹ This has been proposed by the former Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression Frank La Rue: ‘the Human Rights Committee should consider issuing a new General Comment on the right to privacy, to replace General Comment No. 16 (1988)’.¹²⁵² In addition, the work of the Human Rights Council and Special Rapporteur would be relevant to coordinating the holistic treatment of the right to privacy including recommendations on the protection of human rights in the digital age.¹²⁵³

Incorporating the right to not be reduced should fulfil the task of deconstructing the right to privacy as a normative basis in international human rights law. First, it can address new categories of infringements that are the inevitable and natural consequences of algorithms’ subjective neutrality in the fashion domain. Here, a General Comment could further clarify the right to privacy’s aim of protecting

¹²⁵⁰ As rightly identified by Chris Marsden ‘to a legislator, every problem looks like a new bill will solve it, and worse, to an international lawyer every problem looks like a new Convention or Treaty is needed. Yet in reality, all that law can achieve is to enforce against a few bad actors to prevent the most egregious overreaching by companies and users’. Chris Marsden, ‘Law and Technology How Law and Computer Science Can Work Together to Improve the Information Society’ (2018) 61 (1) Communications of the ACM 29.

¹²⁵¹ On the relationship between treaty-bodies (such as, the Human Rights Committee for the ICCPR) and the charter-bodies (such as, the Human Rights Council and the work of the Special Rapporteur), see Philip Alston and Ryan Goodman, *International Human Rights Law: The Successor of International Human Rights in Context* (OUP 2013) 693, 728, 794-795.

¹²⁵² Human Rights Council, ‘Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, Frank La Rue’ (17 April 2013) A/HRC/23/40, para 98; UNCHR ‘CCPR General Comment No. 16: Article 17 (Right to Privacy) The Right to Respect of Privacy, Family, Home and Correspondence, and Protection of Honour and Reputation’ (n 1228).

¹²⁵³ For example, the report presented by the United Nations High Commissioner for Human Rights to the Human Rights Council on the right to privacy includes the ‘promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development’; Human Rights Council, ‘The right to privacy in the digital age: Report of the United Nations High Commissioner for Human Rights’ (3 August 2018) A/HRC/39/29.

personality and self-relationality with regard to recommender systems, as well as its relevance to other rights protecting equality and non-discrimination. Second, the interpretative guidance could introduce new perspectives on the right to privacy, focusing on vulnerabilities in relation to AI techniques in fashion, as well as offering a perspective on how informational structures in fashion shape an individual's autonomy and privacy.¹²⁵⁴ Third, a new General Comment could illuminate new manifestations of autonomy, identity, and privacy, clarifying how appearance management and individual perception can inform identities (i.e. the material, social, and personal selves) in a legal landscape. The Special Rapporteur should receive a special mandate to clarify human rights discourse on commercial algorithms and support the future work of the Human Rights Committee in preparing the General Comment.¹²⁵⁵

The next task would be to embed the right to not be reduced in the General Comment's purpose and language. As pointed out by Helen Keller and Leena Grover, General Comments 'are not legally binding'.¹²⁵⁶ However, they have great significance in clarifying international human rights norms, which by their nature are 'notoriously, but unavoidably vague or open-ended'.¹²⁵⁷ In this respect, General Comments can fulfil a range of purposes with regard to the right to privacy and can be authoritative in clarifying international human rights obligations, such as by drawing attention to aspects of the provision in the Covenant and issuing interpretative guidance¹²⁵⁸ and defining the right to privacy in light of the new considerations mentioned above. A General Comment thus articulating the right to privacy could include policy recommendations (i.e. stressing the responsibility of private entities to implement human rights standards in the design and deployment of AI techniques in fashion) and legal guidance (i.e. assisting courts and authorities in the implementation of Article 17 ICCPR), as well as generally outlining the challenges that algorithmic personalisation systems pose to identity, autonomy, and privacy (such as by using the findings of Human Rights Council reports).¹²⁵⁹

We also need to clarify the contours of governance of the right to be not reduced in accordance with the interpretative guidance. Indeed, an international human rights approach to the risks of algorithmic

¹²⁵⁴ See also, The Report of the United Nations High Commissioner for Human Rights stipulates that 'the protection of the right to privacy is not limited to private, secluded spaces, such as the home of a person, but extends to public spaces and information that is publicly available'; Human Rights Council, 'The right to privacy in the digital age: Report of the United Nations High Commissioner for Human Rights' (n 1253) para 6.

¹²⁵⁵ This is not an unusual procedure as seen in General Assembly Resolution on the right to privacy where it is stated that it is 'welcoming the report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, submitted to the Human Rights Council at its twenty-third session', see UNGA 'Resolution adopted by the General Assembly on 18 December 2013: The right to privacy in the digital age' (2014) UN Doc A/RES/ 68/167.

¹²⁵⁶ Keller and Grover, 'General Comments of the Human Rights Committee and their Legitimacy' (n 1186) 138.

¹²⁵⁷ Philip Alston, 'The Historical Origins of the Concept of 'General Comments' in Human Rights Law' in Laurence Boisson de Chazournes and Vera Gowland-Debbas (eds), *The International Legal Systems in Quest of Equity and Universality: Liber Amicorum Georges Abi Saab* (Martinus Nijhoff Publishers 2001) 763.

¹²⁵⁸ UNCHR 'General Comment No. 16: Article 17 (The right to respect of privacy, family, home and correspondence, and protection of honour and reputation)' (n 1228); Keller and Grover, 'General Comments of the Human Rights Committee and their Legitimacy' (n 1186) 143.

¹²⁵⁹ As highlighted by Helen Keller and Leena Goover 'General Comments can have up to three meta-functions: (1) legal analytical; (2) policy recommendation; and (3) practice direction', Keller and Grover, 'General Comments of the Human Rights Committee and their Legitimacy' (n 1186) 143.

personalisation systems in fashion poses challenges to enforcement. Private entities should have a responsibility to address and limit the adverse impact of AI systems, independent of the obligations of states. However, David Bilchitz rightly points out:

On the one hand, the fundamental rights recogni[s]ed in international treaties protect the fundamental interests of individuals, obligating all actors who can affect these rights. On the other hand, international law has often been conceived of as a system in which the only legitimate actors are states. In turn, only states can be bound by the fundamental rights obligations in international treaties.¹²⁶⁰

Therefore, we need to consider a mechanism that can go beyond the state's positive obligation to protect human rights from harms committed by non-state actors.¹²⁶¹ In addition, we need a framework that is complementary regarding the gaps in the law to regulate algorithmic personalisation systems in fashion and that incorporates the right to not be reduced into a broader regulatory framework, which includes recent developments on the EU level such as the EU Commission's proposal for the AI Act.

IV. Governance and the right to not be reduced

This Section intends to clarify the governance mechanism for the right to not be reduced. Two key developments need to be mentioned, which are relevant to the regulation of algorithmic personalisation systems in fashion. First, as mentioned above, the EU Commission has proposed new legislation on AI, which is one of the most influential contributions regarding the socially acceptable and unacceptable uses of novel technologies to date.¹²⁶² Another, less publicised, development concerns the governance of AI technologies based on soft law, focusing on the notion of due diligence, in the UN Guiding Principles.¹²⁶³ Indeed, I claim that we need both regulatory tools to ensure the effective governance of the kind of algorithmic personalisation systems I have illustrated.

The UN Guiding Principles, whilst not binding, are 'global authoritative standards of business and human rights'.¹²⁶⁴ Their application can be useful in the commercial context, guiding private entities and fashion brands to incorporate due diligence in the use and design of algorithmic systems.¹²⁶⁵ It is

¹²⁶⁰ David Bilchitz, 'Corporations and the Limits of State-Based Models for Protecting Fundamental Rights in International Law' (2016) 23 (1) *Indiana Journal of Global Legal Studies* 143.

¹²⁶¹ On the obligation to protect regarding non-state actors, please see *Velasquez Rodriguez v Honduras*, Inter-American Court on Human Rights Series C No 4 (1988), paras 172-176; Lottie Lane, 'The Horizontal Effect of International Human Rights Law in Practice: A Comparative Analysis of the General Comments and Jurisprudence of Selected United Nations Human Rights Treaty Monitoring Bodies' [2018] 5 *European Journal of Comparative Law and Governance* 5, 29.

¹²⁶² Artificial Intelligence Act proposal.

¹²⁶³ Guiding Principles on Business and Human Rights.

¹²⁶⁴ International Bar Association, 'IBA Practical Guide on Business and Human Rights for Business Lawyers' (28 May 2016) < www.ibanet.org/MediaHandler?id=d6306c84-e2f8-4c82-a86f-93940d6736c > accessed 27 August 2021, page 13; Robert McCorquodale and Melanie Tse, 'Artificial Intelligence impacts: a Business and Human Rights Approach' (2021) 26 (1) *Communications Law* 11, 15.

¹²⁶⁵ See for example, Lorna McGregor and Vivian Ng, 'Google's new principles on AI need to be better at protecting human rights' (*The Conversation*, 15 June 2018) <<https://theconversation.com/googles-new-principles-on-ai-need-to-be-better-at-protecting-human-rights-98035>> accessed 8 September 2020.

important that we take the opportunity to solidify the due diligence obligation into an enforceable standard which establishes the preconditions for the right to not be reduced.

The EU Commission's proposal for the AI Act, by contrast, is a regulation that is directly applicable to Member States.¹²⁶⁶ It is arguably one of the first to establish comprehensive regulation of the design and use of algorithmic systems.¹²⁶⁷ Although we can expect some significant revision preceding the final text, some points need to be addressed to ensure the effective protection of individual rights with regard to algorithmic personalisation systems in fashion. AI policy needs to be shaped around common principles and values to effectively protect an individual's "right to not be reduced" and provide more comprehensive governance of algorithmic personalisation systems in fashion.

