EUMEPLAT
European Media Platforms:
assessing positive and negative
externalities for European culture

D 5.2
Assessing Externalities: Algorithms and Choices

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004488

Document information

Grant Agreement #:	**101004488**
Project Title:	**EUROPEAN MEDIA PLATFORMS: ASSESSING POSITIVE AND NEGATIVE EXTERNALITIES FOR EUROPEAN CULTURE**
Project Acronym:	**EUMEPLAT**
Project Start Date:	**01/03/2021**
Related work package:	WP5 Power: People and Platforms
Related task(s):	5.2 – Assessing Externalities: Algorithms and Choices
Lead Organisation:	P12: CU – Charles University
Author(s):	Miloš Hroch (CU) Volker Grassmuck (HBI) José Moreno (ISCTE-IUL) Panos Kompatsiaris (IULM) Debashmita Poddar (UNIVE) Lutz Peschke (Bilkent)
Status	Final
Submission date:	13/11/2023
Dissemination Level:	Public

Contents

1. Introduction

This deliverable is part of a group of five that each focuses on one of the themes related to the future of European media platforms. In our case, we focus on a theme titled Algorithms and Choices, which we translated into the dynamics between agency and structure, in algorithmically governed platform environments. In order to entangle the complexity of relationships in these processes – connected to the rising impact of algorithms in our everyday decisions, their regulation by European institutions and the platformization of governance – we adopted an approach grounded in structuration theory. Structuration theory (ST), initially developed by Giddens (1984), is the starting point in the theoretical reflection that continues with more contemporary approaches to ST, which has been favored by information systems researchers, but also researchers from platform studies. We prefer broader approaches that allow us to see algorithmic assemblages of entangled relationships between platform users, platform corporations, algorithms, and institutions.

One of the issues that cuts through the deliverable is algorithmic transparency. The problematics and workings of algorithms and platforms are often framed as being opaque structures or "black boxes". While the first section of this deliverable provides a theoretical reflection on structure and agency in platform environments and algorithmic assemblages, the second section looks back to the earlier work of the EUMEPLAT project. Even though the previous research did not particularly zoom in on the workings of algorithms, these processes were manifested in implicit (or more explicit) ways in the deliverables. In this second section, we revisit the research done in four EUMEPLAT work packages from the angle of algorithmic transparency as one of the recurring topics. The reflection on algorithm regulation in EU law in Work Package 1, on recommendation systems on VOD platforms in Work Package 3, and finally, the Twitter algorithm that makes some posts or agents more visible than others in Work Packages 2 and 4 allow us to further enrich our theoretical reflection on the role of algorithms and choices (or their limitations) in algorithmically governed platform environments.

The first two sections stand as theoretical support for the empirical part of this deliverable, which is a qualitative future scenario analysis that uses methods of future studies research. The future studies component of this deliverable is not aiming at forecasting and predicting the future but at capturing the imaginaries about the future. Rather than playing clairvoyant and hypnotizing the crystal ball, the empirical part analyses how the imaginary about the future of European media platforms is constructed by the diversity of experts. These future scenarios, focused on one of the themes, Algorithms and Choices, were produced by 29 Delphi+ participants and the EUMEPLAT researchers. The future scenarios analysis is developed on the axis of structure/agency and tech-centric/human-centric and around four actors, which emerged when the theory was filtered through our data, namely: platform users, platform corporations, algorithms and institutions. Ten scenarios (as clusters) were developed around these actors, and they further provided a perspective on interdependencies between these actors in future imaginaries related to European platform landscapes that involve transhumanistic/neurofuturistic visions of humans enhanced by algorithms, platformization of state or hopes in supranational institutions in securing the algorithm literacy and transparency.

