Choosing '*For You*': Algorithmic Media Recommendations and Personal Autonomy

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Abstract

Social media platforms have become an important source for media consumption. Billions of users access broad categories of media, ranging from entertainment to news or political engagement. These platforms often employ a media recommendation algorithm (MRA), which are crucial in determining the content users are presented with. Among these platforms, TikTok exemplifies the use of a MRA to power their content discovery platform and is chosen as the focus of this thesis.

By applying relational autonomy, a field of theories that emphasize the social embeddedness of autonomy, this thesis explores how MRAs might affect user autonomy. The aim is to identify specific mechanisms through which harms might arise as a direct result of the design of the service. From a discussion of two different relational theories of autonomy, by Gerald Dworkin and Marina Oshana, one theory of autonomy is derived. Autonomy is understood here as the capacity of persons to critically reflect on their motivations and to be able to act in meaningful ways based on this reflection. Procedural independence holds that this critical capacity of individuals must not be influenced in ways which hinder such reflective ability.

Three main findings regarding the impact of MRA use on personal autonomy are argued for. First, it is argued that the MRA of TikTok emphasizes non-deliberate choice regarding the media consumed, which disincentivizes autonomous choice making. Second, it is argued that procedural independence is threatened when using TikTok. The argument concludes that self-adjustment of the MRA might change a person's critical reflection capacity regarding the amount of content they use. This is given special relevance in the context of advertising. Finally, it is argued that the social environment can hinder a person from disengaging from the service, which might exacerbate the other harmful effects.

Finally, the focus is on ways for mitigating the potential harms identified. The Digital Services Act of the European Commission specifically regulates the design of MRA from content providers like TikTok. The legislation is analysed in regards to how far it manages to mitigate the harms identified above. The legislation falls short to mitigate the main harms identified. It is argued that reducing the kinds of data the MRA has access to provides the best opportunity to reduce harm. Both in terms of practical and political feasibility.

Table of Contents

Introduction

Social media platforms have developed into an important place of media consumption. Billions of users worldwide consume news, entertainment and even political engagement from social media sites[1]. This is possible in significant part due to the general adoption of media recommendation algorithms by these services. Media recommendation algorithms are crucial in determining what content users get presented. One of the most impactful usages, and the focus of this thesis, is in content discovery platforms. These platforms focus on suggesting content without the user having to input or search for their preferred types of content actively. The media recommendation algorithms used in these services analyze user behavior with the goal of finding preferences and recommending personalized content[2]. Preferences are not generally defined, and will vary with the specific measurements that services handle internally to validate their media recommendation algorithm. Generally, preferences or relevance is that content which increases engagement of users with the service, like clicks, watches, likes, shares, etc. These algorithms are largely proprietary and individual to each platform. Based on large machine learning algorithms, all available content is ranked and identified. TikTok is an especially successful example of a content discovery platform utilising the media recommendation algorithm as a central functionality of their service[3].

It will be argued in the thesis that the proliferation of content discovery platforms using media recommendation algorithms indicates a changed mode of interaction between users and media consumption. This new way of interaction with media raises questions about choice and control of users. Are users still in control and do they have (sufficient) choice? The technology uses behaviors translated into predictions to present media to users. This differs from choice as direct selection of media (for example choosing a DVD to rent from a video store). Behaviors here are the observable and measurable actions that people make. Behaviors

[1] Bustamante, Candela, Wright, Bogan, 2022
[2] This system of the media recommendation algorithm on content discovery platforms is also referred to in short as 'the algorithm'.
[3] Ceci, 2023; TikTok, For You

relevant to media recommendation algorithms are clicks, likes, shares, etc. Choice here is those behaviors that influence the outcomes. Outcomes are the media they are shown. Choice and control will be further defined and discussed. Another question is that of influences on persons through the use of content discovery platforms. By presenting content based on predictive models, the systems may constrain users in the content they can access or manipulate them in other ways. These broad concerns are relevant to the concept of personal autonomy. Personal autonomy is chosen as the lens through which this thesis will approach the issues alluded to above. A discussion on the definition of autonomy follows below.

The term autonomy derives from the Greek for self-rule[4]. A generally accepted conception of autonomy is that a person must have authority over a personal sphere of life. A person is autonomous when they have some ownership over, among others, their behaviors and motivations[5]. Specific interpretations of autonomy differ between accounts, and will be discussed more below. Autonomy thus deals broadly with the authority a person has over their own life. In this way, it intersects with the concerns of choice, control and influence with the use of media recommendation algorithms raised above. Media recommendation algorithms challenge ideas about self-rule by creating the environment which users experience, and possibly aspects of themselves are shaped without their explicit involvement or understanding. What is the role of self-government in an environment that is pre-structured by algorithmic curation?

This leads to the research question of this thesis: *What is the possible impact of media recommendation algorithms used in the content discovery platform TikTok on the personal autonomy of users? Moreover, in what ways can and are these possible negative impacts preventable in legislation.* The focus is not on the (types) of content shown on the service. Rather, the focus is on the impact of the design of the technology on autonomy. This lens is unrelated to specific developments in content. Hopefully it thus presents a more generalizable analysis of the impact of media recommendation algorithm technology.

The second focus of the research question is about ways in which legislation could serve to prevent possible harms found. The executive arm of the European Union, the

[4] Oshana, 2006, p. 1
[5] Ibid., p. 2

European Commission, has recently focussed on legislating large technology and media services for its citizens[6]. In the Digital Services Act which was enacted in 2022 and went into effect in 2024, the Commission set direct rules for service providers. The legislation sets, amongst others, rules for the design and functionality of media recommendation algorithms. TikTok falls under this regulation[7]. Therefore, it will be investigated to which degree autonomy of users is protected under its rules.

A key consideration for the project of this thesis is the specific definition of autonomy to be used and applied. Relational autonomy is a subsection of writing on autonomy which emphasizes the social embeddedness of autonomy. It developed in opposition to other theories of autonomy, which according to critics presuppose an atomistic conception of the self[8]. According to critics, this leads to emphasizing self reliance as a good. Critics note also that other autonomy definitions overemphasizes independence from relational aspects of autonomy.

Relational autonomy stems from a specifically feminist tradition[9]. The interest of feminist work regarding autonomy is in part to develop theoretical frameworks which put into greater focus social relationships. Relational autonomy, then, puts the focus on autonomy as created through social relations[10]. In this view, people are fundamentally relational beings, whose autonomy is shaped in relation to others. Relational autonomy is chosen as the approach in this thesis. For these theories, the impact of the social environment on autonomy of individuals is the focus of investigation. This connects to questions about how media recommendation algorithm use is related to the interaction of users with their environment. Thus, a theoretical framework that specifically focuses on such interaction is well suited to the analysis.

Among relational autonomy accounts a major distinction is the difference between procedural and substantive accounts of autonomy. Procedural accounts focus on the historical process that leads to the psychological state of a person as autonomous. Influences from a person's upbringing, social relations etc. play a role in forming an internal psychological

[6] Buri, van Hoboken, 2021
[7] European Commission, 2023 October
[8] Oshana, 2006, pp. 1-20
[9] Friedman, 2000, p. 207
[10] Ibid.

capacity for autonomous thought. This psychological capacity is the main measure of autonomy of a person in such a theory. They are therefore also referred to as content-neutral, substance-neutral, or internalist[11,12]. Content-neutral and substance-neutral because they claim to not make judgements on the content of persons' actions or material environment in determining the status of autonomy. A purported advantage of this stance is to allow for various life-plans, without making value judgements on what kind of life results in more autonomous control[13]. Opposed to (fully) procedural theories are substantive theories of autonomy. They are not content neutral, as they presuppose specific substantive elements are necessary for a person to be in an autonomous life-position. Generally, substantive theories require autonomous persons to have (at least some measure of) substantive independence. Substantive independence necessitates that a person has self-reliance, an independence from their substantive environment. For example, substantive independence might mean that a person has the money, rights and ability to change their job to another one. They do not have to want to do this, but being autonomous with substantive independence means that they could. The distinction will be further explained in chapter one.

Including or not including a substantive independence requirement has relevance to the content of this thesis, as it defines the scope of influences to be considered. Therefore, the first chapter discusses this distinction at the hand of two theories. The first account is the procedural account by Gerald Dworkin. Dworkin's account is foundational among relational theories, being frequently cited in contemporary work on relational autonomy[14]. The second account is the Social-Relational account of autonomy by Marina Oshana. Their account builds in many elements upon that of Dworkin, but includes specific substantive elements. Their focus is explicitly on considering the social-relational context of persons[15]. This focus provides another useful lens during the analysis.

Finally, a combined relational theory of autonomy is defined, which is applied in subsequent chapters. The final definition of autonomy is as follows:

[11] Oshana, 2006, p.
[12] The terms procedural theory, internalist theory, content-neutral theory, and substance-neutral theory are used interchangeably
[13] Oshana, 2006, p. 46
[14] See for example Oshana, 2006 or Westlund, 2009 to name some
[15] Oshana, 2006, p. 49

Personal Autonomy as understood here is the capacity of persons to critically reflect on their motivations and be able to affect their life choices and position in meaningful ways. To this end, the critical faculties must develop without influences that make the person's motivations illegitimate and not their own. Additionally, a person's social-relational environment must be sufficiently free from constraints so that it allows them to implement various possible life-plans. Their actions cannot be fully determined by their social environment. Critical reflection is a mental capacity of persons to assess their motivations and actions and actively aim for a reconciliation between the two. Motivations are the various values, ideas, or goals that a person has. Both concepts will be explored more in depth in chapter one. While autonomy presupposes at least some freedom (which will be explored some more in chapter one), it is not within the scope of this thesis to explore the relation to free will in detail[16]. Some ability of persons to have independent decision making ability is presumed.

The thesis is separated into three chapters. Chapter one presents the theories of Gerald Dworkin and Marina Oshana, and defines the final theory of autonomy from the two. Chapter two applies the definition of autonomy to the use of media recommendation algorithms in TikTok. This is done to identify possible specific harms to the autonomy of users. Chapter three discusses the Digital Services Act legislation. This is done through the lens of its impact on mitigating the potential issues of autonomy identified before. This leads to a general discussion on ways of mitigating possible harm to users of media recommendation algorithm driven services.

Chapter 1: Personal Autonomy

Introduction

The goal of this chapter is to introduce and develop a theory of personal autonomy, to apply it in subsequent chapters to media recommendation algorithm technologies. The

[16] The theory is agnostic to whether absolute free will or full determinism exists. Whether there is direct control through a person's consciousness, or that process being the 'mere' combination of environmental inputs and the biological functions bears little consequence for the theory here described and the consequences of this work. The value of autonomy and the relation of persons to each other in society (the lack of subservience) holds independently.

chapter is divided into three sections. Section one presents the relational procedural theory of autonomy by Gerald Dworkin. Discussion of Dworkin's theory is separated into two main aspects. First, the critical capacity of persons which are the main element of an autonomous person's thoughts. Second, the procedural independence necessary to guarantee that a person's critical capacity is not influenced unduly. Critiques of their focus on a purely procedural approach are presented. The conclusion of the argument is that a purely procedural approach is not sufficient to describe autonomy. The second section presents the relational substantive theory of autonomy by Marina Oshana. The third section describes the construction of a combined theory of relational autonomy. This theory contains elements from both theories.

Section 1.1: Procedural Autonomy Theory of Gerald Dworkin

For Gerald Dworkin, autonomy is related to a fundamental conception of what a person is. "What makes an individual the particular person he is is his life-plan, his projects [sic]. In pursuing autonomy, one shapes one's life, one constructs meaning. The autonomous person gives meaning to his life."[17] Dworkin sees autonomy as an important but not supreme value. Rather, they see it as equal and related to other values of importance. On Dworkin's account, autonomy cannot be simply equated with liberty and freedom. For Dworkin, liberty refers here to the ability to choose and act from a range of relevant options without fear of harm. On Dworkin's account freedom concerns the ability to perform actions in the world without hinderance from others. While liberty, freedom, and autonomy are strongly related, liberty itself cannot fully account for possible limitations of self-determination. One can be deprived of autonomy in other ways than just curtailing their liberty. For example, a person deceived about their options might not have their liberty infringed yet be less autonomous. Nevertheless, liberty is a necessary requirement for the development of autonomy.

Similarly, not every interference with a person's liberty must interfere with said person's ability to choose their own course of life and act autonomously[18]. As an example, one might enroll themselves in a rehabilitation program, which curtails some of their immediate freedoms to make choices. Yet this might be just what is needed to enable said person to

[17] Dworkin, 1988, p. 31
[18] Ibid., p. 14

realize their broader life goals, which for Dworkin is at the core of autonomy as he understands it.