To define my multidisciplinary account of the global governance of algorithmic personalisation systems, it makes sense to clarify key elements of the AI Act and the UN Guiding Principles and highlight some important differences between a risk-based and rights-based approach to regulating the deployment of AI systems.

1. The new AI Act: a risk-based approach

In April 2021 the EU Commission laid down its proposal for the new AI Act, a set of harmonised rules for artificial intelligence.¹²⁶⁸ This proposal came into fruition after the Commission's publication of the White Paper on Artificial Intelligence, setting the basis for 'the key elements of a future regulatory framework for AI in Europe that will create a unique "ecosystem of trust"'.¹²⁶⁹ The proposal aims to establish a risk-based approach to the design of AI systems.¹²⁷⁰ In other words, whilst the AI Act incorporates a definition of AI that can capture virtually all possible techniques, the framework makes a clear statement that only those systems of a high or moderate risk are specifically targeted by the regulation.¹²⁷¹

A disappointing aspect of the proposed regulation is its lack of rules and legal certainty regarding recommender systems. The proposal does not seem to classify algorithms used for social media advertising, ad tracking, and recommender systems as 'high-risk systems' which would require

¹²⁶⁶ This means that Member States do not transpose EU law into national law (cf Directives), Case T- 43-71 *Politi s.a.s. v Ministry for Finance of the Italian Republic* [1971] ECR II- 01039.

¹²⁶⁷ Luciano Floridi, 'The European Legislation on AI: a Brief Analysis of its Philosophical Approach' [2021] 34 *Philosophy & Technology* 215, 215- 216.

¹²⁶⁸ Melanie Fink, "'The EU Artificial Intelligence Act and Access to Justice'" [2021] *EU Law Live* 1.

¹²⁶⁹ European Commission, 'On Artificial Intelligence - A European approach to excellence and trust' (n 1214) page 3.

¹²⁷⁰ Artificial Intelligence Act proposal.

¹²⁷¹ Raimond Dufour, Josje Koehof, Tina van der Linden and Jan Smits, 'AI or More? A Risk-based Approach to a Technology-based Society' (*University of Oxford*, 16 September 2021) < www.law.ox.ac.uk/business-law-blog/blog/2021/09/ai-or-more-risk-based-approach-technology-based-society > accessed 31 October 2021.

enhanced transparency and human oversight.¹²⁷² Indeed, some algorithmic personalisation systems in fashion might illustrate a ‘prohibited practice’ under the regulation, provided that the technology produces ‘subliminal techniques beyond a person’s consciousness in order to materially distort a person’s behaviour in a manner that causes or is likely to cause that person or another person physical or psychological harm’.¹²⁷³ An enforcement agency will have to determine the factors contributing to the ban of certain AI systems as well as clarify the meaning of manipulative and exploitative practices beyond consumer law.¹²⁷⁴ This is a much-needed regulatory step that has to take into consideration other international policy developments, such as the Cyberspace Administration of China’s unprecedented new draft dealing with recommender systems, the ‘Internet Information Service Algorithm Recommendation Management Regulations’.¹²⁷⁵

Nevertheless, we have to recognise the EU regulation’s potential to set future and global standards for the development and innovation of AI systems.¹²⁷⁶ The new AI Act is arguably ‘the first-ever legal framework on AI’ and a first step in ensuring a comprehensive system for the safe, reliable and ethically sound development of AI innovations.¹²⁷⁷ Much commentary will follow in coming years to explain the various provisions, including interpretations of risks regarding certain AI systems, in the AI Act, and how individuals can invoke the rights before the national court as well as the CJEU.

2. The UN Guiding Principles: a rights-based approach

The UN Guiding Principles illustrate the effort by the former Special Representative to the United Nations Secretary-General for Business and Human Rights, Professor John Ruggie, to develop an instrument for closing the gap between ‘business and human rights’.¹²⁷⁸ The principles developed amidst heated debates leading to a set of Draft Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights, which intended to impose obligations directly on multinational enterprises under international human rights law and were heavily resisted by

¹²⁷² Artificial Intelligence Act proposal, art 14, art 52; Mark MacCarthy and Kenneth Propp, ‘Machines learn that Brussels writes the rules: The EU’s new AI regulation’ (*LAWFARE*, 28 April 2021) <www.lawfareblog.com/machines-learn-brussels-writes-rules-eus-new-ai-regulation> accessed 28 August 2021.

¹²⁷³ Artificial Intelligence Act proposal, art 5.

¹²⁷⁴ MacCarthy and Propp (n 1272).

¹²⁷⁵ Cyber Space Administration of China, ‘Notice of the State Internet Information Office on the "Internet Information Service Algorithm Recommendation Management Regulations (Draft for Solicitation of Comments)" Public Solicitation of Comments’ (27 August 2021) <www.cac.gov.cn/2021-08/27/c_1631652502874117.htm> accessed 28 August 2021.

¹²⁷⁶ ‘Europe fit for the Digital Age: Commission proposes new rules and actions for excellence and trust in Artificial Intelligence’ (European Commission: Press Release, 21 April 2021) <https://ec.europa.eu/commission/presscorner/detail/en/IP_21_1682> accessed 28 August 2021; Eleonore Fournier-Tombs, ‘The United Nations needs to start regulating the ‘Wild West’ of artificial intelligence’ (*The Conversation*, 31 May 2021) <<https://theconversation.com/the-united-nations-needs-to-start-regulating-the-wild-west-of-artificial-intelligence-161257>> accessed 28 August 2021.

¹²⁷⁷ ‘Europe fit for the Digital Age: Commission proposes new rules and actions for excellence and trust in Artificial Intelligence’ (n 1276); cf Floridi, ‘The European Legislation on AI: a Brief Analysis of its Philosophical Approach’ (n 1267) 215- 216.

¹²⁷⁸ Nicola Jagers, ‘UN Guiding Principles on Business and Human Rights: Making Headway towards Real Corporate Accountability’ (2011) 29 (2) N.Q.H.R. 159.

businesses in 2004.¹²⁷⁹ Therefore, the aim of the UN Guiding Principles is to provide a flexible framework developing in tandem with transboundary challenges and resulting issues of the accountability of multinational enterprises.¹²⁸⁰ This explains why the UN Guiding Principles are a soft-law instrument that is not binding on private entities.

Of course, the UN Guiding Principles, including John Ruggie's effort to develop a framework that does not govern the actions of multinational corporations in a binding manner, are not free from criticism.¹²⁸¹ In this respect, the criticism refers to John Ruggie's 'neo-liberal outlook' to effectively 'bow to the corporate refusal to accept[ing] any standards except voluntary codes'.¹²⁸² This criticism of the voluntary character of the UN Guiding Principles has been further elaborated by Nora Ni Loidean and Rachel Adams who submit that the principles require 'more concrete legal mechanisms to ensure accountability and oversight in the protection of rights in the digital era' to minimise the socio-legal risks of algorithms.¹²⁸³ Hence, it is argued that the UN Guiding Principles are a pragmatic middle way for imposing indirect obligations on private entities, rather than a robust setting of standards for corporate accountability.¹²⁸⁴ Corporations can escape international human rights norms based on self-regulation, which indeed is an avenue that risks disrupting the important international agenda to address the risks posed by AI systems to an individual's fundamental rights.¹²⁸⁵

Nevertheless, much faith is placed in the UN Guiding Principles to regulate corporate conduct employing algorithms in the commercial context. Several non-governmental and non-profit organisations have issued reports advocating the UN Guiding Principles as a bedrock for corporations' use and development of commercial algorithms that are human rights compliant.¹²⁸⁶ Accordingly, many

¹²⁷⁹ 'The UN "Protect, Respect and Remedy" Framework for Business and Human Rights' (Business & Human Rights Resource Centre) <<https://media.business-humanrights.org/media/documents/files/reports-and-materials/Ruggie-protect-respect-remedy-framework.pdf>> accessed 12 November 2020.

¹²⁸⁰ Deborah Leipziger, *The Corporate Responsibility Code Book* (3rd edn, Routledge 2017) 142.

¹²⁸¹ Alejandro Teitelbaum, 'A dialogue with Ruggie? To change so that everything remains the same... An assessment of John Ruggie's 2009 and 2010 Reports' (*Jus Semper Global Alliance*, 1 September 2010) <www.jussempere.org/Resources/Corporate%20Activity/Resources/A_dialogue_with_Ruggie.pdf> accessed 12 November 2020.

¹²⁸² David Weissbrodt, 'Keynote Address: International Standard-Setting on the Human Rights Responsibilities of Business' [2008] 26 *Berk J Intl L* 373, 390; Maciej Zenkiewicz, 'Human Rights Violations by Multinational Corporations and UN Initiatives' (2016) 12 (1) *Review of International Law and Politics* 121, 143.

¹²⁸³ Written evidence from Dr Nora Ni Loidean and Dr Rachel Adams, Information Law and Policy Centre, Institute for Advanced Legal Studies (RTP0012) <<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/human-rights-committee/the-right-to-privacy-article-8-and-the-digital-revolution/written/95879.html>> accessed 12 November 2021.

¹²⁸⁴ Florian Wettstein, 'Normativity, Ethics, and the UN Guiding Principles on Business and Human Rights: A Critical Assessment' (2015) 14 (2) *Journal of Human Rights* 162, 163.

¹²⁸⁵ See for example criticism on corporate self-regulation regarding AI deployment in Julia Black and Andrew Murray, 'Regulating AI and Machine Learning: Setting the Regulatory Agenda' (2019) 10 (3) *European Journal of Law and Technology* 1, 8; Leila Ouchchy, Allen Coin and Veljiko Dubljevic, 'AI in the headlines: the portrayal of the ethical issues of artificial intelligence in the media' (2020) 35 (4) *AI & Society* 927, 934.