2. A theoretical reflection about structure & agency in platform environments

2.1 Structure & agency

Structure and agency are central concepts in sociology (Stones, 2017). Structure has been traditionally understood as a more fixated aspect of society, as a system of patterns that limit free will and choice. On the other hand, agency has been typically seen as a more active and processual element, that refers to the capacity of individuals or groups, such as political movements, to act independently. Cohen (1989) uses the aphorism by Marx, which appears elsewhere in variations, to illustrate this relationship: “Human beings ‘make their own history, but not in circumstances of their own choosing’” (Marx in Cohen, 1989, p. 9).

Some authors, especially the representatives of structural functionalism like Durkheim (1893), tended to privilege structure over agency, while others, such as Giddens, attempted to overcome the dualism between structure and agency. Giddens refers to structure as “recursively organized sets of rules and resources” (Giddens, 1984, p. 25) that are “implicated in social reproduction; institutionalized features of social systems have structural properties in the sense that relationships are stabilized across time and space” (Giddens, 1984, xxxi). On the other hand, agency simply “refers to doing” (ibid, p. 10), but agency is more than a matter of individual will and skill:

> “For Giddens, agency is enhanced by control over *resources*; it is exercised through the following, or rejection, of *rules*. These rules and resources are the structural properties of social systems, in which *structures* are relatively enduring and general principles of system ordering” (Whittington, 2015, p. 147).

In the core of Giddens’ structuration theory, which was outlined in his 1976’s book *New Rules of Sociological Method* and most systematically mapped in 1984’s *The Constitution of Society*, is an attempt to see concepts of structure and agency in a mutual relationship of interdependency and reciprocity. For this purpose, Giddens introduced the notion of duality of structure: “*Structure must not be conceptualized as simply placing constraints upon human agency, but as enabling* (...) To enquire into the structuration of social practices is to seek to explain how it comes about that structure is constituted through action, and reciprocally how action is constituted structurally”[1] (Giddens, 1976; 1997, p. 169). In the latter publication, he further developed the concept: “According to the notion of the duality of structure, the structural properties of social systems are both medium and outcome of the practices they recursively organize” (Giddens, 1984, p. 25).

Structure is thus seen in motion. According to Whittington (2015, p. 149), it is “an important implication of structuration (...) that structures are not fixed or given”. It opens the possibility of change for society. ST’s contemporary innovations, such as strong structuration theory (Coad et al., 2016) and other areas, are “designed to refine and enrich the conceptual range and precision of structuration” (Stones, 2020, p. 410), which means to better operationalize still abstract concepts for empirical analysis (Stones, 2005).

[1] The format of the quotation was maintained from the original, italics included.

More recent debates on structuration accentuate specific combinations of these two critical aspects of social life (Stones, 2017), for instance, the balance between the discursive and material aspects of agency and structure (Carpentier, 2017). Carpentier pointed to the tendency in sociology, to privilege material perspectives on structure (present also in the Giddens' work), "not acknowledging (or thematizing) the presence of structure in culture" (Carpentier, 2017, p. 24).

Structuration theory has been used to "explain organizational adoption of computing and other technologies" (DeSanctis & Poole, 1994, p. 125; Orlikowski, 1992). The concern with structure made structuration theory attractive for information systems researchers "despite its almost complete neglect of technology" (Jones & Karsten, 2008, p. 134). Webster (2011) applies structuration theory to the digital media environment to show how interactions between agents and structures (individuals and institutions, in his words) construct the algorithmically organized media landscape. At the core of Webster's analysis is the concept of "user information regimes" – recommendation systems or algorithmically driven search engines – that illustrates how agents and structures cooperate in the reproduction of the digital media environment. These user information regimes have dual structures that are both enabling and constraining. Such regimes (Webster, 2011, p. 43) are socially constructed, and they determine what comes to public attention with potential bias:

> "Compared with more traditional media, they all offer users some measure of interactivity, whether it is the ability to click, link, sort, retrieve, recommend, comment, buy, or collaborate. Importantly, most also leave an electronic record of their use that can be harvested in various ways and used to produce the many forms of surveillance that constitute user information regimes" (Webster, 2011, p. 50).