For Dworkin, autonomy is realized by a psychological duality, a reflection upon one's own desire, preference, or motivation. Dworkin uses desires, motivations and preferences interchangeably in his theory. One has "[…] a preference about [one's] preferences […]"[19]. In this way one can have conflicting internal states and desires. One might be compelled to do something in the moment, for example a craving or impulse to consume a large amount of ice-cream. Yet, one can also have a conviction that sharing is an important value. Thus, one might want to leave some of the ice-cream for their friends to enjoy. The ability to reflect upon sometimes conflicting desires or impulses is important to Dworkin regarding autonomy. They make a distinction between first-order desires, wishes, or intentions and second-order desires, wishes, or intentions. The first order describes immediate cravings, motivations, or common impulses with sometimes limited control[20]. Second-order desires are long held motivations, broader intentions, and life goals. They include attitudes and reflections upon one's first-order desires. The distinction between first and second order is not made specific by Dworkin. Moreover, it is not necessary for application of the theory to make distinction between first and second order motivations. To Dworkin, the goal is mainly to denote various levels of motivations (immediate, fleeting, or longstanding and consistent).

In earlier work, Dworkin describes the identification between one's first-order with one's second order desires as the necessary condition for autonomy[21]. Identification, as Dworkin defines it, means aligning one's actions with both first and second order motivations. So, for example, a person who wants to be honest, thinks of themselves as an honest person, and consistently tells the truth has achieved identification. They have successfully aligned their desire for truthfulness with their actions of telling the truth. A person struggling with any of these elements would lack identification. In later writing, Dworkin adjusts the requirement that identification must be achieved to satisfy autonomy. One must not necessarily identify fully with one's own first-order desires to be deemed autonomous. It is not the actual identification itself that is the determining factor. Rather, it is the ability to reflect upon this

[19] Dworkin, 1988, p. 15
[20] Ibid., p. 15
[21] Dworkin, 1976, p. 24

tension (or lack thereof) that is necessary for personal autonomy. One needs the ability to consider the reasons for one's actions and have the capacity to agree with them or reject them. The ability and process of making one's first and second order congruent, even if not wholly successful, is crucial for personal autonomy.

Various levels of identification or friction will occur in an autonomous agent. Detecting friction by the autonomous agent does not also necessarily lead to a change in behavior. One gripped by the craving for ice-cream, to return to the previous example, might have the personal ideal to be a sharing person, and thus make this effective in their behavior by ignoring their craving to finish the ice-cream. Alternatively, they might change their second order understanding of what it means to be a sharing person. They might even conclude that sharing ice-cream is not as strong a value for themselves as they thought, and thus achieve some identification with their actions. The degree to which one can put into action behavior based on one's second order desires is of importance here[22]. Dworkin claims that complete control over one's actions is not necessary to be deemed an autonomous agent. Moreover, the level of control over what one does is not necessarily a direct measurement of one's level of autonomy. On the other hand, a complete lack of control over one's actions (as with an addict who identifies with his inability to control his desire) cannot be deemed fully autonomous either.

Dworkin remarks that these second order desires and considerations need not be articulated. They emphasize this to distance themselves from a perception of intellectualized ideas of autonomy. Anyone, no matter their formal education, can in principle evaluate their actions against their long-term aspiration, goals, or beliefs. The results of that autonomous capacity will materialize in "[…] what he tries to change about his life, what he criticizes about others, the satisfaction he manifests (or fails to). In his work, family, and community"[23]. Being able to articulate these considerations in an academic language does not make for a more autonomous person.

A core consideration that Dworkin pursues is the question of legitimate vs. illegitimate influences on "the minds of the members of society"[24]. As was described above, autonomy is

[22] Dworkin, 1988, p. 16
[23] Ibid., p.17
[24] Ibid., p. 11

about an internal critical evaluation of actions and first and second order motivations. But in their conception of autonomy, this internal process is not and cannot be independent from external factors. Dworkin claims that "[our] dispositions, attitudes, values, wants are affected by the economic institutions, by the mass media, by the force of public opinion, by social class, and so forth".[25] According to them, a conception of autonomy cannot escape the fact that most of the environment that we are born in and shapes who we are, is in fact outside of our control. For Dworkin, the notion of self-determination can clash with the fact that anyone necessarily is the unwilling product of their environment. Addressing this tension is thus a core tenant of their theory of autonomy. Dworkin's approach is procedural, meaning they focus on the process that leads towards the psychological capacity of the agent to be autonomous. Thus, the influences that determine this process are a crucial aspect of their theory.

Therefore, they introduce the requirement of 'procedural independence'[26]. This means that the process by which a person has come to their second-order conception of themselves, their opinions and goals have developed without undue influence or deception[27]. A person's motivations and self-conception must not be influenced in such a way as to question that they are authentic[28]. An example they give where procedural independence is violated is to have oneself be hypnotized, and thus inserted new motivations or manufactured identification with one's motivations[29]. Next to hypnotizing they mention "[…] manipulation, coercive persuasion and subliminal influences"[30]. These different types of manipulation are not violating autonomy necessarily. They only have a negative influence as they manipulate the critical and reflective capacities. Lying, to take a simple example, would not necessarily violate procedural independence in Dworkin's account. Just having false information does not make it impossible to have authentic critical reflection, and thus act autonomously. One might come to regret a decision later, if it was based on false information, for example. This does not mean that the decision was not made autonomously.

Dworkin distances himself from an approach to autonomy that necessitates substantive independence as a requirement for autonomy. By rejecting substantive

[25] Dworkin, 1988, p. 11
[26] Ibid., p. 16
[27] Ibid., p. 18
[28] Dworkin, 1976, p.25
[29] Dworkin, 1988, p.16
[30] Ibid., p. 18

requirements, Dworkin wants to alleviate his theory of requirements of the substantive environment of persons. Their aim is to make room for different life plans of individuals and grant room for different ways of living an autonomous life. Thus, a non-substantive or content-neutral theory of autonomy aims to construct the minimal framework that enables autonomous agency. In the case of Dworkin, it is the procedurally independently formed critical faculties reflecting on motivations, as discussed above. The problem Dworkin sees with substantive independence requirements is the (in their view) resulting conflict with other values, like "loyalty, objectivity, commitment, benevolence, [and] love"[31]. This, they claim, can lead to theories that put special emphasis on "rugged individualism"[32], and devalues making commitments to others. For example, if autonomy is measured by the level of self-government of a person, this could show in the number of decisions made independently by a person. Thus, someone who lives in a tight-knit community would probably be deemed less autonomous than a person living by themselves in the mountains. The person living close to others would have to accept choices and rules made by others in the community, thus limiting the number of decisions they make in self-government.

The appeal of non-substantive theory like that of Dworkin to the application on media recommendation algorithm technology is the emphasis on making no moral judgement over actions that people take when assessing the status of autonomy. This leaves room to how people give their (autonomous) life shape. So, morality of actions is independent of autonomy. This separation might help to delineate the issue.

Applying this to technologies has the advantage of avoiding predispositions regarding what type of life one ought to live, and projecting that onto the status of autonomy. It lends itself to a view of autonomy that is disregarding to the largest degree possible the specific content of people's choices. As long as it does not interfere with the underlying autonomy. But this view is focusing on the psychological content of a person's mind only. This content-neutral view is not without critique. In the following, critique of the limited scope of Dworkin's procedural theory is presented.

[31] Dworkin, 1988, p.21
[32] Ibid., p.28

Critiques of Dworkin's theory focus on whether the claim of non-substantiveness can hold in practice. Marina Oshana questions the degree to which Dworkin can in fact keep substantive judgements out of their description of autonomy as much as they hope to[33]. In these judgements, according to Oshana, normative substantive elements will play a role. The following addresses this critique in more detail.

One of the main critiques that Oshana presents against the procedural view of autonomy is that "history is important for autonomy only to the extent that it results in a certain state of affairs in the present"[34]. They argue that the exclusive focus on internal psychological states of the agent leads to situations where an individual is deemed autonomous due to their acceptance and yielding to external circumstances beyond their control. It is not immediately clear whether Dworkin necessarily accepts this characterization. From Dworkin's own theory, the actor's ability to affect and steer their motivations, and consequently, their actions in the substantive environment, is relevant to autonomy. They argue that making one's desires effective in actions is necessary for personal autonomy[35]. This implies that an agent must be able to engage with their substantive surroundings in a self-directed manner. Otherwise, they might be prohibited in executing their will, which leads to non-autonomy. At least to the extent that they must be able to implement the results of their critically evaluated motivations in their environment. Only, in the case that an agent happens to find themselves in a situation of substantive servitude but happens to always align their goals and aspirations fully with the whims of their master, they will be deemed as autonomous by Dworkin while in chains. So a person who has no actual agency in their life could be seen by Dworkin as autonomous. In the very specific case that they never wish to do anything other than what they are forced to do.

Dworkin discusses this conflict with the case of the willing slave. Consider a person whose critical evaluation of their motivations leads them to legitimately want to be a slave, to act only at the command of others. Dworkin concedes that from their conception of autonomy, "[…] one cannot argue against such slavery on the grounds of autonomy."[36] But this position conflicts with another example they make. They consider the idea of the willing addict, who

[33] Oshana, 2006, p. 43
[34] Oshana, 1998, p. 96
[35] Dworkin, 1988, p. 17
[36] Ibid., p.129

identifies with his inability to control his desire for the drug and identifies with his inability to act differently[37]. They reject the claim that such a person would be deemed autonomous, as "Autonomy should have some relationship to the ability of individuals, not only to scrutinize critically their first-order motivations but also to change them if they so desire."[38] Additionally, they agree with Susan Wolf, arguing the individual "[…] could have done otherwise […]"[39]. Even if a person never wants to do something, there must be the possibility of them to have done it. A person must be able to do things, even if they never want to. This is also referred to as 'counterfactual power'[40]. The power to act unexpectedly from one's environment and influences. This implies some interaction with the substantive world the individual inhabits, and thus relates to their position of slavery. Could the slave change his first-order motivations if they so desired? Clearly once in the position of slavery, this ability is dependent on the whims of their master. And concerning the possible motivation to not be a slave, unchangeable. He could not, in fact, do otherwise. While Dworkin seemingly wants to ignore the substantive environment in which a person lives, it's shown here that this cannot ultimately be upheld. If the individual must be able to act differently from how they did, according to internal motivations that can change and are not wholly determined by their master, then the material circumstances do matter.

There seems then to be incongruity within the writing of Dworkin on the subject. Consider a possible argument against the voluntary slave, from the argumentation Dworkin lays out in their writing as follows. The voluntary slave might well conclude wanting to be a slave in an autonomous fashion. But once they have submitted themselves into the situation, they lack the necessary ability to reconsider or adapt their motivations concerning the desire for slavery. Dworkin might then argue that they could remain autonomous in their newfound motivation to hate their position of slavery. But is it possible for an unwilling slave to have continued critical reasoning development? A person who wants to be free but is not will not develop sufficient critical reasoning abilities. So, either they have no capacity for change, or they result in a situation of such lack of freedom to deny them autonomous development. In

[37] Dworkin, 1988, p. 16
[38] Ibid.
[39] Ibid., p. 17
[40] Oshana, 2006, p. 84

both cases, the voluntary slave will end up non-autonomous after they have submitted themselves.

Dworkin's position seems at best convoluted on the issue and is not providing a clear solution. Their firm commitment to ignore the individual's substantive environment leads them to conclusions that as was shown do not neatly follow from their own theoretical framework. Alternatively, if their arguments relating to the substantive environment as important hold as presented above, it becomes unclear why full rejection of substantive elements should be retained. It is thus reasonable to consider in more detail the position of Marina Oshana, whose social-relational theory of autonomy clearly deems the voluntary slave as nonautonomous. Marina Oshana resolves the issue by introducing the need for substantive requirements for autonomy, on top of the procedural internal ones presented by Dworkin. The following section motivates their theory with another example, that of Harriet, and discusses two of her substantive requirements she adds.

Section 1.2: Marina Oshana's Social-Relational Theory of Personal Autonomy

Marina Oshana proposes a theory of autonomy that builds upon the procedural theory of autonomy of Dworkin. Their social-relational theory of autonomy introduces substantive elements, while retaining many of the procedural elements found in Dworkin's theory. They argue that the purely non-substantive procedural theory of autonomy proposed by Dworkin misses cases of non-autonomy, which justifies the need for additional substantive conditions of autonomy.

The next case is that of 'Harriet, The Angel of the House'[41]. This concerns a housewife Harriet, who prefers to be subservient and serving in her role as housewife. She always puts her own needs behind those of her family members. All decisions important to the shaping of her life (financial decisions, childbearing choices, etc.) she defers to others in her family[42]. She

[41] Oshana, 2006, p. 57
[42] Ibid., p. 58

sees herself not as a person with her own wishes and desires that are relevant for consideration and is not treated as such. Even if other opportunities might arise for her that would further her autonomy, she is not inclined to pursue them. She herself chose this life situation, coming to it in a manner consistent with procedural autonomy and the procedurally independent psychological development necessary. What makes Harriet nonautonomous is not her position as other-regarding caregiver, her dedication to the family is not at issue. It is the subservience in all things regarding her own life that makes her nonautonomous[43].