¹²⁸⁶ BSR, 'A Human Rights-Based Approach to Content Governance' (21 March 2021) <www.bsr.org/reports/A_Human_Rights-Based_Approach_to_Content_Governance.pdf> accessed 27 August 2021; BSR, 'Artificial Intelligence: A Rights-Based Blueprint for Business, Paper 1: Why a Rights-Based Approach?' (August 2018) <www.bsr.org/reports/BSR-Artificial-Intelligence-A-Rights-Based-Blueprint-for-Business-Paper-01.pdf> accessed 27 August 2021; Privacy International, 'Privacy and Freedom of Expression In the Age of Artificial Intelligence' (11 May 2018) <<https://privacyinternational.org/report/1752/privacy-and-freedom-expression-age-artificial-intelligence>> accessed 27 August 2021

academics as well as policy consultations refer to private entities' obligation to exercise due diligence as a means of strengthening the governance of international human rights standards in the digital age.¹²⁸⁷ The UN Guiding Principles are described as an effective tool for measuring private entities' reshaping of compliance with international human rights norms in light of advancements in technology and AI techniques.

In addition, what is often overlooked are the UN Guiding Principles' reliance on and direct references to international human rights norms. As stipulated by John Ruggie, ““doing no harm” is not merely a passive responsibility for firms but may entail positive steps’, and ‘due diligence ... describes the steps a company must take to become aware of, prevent and address adverse human rights impacts’.¹²⁸⁸ This statement highlights the historical significance of the UN Guiding Principles in addressing non-compliant corporate behaviour *vis-à-vis* all human rights (i.e. civil, political and socio-economic rights). Hence, it is important to underline the UN Guiding Principles' reliance on a rights-based approach to prevent human rights impacts as an overarching principle applying to fashion brands.

3. Embedding international human rights: which route to take?

I have just outlined two regulatory approaches – the new proposal for the AI Act and the UN Guiding Principles to highlight their different philosophical underpinnings – risk-based and rights-based – for embedding human rights in the design and commercial use of AI techniques. Both frameworks have their weaknesses as elaborated below; however, it is important to delineate the underlying framework which could govern the use of algorithmic personalisation systems in the future.

It is clear that the new AI Act is not a human rights instrument and it certainly does not intend to develop new human rights commitments with regard to the governance of AI systems. The regulation's policy provides a route towards certifying algorithmic systems, following the spirit of other EU sectoral

2021, page 13; Mark Laterno, 'Governing Artificial Intelligence: Upholding Human Rights & Dignity' (Data & Society 2019) < <https://apo.org.au/sites/default/files/resource-files/2018-10/apo-nid196716.pdf>> accessed 27 August 2021, page 6.

¹²⁸⁷ Lorna McGregor, Daragh Murray and Vivian Ng, 'International Human Rights Law As A Framework for Algorithmic Accountability' (2019) 68 (2) *The International and Comparative* 309, 329-330; McCorquodale and Tse, (n 1264) 20; Alexander Kriebitz and Christoph Luetge, 'Artificial Intelligence and Human Rights: A Business Ethical Assessment' (2020) 5 (1) *Business and Human Rights* 84, 103; McGregor and Ng, 'Google's new principles on AI need to be better at protecting human rights' (n 1264); see also, The Scottish Human Rights Commission, 'Submission to Scottish Government on Consultation on the Digital Strategy for Scotland' (23 December 2020) < www.scottishhumanrights.com/media/2141/submission-to-scottish-government-on-consultation-on-the-digital-strategy-for-scotland-final-for-web.pdf> accessed 21 August 2021, para 57; UK Joint Committee on Human Rights, 'The Right to Privacy (Article 8) and the Digital Revolution, Chapter 6: Considering Alternative Enforcement Tools?' (3 November 2019) < <https://publications.parliament.uk/pa/jt201919/jtselect/jtrights/122/12209.htm>> accessed 27 August 2021.

¹²⁸⁸ Human Rights Council, 'Report of the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises, John Ruggie' (7 April 2008) A/HRC/8/5, paras 55–56; see also, Jonathan Bonnitcha and Robert McCorquodale, 'The Concept of 'Due Diligence' in the UN Guiding Principles on Business and Human Rights' (2017) 28 (3) *EJIL* 889, 900.

regulations in the area of safety, such as the Medical Device Regulation.¹²⁸⁹ Moreover, the AI Act is an important tool for securing AI innovation in Europe. According to the Act's accompanying notes:

harmonised rules across all sectors would...help to increase the trust of citizens and users that AI use is safe, trustworthy and lawful ... and prevent unilateral Member States actions that risk to fragment the market and to impose even higher regulatory burdens on operators developing or using AI systems.¹²⁹⁰

The extent of the regulation's intervention depends on the system's level of risk, including intended use, as high-risk systems are by far subject to most requirements and limited-risk systems are subject to basic transparency obligations.¹²⁹¹ It relates to the categorical design of algorithmic systems before these tools can be put on the market.

Nevertheless, the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions stipulates that:

The European AI strategy and the coordinated plan make clear that trust is a prerequisite to ensure a human-centric approach to AI: AI is not an end in itself, but a tool that has to serve people with the ultimate aim of increasing human well-being. To achieve this, the trustworthiness of AI should be ensured. The values on which our societies are based need to be fully integrated in the way AI develops.¹²⁹²

It is not clear how a regulatory tool like the proposal for the AI Act, which adopts a system of “product regulation” can ensure the protection of individuals as moral subjects, rather than situated objects within an AI ecosystem.¹²⁹³ Nevertheless, it is important to clarify the importance of normative values in scrutinizing the commercial use of AI technologies for our present discussion. Section IV.4 (of Chapter 7) will highlight how normative values (i.e. privacy, autonomy, and identity) can support human rights-based innovations in AI techniques. International human rights law can certainly issue guidance in this respect, and how human rights should be maintained irrespective of the technology.

In addition, Section IV.4 (of Chapter 7) will suggest a structure enforcing the “right to not be reduced”.

¹²⁸⁹ Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC [2017] OJ L 117/1; see also, Decision No 768/2008/EC of the European Parliament and of the Council of 9 July 2008 on a common framework for the marketing of products, and repealing Council Decision 93/465/EEC (Text with EEA relevance) [2008] OJ L 218/82; cf Nora Ni Lodeain who argues that ‘it is welcome that the EU legislator is taking its first steps towards the timely aim of providing a trustworthy and rights-compliance regulatory framework for the use of AI systems...’, cf Nora Ni Lodeain, ‘A Trustworthy Framework that Respects Fundamental Rights? The Draft EU AI Act and Police Use of Biometrics’ (*Information Law Policy Centre*, 4 August 2021) <<https://infocentre.blogs.sas.ac.uk/2021/08/04/a-trustworthy-framework-that-respects-fundamental-rights-the-draft-eu-ai-act-and-police-use-of-biometrics/>> accessed 28 August 2021.

¹²⁹⁰ Artificial Intelligence Act proposal.

¹²⁹¹ *ibid* art 52.

¹²⁹² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ‘Building Trust in Human Centric Artificial Intelligence’ (COM(2019)168) (8 April 2019) <<https://digital-strategy.ec.europa.eu/en/library/communication-building-trust-human-centric-artificial-intelligence>> accessed 18 November 21, pages 1-2.

¹²⁹³ Nevertheless, it makes sense to compare this statement with the post-market monitoring system in Article 61 of the AI Act; cf Artificial Intelligence Act proposal, art 61.

The UN Guiding Principles, by contrast, are based on the complementary responsibilities of state and non-state actors to ensure the effective protection of international human rights standards.¹²⁹⁴ The effective enforcement of the framework is resource dependent, presupposing that private entities have all available means to recognise the adverse human rights impacts of their operations and that states have the means to redress harm to victims.¹²⁹⁵ Thus, the UN Guiding Principles, whilst a human rights instrument, require further elaboration at a policy level on how processes for human rights compliance and corporate accountability should be rolled out in practice.¹²⁹⁶

Recognising these weaknesses regarding the AI Act and the UN Guiding Principles, the aim of the next Section is to close the normative gaps in both regulatory frameworks to ensure the effective regulation of algorithmic personalisation systems. Both need to acknowledge the risks posed by commercial algorithms to individual rights and collective values.

4. Closing the gaps: complementary responsibility and design principles

The UN Guiding Principles are structured around three pillars: the state's duty to protect individuals against human rights violations by third parties, private entities' responsibilities to respect human rights, and the need to ensure greater access to an effective remedy.¹²⁹⁷ The distinction between 'duties' and 'responsibilities' is significant, maintaining a division of tasks and substantive enforcement of human rights between the state and the private entity.¹²⁹⁸ I make suggestions for how the 'protect, respect, and remedy' framework can contribute to a human rights-based approach to AI techniques in fashion, namely (i) more competences for National Human Rights Institutions (NHRIs) to monitor and address human rights issues and policy gaps, and (ii) concretising the due diligence obligation into a mandatory standard for private entities.

An additional two recommendations focus on the AI Act and how we can make amendments to the risk-based approach to incorporate a human rights impact assessment as a tool for the design of AI systems.

¹²⁹⁴ UN Guiding Principles on Business and Human Rights 'Implementing the United Nations "Protect, Respect and Remedy" Framework' (2011) HR/PUB/11/04, Principles 27-31.

¹²⁹⁵ *ibid* Principles 27-31; see also Fiona Haines, Kate Macdonald and Samantha Balaton-Chrimes, 'Contextualising the Business Responsibility to Respect: How Much Is Lost in Translation?' in Radu Mares (ed), *The UN Guiding Principles on Business and Human Rights: Foundations and Implementation* (Brill 2011) 126.

¹²⁹⁶ Indeed, we see some progression in this direction on the EU level, 'European Parliament resolution of 10 March 2021 with recommendations to the Commission on corporate due diligence and corporate accountability' (10 March 2021) 2020/2129(INL).