2.2 Structure & agency through platforms and algorithms

Current discussions on digital media environments are shaped around platforms and algorithms that are based on user information regimes. Platforms are digital infrastructures facilitating multi-sided markets and mediating modes of production, consumption, and user interactions (Srnicek, 2017). Srnicek sees them as "intermediaries that bring together different users: customers, advertisers, service providers, producers, suppliers, and even physical objects" (ibid., p. 43). For these emerging new digital economies, Srnicek uses the umbrella term "platform capitalism" and isolates five types of platforms (ibid., p. 49), mainly on the business model they employ and implications for the transformation of labor they pose: advertising platforms (Google or Facebook), cloud platforms (Amazon), industrial platforms (GE or Siemens), product platforms (Spotify), and lean platforms (Uber or Airbnb). There are different typologies of platforms, for instance, Steinberg and Li (2017, p. 176) distinguish between three types: product-technology platforms (computing infrastructure like Apple), content platforms (social media platforms such as Twitter or YouTube), and transaction-type or mediation-type platforms (Amazon). If we use the latter classification, we will focus on the content platforms.

Van Dijck (2013, p. 25) disassembles platforms as techno-cultural constructs and socio-economic structures into their constitutive components. Approaching platforms as the former means to analyze "technology, users and content in close alignment" (ibid., p. 28); the latter designates focusing on "their ownership status, governance, and business models" (ibid.). In the book Platform Society, Van Dijck et al. (2018, p. 2) further highlight the inseparable relation between online platforms and societal structures: "Platforms do not reflect the social: they *produce* the social structures we live in" (ibid.).

If platforms produce structures in the Giddensian sense, then the algorithms are the structuring mechanisms that structure user behavior, shape content, and feed (in the form of user data) recommendation systems: "Algorithms are tools for structuring and influencing *repeated* data: designed to pattern input and instrumentalize output" (Foster & Zhang, 2022, p. 1). Webster emphasized that algorithms determine attention in certain ways, they "structure decision making within certain bounds" (Webster, 2011, p. 50). The agency[2] of platform users is thus shaped around algorithmic goals and, to some extent, construct them because personal data are used to sustain the business model and to create personalized content, ads, and services, as Park et al. (2018, p. 1321) write: "(I)ndividuals' voluntary actions in digital media consumption become constitutive of the very structure of which they are a part."

According to Napoli (2014, p. 346) – who draws from Webster's notion of user information regime – algorithmic systems "exhibit characteristics that are inherently institutional in nature". Napoli (ibid. 347) further mentions their gatekeeping role, similar to traditional media. As an example, he mentions the controversy around Occupy Wall Street movement being removed from the Twitter Trends lists, which initiated the discussions around the workings of the Twitter algorithm: "The controversy recalls more traditional media criticism that would frequently focus on the presence or dearth of media coverage of specific issues, individuals, or organizations, within the context of the significant agenda setting effects that such patterns could have" (Napoli, 2014, p. 347).

Platforms and algorithms are surrounded by discourses on participation (Vaccari & Valeriani, 2021) as devices enhancing agency and enabling activism. On the other hand, recently, prevalent discourses accentuate the power of structures to exercise algorithmic control (Griesbach et al., 2019), accumulate platform power (Terranova, 2022), exploit user activity and surveil (Ytre-Arne & Moe, 2021, p. 807; Zuboff 2019), enforce racial/gender biases (Noble, 2018), or shape platform users' choices in the consumption of culture (Higson, 2021). Apart from the discourses around platforms and algorithms, we should not forget they have a material presence. In the previous decade, the material turn in (digital) media studies has taken place (Hroch & Carpentier, 2021, p. 253), which led authors like Parikka (2015) to stress the materiality (and environmental footprint) of streaming culture and platforms with data storage facilities, or to reconsider the materiality of media technologies (Gillespie et al., 2014), but also to attribute agencies to non-human actors such algorithms.