According to Oshana, Harriet is not necessarily trapped in this arrangement. Different from the voluntary slave, she might one day decide to leave her subservient position behind and demand more agency in the family. Thus, Oshana claims, when analyzed through the position of Dworkin, Harriet could be seen as fully autonomous. If Harriet did not violate the condition of critical reflection or procedural independence. Though one might be suspicious of whether her situation in her family provides her with continuous procedurally independent development opportunities. As she is making decisions not in her interest, she will not make decisions that further her ability to have sufficient critical capacities. For example, she might forgo opportunities for education. It is conceivable that not using one's critical capacities over time might weaken them, too. Still, the situation of Harriet underlines how a person might have the 'correct' mental capacities for procedural autonomy but still lack agency over their life.

The cases of the slave and Harriet both concern the socially situated life positions of individuals, and the influence of this standing on their autonomy[44]. The persons presented lack de facto power over life decisions, stemming from "[…] the context of social, moral, and political frameworks […]"[45] they inhabit. They lack the counterfactual power to determine how to shape their lives. This leaves them vulnerable to determination from others about important decisions about their life. The two cases demonstrate that substantive elements are necessary to describe autonomy.

Requirements of the Social-Relational Account

[43] Oshana, 2006, p. 60
[44] Ibid., p. 67
[45] Ibid., p. 67

From these considerations Oshana derive the conditions for their theory of social-relational autonomy. She retains and adjusts procedural elements taken from Dworkin and adds substantive environmental ones. The following section presents three of these conditions for personal autonomy[46] proposed by Marina Oshana. They are 'Procedural Independence', 'Control', and 'Substantive Independence'[47]. Procedural independence refers to the same condition as defined by Dworkin. It is further elaborated here as Oshana adds aspects to the theory that are included in the final theory. Control and substantive independence, too, are selected as they will be integrated into the theory of autonomy developed for this thesis. They are the substantive conditions argued for above. For reasons of scope, several other conditions formulated by Oshana will not be discussed here, as they are not deemed relevant to the application in later chapters.

Oshana extends the definition of 'procedural independence' (as presented by Dworkin) regarding the importance of the person's involvement and knowledge in the process. Her main addition to Dworkin is about the knowledge of a person about being influenced. She argues that knowing or agreeing to a process of cognitive development does not determine its influence. Oshana argues that "[…] Procedural Independence is satisfied when […] a person's critical faculties have not been introduced or influenced in ways that undermine the legitimacy of the motivations that are appraised by those faculties, even if the person approves of the process and regardless of the person's lack of resistance toward the process."[48]

The motivations here refer to the totality of wants, needs, desires, etc. They represent both the direct impulses, and the broader life goals. So, the ideas about self-perception and one's position in life. To Oshana, critical faculties relevant to autonomy are those that test and reflect on the motivations, thus making them 'one's own'. On this account, the legitimacy of an autonomous agent's motivations is guaranteed by these critical faculties. Procedural independence is then concerned with the process through which they arise. The critical faculties must neither be created nor undermined in such a way as to significantly harm the legitimacy of the motivations. An example might be the motivation one has to become a pilot. In life, many external influences might shape a person's view of becoming a pilot. An example

[46] Oshana, 2006, p. 76
[47] Ibid., p. 87
[48] Ibid., p. 79

might be family stressing the importance of pursuing a well-paying career. This pressure is influencing and shaping one's motivations to become a pilot. In terms of Oshana's account, this is a legitimate influence. Illegitimate influences would be those that make it harder for the person to come to such a decision. An example could be a kind of upbringing which left the child with very low self-esteem and self-worth. This might make them disregard some other feelings they might have. To choose an example, they might have a fear of heights. For the sake of argument, it can be assumed that a fear of heights would be a sufficient reason to choose a different profession for persons without such low self-esteem. The extreme low self-esteem leads them to make a decision (become pilot) which goes against some reasonable objection (fear of heights). In this case the upbringing of the child to have very low self-esteem violates procedural independence. Therefore, the decision to become a pilot is not made by a (sufficiently) autonomous person.

This so far is in line with the definition of procedural independence as Dworkin understands it. In the second part of her definition, Oshana wants to make a distinction. It does not matter to what degree the person being influenced agrees to or even embraces the process of undue influence on their critical faculties. The outcome remains, their motivations are either more legitimate or less so. Moreover, the person has no direct way of testing this assumption. Oshana claims to depart from procedural theories like that of Dworkin in this point[49]. It remains unclear, though, to what extent if at all Dworkin would reject this formulation, though they do not comment on it directly. They both reject the claim that procedural independence must lead to authenticity and subsequently authenticity as necessary for autonomy[50]. Authenticity is reached if a person has aligned all of their motivations, so (always) acts in accordance with their motivations and has only motivations that are in accordance with their actions. Both Dworkin and Oshana reject the need for closure and contentment as a result. Feelings of alienation, discontentment, or cognitive dissonance do not necessarily mean that one is less autonomous and self-directed.

The next condition of Marina Oshana introduced here is 'control'. The condition for 'control' is defined as the ability of an actor to have the power to determine the direction of their life. An actor must be able to have the ability to have acted differently. This requires the

[49] Oshana, 2006, p. 80
[50] Oshana, 2006, p. 79; Dworkin, 1988, p. 15

power to act differently from what the environment expects or demands from them. The environment might be for example people in roles of authority or laws and rules. Oshana calls this 'counterfactual power'[51]. In this sense, an actor who wishes to only follow the actions commanded by others and could not do otherwise cannot be deemed autonomous. Even if they never wish to act differently from the commands. The fact that they could not decide to act otherwise disqualifies them from being in a globally autonomous life position. Counterfactual power is concerned with possible alternative actions, even if those are never taken.

Social-relational autonomy requires 'Substantive Independence'[52]. Just having choices available is not enough, if an agent does not have some ability to select and implement choices independently from their substantive environment. Oshana defines five social-relational properties necessary for an agent to be autonomous. One, persons must be in such a social situation that safeguards their de facto and de jure power and authority as is relevant for autonomy. De facto power is the ability to act in practice without facing undue consequences. De jure power refers to having the legal right to act in a certain way. Both in legal and in every-day sense, the choices available must not be subject to domination from others. Second, the agent must be able to pursue different goals and interests from those of their environment, without the threat or fear of reprisal for it. Third, the agent must take responsibility for others only as far as it can reasonably be expected from them in their roles in society. So, a parent has some responsibility to their child, and a fireman to someone trapped by a fire. The expectations must be achievable, without depriving the person of the ability to care for themselves. Fourth, a minimum level of financial self-sustainability is needed to materially provide for oneself. Control over others is often achieved through financial dependence, and Oshana wants to guard against such influences. Fifth, the individual is not misinformed about their options or abilities. Having the information about the choices one has is crucial to being able to exercise them.

Having discussed Oshana's view of autonomy, it is helpful to review the reasons that made Dworkin reject adding substantive elements to their theory of autonomy. Dworkin anchors their decision to reject substantive aspects of autonomy in the fear that doing so will

[51] Oshana, 2006, p. 84
[52] Ibid., p. 86

conflict with other relevant values. Does Oshana's substantive social-relational view of autonomy lead to what Dworkin is worried about regarding substantive notions of autonomy? Namely that they (as Dworkin puts it) lend themselves to promoting rugged self-determination and lack of regard for other values like "loyalty, objectivity, commitment, benevolence, [and] love"[53]. It seems that autonomy in the social-relational view contains ample room for the values Dworkin names. For example, making commitments forms an important aspect of Oshana's view of autonomy. An explicit part of the substantive independence conditions is the importance of reasonable social commitments[54]. Moreover, values like commitment, benevolence, and loyalty derive their meaningfulness through an agent who could choose them in an informed and deliberate way. Only if a person can choose not to be loyal, or honor a commitment do these values become meaningful. It could be argued that if they had no other choice due to a fear of retaliation, the expression of these values would lose their meaningfulness. Someone forced to be loyal might not be described as truly loyal. This might indicate that the substantive conditions defined by Oshana support the importance of other values than autonomy. The arguments Dworkin proposes to reject substantive independence elements in their theory are here found to be unconvincing. Therefore, the inclusion of substantive conditions in the theory developed here is further supported.

Section 1.3: Personal Autonomy Definition

The third section aims to define a working conception of personal autonomy. The theory of autonomy used in the remainder of this work is defined as follows: *Personal Autonomy as understood here is the capacity of persons to critically reflect on their motivations and be able to affect their life choices and position in meaningful ways. To this end, the critical faculties must develop without influences that make the person's motivations illegitimate and not their own. Additionally, a person's social-relational environment must be sufficiently free from constraints so that it allows them to implement various possible life-plans. Their actions cannot be fully determined by their social environment.*

[53] Dworkin, 1988, p.21
[54] Oshana, 2006, p. 87

Identification with one's motivations is not a necessary condition for autonomy. Neither is the full control over one's motivations and actions in all circumstances. The above definition derives from the theories of Gerald Dworkin and Marina Oshana presented in previous sections. Four necessary conditions are defined that cover the aspects of the definition. The first two are critical reflection and procedural independence, as described by Gerald Dworkin and added on by Marina Oshana. The latter two are control and substantive independence, as defined by Marina Oshana.

The conditions are presented in the following table:

Personal Autonomy Condition:	Description:
Critical Reflection	Critical Reflection is satisfied when a person uses their critical faculties to evaluate their (possibly conflicting) first and second order motivations about their life and the choices they make. One must be able to implement the outcome of this process in behavior.
Procedural Independence	"Procedural Independence is satisfied when a person's critical faculties have not been introduced or influenced in ways that undermine the legitimacy of the motivations that are appraised by those faculties, even if the person approves of the process and regardless of the person's lack of resistance toward the process."[55]
Control	Control is satisfied when a person could have acted differently. They have counterfactual power over their material environment and

[55] Oshana, 2006, p. 79. This definition is cited directly from Marina Oshana and used as the definition of PI in the remainder of this thesis.

	could affect their choices outside of the control of others.
Substantive Independence	Substantive Independence is satisfied when a person has the material security and safety to select and implement their choices. For this they need (1) legal and physical ability to implement their choices. They need (2) to be free from fear of reprisal. (3) A person can only be made to take responsibility for others to a reasonable degree. (4) A minimum level of financial self-sustainability is needed.

Critical reflection derives from Dworkin's theory of autonomy. The explicit focus on the ability of implementation points towards the substantive influence accepted as necessary. Procedural independence is taken from the definition of Marina Oshana. Their definition does not conflict with that of Dworkin. Control, too, is taken from the definition of Oshana. It specifies the need for material impact of a person in their environment. The same holds for substantive independence.

Conclusion

This chapter has explored and developed a theory of personal autonomy suitable for analyzing the impact of media recommendation algorithms. Through a discussion of Gerald Dworkin's procedural account and Marina Oshana's social-relational theory, a combined relational theory of autonomy has been formulated. Each of these approaches has contributed distinct insights into the necessary conditions for autonomy.

Dworkin's procedural theory highlights the importance of critical reflection and procedural independence as fundamental elements of autonomy. He emphasizes that autonomy is realized through the capacity to evaluate one's motivations and align them with personal goals or values. This capacity is protected by procedural independence, which requires that individuals are free from undue external influences that could distort their

reflective processes. However, the limitations of Dworkin's account become apparent in its inability to account for cases of diminished autonomy stemming from broader social contexts.

Oshana's social-relational theory addresses these limitations by incorporating substantive requirements into the framework of autonomy. Her account emphasizes that autonomy also depends on social conditions such as control over one's environment, and substantive independence from one's environment. Oshana's inclusion of substantive independence highlights the necessity of material and social resources that empower individuals to act according to their critical reflections. The synthesis of these two approaches has resulted in a definition of autonomy: the capacity to critically reflect on one's motivations and act meaningfully, while being sufficiently free from external constraints in both procedural and substantive terms.

This theoretical foundation will serve as a lens for examining the impact of MRAs, particularly as implemented by platforms like TikTok. In the subsequent chapters, the relational theory of autonomy developed here will be applied to analyze how these algorithms might influence users. Furthermore, the framework will support an evaluation of regulatory responses, such as the Digital Services Act, to determine their effectiveness in mitigating the identified harms to autonomy.

Chapter 2: Media Recommendation Algorithms and Personal Autonomy

Introduction

This chapter will apply the notion of autonomy developed in chapter one to technologies of algorithmic content recommendation systems. As a specific example, the popular short video platform TikTok and its algorithmically generated content feed on the For You page will be analyzed. TikTok is selected as a technology due to its global popularity (825 million downloads globally as of 12.2024)[56] and central use of algorithmically recommended content[57]. It is treated as one specific example of a broader trend in algorithmic media

[56] Statista, 2023
[57] TikTok, For You

recommendation system use on content discovery platforms. Content discovery platforms like TikTok provide users with personalized content, meaning that each user will have different content served to them. This is achieved through use of a media recommendation algorithm. This uses machine learning to discover patterns in use of many people (what they watch etc.) and based on those patterns suggests specific content.