¹²⁹⁷ Guiding Principles on Business and Human Rights., Principle 25; see also, John Gerard Ruggie and John F Sherman, 'Adding Human Rights Punch to the New Lex Mercatoria: The Impact of the UN Guiding Principles on Business and Human Rights on Commercial Legal' (2015) 6 (3) *Journal of International Dispute Settlement* 455, 456; Lise Smit, Gabrielle Holly, Robert McCorquodale and Stuart Neely, 'Human rights due diligence in global supply chains: evidence of corporate practices to inform a legal standard' [2020] *The international Journal of Human Rights* 1, 2.

¹²⁹⁸ Bjoern Fasterling and Geert Demuijnck, 'Human Rights in the Void? Due Diligence in the UN Guiding Principles on Business and Human Right' (2013) 116 (4) *Journal of business ethics* 799, 800; Peter Muchlinski, 'Implementing the New UN Corporate Human Rights Framework: Implications for Corporate Law, Governance, and Regulation' (2012) 22 (1) *Business Ethics Quarterly* 145, 148.

Thus, I also recommend (iii) more avenues for individual rights claims regarding AI systems that infringe an individual's privacy, autonomy, and identity, and (iv) amending the risk-based approach based on a proportionality principle which considers the tangible and intangible risk of harm to the "right to not be reduced."

(i) *UN Guiding Principles: more resources for NHRI's to holistically assess the state's duty to protect regarding algorithmic personalisation systems in fashion*

The first pillar of the UN Guiding Principles affirms the state's responsibility to protect individuals against harms caused by non-state actors under international human rights law.¹²⁹⁹ States, in accordance with the duty to respect human rights, are required to develop a 'National Action Plan' as a mechanism to translate the UN Guiding Principles into an enforceable framework with regard to international human rights standards.¹³⁰⁰ While the development of a National Action Plan is not a binding obligation,¹³⁰¹ it is an important tool for measuring the state's duty to protect through improvements in public policy.¹³⁰²

In developing a National Action Plan and changing policy on the national and international level, states rely heavily on guidance issued by the UN Working Group on Business and Human Rights, and the work of NHRIs.¹³⁰³ NHRIs constitute an independent and specialist body for addressing emerging human rights issues, translating international debates at the domestic level.¹³⁰⁴ Their tasks are diverse, ranging from the promotion of human rights standards in research and government advice to monitoring and mediation efforts, handling complaints and advising on access to justice regarding human rights breaches.¹³⁰⁵ A concrete example highlighting (European) NHRIs' proactive role in shaping human rights and business is the report of the European Union Agency for Fundamental Rights, which

¹²⁹⁹ Guiding Principles on Business and Human Rights, Principle 1; Zenkiewicz (n 1282) 142; see also, Directorate-General For External Policies, 'Implementation of the UN Guiding Principles on Business and Human Rights' (European Parliament, February 2017) < [www.europarl.europa.eu/RegData/etudes/STUD/2017/578031/EXPO_STU\(2017\)578031_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2017/578031/EXPO_STU(2017)578031_EN.pdf)> accessed 12 November 2020 at page 20.

¹³⁰⁰ Cantu Rivera, 'National Action Plans on Business and Human Rights: Progress or Mirage' [2019]4 Business and Human Rights Journal 213, 221; Council of Europe, 'Human Rights and Business' (RECOMMENDATION CM/REC(2016)3 OF THE COMMITTEE OF MINISTERS TO MEMBER STATES, 10 March 2016), page 10.

¹³⁰¹ cf the Draft Optional Protocol on a Business and Human Rights Treaty which would contain the legal obligation to establish a binding National Implementation Mechanisms; Draft Optional Protocol to the Legally Binding Instrument to Regulate, in Inter-national Human Rights Law, the Activities of Transnational Corporations and Other Business Enterprises (2018), art 1 < www.ohchr.org/Documents/HRBodies/HRCouncil/WGTransCorp/Session4/ZeroDraftOPLegally.PDF> accessed 12 November 2020.

¹³⁰² Rivera (n 1300) 215; see also, Linda C Reif, 'The UN Guiding Principles on Business and Human Rights and Networked Governance: Improving the Role of Human Rights Ombudsman Institutions as National Remedies' (2017) 17 (4) H.R.L.Rev. 603.

¹³⁰³ UN Working Group on Business and Human Rights, 'Guidance on National Action Plans on Business and Human Rights' (November 2016) < www.ohchr.org/Documents/Issues/Business/UNWG_NAPGuidance.pdf> accessed 12 November 2020; 'The Danish Institute for Human Rights' input to 'UNGPs next 10 years project' (The Danish Institute for Human Rights, 30 November 2020) < www.ohchr.org/Documents/Issues/Business/UNGPsBHRnext10/inputs/nhris/danish-institute.pdf> accessed 12 November 2020.

¹³⁰⁴ Veronika Haász, 'The Role of National Human Rights Institutions in the Implementation of the UN Guiding Principles' (2013) 14 (3) Human Rights Rev 165, 173.

¹³⁰⁵ The Edinburgh Declaration (10 October 2010) < www.ohchr.org/Documents/AboutUs/NHRI/Edinburgh_Declaration_en.pdf> accessed 12 November 2020.

emphasizes how well-paced they are to examine the challenges of artificial intelligence and refers to their observer status on the Council of Europe Ad hoc Committee on Artificial Intelligence.¹³⁰⁶

NHRIs could act alongside existing mechanisms to review compliance with human rights, such as the Data Protection Impact Assessments carried out under the General Data Protection Regulation, to ‘establish legal gaps’ and coordinate experts and groups informing regulatory frameworks for existent human rights standards.¹³⁰⁷ Their expertise could provide important input on (i) how algorithmic systems affect all fundamental rights, beyond data protection and privacy and (ii) establishing a human rights impact assessment regarding the deployment of an AI techniques. According to the European NHRIs’ submission to the European Commission’s White Paper on AI, these institutions require ‘sufficient resources, powers and – importantly – expertise to prevent and assess fundamental rights violations and effectively support those whose fundamental rights are affected by AI’.¹³⁰⁸

We thus need technical expertise from the NHRIs working with stakeholders, as well as more in-depth (empirical) research to define the potential widespread risks of AI techniques in the fashion domain. Their engagement with states and stakeholders could be relevant to formulating policy choices.¹³⁰⁹ In addition, we could align NHRI expertise with the European Commission’s independent High-Level Expert Group on Artificial Intelligence’s recommendation to establish an ‘auditing mechanism’ for identifying the harms of algorithmic systems.¹³¹⁰ Therefore, the NHRIs’ expertise, independence, and mandate could enable context-specific recommendations on the harms of algorithmic personalisation systems in fashion, which could be dynamically adapted into a legal policy framework to ensure the responsibility and accountability of businesses.

In addition, it is important to mention that the European NHRIs anticipate a working tool based on the work of the Council of Europe Ad hoc Committee on Artificial Intelligence.¹³¹¹ Such a tool could be

¹³⁰⁶ In this respect, the report states that ‘National Human Rights Institutions (NHRIs) are a vital part of the country level human rights protection system. By raising awareness, providing advice, monitoring and holding authorities to account, they have a central role in navigating the great human rights challenges of our day – tackling both persistent concerns like discrimination and inequality, and novel issues such as the rights implications of artificial intelligence’, taken from, European Union Agency for Fundamental Rights, ‘Strong and effective national human rights institutions – challenges, promising practices and opportunities’ (3 September 2020) < <https://fra.europa.eu/en/publication/2020/strong-effective-nhris>> accessed 12 April 2021 at pages 1, 70.

¹³⁰⁷ ENNHR: European Network of National Human Rights Institutions, ‘European NHRIs make submission on fundamental rights implications of Artificial Intelligence’ (30 June 2020) < http://ennhri.org/wp-content/uploads/2020/06/ENNHRI-letter_White-Paper-AI.pdf> accessed 30 March 2021.

¹³⁰⁸ *ibid.*

¹³⁰⁹ On the full NHRI’s input developing a human rights based approach to AI see, ‘ENNHRI’s work to promote and protected fundamental rights related to artificial intelligence’ (30 June 2020) < http://ennhri.org/wp-content/uploads/2020/06/ENNHRI-letter_White-Paper-AI.pdf> accessed 29 August 2021.

¹³¹⁰ Independent High-Level Expert Group on Artificial Intelligence, ‘Policy and Investment Recommendations for Trustworthy AI’ (EU Commission, 26 June 2019) <<https://digital-strategy.ec.europa.eu/en/library/policy-and-investment-recommendations-trustworthy-artificial-intelligence>> accessed 12 March 2021 at page 41; European Union Agency for Fundamental Rights ‘Strong and effective national human rights institutions – challenges, promising practices and opportunities’ (n 1306) page 91.

¹³¹¹ ENNHR: European Network of National Human Rights Institutions, ‘European NHRIs make submission on fundamental rights implications of Artificial Intelligence’ (n 1307).

useful and should fulfil two aims: (i) raising awareness about the importance of human rights in specific-use cases, such as algorithmic personalisation in fashion;¹³¹² (ii) concretising the socio-legal assessment of harm to align human rights with the implementation of EU sectoral law, as well as technical standards and certification.¹³¹³ The working tool would be significant for developing a human rights impact assessment template that could work alongside a risk-based assessment in other EU sectoral legislation.