2.3 Structure & agency through algorithmic assemblages

Platforms and algorithms are often framed as constituting opaque structures based on mechanisms that are not completely transparent. They are seen as black boxes (Pasquale,

[2] Some authors (Klinger & Svensson, 2018) pointed to the agency of humans, such as programmers and developers, in the input phase, while others highlight the non-human agency of algorithms (Rutz, 2016).

2015), as the invisible hand(s) influencing culture, politics, and other fields. We have already mentioned several attempts to look under the hood of platforms and algorithms utilizing structuration theory (Park et al., 2018; Webster, 2011). Courtois and Timmermans provide us with a useful conceptual model, that combines media effects research and (critical) political economy of online media, that: "(...) treats algorithmic governance as a dynamic structuration process" (Courtois & Timmermans, 2018, p. 2). They subscribe to Stones' innovations in structuration theory (allowing for domain-specific applications), which (2005, pp. 84-85) propose a quadripartite conceptualization of structuration with four interconnected elements: external and internal structures, active agency, and outcomes. Courtois and Timmermans instead present a tripartite of structuration for algorithmically governed platform environments that involves three types of actors that interact with one another: platform owners/developers, platform users, and machine learning algorithms dynamically interact, while they all possess agentic and structural characteristics (Courtois & Timmermans, 2018, p. 2).

Platform users "exercise agency within the boundaries that a platform provides: they roam within a platform's architecture that is governed by protocols, default settings, and algorithms" (Courtois and Timmermans, 2018, p. 3). Authors notice that platform users have the ability to perform different types of resistance to algorithms, such as figuring out the mechanics and acting accordingly, thus exercising agency beyond platform protocols (ibid., p. 12). Perspectives of platform owners and developers, who develop and refine platform mechanics and business models, then allow "to understand their internal structures and consequently their actions" (ibid., p. 4). It means taking into account the sequence of goals (for instance, how the revenue is generated) that "forms the internal-structural backdrop against which platform owners and developers exercise agency. This agency relates to a wide array of choices including the platform's interface design, its default settings, the protocols that govern it, what (meta)data are generated, and how these data are processed" (ibid., p. 3).

Finally, algorithms, and machine learning algorithms, shape platform users' choices and execute goals built into platforms by developers/owners. Courtois and Timmermans argue that it should be possible "to construct informed assumptions on the mechanics of algorithms by considering the economic and technological logics that pressure platform owners and developers" (ibid., p. 5). It is important to note that recent innovations informed by Latour's actor-network theory (Greenhalgh & Stones, 2010) have enriched structuration with non-human agencies, thus allowing to consider the relationships between human and technological actors (such as algorithms or their material infrastructures): "Both categories of human actors actively interface with algorithmic systems whose development is increasingly outsourced to machine learning algorithms" (Courtois & Timmermans, 2018, p. 3).

Other authors propose models inspired by new materialism (e.g., DeLanda, 2016) to enhance radical contextualization and conceptualize algorithms and platforms as assemblages, i.e., "wholes whose properties emerge from the interactions between parts" (DeLanda, 2006, p. 5). For instance, Fisher, by algorithms, understands "a whole socio-technical assemblages of people, technologies, practices, sites, and knowledges" (2022, p. 9). Cellard (2022, p. 990) understands algorithms as sociotechnical assemblages and is concerned with algorithmic transparency and accountability: "At the end, what has to be negotiated and governed is not only a digital object but a set of protocols and procedures made of organisational habits, legal rules, analog artefacts and technological expertises" (Cellard, 2022, p. 996).

3. Methodology

With the theoretical framework presented above we first analyzed the output from previous working packages of the EUMEPLAT project (section 4), with a special focus on algorithmic transparency as an intersecting theme (in relation to law, platform recommendation systems, and Twitter algorithm). Secondly, we analyzed our original Work Package 5 data that were collected through so-called Delphi+ workshops, and future scenario essays produced by the EUMEPLAT researchers (section 5). Methodologically, our analysis will be grounded in the field of future studies.