The chapter is divided into two main sections. First, TikTok and its functionality is briefly explained, with a look at the interactions of users and the TikTok algorithm. Moreover, TikTok's algorithm is situated within the broader context of the attention economy and its addictive design elements are discussed. The second section applies the theory of personal autonomy to the use of TikTok and the possible consequences for users. It is argued that the specific adaptive design of the algorithm leads to a possible harm of personal autonomy of users regarding their use time of the application. The impact of the substantive environment of a user on the relation between autonomy and the use of TikTok is reviewed. The issues identified in this chapter will form the basis for chapter three, where possible approaches for mitigating the harms will be discussed.

Section 2.1: TikTok

TikTok is a short-form video platform, owned by the Chinese company ByteDance Ltd.[58] The TikTok app currently has 650 million active global users[59]. This makes it the 6th most popular social media application globally[60]. Its cultural relevance especially for young people and youth culture in at least Europe and the US is widely acknowledged. For example, Literat and Kligler-Vilenchik argue that TikTok is an important platform for young people to express and form their political and cultural views[61]. While the application has many features, here the discussion will be limited to users' consumption of content on the For You page. This is the main feature of the app, a continuous stream of short-form videos presented to the user. These videos are chosen based on an algorithm that combines observations from the user (which of the presented videos they watch, amongst other observations) and statistical information like

[58] TikTok, 2023
[59] Ceci, 2023, Statista
[60] Dixon, 2023, Statista
[61] Literat and Kligler-Vilenchik, 2023

viewing habits of millions of other users. In this way it identifies patterns and suggests videos that fit the viewing patterns of every individual user. Making videos and chatting with other users are elements of the app that will not be directly addressed in the thesis here. The algorithm refers to the media recommendation algorithm embedded in the application. It describes the whole system of user data observation, gathering, prediction and serving of content based on those predictions.

TikTok uniquely centers its main functionality almost exclusively around this main page of continuous videos selected entirely by the media recommendation algorithm. Other popular applications like Instagram, Facebook, YouTube, and Reddit have since TikTok's success introduced similar algorithmically driven features. This is showing the apparent success of the concept. Still, TikTok lends itself to the focus of this analysis as it uses algorithmically predicted short-form media most centrally.

The following section connects the architecture of content discovery platforms with the attention economy, and how its incentives shape design choices. If design choices made in services like TikTok can have an impact on personal autonomy, then the (economic) incentives that inform those design choices are of relevance. These incentives can provide insight into why certain (autonomy impacting) design elements are implemented. Moreover, they can in later analysis provide indication into how the companies themselves would react to addressing issues of autonomy violation. In this way, the following section provides a background in which to situate the analysis on personal autonomy.

The attention economy is part of what Shoshana Zuboff names 'Surveillance Capitalism' as a new form of capitalism which produces revenue through the extraction, commodification, and modification of human behavior[63]. What is traded in the attention economy is not a product or service, but the attention of users. This attention is used for behavior prediction and change. The latter mainly uses targeted advertising. This economic model relies on two main aspects. First, the mentioned gaining and holding of the maximum amount of attention, so time spent consuming content. And second, the collection of as much personal data on users as possible. This personal data is used to feed the machine learning driven algorithms which promise the buyers of advertisement spots a precise and impactful

[63] Zuboff, 2019

marketing campaign. Content discovery platforms like TikTok are an especially successful version of this economic model[64]. They are especially successful at gaining and retaining this attention capital. TikTok's For You page bases their recommendations on many factors, mainly the time spent looking at a video (as opposed to swiping away to the next video). Additional information included is if users like, save, or comment on the video, if users watch it again, if and to what other platform they share it, if they usually watch similar videos, and possibly many more. ByteDance does not reveal the specific ways in which their algorithmic system decides on which videos to serve a user, but it is some combination of these elements.

Not unlike other Big Tech companies, TikTok collects data on what a user watches to a millisecond[65]. Also, they have access to what private messages they send, the comments they write, the geolocation of a user, their contact list, the users email address, phone number, age, search history, and information about the videos and photos a user uploads to the service[66]. All this data can be used to adjust the algorithm, or to serve more relevant advertisements to users. Relevant advertisements are those that elicit the most conversion. Conversion meaning that an advertisement reaches the desired outcome. This could be the sale of a product directly for example.

Important for the analysis of personal autonomy of TikTok use is gaining some understanding about the experience of users directly. This is impracticable to do fully, as TikTok is based on providing varying experiences to its users. Still, the following aims to give some insight into user experiences that can inform the later analysis. Schellewald aims to do that in their digital ethnographic investigation of TikTok use. They find that users employ a range of meaning-making and interactive engagement with what they understand the algorithm to be[67]. They interviewed 30 university students from the greater London Area about their use of TikTok and their understanding of the TikTok algorithm. While this is only a small selection of the whole range of users and use cases for TikTok, it provides a tangible insight into what users experience when they use the algorithmically suggested media feed.

[64] Bhargava and Velasquez, 2021, p. 322
[65] Fung, 2023
[66] Ibid.
[67] Schellewald, 2022, Theorizing "Stories About Algorithms" as a Mechanism in the Formation and Maintenance of Algorithmic Imaginaries

The participants of Schellewald's study indicated that they did not engage with TikTok for its features of content creation or social interaction with peers[68]. The participants used TikTok mainly by watching videos on the For You page, the main landing page serving a continuous stream of recommended videos. TikTok is experienced by the participants mainly as a pleasurable activity, a way of escaping their lives for a period, and for spontaneous distraction[69]. They experienced the algorithm as 'knowing them well', and credit their enjoyment of the content shown to this knowledge. What is consistent through various studies on TikTok use is how users actively try to adjust their algorithm to serve them fitting content[70]. This experience is generally described as satisfying, as TikTok quickly and accurately identifies users' tastes[71]. Taste here refers to the kinds of videos they enjoy watching on the platform. From these limited studies on users' experience of TikTok, it seems that the recommended videos and taste are generally equated by participants. This indicates that there is some identification of the users with the videos that they are being presented through the media recommendation algorithm. A successful algorithm then, is equated by these users as one where they can claim ownership over the content as 'their taste'. Users are identifying with the output of the media recommendation algorithm as 'taste'. This link provides insight into users' relationship to TikTok.

Simultaneously, users in Schellewald's study report being aware of the tension between wanting to be served fitting content, and knowledge of it being a source of surveillance and effective control[72]. People become aware of the algorithm as an entity and report some intuitions on how it curated content. They reported to have gained perceived understandings and intuitions about how the algorithm worked and aimed consciously to adjust its output. This led users to adjust their behavior on the app over time. For example, as the algorithm is sensitive to watch-time, a user might scroll past quickly on videos they deem as unenjoyable, unwanted, annoying, etc. This behavior is recorded by the algorithm and nudges it to serve different content. This creates a limited sense of control and ownership over the algorithm. Users felt as active participants in the creation of the For You page and the content they are shown. This work of interpreting the algorithm is shaped also from

[68] Schellewald, 2022, p. 4
[69] Ibid.
[70] Schellewald, 2022; Siles, Valerio-Alfaro, & Meléndez-Moran, 2022; Kang, H., Lou, C., 2022
[71] Siles, Valerio-Alfaro, & Meléndez-Moran, 2022, p. 7
[72] Schellewald, 2022, p. 5

discussions of the algorithm in users feed[73]. Schellewald describes users seeing content that specifically engages with the algorithm and its functionality[74].

This form of interactive use described in the study by Schellewald points towards a conception of scrolling on the For You page as not mindless and fully passive. The use of the For You page is often described as a fully passive activity, whereby users have no direct control over what kind of content they will experience and 'switch off'[76]. This description of watching as fully passive is widespread, not only in popular understanding, but also academic discussions of the topic[77]. Rhymes (2023) argues against the idea of scrolling as 'mindless', arguing it is an attentive activity. For the 'personalized' experience (based on watching behavior) provided by the algorithm to function, the user must have made attentive choices. A totally passive user would forever view the default selection of videos. That watching TikTok videos is a stimulating activity is supported in a study of brain scans by Su et al.[78]. Their research suggests that activity is increased when participants watch recommended videos, higher than participants who saw non-personalized videos on TikTok.

Section 2.2: Personal Autonomy and TikTok use

The following section applies the definition of personal autonomy in relation to the use of the media recommendation algorithm on TikTok's For You page. By doing this, it becomes clearer in what ways users of TikTok might be harmed in their personal autonomy. In turn, this can answer questions about the relation of persons' choices to their values. Knowing the specific ways in which personal autonomy might be threatened can in turn inform in which ways mitigation of the issues would be possible. This is addressed in detail in chapter three. For this, the specific aspects of personal autonomy that are potentially threatened are identified in the following.

[73] Schellewald, 2022, p. 5
[74] Ibid., p. 6
[76] Rhymes, 2023 while arguing against this point, presents cases of scrolling described as 'mindless'. See Schellewald, 2022, for descriptions from users describing their scrolling activity as 'mindless'.
[77] Rhymes, 2023, p. 38
[78] Su, et al., 2021, Conclusions.

Recall the definition of personal autonomy, defined in Chapter 1.3: "*Personal Autonomy as understood here is the capacity of persons to critically reflect on their motivations and be able to affect their life choices and position in meaningful ways. To this end, the critical faculties must develop without influences that make the person's motivations illegitimate and not their own. Additionally, a person's social-relational environment must be sufficiently free from constraints so that it allows them to implement various possible life-plans. Their actions cannot be fully determined by their social environment.*"

Autonomy is defined by four conditions, 'Critical Reflection', 'Procedural Independence', 'Control', and 'Substantive Independence'. These conditions must be fulfilled to deem an agent broadly autonomous in their life-situation. The impact of Media Recommendation Algorithms on these conditions will be evaluated. Thus, their possible positive or negative impact on personal autonomy can be approximated.

Subsection 2.2.1: Critical Reflection in TikTok watching

Critical Reflection is a core aspect of an autonomous agent. Recall the definition: "Critical Reflection is satisfied when a person uses their critical faculties to evaluate their (possibly conflicting) first and second order motivations about their life and the choices they make." To satisfy critical reflection and be deemed an autonomous agent, motivations and their outcomes must be evaluated critically. This presupposes that a person sees the content they are shown as the outcome of their choice and thus subject to their motivations. In the case of watching TikTok, this is not clear.

The practices of use described by some users of TikTok (discussed in the previous section) could fall within this process of autonomous critical reflection. The content one consumes can be seen as the outcome of a user's choices. Thus, they are subject to the motivations of a user. Moreover, the videos a person sees reflect a user's first and second order motivations. Thus, they are subject to their autonomous decision making.

How much a person sees the content shown to them as subject to their autonomous control might change the content they are shown. Take for example two persons, both are fascinated by violence (a first order motivation for them) but both think of themselves as peace loving (a second order motivation for them). The first person thinks of the content they see as

not related to their choice. The content is happening to them, and they get presented with violent content because they watched similar content before. The second person sees the content they see as (partly) the outcome of their motivations and their actions. From the critical reflection they conclude that this is not in line with their second order motivation to not consume violent content. This leads them to change their behavior, they swipe away violent video content. So, feeling control over the content shown might lead to more autonomous control exercised. The next paragraph argues that TikTok can make such critical engagement harder than in other media types.

There is a difference in the way critical engagement might happen in the case of TikTok and non-algorithmically driven content consumption. Choosing could be seen as less deliberate than it might be done for other media. For example, one might be choosing a movie DVD from the selection at a store. Deliberate choice here means that actions are performed with the express intent to impact a specific outcome (choosing to buy the Shrek 2 DVD for the outcome of watching Shrek 2 that night). In this case actions are the observable behaviors, like pressing the like button on a video. The specific outcome in the case of TikTok would be the types of videos one sees on the For You page. Non-deliberate choice then would be performing actions that result in outcomes without that outcome being the express goal of the action. An example could be pressing the like button on a video just to indicate enjoyment of the video. The action is not done with the direct intent to affect the content that will be shown subsequently. Thus, it can be seen as a non-deliberate choice of what content one is shown. It seems that TikTok mainly works through non-deliberate choice. An indication of this is how little direct communication there is from TikTok to users about the way their behavior impacts the content shown[82]. The language used by TikTok themselves suggests the adaptation of the algorithm to be a passive process: “The more you use TikTok, the more your For You page will reflect your interests […]”[83]. Contrast this with the social media site Tumblr. There, the personalized main page (called Dashboard) is not algorithmically curated. The Tumblr support site suggests following tags (general topics) and blogs (content from particular users) in order to build an experience[84]. There is more direct user input that is needed to generate the content

[82] TikTok support, For You
[83] Ibid.
[84] Tumblr, n.d. Getting Started on Tumblr

shown. Thus, it might be clearer that the content one sees is (in part) a product of one's choice. Thus, it could be to a larger extent subject to one's critical reflection.