(ii) UN Guiding Principles: doing the groundwork for a mandatory due diligence requirement for private entities when deploying AI techniques in fashion

The second pillar suggests that ‘corporate responsibility to respect human rights illustrates a management, governance and communication process’.¹³¹⁴ This obligation is significant as it may go beyond established regulatory standards on privacy, data protection, and discrimination implemented in domestic laws of the state.¹³¹⁵ In other words, corporations have an obligation to exercise due diligence regarding ‘actual and potential human rights impacts’.¹³¹⁶

The due diligence element invokes two requirements for corporate responsibility; one is procedural and the other is substantive. With regard to the former, due diligence might require the private entity to have a set of procedures in place to identify human rights risks.¹³¹⁷ This principle brings us to the importance of the human rights impact assessment,¹³¹⁸ as developed by NHRIs and implemented by private entities. In addition, the due diligence element introduces a substantive notion to address ‘actual and potential’ human rights risks.¹³¹⁹ Accordingly, the ‘human rights impact assessment’ needs to apply to the entire operation of the technology, based on the ‘complex interactions of algorithms’¹³²⁰ with the environment. For instance, a private entity assessing the risks of fashion recommender systems perpetuating unfair

¹³¹² Very interesting research conducted by the European Union Agency for Fundamental Rights on the awareness of fundamental rights regarding ad tracking and profiling, European Union Agency for Fundamental Rights, ‘Getting the Future Right: Artificial Intelligence And Fundamental Rights’ (2020) < https://fra.europa.eu/sites/default/files/fra_uploads/fra-2020-artificial-intelligence_en.pdf > accessed 23 August 2021, page 65; European Union Agency for Fundamental Rights, ‘Annex II: Examples of theoretical assessment of harm and significant impact of AI or automated decisions’ (2020) < https://fra.europa.eu/sites/default/files/fra_uploads/fra-2020-artificial-intelligence-annex-2_en.pdf > accessed 29 August 2021; European Union Agency for Fundamental Rights, ‘Annex I: Research methodology’ (2020) < https://fra.europa.eu/sites/default/files/fra_uploads/fra-2020-artificial-intelligence-annex-1_en.pdf > accessed 29 August 2021, pages 5-6.

¹³¹³ Ad Hoc Committee on Artificial Intelligence (CAHAI), ‘Feasibility Study’ (17 December 2020) CAHAI (2020)23, para 93.

¹³¹⁴ Fasterling and Demuijnck (n 1298) 801.

¹³¹⁵ Gerard Ruggie and Sherman (n 1297) 457.

¹³¹⁶ Guiding Principles on Business and Human Rights, Principle 17; see also, Nicolas Bueno and Claire Bright, ‘Implementing Human Rights Due Diligence through Corporate Civil Liability’ (2020) 69 (4) The International Comparative Law Quarterly 789, 790.

¹³¹⁷ Guiding Principles on Business and Human Rights, Principle 17; As argued by Jonathan Bonnitcha and Robert McCorquodale ‘In a business context, due diligence is normally understood to refer to a process of investigation conducted by a business to identify and manage commercial risks’, taken from Bonnitcha and McCorquodale (n 1288) 901.

¹³¹⁸ See for example, ‘Human Rights Annual Report’ (Microsoft, Fiscal Year 2018) < <https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RE2FMZY> > accessed 12 April 2021.

¹³¹⁹ Guiding Principles on Business and Human Rights, Principle 17.

¹³²⁰ Filippo A Raso, Hannah Hilligoss, Vivek Krishnamurthy, Christopher Bavitz and Levin Kim, ‘Artificial Intelligence & Human Rights: Opportunities & Risks’ (Berkman Klein Center, September 2018) < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3259344 > accessed 12 September 2020 at page 15.

differentiation and discrimination needs to assess both the choice of training data and training variables and the systems' performance including 'internal processes' after deployment. In other words, due diligence entails private entities systematically mapping human rights issues and the iterative process of adapting and monitoring the AI system's applications within the interactive setting with the user.

The company's first step would be to establish processes of human rights risk management that should be centered on goals and risks. That is, the extent of personalisation in algorithms is weighed against actual and potential risks to human rights. Another process highlighting the relationship between goals and risks is to focus on strengthening user integrity regarding dynamic changes in preferences. The "right to not be reduced" could establish that goals and risks are not only focused on intended use of the algorithmic systems but the recommender system's use of latent features and their inter-relationship with an individual's fashion identity.

By way of illustration, suppose a fashion brand intends to develop algorithmic personalisation systems on an e-commerce platform. The right to not be reduced would imply that the private entity needs to do two things: (i) establish the essential preconditions of personalisation to maintain fundamental values of privacy, autonomy, and identity; (ii) establish the essential preconditions of user preferences guiding the interactive experience with the algorithmic systems. Accordingly, a fashion brand could explore the option to develop a fashion recommender engine, which is an interactive platform (for example, using augmented reality) relying on the individual's explicit feedback (such as rating items) for clothing recommendations, that is authorised by the user as the default option. If the user wants to explore more products beyond the interactive platform using explicit feedback, the fashion brand needs to explore further the goals and risks in accordance with the second step below.¹³²¹

The companies' second step in implementing due diligence with regard to potential harms entails incorporating 'new methodologies' to assess the human rights risks of algorithmic personalisation in fashion.¹³²² The aim of the companies' substantive approach of due diligence should be to identify common norms for the effective integration of human rights norms in the design and use of algorithmic personalisation systems in fashion.

An important aspect of doing this is engagement with key groups to identify the common norms of fashion identity. In accordance with Principle 18(b) of the UN Guiding Principles,¹³²³ this entails

¹³²¹ See also my proposal on the 'investigative duty of private entities' regarding the ambivalence of appearance management and perception in **Section III.4 of this chapter (7)**.

¹³²² The need for 'new methodologies' to apply due diligence in the big data age is made by the BSR organisation who propose a holistic method to apply the UN Guiding Principle regarding the company's design and use of recommender engines, BSR, 'Artificial Intelligence: A Rights-Based Blueprint for Business: Implementing Human Rights Due Diligence' (28 August 2018) < www.bsr.org/reports/BSR-Artificial-Intelligence-A-Rights-Based-Blueprint-for-Business-Paper-03.pdf> accessed 12 February 2021 at pages 7-8; for our present discussion we should re-consult my proposals in **Chapters 2, 4, 5, 6** respectively.

¹³²³ Guiding Principles on Business and Human Rights, Principle 18 (b).

meaningful consultation not only with vulnerable groups but also fashion designers, social media influencers, and civil society who can give a cross-cultural perspective on the meaning of dress, to identify the variables of conformity and differentiation regarding fashion narratives, which form the parameters of human oversight of algorithmic decision-making. Human rights should not only refer to the filling in of sparse, incomplete, and/or incorrect data, but also needs to be directed to maintaining the diversity of fashion identity.

In addition, the due diligence obligation entails a standard-setting exercise that allows a dynamic interplay considering an individual's perception and self-relationality of fashion identity. This step effectively uses the "right to not be reduced" considering the interpretative guidance I issued in Section III.4 (Chapter 7). In this respect, algorithmic personalisation systems require an iterative process that does not only cover the system's intended use but needs to respect an individual's perception of fashion identity. The notion of self-relationality is an aspect of boundary control to maintain an individual's ambivalence of the personal and social aspects of fashion identity as well as a design choice of AI techniques in fashion.

This groundwork is necessary for clarifying a fashion brand's due diligence obligation when using algorithmic personalisation systems in fashion. And mandatory due diligence needs to be introduced for private entities to address the accountability gap in the UN Guiding Principles. As highlighted by Peter Muchlinski, the UN Guiding Principles use the 'economic functions of corporations as the starting point for the "responsibility to respect" which is seen as a "responsibility" rather than a "duty".'¹³²⁴ The Office of the UN High Commissioner for Human Rights issued a recommendation of a Due Diligence Directive to the EU Commission, and the European Parliament recently published a resolution on corporate due diligence in environmental matters and regulating the supply chain.¹³²⁵ However, no comparable efforts have been made with regard to corporate accountability and AI systems.¹³²⁶ Hence, more international and EU guidance is needed with a focus on how to strengthen corporate due diligence within a regulatory framework, as we should not leave questions of accountability to (big) tech firms and fashion brands' self-assessment and self-reporting free from independent scrutiny.

It is clear that the private entity discharging both recommendations submitted above requires state involvement as well as private entity responsibility for securing a victim of a human rights abuse access

¹³²⁴ Muchlinski (n 1298) 147; Rachel Adams and Nora Ni Loideain, 'Addressing indirect discrimination and gender stereotypes in AI virtual personal assistants: the role of international human rights law' (2019) 8 (2) CILJ 241, 253; cf Wettstein (n 1284) 163-164.

¹³²⁵ Office of the UN High Commissioner for Human Rights, 'EU Mandatory Human Rights Due Diligence Directive: Recommendations to the European Commission' (2 July 2021) < www.ohchr.org/Documents/Issues/Business/ohchr-recommendations-to-ec-on-mhrdd.pdf> accessed 29 August 2021; European Parliament resolution of 10 March 2021 with recommendations to the Commission on corporate due diligence and corporate accountability (2020/2129(INL)).

¹³²⁶ Nevertheless, see 'OECD AI Principles' (adopted May 2019) < <https://oecd.ai/ai-principles>> accessed 7 August 2021.

to an effective remedy.¹³²⁷ The third pillar of the UN Guiding Principles stipulates the state's obligation to 'take appropriate steps to ensure, through judicial, administrative, legislative or other appropriate means, that when such abuses occur within their territory and/or jurisdiction those affected have access to an effective remedy'.¹³²⁸ The 'access to remedy' obligation entails judicial and administrative remedies based on the 'obligation to protect' in the first pillar, as well as the availability of corporate grievance mechanisms.¹³²⁹

Without doubt, corporate due diligence can ensure a private entity's responsibility to adopt a human rights-based approach to AI techniques in fashion. Private entities are invited to focus on vulnerabilities created by AI systems, which encompass social disparities, an individual's access to information, and layered levels of individual autonomy. However, what are the risks if we are to leave the governance of human rights to corporate actors and internal corporate grievance mechanisms?¹³³⁰ Indeed, providing a robust governance framework as a result of harms committed by algorithmic systems requires 'new research and innovation'.¹³³¹ In other words, we need new conditions for how to protect human rights standards in the digital age as well as parameters that ensure private entities are 'doing [it] right'.¹³³²

Therefore, the following recommendations focus on the governance of human rights norms with reference to the AI Act in order to provide comment on the protection of legal norms (compared to principles in a soft-law approach or ethical rules) and how we effectively set the boundaries and standards for socially acceptable algorithmic personalisation systems in fashion.