The seeming focus on predominantly non-deliberate choice in the use of TikTok might lead to less room for identification of users. Identification is the connection between choices (and their outcomes) and a person's (first or second order) motivations. For example, the person who does not want to be a person who watches aggressive content might still find content featuring aggression shown to them. This is due to their non-deliberate choice, watching or interacting with earlier aggressive content. Because the choice is largely non-deliberate, the connection between their desires (kinds of content would like to see), actions (e.g. what they do watch), and the outcome for their life (what content gets subsequently shown) might be less clear to them. Consequently, it might be harder for a person to identify that there is a connection between their actions, motivations and their outcome. In this way, the way choice is implemented in TikTok might make critical engagement less likely for some users. Moreover, it is not clear how much a person's actions really influence the content they are shown. For example, content might be shown due to the location a person is in. This is not directly linked to choice of the person. This makes it even harder to link one's motivations with the outcomes.

Moreover, in chapter one it was argued that critical reflection needs a person to identify oneself as an acting agent. Think back to the example of 'Harriet, the angel of the house'. She did not recognize herself as an acting agent, and thus not deserving of autonomy. This is what leads her to disregard chances for her to develop autonomous skills. Ultimately, this contributes to her position of non-autonomy. Having less critical engagement with the use of TikTok might make users more open to being influenced in harmful ways. The following section goes into how the working of the algorithm might influence users' capacity for autonomy negatively.

Subsection 2.2.2: Procedural Independence in TikTok Watching

This next section concerns 'procedural independence'. As discussed in chapter 1.3, procedural independence is the most important condition for autonomous development. Recall the definition of procedural independence: "*Procedural Independence is satisfied when a person's critical faculties have not been introduced or influenced in ways that undermine the*

legitimacy of the motivations that are appraised by those faculties, even if the person approves of the process and regardless of the person's lack of resistance toward the process."

One major threat to procedural independence is addiction[85]. Addiction violates personal autonomy as the motivations regarding the subject of addiction have not been introduced through use of critical faculties. Also they cannot be meaningfully reflected on and changed, as long as the addiction persists. Even if a person claims to approve of their addiction, this makes them not any less addicted. A person addicted cannot be deemed fully autonomous regarding the motivation to use the substance of their addiction. Critical reflection regarding the use of the substance does not influence their decision making. Thus, the addict might not be in the habit of using their critical reflection on other motivations in their life. This might lead them to further deemphasize ownership over their motivations and behaviors.. Of course, addiction can be healed. In that case, on this account critical reflection on the motivation might help the addict avoid their use of the substance.

The issue of addiction and social media is as widely discussed as it is continuously controversial[86]. While there is no medical consensus on the exact nature or existence of social media addiction, many patterns of behavior of use are recognized as similar to those in other addictions. Bhargava and Velasquez argue that social media companies purposefully design their services to be addictive[87]. They argue that removing natural stopping cues like replacing page breaks with continuous streams of content are designed to inhibit moments of users stopping their behavior, giving them a chance to contemplate their use. In this way, more usage is encouraged. Shoshana Zuboff borrows from the literature on gambling machines and their addictive features[88]. The concept of the 'machine zone' is connected by Zuboff to how (in her example) Facebook aims for a similar psychological end goal as gambling machines. They argue the machine zone is

"[…] a state of self-forgetting in which one is carried along by an irresistible momentum that feels like one is 'played by the machine'. The machine zone achieves a sense of complete

[85] See chapter one section 1 for Dworkin's view of addiction and autonomy.
[86] Bhargava and Velasquez, 2021, p. 322; Wiederhold, 2022; In this work, the specific discussions around whether social media addiction should be classified as such in a medical sense are beyond the scope. The methods of addicting design are relevant, nonetheless.
[87] Bhargava and Velasquez, 2021, p. 322
[88] Zuboff, 2019, p. 282

immersion that recalls Klein's description of Facebook's design principles—engrossing, immersive, immediate—and is associated with a loss of self- awareness, automatic behavior, and a total rhythmic absorption carried along on a wave of compulsion."[89]

The design of the machine is fully geared towards the enhancement of that subjective shift, ideally without the awareness of the user. This design philosophy is reflected in TikTok's design. The descriptions by users of 'losing control over time' fit well into this picture[90]. The immersiveness of TikTok leads to extended use, and problematic TikTok use, exhibiting features of addiction. Montag, Lang, and Elhai argue that TikTok's For You page leads users to consume content for longer periods of time than they intend to. This, they argue, encourages TikTok-related addictive behavior[91]. While problematic and possibly addictive behavior linked to specifically algorithmically recommended media consumption is often observed, empirical studies regarding their precise nature are lacking[92]. Just as empirical evidence on addictive TikTok use is lacking, only few neurological studies look at the impact of personalized video content on users. Part of a small body of work on the topic, Su et al.[93] studied the difference in brain activity of users viewing personalized TikTok videos and unspecific videos. They showed increased attention and retention in recommended users. Moreover, they showed that reduced self-control is positively correlated to problematic TikTok usage, pointing to a susceptibility for persons with decreased self-control to become unable to moderate their use. This first study into the neurological foundation of recommended video content does not yet present conclusive results on how attention is moderated by algorithmically recommended media. Nevertheless, it indicates that recommended videos have an increased effect on brain activity linked to attention related tasks. The addictive nature of TikTok cannot then be fully argued for either way. But there is another related aspect of TikTok's MRA which warrants attention.

Bhargava and Velasquez argue for a difference between regular addictive products and those of social media companies and algorithmic media recommendation in particular. What makes TikTok different from, for example cigarettes, is the way in which the addiction is created

[89] Zuboff, 2019, p. 282
[90] Schellewald, 2022, describes users losing track of time
[91] Montag, Lang, Elhai, 2021, p. 2
[92] Ibid., p. 2
[93] Su, et al., 2021, Conclusions.

procedurally through continued use. The nicotine in the cigarette changes the motivations of a user in a way as to make them crave increased usage of the drug[94]. But the MRA changes itself in such a way as to make itself more appealing and possibly more addictive to the user. "The social media companies involve the individual in the very process that makes the platform more addictive to that individual."[95] Social media sites like TikTok are "getting a person to contribute to making addictive the very thing to which that person has become addicted"[96]. TikTok and its algorithm are not just designed in an addictive way, as for example the gambling machine is. They are additionally harmful to personal autonomy in a way that other substances or services are not. By continuously adjusting itself with the help of the user, the algorithm hijacks the reflective process someone might have regarding their TikTok use. This hijacking can work in the following way. The design elements described before that make disengaging with the service hard might make a person use TikTok for a longer period than they might intend beforehand. Consequently, a person might critically reflect on their usage of the app. This would lead to comparing their actions and first order motivations (the usage of TikTok) with their second-order motivations. So, what they see on TikTok compared to what they would like to see more/less of. This might leave them unsatisfied with their usage in some way, they watch more content than they want to based on some second order motivation.

The conclusion of this process (of critical reflection on use leading to behavior change), though, will, to the extent technically possible, be incorporated by the algorithm in such a way as to extend engagement with the app regardless. The full process of reflection cannot take place in an unmediated way by the algorithm adapting itself to serve more 'fitting' content. As Rhymes puts it "If a user does not engage with a particular piece of content in the way predicted, it is taken note of, and the algorithm will modify the extent to which it presents similar content in the future, correcting itself in real time."[97] The legitimacy of the motivation to be a consumer of large amounts of content on TikTok needs to be evaluated by critical

[94] Bhargava and Velasquez, 2021, p. 334
Bhargava and Velasquez also argue that the economic incentives of social media companies lead to an especially problematic moral damage to users. While many sectors and businesses rely on an addictive product which might harm its users, their goals are usually limited to the point of sale of the product. Cigarette companies, they argue, do not care directly what you do with them after buying the product. But for social media, the continued use and interaction with the service is itself the source of revenue. Thus, the interest of controlling usage of the app is much stronger. This leads to a different kind of incentive for control of users by way of addictive design.
[95] Bhargava and Velasquez, 2021, p. 334
[96] Ibid., p. 335
[97] Rhymes, 2023, p. 34

faculties for a person to be autonomous in their engagement with the service. These critical reflections are discouraged by both the type of content shown, and the means in which stopping cues and other opportunities for moments of reflection and distance are removed. Moreover, the outcome of reflection will result in a change in viewing behavior and thus will be used by the algorithm to extend watch-time through content selection. Thus, procedural independence is violated. The development and evolution of critical capacities regarding consumption of content while using the application is not independent. Rather it is possibly influenced and changed towards increased content consumption.

This argument rests on the following position: that the critical reflective processes about usage of TikTok will be evident in observable behaviors within the application. For example, some content (based on critical reflections of a person) makes a person close the app for longer periods of time than others. This is then observable behavior to the algorithm. As the algorithm will always tend to show content that will increase overall time spent in the app, it invariably will adjust itself in such a way as to utilize the behavioral result of the reflective processes to only one end. The process of critical reflection is not a direct, one-time event in most cases. Persons do not usually stop their behavior fully, thoroughly reflect on this behavior, and come to some kind of conclusion which they then implement in behavior. Rather, it is a continuous cycle of action and reflection. Thus, there is potentially useful behavioral data generated in the process on which the algorithm can act.

A person feeling critical about their usage of the app, for example, might get videos presented to them that discuss harmful aspects of TikTok. This might then address and temporarily satiate their negative feelings, as their worries are satiated as part of the content. Their For You page feed gets adjusted to show more of these kinds of videos and keeps them watching. Another user might feel overwhelmed by the immediacy and intensity of the videos presented to them in their feed. This ordinarily might prompt them to distance themselves from the app and watch less. Instead, they might be presented with ‘TikTok rest area’ type videos, as described in Schellewald’s study[98]. In this type of video, resting from the onslaught of videos is emphasized, and a connection to others with similar feelings is established. Again, the worry of the user is addressed in such a way as to keep them watching. It is impracticable

[98] Schellewald, 2022, p. 7

and unnecessary to compile an exhaustive list of such effects. The ways in which this is possible are, just as the algorithm and its base of content, near endless and individualized. The argument is not that this process is inevitable. People can disengage from TikTok, get bored with it, and stop using it. It is the explicit design of the algorithm to self-adjust in order to retain user attention. Consequently, it will always aim to co-opt the critical reflective process of motivations of persons. In turn, it thus violates personal autonomy. Resulting motivations for watching TikTok content could then be described as illegitimate.

There are two other elements that moderate this effect on procedural independence. One, advertising and its impact on procedural independence. Second, the types of data used and the potential for more invasive data being incorporated in the future.

Advertising is the way through which the user's attention gained by the media recommendation algorithm is monetized. Advertising aims to change user's behavior towards purchasing goods and services of the advertisers. Advertisements in TikTok are embedded into the flow of recommended videos, while marked as such. Embedding unmarked advertisements into content is illegal. Still, it is a common occurrence. For those illegal ones the following analysis holds especially. Advertising leverages the same methods and detailed data collection and user profiling used for the media recommendations. It thus promises the companies who place the ads an effective and ideally precisely targeted way of behavior change of their target audience. As the advertisements are placed right within the stream of recommended videos, they interact with the critical reflection and adaptation feedback loop described above. The algorithm impacts the user's critical reflections on their motivations to watch more content. Advertisements then directly profit from these possibly illegitimate motivations to watch more content, as in turn more advertising is watched that changes a users' behavior. The self-adjustment of the algorithm could even interact with a user's motivations regarding watching ads itself. Say, a user is annoyed by the advertisements they watch and notices how they change their behavior. This too might change their consumption of TikTok in a way that is measurable by the algorithm, which then adjusts itself to keep the user watching even more. Disengaging from the advertising through critical reflection is made harder again by the self-adjustment process of the algorithm readjusting itself to the outcome of those reflections. This behavior change brought on by the ads then is in part based on motivations that are possibly illegitimate as they violate procedural independence. These

advertisements present a particular harm to users whose personal autonomy is not guaranteed.

The effectiveness of the process described above relies on the quality of data that is gathered, and the breadth of content available. Effectiveness is here the degree to which videos can capture the attention of users and increase their time spent watching. This could be the quality and quantity of content from the user's perspective, which makes them watch the longest amount of time. It is conceivable that more intimate data sources could be leveraged in the future. Biometric data like heart rate or facial analysis might be incorporated. They could provide even more detailed analysis of user engagement and then promise even more fitting predictions of what to serve its users. In turn, the described process of interacting with the critical reflections of users would be strengthened.

An additional limiting factor to the algorithm is the available content available to be shown to users. Content is generated by other users, and thus not infinite or directly controlled by TikTok. This limits the efficacy of the algorithm, and thus the extent of possible impact on a user's motivations regarding continued watching. It is imaginable that future content could be partly or wholly generated algorithmically. Algorithmically generated content could in principle be created in a way to directly engage users' preferences so as to make them continue watching content. In principle unlimited content could keep users watching. The process earlier described as procedural independence violations could be strengthened. This then would present additional control over the process of motivations impacted by the algorithm. Technological innovation in this area is quickly advancing, and thus bear considering[99]. Possible future technological advances stand to increase the potential for harm to personal autonomy of persons through the processes described above.

The following section explores applying the substantive environment requirements of autonomy to the use of TikTok. The emphasis is here on the environment in which users experience their use of TikTok.

[99] See Wu, Gan, Chen, Wan, & Lin, 2023

Subsection 2.2.4: Substantive environment

Social media and its use cannot be seen separate from its broader social and societal context. Shoshana Zuboff describes the pressures that especially young people face to participate in social media services. “Increasingly no person who wants a social life can afford not to be active on [social media]”[100]. While general statistics on use are not available, examples show that TikTok use is widespread, especially among teenagers. For example, a survey in France in 2022 showed that between 60 to 66% of 11- to 18-year-olds were engaged in use of TikTok[101]. This gives some indication that use of TikTok especially amongst young people is widespread. In a study on UK adolescents, Winstone, Mars, Haworth and Kidger discuss the importance of social media to the social connectedness for their participants[102]. They proposed that social media use played an important role in making social connections. Nesi, Choukas-Bradley, and Prinstein, too, emphasize the importance of social media in the formation of peer relationships among adolescents[103]. Moreover, they argue that peer interactions on social media play an important role in the acquisition of developmental competencies. The findings above indicate that for many, especially adolescent users, social pressure exists to keep them using social media and TikTok specifically. Thus, disengaging from TikTok and the algorithmically generated content on the For You page can be connected to significant (social) repercussions. This threatens the condition of control for autonomy.

Control over the experience within the app is limited, especially when it comes to the use of the media recommendation algorithm. As mentioned earlier in the chapter, use can vary and does not have to focus on watching content on the For You page. Thus, a person trying to disengage from consumption on the media recommendation algorithm will have a harder time if they (feel) they cannot completely delete the application. The less tools are available to externally control the algorithmically generated feed, the more one must affect control directly within the application. As was shown, this is made as hard as possible through intuitive controls, low resistance design elements, short attention-grabbing videos, etc. Thus, effecting control over the motivations to watch less is made even harder. Moreover, potential for the algorithm to impact these motivations (as discussed in the section on Procedural

[100] Zuboff, 2019, p. 280
[101] Ceci, 2024
[102] Winstone, Mars, Haworth, Kidger, 2021
[103] Nesi, Choukas-Bradley, and Prinstein, 2018

Independence) is further increased. Tools for external control could be, for example, ways of hiding the button leading to the For You page. The For You page being the way to access the algorithmically recommended content. Another would be ways of limiting the tracking of the algorithm to propose relevant media or setting limits for the daily consumption of that specific feature.

Conclusion

This chapter has explored the way that media recommendation algorithms, particularly TikTok's For You page, can shape the interaction of users and the content they watch. This relation is analyzed using the framework of relational autonomy developed in chapter one.

Some limited studies exploring the experiences of users with consuming content on TikTok are presented. While the studies are limited in scope, this gives some insight into how users experience the consumption of algorithmically recommended content.

One of the concerns raised in this chapter is the way TikTok's media recommendation algorithm might decrease users' critical reflection on the content they watch. It is argued that TikTok emphasizes non-deliberate choice of users. More than in other forms of media selection, where users more explicitly choose what to watch, TikTok's algorithm serves content based on preferences estimated indirectly. This can distance users from recognizing responsibility for what they see and deemphasize the role of their choice and behaviors in selection of content. In turn, this can deemphasize the use of critical engagement regarding content watched.

Furthermore, the chapter has examined how procedural independence might be compromised by the platform's inclusion of addictive design elements and continuous self-adjustment. TikTok's interface is argued to be informed by the principles of the attention economy. From this follows that the maximum time spent consuming content on the platform is the underlying goal of the design of the system. TikTok's design employs features that encourage prolonged use, such as infinite scrolling and tailored content delivery. The algorithm's ability to adapt to user behavior in real time creates a feedback loop that might undermine such critical engagement which would lead to lessened content consumption. This self-reinforcing system cannot only sustain possibly addictive behaviors but can also undermine users' ability to continue to critically reflect on their motivation to engage with the

platform. In this context, advertising can be especially harmful. As it leverages the influence on critical engagement discussed above, users might have less mental resources to critically engage with these attempts at behavior change.

Additionally, the discussion has highlighted how TikTok's role as a social media platform extends beyond entertainment, embedding itself in users' social environments. Social pressures to participate in digital spaces constrain users' ability to disengage from algorithmic content. This is argued to hold especially among younger demographics. This reinforces a dependence on the platform, limiting their substantive independence. This can further complicate the exercise of autonomous control over their media consumption, as disengagement from the platform as a whole can have social repercussions.

In summary, TikTok's media recommendation algorithm presents possible challenges to personal autonomy by reducing opportunities for critical engagement, possibly influencing motivations regarding use, and consequently fostering patterns of dependency. While the platform provides a highly personalized and engaging experience, the mechanisms through which it operates raise concerns about users' personal autonomy. These findings lay the foundation for the next chapter, which will explore potential strategies for mitigating the autonomy-related harms posed by media recommendation algorithms. This will be done mainly through analyzing the Digital Services Act by the European Commission.

Chapter 3: Legislation of Media Recommendation Algorithms

Introduction

As was developed in chapter two, the constant adaptation of media recommendation algorithms poses a risk for personal autonomy development. This is in part as it pushes users towards consuming increasing amounts of content on the service. The media recommendation algorithm relies on large amounts of personal data to deliver this service. Finally, this watch

time is monetized with attempts at behavioral change in the form of advertisements integrated into the flow of media. The example of TikTok was analyzed in some detail, but the basic concept holds for similar media recommendation systems in other services. The 'Reels' on Instagram or 'Shorts' on YouTube are examples of this. This adaptation tends towards maximizing watch time by users. This maximizes profits for the companies hosting the content and maintaining the media recommendation algorithm. Thus, it seems unlikely that effective remedies or mitigation efforts of the potential negative effects will be voluntarily implemented by said companies. The analysis in chapter two suggests that the possible harms to autonomy directly result from the profit model of the hosting companies. Therefore, attention for mitigation efforts should in part be placed upon governmental regulations.

One regulatory body that has put itself at the forefront of regulating big tech companies has been the European Commission with rules that cover citizens of the European Union member states[104]. The effect of media recommendation algorithms on personal autonomy as described in chapter two are novel. Still, negative effects of MRAs have been widely recognized[105]. The European Commission (EC) themselves specifically mention concerns about media recommendation algorithms[106]. The Commission has therefore included specific provisions that address recommendation algorithms in the recent Digital Services Act (DSA).

The DSA is a recent legislation package that introduces new rules for intermediary internet service providers that protect the rights of users in the European union. It was passed in 2022 and went into full effect in February of 2024. The DSA specifically targets "intermediary services", which refers to "services that involve the transmission and storage of user-generated content"[107]. The DSA is novel in its approach to legislation, as it divorces liability for underlying content from the responsibility of design of the service[108]. This means that providers will not be held accountable for illegal content that their users post through their service. Rather, they are held responsible for the design of the service and how it might deter or support possibly

[104] Wilman, 2022, p. 1-2
[105] Rhymes, 2023
[106] DSA, 2022, Rec. 70, critical discussion of the DSA position in Buri and Huboken, 2021, p. 38 and Helberger, Drunen, Vrijenhoek, Möller, 2021
[107] Wilman, 2022, p.1
[108] Husovec and Laguna, 2022

illegal conduct. In this sense, the approach taken in this thesis (focusing on the design rather than the content of media) mirrors this approach taken by the EC.

Given the focus of the DSA on MRAs[109], it is appropriate to examine how its rules interact with the potential challenges to personal autonomy identified in earlier chapters. Specifically, the analysis will focus on whether the DSA's provisions have the potential to mitigate risks posed to personal autonomy of users. Such an analysis can provide insight into how the theoretical findings on autonomy might inform implementable rules.

In this chapter, the DSA is analyzed with regards to its impact on the relation of media recommendation algorithms on personal autonomy. First, a self-imposed commitment and thus responsibility of the Commission in the DSA towards protecting mental integrity is outlined. It is argued that this in turn implies a responsibility to protect the personal autonomy of users of media recommendation algorithms. Second, the specific provisions of the DSA act regarding this issue are summarized. They are categorized under the aims of 'transparency', 'control', and 'design'. Moreover, the potential of the DSA to prevent possible harm to personal autonomy of users is approximated and shortcomings are discussed. Third, from the preceding analysis, future recommendations and considerations are drawn.

Section 3.1: Fundamental Rights under the DSA

The following section argues that the Digital Services Act is relevant to the issue of recommendation algorithms impact on users' personal autonomy. The Digital Services Act (DSA) passed in October 2022 and took full effect in February 2024, sets itself the goal of creating a "safe, predictable and trusted online environment […] in which fundamental rights enshrined in the Charter […] are effectively protected"[110]. Consequently, provisions of the DSA put itself to the task of defending all rights defined within the charter which relate to the intermediary services for the online environment of users located within the European Union. Intermediary providers of media content like TikTok, the example focused on in Chapter two, are services that provide users access to media or services that are not generated by that

[109] The terms media recommendation algorithm, Recommender system, and algorithm here are used interchangeably.
[110] DSA, 2022, Art. 1(1)

provider themselves. The fundamental rights that are explicitly focused on in the DSA are human dignity (Article 1 of the Charter), respect for personal data (Article 7 of the Charter), freedom of expression and information, including freedom and pluralism of the media (Article 11 of the Charter), nondiscrimination (Article 21 of the Charter), respect for the rights of the child (Article 24 of the Charter), and to a high-level the right for consumer protection (Article 38 of the Charter)[111].

Fundamental rights of the Charter of Fundamental Rights of the European Union relevant to the issue of personal autonomy are the right to human dignity (Article 1) and the right to respect for the integrity of the person (Article 3)[112]. In particular, the article separates between physical and mental integrity. Physical integrity means that a person is protected from harm to their body. Mental integrity relates to protection of a person's psychological well-being and protection from manipulation[113]. The relation between mental integrity and autonomy is strong, but not without critique. Peter Zuk, for example, argues that autonomy presents too high a bar to be useful for legal implementation of mental integrity[114]. Nevertheless, the aspects of mental integrity discussed in literature overlap strongly with those set out in this thesis as comprising autonomy. For example, an analysis by Keeling and Burr on digital manipulation and mental integrity[115]. Their definition of mental integrity is in large parts like the definition of personal autonomy as used in this thesis[116]. They argue *"roughly, an individual's mental integrity is compromised if the conditions required for them to make authentic choices are compromised. These conditions include, inter alia, having options to choose between and having the capacity to enact them; being in an environment that permits rational assessment and evaluation of the available options; having a stable set of beliefs and values that facilitate the pursuit of objectively worthwhile ends; and having a suitably stable sense of who they are."*[117] The aspects of capacity for rational assessment of options and the emphasis for a stable environment closely align with autonomy as understood in this thesis. While the relational account focuses less on judging the outcome of persons'

[111] DSA, 2022, Art. 34 (1) (b)
[112] CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION, 2012, Art.1 and 3.
[113] Zuk, 2024
[114] Ibid.
[115] Keeling, Burr, 2022
[116] Ibid., p. 254
[117] Ibid.

critical thought, the overlap is still considerable. Thus, the concept of autonomy discussed here seems strongly related to mental integrity. At least, similar aspects (critical capacity/stable environment) are at stake. Based on this, it is reasonable to judge the DSA by its capacity to protect personal autonomy.

Mental Integrity is not specifically named as a right to be protected within the DSA itself. This indicates that the DSA does not specifically recognize the need for mental integrity as relevant to the users' interactions with intermediary services. It is argued here that the right to mental integrity and in turn personal autonomy should be specifically considered in the EC's legislation on intermediary services and the relation to their users. As the DSA set itself to the task of protecting all fundamental rights of the Charter, so it will be held to this standard in the following.

As has been established in chapter two, media recommendation algorithms threaten continued personal autonomy of their users by violating procedural independence. This is due to the constant re-adaptation of the algorithm based on the behavior of users. The algorithm incorporates the outcome of its users' critical reflections in its continued recommendations, and thus nudges users towards illegitimate motivations that lead towards continued media consumption. It follows that the European Commission through the DSA or similar legislation has a responsibility to address this potential harm. The aspect of personal autonomy is not directly stated as an aim within the legislation, which is here considered an oversight. In the following, it will be established to what degree the regulation succeeds in this responsibility, nevertheless.

Section 3.2: The Digital Services Act Mandates

Three articles of the DSA regulation have been identified that are relevant to the issue of personal autonomy and are discussed in the following. The relevant themes emerging in these articles are mandates for transparency, choice, and service design, which will be discussed in turn.