(iii) The AI Act: less self-regulation and more individual rights claiming

On the one hand, high-risk AI systems are subject to conformity assessments, which is an ex-ante procedure including a quality management system, technical documentation, and post-market monitoring system.¹³³³ On the other hand, the control mechanism in the AI Act is less stringent than it first appears. First, specific safety products and some stand-alone systems are subject to third-party

¹³²⁷ Guiding Principles on Business and Human Rights, Principle 26.

¹³²⁸ *ibid* Principle 25.

¹³²⁹ *ibid* Principle 15(c); Zenkiewicz (n 1282) 142-143; Andreas Rasche and Sandra Waddock, 'The UN Guiding Principles on Business and Human Rights: Implications for Corporate Social Responsibility Research' [2021] *Business and Human Rights Journal* 1, 9; Karin Buhmann, '(Re-)enter the State: Business and Human Rights Dynamics as Shapers of CSR Norms and Institutions' in Arnaud Sales (ed), *Corporate Social Responsibility and Corporate Change: Institutional and Organizational Perspectives* (Springer 2019) 119;

¹³³⁰ Rikkie Frank Jorgensen suggests that 'it seems naïve to presume that voluntary commitment is an effective mechanism for securing users' rights', Rikkie Frank Jorgensen, 'When private actors govern human rights' in Ben Wagner, Matthias C Kettemann and Killian Vietch (eds), *Research Handbook on Human Rights and Digital Technology: Global Politics, Law and International Relations* (Edward Elgar Publishing 2019) 362; compare with Onora O'Neill who recognises that private entities including powerful corporations can act as 'agents of justice' 'when states are weak', cf Onora O'Neill, 'Agents of Justice' (2001) 32 (1/2) *Metaphilosophy* 180.

¹³³¹ BSR, 'Artificial Intelligence: A Rights-Based Blueprint for Business, Paper 3: Implementing Human Rights Due Diligence' (August 2018) < www.bsr.org/reports/BSR-Artificial-Intelligence-A-Rights-Based-Blueprint-for-Business-Paper-03.pdf> accessed 28 August 2021, page 18.

¹³³² Benjamin Gregg, 'Beyond Due Diligence: the Human Rights Corporation' (2021) 22 (1) *Human Rights Rev* 65, 70.

¹³³³ Artificial Intelligence Act proposal, Recital 54, Recital 80.

approval, whereas most AI systems listed in Annex III are subject to self-assessment.¹³³⁴ Second, no ex-ante procedure is subject to independent verification that the AI systems are human rights compliant.¹³³⁵ These considerations limit the capacity of the AI Act to establish a comprehensive oversight procedure regarding the socially acceptable use of high-risk systems, as well as algorithmic personalisation systems in fashion.

Thus, more substantive and procedural safeguards need to be in place to challenge the impact of algorithmic systems on privacy, autonomy, and identity. A due diligence requirement would be a substantive obligation that must apply irrespective of the technology and is not dependent on an ex-ante assessment regarding ‘high-risk’ systems (see also recommendation iv below).¹³³⁶

In addition, procedural obligations need to enable *external scrutiny* of conformity assessments to limit the discretion of corporate self-assessment. EU NHRIs possess the appropriate expertise to provide input on how to plan human rights impact assessments (see also recommendation i above), which could be controlled by national and private bodies. Finally, there is a need for a supervisory body that can receive complaints from individuals.¹³³⁷ Overall, more convergence is needed between the international human rights framework and the new EU order to establish the criteria in Article 7(2)(h)(i)-(ii) in the AI Act, and to adapt the contours of the AI Act to effective oversight mechanisms regarding both technical compliance and protection of an individual’s fundamental rights.¹³³⁸

(iv) The AI Act: more consideration of international human rights obligations to address the need for normative principles

A key feature of the AI regulation is that it develops a risk-methodology to scrutinise the design and development of AI systems. It provides a regulatory burden with regard to AI systems classified as ‘high-risk’, which could include things such as medical devices including diagnostics, whereby systems posing a low risk are subject to specific transparency obligations and minimal risk systems are outside the scope of the new regulation.¹³³⁹ This ‘balanced approach’,¹³⁴⁰ which is based on the EU’s notion of

¹³³⁴ *ibid* Annex III.

¹³³⁵ Nathalie Smuha, Emma Ahmed- Rengers, Adam Harkens, Wenglong Li, James MacLaren, Riccardo Piselli and Karen Yeung, ‘How the EU can achieve legally trustworthy AI: A Response to the European Commission’s Proposal for an Artificial Intelligence Act’ (5 August 2021) < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3899991 > accessed 30 August 2021, page 37; Michael Veale and Frederick Zuiderveen Borgesius, ‘Demystifying the Draft EU Artificial Intelligence Act’ (ArXiv, 20 July 2021) < <https://arxiv.org/abs/2107.03721> > accessed 1 August 2021.

¹³³⁶ Artificial Intelligence Act proposal, Explanatory Memorandum.

¹³³⁷ Indeed, the new AI Act allows member states to designate national competent authorities to ensure effective compliance with the Act in Article 59. However, I suggest external and independent oversight is needed to enable effective scrutiny a human-rights impact assessment, which could be similar to a supervisory body in article 77 of the GDPR, Artificial Intelligence Act, art 59; General Data Protection Regulation, art 77.

¹³³⁸ Artificial Intelligence Act proposal, art 7 (2) (h) (i), art 7 (2) (h) (i); see also, Human Rights Council, ‘Improving accountability and access to remedy for victims of business-related human rights abuse: The relevance of human rights due diligence to determinations of corporate liability’ (1 June 2018) A/HRC/38/20/Add.2.

¹³³⁹ Artificial Intelligence Act proposal, art 16, art 52.

¹³⁴⁰ The aim of this classification is to develop a ‘balanced approach’ constrained to ‘the minimum necessary requirements to address the risks and problems linked to AI, without unduly constraining or hindering technological development or otherwise

the principle of proportionality applied to the ‘intended use’ of AI systems, does not ensure the effective evaluation of fashion recommender systems.

In addition to the problems of addressing proportionality assessments in practice, the assessment of proportionality in the AI Act falls short of substantive guidance. The intention of the EU Commission does not seem to include ad tracking and recommender engines within the list of banned practices, as these could be covered by other sectoral legislation.¹³⁴¹ Furthermore, the proportionality principle seems to blur the link between AI systems and varying risk levels in practice, as the AI Act does not clearly establish substantive criteria for evaluating the risk assessment.

Currently, the proportionality principle produces a tool to over- and under-regulate certain AI systems without evidence of established criteria. For instance, we can show how a previously low-risk system can become high risk based on its technical requirements, rather than its impact on an individual’s autonomy, human dignity, or identity. For instance, emotion recognition systems and biometric categorisation systems are subject to harmonised transparency obligations but facial recognition technology is classified as a ‘high risk’ with regard to an individual’s fundamental rights.¹³⁴² However, it is not entirely clear whether a high-risk system can become a prohibited practice based on its contextual use and purpose. Whilst biometric identification systems can be used for predictive policing applications by law enforcement,¹³⁴³ the same does not apply to biometric identification systems in public spaces, which are a prohibited practice under the Act.¹³⁴⁴ This fragmented approach to evaluating the technology and contextual use of the AI system in question to identify ‘risk’ produces several loopholes with regard to personalisation systems.

For example, it does not clarify how targeted advertising, persuasion in fashion, as well as algorithmic categorisations defining a user’s ‘sex, age, hair colour, eye colour, tattoos, ethnic origin or sexual orientation’ would be a ‘limited risk’ and when sensitive inferences of a user’s current mood or personal wellbeing cross the line and become ‘high risk’.¹³⁴⁵ It seems that not even a virtual style assistant, such as a smart mirror, which analyses an individual’s body shape and facial features and infers sensitive attributes such as health status, would be considered a ‘live’ and ‘remote’ biometric system used in a commercial context and classified as ‘high risk’.¹³⁴⁶ However, if law enforcement uses the same

disproportionately increasing the cost of placing AI solutions on the market’; see Artificial Intelligence Act proposal, Explanatory memorandum.

¹³⁴¹ See also my discussion on ‘consumer harm’ in **Chapter 5**.

¹³⁴² Artificial Intelligence Act proposal, Recital 70; art. 3 (33), art 3 (36).

¹³⁴³ ‘Annex III defines that High-risk AI systems pursuant to Article 6(2) are the AI systems listed in any of the following areas... AI systems intended to be used for the ‘real-time’ and ‘post’ remote biometric identification of natural persons’; Artificial Intelligence Act proposal, Annex III.

¹³⁴⁴ Artificial Intelligence Act proposal, Recital 9, Recital 23, art 5 (1) (d); however, live facial recognition for law enforcement seems to not be prohibited by the Act, see Ni Lodeain (n 1289).

¹³⁴⁵ Artificial Intelligence Act proposal, art 3 (35); Recital 8.

¹³⁴⁶ *ibid* Recital 8.

algorithmic construction without the augmented reality interface to ‘detect the emotional state of the individual’ then the technology is considered a ‘high-risk’ system.¹³⁴⁷ Here, we see how the AI Act narrows down the ‘risks’ to an individual’s fundamental rights to the intended uses of systems, leaving out the structural challenges of algorithmic personalisation systems (in fashion) to the creation and definition of notions of appearance management and perception of fashion identity.