Subsection 3.2.1: Transparency Mandates

Transparency is one of the main approaches through which the Commission aims to improve users' agency when interacting with services like TikTok. In Article 27 the DSA

proposes specific rules on the functioning of recommendation algorithms[118]. These rules focus mainly on transparency for users. They mandate that the "main parameters used in the recommender systems" be clearly described in the terms and services[119]. These parameters must explain the significant criteria used, and the reasoning for their relative importance. This is supposed to give information to the user on why certain information is suggested, as per the DSA[120].

Article 26 covers specific rules for advertising transparency. The Article sets out rules for advertisements to be clearly identifiable as such. Moreover, it must be clear to a user on whose behalf the advertisement is presented, and who paid for the advertisement to be placed[121]. Also, meaningful information must be presented on the "main parameters used to determine the recipient […]"[122] and if possible, how to change them.

These rules (except for the exclusion of targeted advertising for minors) limit themselves to transparency as a means of protecting users. Criticism on the insufficiency of such an approach to the problem of targeted advertising has been raised by the EU's own European Data Protection Supervisor (EDPS), as well as various civil society organizations[123]. They argue that the categories are vaguely defined, and thus question the effectiveness of the regulation to protect users. The wording of the Articles makes compliance possible with very surface-level disclosure. Buri and Hoboken, too, conclude that these rules are unlikely to provide users with meaningful transparency or control[124].

The effectiveness of transparency-based approaches in general has been questioned repeatedly. Empirical evidence shows that informational labels are rarely noticed and thus their effectiveness is limited[125] In a study, Dobber et al. presented participants with various kinds of political ad disclosure labels, and later measured participant recall of these labels[126]. The results showed few participants noticed the labels, which implies that this kind of information is not broadly effective for informing users. Helberger, Drunen, Vrijenhoek, and

[118] DSA, 2022, Art. 27
[119] Ibid., (1)
[120] Ibid., (2)
[121] Ibid., Art. 26 (1)
[122] Ibid.
[123] Buri and Hoboken, 2021, p. 29
[124] Ibid., p. 39
[125] Dobber, et al., 2021
[126] Ibid.

Möller[127] question whether providing information to users can meaningfully empower them against the "potentially invasive or even manipulative effect that data-driven recommendations can have on users' privacy, autonomy and informational self-determination". Even if total transparency and communication to users was possible, this will not meaningfully change the power imbalance between providers and users. Providers have control over for example users' data, can choose what features or information to show a user, and in this way steer the actions of users to some extent. Access to information on advertisements or algorithmic profiling without the ability to effect changes based on it cannot lead to a sufficiently effective counterweight for users. The users are caught in an all-or-nothing bind, where the only way to impact their relationship to the provider is to not use the service at all. This is not a reasonable position when it is assumed that users rely on aspects of the service and have embedded it into their (social) lives.

The personal experiences of TikTok users presented in chapter two indicate that at least some users do have knowledge of for example the wide-reaching data usage and the underlying mechanism that makes personalized content delivery possible. More knowledge on for example the parameters used by the MRA seems unlikely to sway many such users. The information gained by the users by means of transparency is not helpful, if it is not connected to meaningful tools to control the experience. A user might know of an unwanted aspect of the experience but cannot change it. Thus, the transparency mandate by itself is not effective in improving the experience. As was also shown in chapter two, knowledge of harm to autonomy (for example manipulation) does not change the possibly harmful impact.

Subsection 3.2.2: Control Mandates

The second main aim of the DSA regarding Recommendation Algorithms is increasing users' level of control over their experience within a given service. Article 27 rules that if the application provides voluntary means of changing the main parameters used in the recommender system, they must be easily and clearly available to the user[128]. There is no mandate for adaptability of the parameters of the MRA. So, it is left to the providers whether

[127] Helberger, Drunen, Vrijenhoek, Möller, 2021
[128] DSA, 2022, Art. 27 (3)

to provide any tools for adaptation of the MRA by users. Moreover, it is not clearly specified what counts as main parameters and how they are defined.

In the recommendations section, the DSA specifically mentions the important role of media recommendation systems. Specifically, to "the way that information is presented and prioritized to users"[129]. Yet, Buri and Hoboken[130] as well as Helberger et. al[131] conclude that these rules are unlikely to provide users with meaningful transparency or control. This is due to in part the technical opacity inherent in the complexity of this class of algorithms.[132]. It is not always practicable to give the parameters used by a complex algorithm that underpins the media recommendation algorithm. So, it falls to the providers themselves to define what constitutes a parameter. Parameters might be mixes of many input variables. Moreover, many of the parameters are inherently unchangeable for users, like popularity of content or date of publication, to name some[133]. For example, if a user got the information that their experience is partly based on their location in city x, this gives them little relevant insight. They cannot know what consequence this parameter has on what videos they are shown. Say they had the option to remove such individual parameters from their experience. The effect this could have to improve control over their experience is questionable. Even alternative proposals from civil rights groups and the EDPS, for example, do not account for this inherent issue. The EDPS recommends that all parameters should be listed, and information on the MRA be offered separately from the terms of service agreement[134]. For the reasons of practicability and enforceability, increased visibility of and control over the parameters used for the recommendation algorithm by users seem ineffective.

So far, the rules of the DSA provide little mitigation capacity for some of the main worries identified in chapter two. The possibility of violation of procedural independence is unlikely to be prevented by the rules described above. As was argued in chapter two, knowledge of the process of manipulation taking place is not sufficient to prevent it. So, knowledge of parameters and even the ability to adjust individual ones would likely not impact the feedback loop of self-adjustment of the MRA. Based on the considerations above, it seems

[129] DSA, 2022, Rec. 62
[130] Helberger, Drunen, Vrijenhoek, Möller, 2021
[131] Buri and Hoboken, 2021, p. 39
[132] Ibid.
[133] Helberger, Drunen, Vrijenhoek, Möller, 2021
[134] Ibid.

not possible to come up with a sufficient alternative regulatory tool concerning the MRA directly. One that targets the functioning of the MRA directly and could be effective in preventing possible harm to autonomy. And one that is mandatory and for all users. The rule would need to be practicable, enforceable, and not limit in large part the main recommended video functionality. The possible harms to autonomy described arise in part directly from the intended functioning of the MRA. Such a rule would mean removing parts that might be important to the appeal of services like TikTok. This is not to say that this is the only way to prevent possible harm, more of which is discussed below.

Article 38 mandates the availability of an option to turn off the recommendation based on profiling of the user[135]. Profiling is based on the definition from the GDPR, 2016, Art. 4, point 4 referring to data on a person's "performance at work, economic situation, health, personal preferences, interests, reliability, behavior, location or movements". From this definition, it seems that this option would impair the use of the MRA severely. If behavior is interpreted to mean the viewing patterns on the service, as well as actions like sharing, etc. This would mandate the availability of using services like the For You page without any personalization[136]. This feature would essentially represent a fully un-personalized experience, where videos are shown to a user irrespective of their previous viewing behavior. Implementation of this would seem easier, too. Turning off all personalization of the videos shown should be technically straightforward. The issues of opacity of the MRA could be avoided by essentially removing all personal observations as input.

As was shown in the personal experiences of users presented in chapter two, the reflection of preferences of users in the media they were shown was described as an important aspect of the appeal of TikTok. On this account, users might not want to turn off the profiling on the For You page completely. Their positive associations with the use of TikTok were in big part based on the personalized videos. A binary off or on function leaves little room for users to navigate the complex trade-offs between enjoyment and data collection, thus handing over all control to the provider. On the other hand, there are possible instances where completely turning off the personalized feed would be welcome. As was discussed in chapter two, users

[135] DSA, 2022, Art. 38 (This article of the regulation is applicable only for 'Very Large Service providers', but as TikTok and relevant competitors easily fall into this category, the distinction is here foregone.)
[136] It is not absolutely clear that this interpretation holds for the implementation, but interpreting these legal consequences is beyond the scope here.

could have various reasons for using an application like TikTok outside of the personalized media recommendation feed. Broader social contexts (like friend groups communicating on the app) might push them towards continued use, even if they would rather disengage from the For You page and personalized content. There, a mandated feature turning off the profiling without having to fully delete the app could be broadly positive. This could allow users to still use the application for uses outside of the For You page, without being subject to the temptation of watching recommended content.

One rule that could be effective is the mandated ability for users to turn off the profiling function. This might mitigate some of the pressures due to the substantive social environment of users, based on the account in chapter two. Without such a function, the only way to fully avoid interaction with the MRA was to delete the application. Taking away these social consequences might make it easier for users to decide against using the MRA. In this way reducing the harm to personal autonomy that might arise from that use.

Subsection 3.2.3: Design Mandates

The third main approach impacting the relationship of users with the MRA service concerns rules for specific design elements of the service. Article 25 deals with the design of online interfaces[137]. It prohibits the design and organization of interfaces in a manner that deceives or manipulates a user in such a way as to inhibit them from making "free and informed choices". The DSA mentions the future development of more specific practices on the way that choices must be presented to the user, prevention of repeated requests for already made choices, and the ease of termination of service.

Article 26 mandates that advertisements cannot be placed based on profiling using special categories of personal data[141]. These categories are "data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual

[137] DSA, 2022, Art. 25(1)
[141] Ibid., Art. 26 (3)

orientation […]"[142]. Special attention is also given to advertisements to minors in Article 28. Where a service identifies a user as minor, any advertising based on profiling is prohibited[143].

Chapter two discussed the way that targeted advertising exploits the close relation of the MRA and the person's motivations in ways that could further violate their personal autonomy. Thus, rules managing targeted advertising on these services are welcome. The ban on using special categories of personal data limits those most personal and intimate data points, which also carry the potential for behavior changes of the most intimate and thus effective and potentially harmful kind. Further, the total ban of profiling ads for minors could protect those especially vulnerable to behavior change attempts, if implementation is effective. It seems reasonable that here, too, the opacity of the machine learning mechanism could lead to trouble. It seems questionable how effective and precise identifying minors based on circumstantial information can be. This might make a weak implementation of providers possible. The European Parliament in an early resolution on the DSA invited stronger rules on targeted advertising. They asked for "a phasing out, leading to a prohibition of targeted advertisement"[144] for all users as part of the DSA. Though this was not picked up by the Commission for the final draft of the DSA. This shows at least an acceptance of the general issue that targeted advertising poses, and a willingness (by at least the European Parliament which is not an insignificant partner in the creation of EU legislation) to implement stronger rules.

The rules regarding targeted advertising (and the motivation for extended rules by some) shows the importance given to targeted advertising as a potential for harm. The account in chapter two came to a similar conclusion. Advertising abuses the possibly weakened personal autonomy of users. On this account, rules limiting targeted advertising do not necessarily prevent harm to personal autonomy itself. Rather, they can prevent the exploitation of that reduced autonomy. Outside of measures that directly limit the functionality of MRAs to recommend media, this might be the most promising approach for mitigating harm to users.

[142] GDPR, 2016, Art. 9 (1)
[143] DSA, 2022, Art. 28 (2)
[144] Buri and Hoboken, 2021, p. 29

Section 3.3: Recommendations for Legislation

In order to prevent harm to users and their personal autonomy, legislation has been shown to be a potentially effective path forward. The analysis of rules under the DSA has shown some approaches that might protect personal autonomy of users of services like TikTok. From these recommendations for further legislation are proposed:

From the analysis above, rules limiting targeted advertising are seen as most promising. They seem politically feasible and potentially effective. Therefore, the existing rules for targeted advertising should be extended. Targeted advertising based on sensitive profiling data in the context of MRAs' influence on users' personal autonomy to pay attention poses the most direct potential for harm. Even untargeted advertising could still be questionable. Any ad shown would still profit from the possibly violated personal autonomy. Thus, behavior change through it could be argued to violate personal autonomy. But forbidding any advertising would make the economic model unfeasible. Thus, recommending such a step would require a more detailed discussion than the scope here allows.

What type and the amount of data a MRA has access to plays a role in the extent to which personal autonomy can be impacted. Discussion in chapter two pointed out that future data sources might provide additional power to the harms identified. Thus, legislative efforts should consider these particularly. The recommendation here is for specific rules regarding incorporating very sensitive data into MRAs. Future technologies could implement data from biometric data or even brain interface data. Things like face scanning for emotional physical reactions might feasibly be assessed, recorded, and used to improve predictions. It is currently not possible to conclusively rule out that TikTok uses elements of these technologies. They publicly deny any such claims. Yet, in 2021 the company agreed to pay a 92-million-dollar settlement to a US-court in a case alleging the secret collection and use of facial recognition data[145]. By paying the settlement they avoided a court case while admitting no wrongdoing. Such developments are relevant, as biometric data could have the potential to improve the precision with which MRAs make predictions. Which in turn could improve the effectiveness of the system to change motivations for users to spend time consuming content on the service. As was shown in chapter two, the link between critical reflections of users and the indirect

[145] BBC News, 2021

measurement of these in the observable behavior in the use of the service forms a crucial link through which MRAs could impact users' autonomy negatively. The more closely the mental states of users can be assessed by the algorithm, the more precisely the algorithm would be able to impact users. Future technologies thus might only increase this influence. Legislation thus should proactively and critically engage with the impact that these additional tools might have, and where regulation on their use is necessary.