My opinion is that to regulate algorithmic personalisation systems in fashion we need to consider the operation of the proportionality principle in light of different objectives with reference to the individual rather than than technology in question. What we need is a complementary framework focusing on individual rights based on notions of autonomy, dignity, and identity in a world of personalisation using ‘fashion’ as a predictor. The “right to not be reduced” encompasses the socio-technical considerations within an individual’s decision-making and, therefore, we need to rethink the risk assessment, including the proportionality principle, considering all AI systems. Again, and from a practical point of view, a mandatory due diligence obligation can offer the means of providing assurance that a risk-based approach is proportionate to the impact of algorithmic personalisation systems on an individual’s rights.

V. The essence of privacy using international human rights law

We need to construct the right to privacy within an international human rights framework to adequately protect an individual’s privacy, autonomy, and identity with regard to algorithmic personalisation systems in fashion. This investigation has highlighted the role of “the right to not be reduced” in deconstructing the right to privacy, focusing on the process of aligning the values of existing norms in international law, new interpretative guidance on international human rights standards and a normative basis extending existing international human rights guarantees. In addition, the discussion has offered practical recommendations for relying on soft- and hard-law approaches to implement the right to not be reduced and has shown how more legislative effort is needed to reconstruct the right to privacy in the digital age.

¹³⁴⁷ *ibid.*

Chapter 8

Summary and final thoughts

AI techniques and new technologies are evolving at a fast pace, and we must develop a proactive approach to addressing the systematic use of algorithms in the commercial sector. This study provides an outlook on how we can consider the risks of AI embedded in social processes. Future research needs to consider the ‘right to not be reduced’ within future technological progress, so that it can dynamically shape our response to the challenges posed by AI within present-day conditions.

I. Introduction

A contextual approach to privacy, autonomy, and identity requires a new approach to protecting an individual’s perception and self-relationality within fashion identity. This thesis examines the risks of algorithmic personalisation systems in fashion that predict individual preferences, shape general sentiment, and undermine an individual’s conscious and unconscious associations with fashion identity. Given the socio-legal risks of algorithmic personalisation systems in fashion, the ‘right to not be reduced’ illustrates a starting point for ensuring the effective protection of (international) human rights standards in the digital age. My conceptual outlook on the right to privacy can inform further research in the field of AI as well as foster more work regarding the socio-technical design and governance of AI systems.

II. Summary of main findings

This chapter summarises the key findings and provides a concrete answer to the research question: How should we interpret the right to privacy to protect notions of individual autonomy, informational self-determination, and identity, considering algorithmic personalisation systems in fashion?

1. Privacy is more than the self and the environment

An important conclusion from my discussion on the nature of the right to privacy is that our understanding of this right entails more than the regulation of social interactions, that is, it includes a deeper appreciation of individual sense-making. Chapter 2 made an important contribution to the socio-legal underpinning of the right to privacy in academic literature in that it claimed that human experiences happen within the self, not outside individual scrutiny. We need to examine the individual’s loss of

autonomy and identity with reference to the individual, rather than the socio-technical affordances regarding the right to privacy.

In doing this, I developed a concept of privacy in relation to fashion identity. The concept suggested that privacy is a construct holding together the separate selves of fashion identity. This understanding of autonomy and identity contributes to privacy discourse, which currently only gives a structural account of the unreasonable constraints on an individual's identity-building. Privacy is more than the self and the environment and includes an individual's performativity of fashion, the formation of individual perception, as well as the formation of attitudes. This conceptual outlook extends our understanding of privacy, autonomy, and identity to include an individual's perception and self-relationality. The definition offers a starting point for examining the implications of algorithmic personalisation systems in fashion within the privacy landscape.

2. The need for a “right to not be reduced”

Another significant claim of my discussion in this thesis, particularly in Chapter 3, was that we must move away from the assumption that we can control and understand algorithmic constructions of individual behaviour. Considering the nature of algorithms in fashion, which can only establish patterns regarding the social and personal aspects of fashion with no meaningful reference to the self, is an important contribution to how we should conduct privacy discourse in the first place. That is, we need a perspective on privacy which can protect me from algorithmic generalisations influencing my individual perception and self-relationality. The ‘right to not be reduced’ is a snapshot of the way algorithmic personalisation systems offer an account of ‘fashion’ including the unquantifiable values of the social and personal aspects of identity, with significant implications for an individual's autonomy and informational self-determination. I have thus deconstructed the right to privacy based on the notions of individual perception and self-relationality (and in relation to the right to not be reduced) in Chapters 4-6.

In addition, the right to not be reduced, including my analysis in Chapter 7, also offered a significant contribution to how we should address the risks of AI techniques in fashion in the future. In particular, I developed a human-rights based approach to privacy using the notions of individual perception, self-relationality and an individual's ambivalence of appearance management and perception of fashion identity. My approach aims to enable interpretative guidance addressing new categories of infringements, new perspectives, including manifestations of autonomy, identity and privacy in the algorithmic sphere. Thus, my approach intends to move beyond policy efforts stressing compliance with existent human rights standards and develop a novel perspective on how we can govern the use of AI techniques in fashion in the future.

3. There is no ‘me’ in a filter bubble and echo chamber in fashion

Chapter 4 showed that social media analytics and consumer profiling define the parameters of how the social aspects of fashion are identified. We need to identify how common representations of ‘fashion’ could shape an individual’s engagement and identification with content. The main finding, therefore, was that the development of echo chambers and filter bubbles in the fashion domain can disturb the process of self-representation and restrain an individual’s reflective choice concerning their appearance and perception of identity.

We tend to understand privacy as the individual’s control of the flow of information, and how situated relationships are covered and uncovered regarding individual interactions in a filter bubble and echo chamber. This conception of the relational nature of privacy is not incorrect but gives an incomplete picture regarding the way filter bubbles and echo chambers in fashion shape communication structures and the process of self-identification. Algorithmic personalisation systems are ingrained in our everyday experience of how we interact with fashion narratives in the Infosphere. Privacy, therefore, is the way fashion narratives in algorithmic personalisation systems define my interaction in the Infosphere, which includes my individual perception and self-relationality of fashion identity.

I then unpacked this claim, focusing on the ECtHR’s interpretation of Article 8 ECHR, as well as its case law on Article 8 in conjunction with Article 10(1). The main takeaway from this discussion was this: the performativity of fashion identity is a dynamic entity with regard to algorithmic filtering. Article 8 ECHR only includes the social constraints on an individual’s expression of identity, leaving out the way an individual’s identity is manifested in a filter bubble and echo chamber. Article 10(1) does not give any added value to the guarantees in Article 8, in so far as it only extends to areas where the access to information in the Infosphere is instrumental in securing the individual’s freedom of expression rather than an individual’s self-development.

I am not the first writer to claim that the notice and consent model in the GDPR is ineffective. Nevertheless, I provided a different perspective on the debate based on the importance of individual perception and self-relationality as an independent value with regard to the design of algorithmic personalisation systems in fashion. Indeed, I stipulated a simple proposition regarding the limitation of the consent model, that is, we need a different form of control concerning non-linear relationships in algorithmic personalisation systems. In this respect, I offered some guidance on how we can translate the notions of individual perception and self-relationality into a design framework which could inform further interactive models respecting an individual’s informational self-determination in the future.

4. Nudges in fashion do not get my incentives right

Chapter 5 addressed an important concern regarding algorithmic decision-making, which makes individuals susceptible to manipulation. In Thaler and Sunstein's findings on human decision-making and cognitive bias, their normative claim is that human decision-making needs to be subject to interventions to promote decisions that lead to an individual's wellbeing.¹³⁴⁸ However, fashion recommender systems blur the lines between acceptable and unacceptable interventions in human decision-making, based on their use of passive nudges.

I then examined the concept of hypernudges in fashion recommender systems and reveal some ways in which we should understand individual autonomy in this context. I claimed that fashion recommender systems influence my awareness of fashion narratives and unconscious association with fashion, going beyond current findings that persuasive strategies exert a hidden influence on individual behaviour. It is not that fashion recommender systems rightly recognise my incentives, such as low confidence, but that the algorithms create incentives that appeal to me in objectifying fashion narratives. This aspect of individual perception and self-relationality is important for our understanding of autonomy in privacy, as well as consumer protection.

Therefore, my primary concern is that we need to consider how fashion recommender systems exert a degree of manipulation, which undermines an individual's subjective awareness of fashion narratives. This proposition on the extent to which persuasion strategies can influence an individual's autonomy and free choice is not considered in consumer law, nor is it reflected in the GDPR. Instead, I suggested that consumer protection in the UCP Directive, as well as the Digital Services Act, promulgates an understanding of individual autonomy as based on one's conscious associations with fashion narratives, which does not take into account the nature of misleading and aggressive practices in contemporary personalisation systems. Some of these challenges need to be addressed through greater transparency of data processing activities. However, we must not fall into the false belief that transparency equates with the individual's 'understanding' of algorithmic decision-making. I highlighted this tension between an individual's knowledge and control of data processing, focusing on the so-called explanation in the GDPR, which induces me to propose interpretability as an indefinable notion of transparency.

¹³⁴⁸ As argued by Richard H Thaler and Cass R Sunstein 'people lack clear, stable, or well-ordered preferences. What they choose is a product of framing effects, starting points, and default rules, leaving the very meaning of the term "preferences" unclear', taken from Thaler and Sunstein, 'Libertarian Paternalism is not an Oxymoron' (n 693) page 3.

5. ‘Who am I’ and should I be concerned about my neighbour?

Chapter 6 dealt with an aspect of the socio-legal issues of algorithms, which has only recently received extensive academic attention and media scrutiny. A paper by Vincent Toubian, Helen Nissenbaum, Arvind Narayanan *et al* back in 2010 suggested that

some are concerned that [online behavioural advertising] is manipulative and discriminatory, but the dominant concern is its implications for privacy.¹³⁴⁹

This position has certainly changed with academic literature on algorithmic bias and non-discrimination law, and computer scientists developing fairness metrics with regard to algorithmic bias. However, it would have been careless on my part to not try to give my perspective on the privacy *and* non-discrimination issues of algorithmic bias in fashion.

In doing this, I am not only concerned about the (biased) purposes of algorithmic classification systems, such as serving the designer’s subjective perception of fashion, but I also submitted that algorithmic bias in fashion shapes our own inferential judgement – the way I recognise my so-called neighbour, i.e. the person with whom I share similar personal characteristics. This finding solidified my conception of the impact of AI techniques on an individual’s perception and self-relationality, focusing on broader notions of equality and how algorithmic bias can be a source of more division and injustice.

I then examined the concern about algorithmic bias in fashion, focusing on privacy and non-discrimination in ECtHR case law. A surprising finding is that I am optimistic about the court’s approach to incorporating notions of appearance management in its reasoning, which could have some tangible impact on the way we regulate algorithmic bias in fashion, focusing on direct discrimination claims. That said, I was more critical of how the ECtHR’s reasoning on Articles 8 and 14 ECHR can cover issues of indirect discrimination. Here, I argued that we need to focus on intangible frictions within the individual’s appearance management, such as individual perception and self-relationality.

Indeed, we need to consider alternative avenues, including significant developments in non-discrimination law at the EU level. In other words, I use EU anti-discrimination law and CJEU case law to highlight more hurdles in addressing algorithmic bias in fashion. Ultimately, we need alternative pathways for thinking about notions of equality in the algorithmic sphere, rather than simply introducing intersectional claims into the law. I did provide some suggestions, such as arguing that equality is not a personal attribute but rather a separate identifier of identity, to push forward the discourse on algorithmic fairness.

¹³⁴⁹ Vincent Toubian, Helen Nissenbaum, Arvind Narayanan, Solon Barocas and Dan Boneh, ‘Adnostic: Privacy Preserving Targeted Advertising’ (Proceedings of the Network and Distributed System Security Symposium, NDSS 2010, San Diego, California, USA, 28th February - 3rd March 2010).

A separate but nonetheless contentious issue regarding algorithmic bias is the distinction between personal and non-personal data in the GDPR. That is, if we want to address the substantive fairness of algorithms, we need to protect the inter-relationships of the data infrastructures, rather than the identifiability of data points. Indeed, what we need is to redefine the contours of data protection law, but on the premise of the social and cultural relevance of data points rather than the output of inferences as such, to address structural bias and representational harm in specific technologies, such as fashion recommender systems.

6. The need for new values regarding privacy, autonomy, and identity

Most limitations open up new possibilities for action. Chapter 7 is about taking the gaps in the effective regulation of algorithmic personalisation systems and placing them in a new legal context. In doing this, I developed an international human rights approach to the risks of algorithmic personalisation systems in fashion. In particular, I articulated a normative basis of the “right to not be reduced” in international human rights law and presented a holistic approach to how we could enforce the right to not be reduced in the future.

We need to go further than merely asserting a fashion brand's obligation to respect an individual's right to privacy and data protection. Algorithmic personalisation systems illustrate a challenge to human rights, which is systematic and has long-lasting effects on our understanding of individual autonomy and identity. The international human rights approach not only allows us to frame harm using common language,¹³⁵⁰ but also enables the articulation of common objectives considering transboundary problems. Thus, an international law approach to harm adds value to present policy responses that focus on intended uses of algorithmic systems,¹³⁵¹ as it directs the actors' conduct in accordance with common human rights commitments.¹³⁵²

III. Opportunities, challenges, and my final thoughts

This thesis offered a fresh perspective on how we should understand privacy discourse, focusing on the meaning of privacy, the impact of algorithmic personalisation systems in fashion on privacy, autonomy, and identity, and finally, providing a contextual perspective on how to address the socio-legal risks of

¹³⁵⁰ Lorna McGregor, Vivian Ng and Ahmed Shaheed, Elena Abrusci, Catherine Kent, Daragh Murray and Carmel Williams, ‘The Universal Declaration of Human Rights at 70: Putting Human Rights at the Heart of the Design, Development, and Deployment of Artificial Intelligence’ (The Human Rights, Big Data and Technology Project, 20 December 2018) <https://ling2s14id7e20wtc8xsceyr-wpengine.netdna-ssl.com/wp-content/uploads/2018/12/UDHR70_AI.pdf> accessed 12 July 2021 at page 40.

¹³⁵¹ Most tangible policy responses in the EU take a risk-based approach to the uses of algorithmic systems; See Floridi, ‘The European Legislation on AI: a Brief Analysis of its Philosophical Approach’ (n 1267).

¹³⁵² See also, The Scottish Human Rights Commission (n 1287) para 58.

AI techniques in fashion. In the following two Sections I provide some thoughts on how these main contributions can inform further research and what challenges my approach raises for further investigations.

1. Extending the main contributions of this thesis into future research

Whilst this thesis has explored the meaning of privacy in relation to fashion identity, its conceptual and methodological contributions have a broader applicability to other areas surrounding the intersection between AI and human rights. Underlining the negotiated, as well as independent, position of identity allows us to unravel future socio-legal problems regarding AI techniques. I have mentioned in Chapter 1 that fashion brands largely focus on the application of algorithmic personalisation systems; however, we could see a more systematic approach to the commercial use of AI techniques in the future. Matters such as an individual's interaction with AI systems replacing certain physical and cognitive processes will require attention soon to fill gaps in the legal and ethical governance of autonomous systems. Here, my research contributes to thinking about notions of privacy, autonomy, and identity in a more nuanced way, challenging the rigidity of current legal discourse responding to technological developments.

In addition, I submit that my research highlights the connection between privacy and fashion identity, producing wider implications for both areas of research. In particular, my interdisciplinary approach can contribute to other emerging fields such as fashion law, which addresses 'the legal issues typically faced by fashion companies and fashion designers'.¹³⁵³ The thesis' methodology can cultivate further research within fashion law, which goes beyond 'the compilation of legal disciplines' and could examine the ethical and legal use of AI technology as a relevant factor in ensuring sustainable fashion.¹³⁵⁴

Moreover, I argue that incorporating fashion theory and psychology into privacy discourse is a novel contribution to the field of AI and human rights. Investigating an individual's autonomy and identity based on the situated self rather than the readings of algorithms is a valuable contribution to scholarship that can inform further research. I am thinking about the ambiguities of the self that are detached and generalised by algorithmic constructions, adding to the proposition that algorithms negotiate and shape an individual's autonomy and identity. My methodology can be used to examine technological progress in the future, including increased 'autonomy' in AI systems which operate in open environments, such as smart assistants and robotics. Hence, my conceptual outlook on privacy and fashion identity can be used to examine data processing activities based on the individual's interactive experience with AI systems.

¹³⁵³ Guillermo C Jimenez, 'A survey of fashion law' in Barbara Kolsun and Guillermo C Jimenez, *Fashion Law: A Guide for Designers, Fashion Executives and Attorneys* (Bloomsbury Publishing 2014) 2.

¹³⁵⁴ *ibid.*

To summarise, whilst my research is specific to the context of AI techniques in the fashion domain, there is no doubt that the conceptual findings in my discussion, including my approach to privacy, can offer a valid way of considering the individual's ambivalence of appearance management and perception within the algorithmic landscape beyond the strict application of algorithmic personalisation systems in the fashion domain.

2. Recognising the limitations of this research

Research on the intersection between AI, innovation, and law is progressing at a fast pace, but there is no work that can give a detailed account of how emergent uses of AI techniques will affect the future. My work is no different – it is impossible to predict how the proliferation of AI systems will diffuse harmful representations in coming years, and what types of individual and collective values need to be addressed first within a socio-technical infrastructure. Much of my research on the importance of privacy, autonomy, and identity is based on the risks of algorithmic personalisation systems causing intangible harms which can either solidify in the immediate future or indeed in the next decade. Accordingly, whilst my research can make some important consequential judgements about the harms of current AI techniques in fashion, there is always the need to adapt findings on present-day conditions, notwithstanding the conceptual validity of the notion of individual perception and self-relationality of fashion identity.

Hence, it is important to note the limitations of my interdisciplinary approach to research. That is, I use external knowledge to clarify existing legal boundaries and clarify current pressing legal issues surrounding an individual's privacy, autonomy, and identity. Accordingly, my conceptual outlook intends to foster doctrinal knowledge using external sources, but it does not offer a comprehensive solution to the governance of AI systems generally. Many questions, such as the design and user-centric governance of AI systems, will require further research that includes close cooperation with researchers from other disciplines, who could investigate the application and simulation of real-world examples with AI systems 'on the ground', and examine user perceptions of privacy, autonomy, and identity using qualitative methods. In other words, further empirical research can strengthen my conceptual outlook on privacy and fashion identity in so far as these scientific methods allow us to dynamically adjust the notions of individual perception and self-relationality in relation to new findings from the real-life interaction of AI systems with data subjects.

That said, we must not conclude that articulating the risks of AI techniques in fashion is another way of fuelling the hype around AI now. The most common misconception about AI is often the 'human-like robot' that will ultimately take over the world. Investigating the risks and abstract problems of algorithmic personalisation systems in fashion underlines that, at least conceptually, we need a

framework that safeguards fundamental values of privacy, autonomy, and identity in the digital age. Therefore, a proactive approach regarding the regulation of algorithmic personalisation systems in fashion needs to always consider the dynamics of technology through which social structures can be shaped and reinvented at a fast pace, constantly changing our understanding of privacy, autonomy, and identity. A conceptual framework is always necessary to set the tone for the values we want to protect in a future with AI.

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