Conclusion

The analysis of the DSA and its impact on the relation between personal autonomy and MRA shows three main points. First, transparency approaches on their own are not expected to be successful in mitigating harm to personal autonomy. Second, giving users control over the parameters that are used for the recommendation generation of content has practical obstacles and thus also is not a practical way to proceed. Third, the most promising approach is to control the amount, quality and sensitiveness of data that providers can use to guide their recommendations. Related to this, limits on what kinds of data can be used for advertising are equally if not more important. As was established, there seems to be political understanding of the issue and general will to further this.

Conclusion

This conclusion covers three aspects. One, a short summary of the most important findings of the thesis. Second, a short discussion on what the outcomes could mean for users on a personal basis. Third, a discussion on further research connections and empirical research that might support arguments made in this thesis.

This thesis has explored the way that media recommendation algorithms might influence personal autonomy of users, in the case of the content discovery platform TikTok. A procedural definition of autonomy was defined in chapter one. From this, three main areas of impact were identified in chapter two. One, non deliberate choosing of content might lead to lessened critical reflection on content watching behaviors. This might lead to potentially less critical reflection on motivations in general. Second, the feedback loop of the self-adjusting

algorithm might interact with the normal process of testing motivations on TikTok consumption. This might violate procedural independence and lead to increased consumption of content. This lessened autonomous position could make targeted advertising unduly impactful. Finally, the social context of TikTok use might inhibit users further in exercising autonomous control over the amount they consume. The third chapter looked at how the Digital Services Act (DSA) of the European Union might mitigate harms to autonomy of users identified. According to the analysis, the DSA does not impact the threats to autonomy directly but does mitigate some of the harmful consequences. The most promising approach was to limit data sources for profiling and limiting targeted advertising especially to minors.

Chapter three discussed the question of how policy might prevent harm to the personal autonomy of users. A related question remains what the analysis might mean for individuals. While this has not been a focus of this thesis, it will be addressed here shortly. Procedural autonomy as used here focuses on developing and maintaining the critical skills needed for autonomous reflection, as well as having the social environment necessary to make these reflections effective in behavior.

From this account, some recommendations can be made for the individual relation to consuming content on TikTok. One, having developed critical capacities when starting to engage with content will be beneficial. So, having experience with other media, having other sources of information, and social interaction outside of digital services would be beneficial. Here, young people are at a natural disadvantage, so it should be a general aim to provide young people with a wide array of media, social contacts and opportunities to exercise control over their life. Learning this will make one more resilient to the possible manipulation of critical engagement by the media recommendation algorithm. While knowledge of or approval of being manipulated does not preclude one from being manipulated, knowledge of the mechanism of manipulation can make one better at recognizing it and reducing its impact. One argument from chapter two was that the possible harm to autonomy from the MRA is directly related to how well it works. The better the recommendations, the more enjoyable content is presented, the bigger the risk to personal autonomy. So, on this account extended TikTok use will have some risks regarding personal autonomy, no matter what content is consumed. Moderating use and having enjoyable alternatives then are the main recommendation to be made on an individual level.

The work in this thesis could be extended to consider more elements of Media Recommendation Algorithms and their impact on society. For example, one might link the analysis of this work with the wider impact of social media in general and media recommendation algorithms in particular. For example, the spread of (political) disinformation, or the trust in media in general are discussed in relation to TikTok and similar social media sites. It would be interesting to investigate how (lessened) autonomy of users might interact with these issues. It could be that less autonomous control over content might lead to higher susceptibility to believing in misinformation. Such hypotheses might be investigated in further research.

Empirical research could be done on how people engage with the content from media recommendation algorithms. Especially on how much ownership they take over the content that is shown, and possibly how or if that differs in media consumption platforms that emphasize more deliberate choosing. Analyzing this connection might be a way to test some of the arguments made in this thesis. Another aspect might be to empirically test if motivations regarding watching content do change over time. By measuring how much new users consume and how they think about their consumption and comparing that to users who already use the platform. This might lend further support or refute the arguments made in this thesis.

Sources:

BBC News. (2021, February 26). *TikTok to pay $92m to settle US privacy lawsuit.* BBC News. Retrieved on 25.01.2025 from https://www.bbc.com/news/technology-56210052

Bhargava, V., & Velasquez, M. (2021). Ethics of the Attention Economy: The Problem of Social Media Addiction. *Business Ethics Quarterly, 31*(3), 321-359. doi:10.1017/beq.2020.32

Buri, I., & van Hoboken, J. (2021). The Digital Services Act (DSA) proposal: a critical overview. *Digital Services Act (DSA) Observatory.* Retrieved from: https://dsa-observatory.eu/wp-content/uploads/2021/11/Buri-Van-Hoboken-DSA-discussion-paper-Version-28_10_21.pdf on 17.07.2024.

Bustamante, C.M.V. , Candela, J.Q, Wright, L., Bogan, L., and Faddoul, M. (2022). Technology Primer: Social Media Recommendation Algorithms. *Belfer Center for Science and International Affairs, Harvard Kennedy School*. Retrieved on 20.01.2025 from: https://www.belfercenter.org/publication/technology-primer-social-media-recommendation-algorithms?utm_source=chatgpt.com

Ceci, L. (2023, August) *TikTok: number of global users 2020-2025.* Statista. https://www.statista.com/statistics/1327116/number-of-global-tiktok-users/

Ceci, L. (2024, December) *Leading mobile apps worldwide in YTD2024, by downloads.* Statista. Retrieved from: https://www.statista.com/statistics/1285960/top-downloaded-mobile-apps-worldwide/

Ceci, L. (2024, October) *Kids and teens using TikTok in France 2022, by gender.* Statista. https://www.statista.com/statistics/1244511/tiktok-use-minors-france-gender/?utm_source=chatgpt.com

Chomanski, B. (2023). Mental integrity in the attention economy: in search of the right to attention. *Neuroethics, 16*(1), 8.

Dixon, S. (2023, October) *Most popular social networks worldwide as of July 2023, ranked by number of monthly active users.* Statista.

https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/

Dobber, T., Kruikemeier, S., Goodman, E., Helberger, N., & Minihold, S. (2021). *Effectiveness of online political ad disclosure labels: empirical findings*, available at: https://www.uva-icds.net/wp-content/uploads/2021/03/Summary-transparency-discloures-experiment_update.pdf

Dworkin, G. (1976). Autonomy and behavior control. *Hastings Center Report, 23-28.*

Dworkin, G. (1988). *The theory and practice of autonomy*. Cambridge University Press. ISBN: 978-0-521-35767-8

European Commission. (2023, October 26). *Commission opens formal proceedings against TikTok for election risks under Digital Services Act.* European Commission - Digital Strategy. Retrieved January 21, 2025, from https://digital-strategy.ec.europa.eu/en/news/commission-opens-formal-proceedings-against-tiktok-election-risks-under-digital-services-act

Fung, A. (2023, March) TikTok collects a lot of data. But that's not the main reason officials say it's a security risk. CNN https://edition.cnn.com/2023/03/24/tech/tiktok-ban-national-security-hearing/index.html#

Helberger, N., Van Drunen, M., Vrijenhoek, S., & Möller, J. (2021). Regulation of news recommenders in the Digital Services Act: Empowering David against the very large online Goliath. *Internet Policy Review, 26*. Retrieved from: https://policyreview.info/articles/news/regulation-news-recommenders-digital-services-act-empowering-david-against-very-large on 17.07.2024

Husovec, M., & Roche Laguna, I. (2022). Digital services act: A short primer. *Martin Husovec and Irene Roche Laguna, Principles of the Digital Services Act (Oxford University Press, Forthcoming 2023). Available at SSRN: https://ssrn.com/abstract=4153796 or http://dx.doi.org/10.2139/ssrn.4153796*

Kang, H., Lou, C., (2022) AI agency vs. human agency: understanding human–AI interactions on TikTok and their implications for user engagement, *Journal of Computer-Mediated Communication,27*(5), https://doi.org/10.1093/jcmc/zmac014

Keeling, G., Burr, C. (2022). *Digital Manipulation and Mental Integrity.* The Philosophy of Online Manipulation. 10.4324/9781003205425-15.

Lavazza, A., & Giorgi, R. (2023). Philosophical foundation of the right to mental integrity in the age of neurotechnologies. *Neuroethics, 16*(1), 10.

Literat, I., & Kligler-Vilenchik, N. (2023). TikTok as a Key Platform for Youth Political Expression: Reflecting on the Opportunities and Stakes Involved. *Social Media + Society, 9*(1). https://doi.org/10.1177/20563051231157595

Montag, C., Yang, H., & Elhai, J. D. (2021). On the psychology of TikTok use: A first glimpse from empirical findings. *Frontiers in public health, 9*, 641673.

Nesi, J., Choukas-Bradley, S. & Prinstein, M.J. (2018) Transformation of Adolescent Peer Relations in the Social Media Context: Part 1—A Theoretical Framework and Application to Dyadic Peer Relationships. *Clin Child Fam Psychol Rev 21*, 267–294. https://doi.org/10.1007/s10567-018-0261-x

Noggle, Robert (2008). *Autonomy and The Paradox of Self-Creation: Infinite Regresses, Finite Selves, and the Limits of Authenticity*. In James Stacey Taylor (ed.), Personal Autonomy: New Essays on Personal Autonomy and its Role in Contemporary Moral Philosophy. Cambridge University Press.

Oshana, M. (1998). Personal Autonomy and Society. *Journal of Social Philosophy, 29-1.*

Oshana, M. (2006). *Personal Autonomy in Society.* Ashgate Publishing Company. ISBN: 978-0-7546-5670-8

Regulation 2016/679. *REGULATION (EU) 2016/679 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)* https://eur-lex.europa.eu/eli/reg/2016/679/oj

Regulation 2065/2022. *REGULATION (EU) 2022/2065 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 October 2022 on a Single Market For Digital*

Services and amending Directive 2000/31/EC (Digital Services Act), https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A52020PC0825

Regulation 326/02/2012. *CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION (2012/C 326/02)*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012P%2FTXT

Rhymes, J. (2023). Scrolling is not Extended Mind-Wandering: How TikTok's *For You*, Andrew Tate, and the Attention Economy are Jeopardizing User Autonomy Online.

Schellewald, A. (2022). Theorizing "Stories About Algorithms" as a Mechanism in the Formation and Maintenance of Algorithmic Imaginaries. *Social Media + Society, 8*(1). https://doi.org/10.1177/20563051221077025

Scherr, S., & Wang, K. (2021). Explaining the success of social media with gratification niches: Motivations behind daytime, nighttime, and active use of TikTok in China. *Computers in Human Behavior, 124*, 106893.

Siles, I., Valerio-Alfaro, L., & Meléndez-Moran, A. (2022). Learning to like TikTok... and not: Algorithm awareness as process. *New Media & Society*, 14614448221138973.

Su, C., Zhou, H., Gong, L., Teng, B., Geng, F., & Hu, Y. (2021). Viewing personalized video clips recommended by TikTok activates default mode network and ventral tegmental area. *NeuroImage, 237*, 118136.

TikTok (n.d.) *For You.* Retrieved on 15.01.2025 from: https://support.tiktok.com/en/getting-started/for-you

TikTok, (2023) *The Truth About TikTok: Separating Fact from Fiction.* https://newsroom.tiktok.com/en-au/the-truth-about-tiktok#

Tumblr. (n.d.). *Getting started on Tumblr*. Tumblr Help Center. Obtained on 17.02.2025 from: https://help.tumblr.com/knowledge-base/getting-started-on-tumblr/

Westlund, A. C. (2009). Rethinking Relational Autonomy. *Hypatia, 24*(4), 26–49. doi:10.1111/j.1527-2001.2009.01056.x

Wiederhold, B. K. (2022). Tech Addiction? Take a Break Addressing a Truly Global Phenomenon. *Cyberpsychology, Behavior, and Social Networking, 25*(10), 623-624.

Wilman, F. (2022). The Digital Services Act (DSA)-An Overview. *Available at SSRN: https://ssrn.com/abstract=4304586 or http://dx.doi.org/10.2139/ssrn.4304586*

Winstone, L., Mars, B., Haworth, C.M.A., Kidger, J. (2021) Social media use and social connectedness among adolescents in the United Kingdom: a qualitative exploration of displacement and stimulation. *BMC Public Health 21*, 1736 . https://doi.org/10.1186/s12889-021-11802-9

Wu, J., Gan, W., Chen, Z., Wan, S., & Lin, H. (2023). Ai-generated content (aigc): A survey. *arXiv preprint arXiv:2304.06632.*

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

Zuk, P., (2024) Mental integrity, autonomy, and fundamental interests *Journal of Medical Ethics, 50*:676-683.