The Delphi method is a method for future scenario-building and forecasting with a long history. To illustrate: Gordon (2009, pp. 1-2) relates this method to the work of RAND in the early 1960s. Developed in the early stages of the Cold War, in order to predict the impact of technology on warfare (San-Jose & Retolaza, 2016, p. 3), its consolidation started with the RAND projects, which were established to predict the probability or intensity of possible enemy attacks. These think tanks, such as RAND, "provided the methods and techniques for the military and strategic planning of US administrations" (Seefried, 2014, p. 3; see also Amadae, 2003). Currently, the Delphi method – as a technique that offers a "systematic means of synthesizing the judgments of experts" (Gordon, 2009, p. 11) – is used across various academic disciplines and fields. There are many variations of the Delphi method itself, but several characteristics are still transversally present. Landeta (2006, p. 468) defines the Delphi method as "a method of structuring communication between a group of people who can provide valuable contributions to resolve a complex problem." As Gordon (2009, p. 4) summarizes it, the Delphi method is grounded in a "controlled debate" which allows for the establishment of consensus among experts, through a series of iterations. This implies that expert-participants can discuss the responses of others and the work of the group as a whole, but also that they can alter their own positions during the process.

Despite its limitations (Winkler & Moser, 2016, p. 63), the Delphi method is often used in future studies, while it is also used in other fields (Poli, 2018). The field of future studies is defined by Inayatullah (2012, p. 37) as "the systematic study of possible, probable and preferable futures including the worldviews and myths that underlie each future." As a field, future studies has moved "from predicting the future to mapping alternative futures to shaping desired futures" (Inayatullah, 2012, p. 37). These three components refer to three different approaches—with different ontological assumptions—namely, forecasting (to predict the most likely future), scenario-building (to explore alternative futures) and backcasting (to assess the feasibility of a desired future). As it is often emphasized in future studies publications: "Futurists do not know what will happen. They do not claim to prophesy. However, they do claim to know more about a range of possible and desirable futures and how these futures might evolve" (Glenn, 2009, see also Robinson, 1988, p. 325). In the end, future studies, as a field, relates to "thinking the unthinkable" (Kahn, 1962).

In our case, we adjusted the Delphi method into a 3-and-a-half-hour face-to-face scenario-building workshop, which focused on five pre-given themes (surveillance and resistance, algorithms and choice, toxic debate and pluralistic values, destructive technologies and war, and gender in society). The four workshops[3] we organized had two stages. Stage one

[3] Before, we had a pilot Delphi+ workshop in Prague, on 5 May 2022. These data were not used.

consisted of small group discussions, with one moderator for each of the subgroups, with the aim of producing three future scenarios for each theme. In stage two, which was a plenary stage, the participants introduced a selection of scenarios to the entire group. The four workshops were organized in three different European cities, with in total 29 participants (see Table 1 for an overview). As a method, these adjusted (and time-compressed) workshops approximate what Pan et al. (1996) called a mini-Delphi, although we prefer to label these four workshops 'Delphi+' workshops.

Number	Date	Location	Participants
1	5 July 2022	Malmö, Sweden	Science fiction writers and foresight researchers, experts on science communication or philosophy of science, and specialists in digital marketing and applied predictive models (6 participants)
2	4 October 2022	Sofia, Bulgaria	A theatre artist, a Roma activist, a journalist, and a former representative of the Bulgarian government in the field of culture (6 participants)
3	13 April 2023	Rome, Italy	Expertise ranging from cultural relations, bioethics and AI to political science and the futures of electronic music (7 participants)
4	23 June 2023	Sofia, Bulgaria	A film maker and producer, a TikTok influencer, journalists, media studies professors, and chatbot and new media experts (10 participants)

Table 1: The EUMEPLAT Delphi+ workshops

4. What has the EUMEPLAT research added to these debates

One of the components in the algorithmic assemblage, are legal rules, issued by European political institutions. In evaluating our previous work packages, we will start in 4.1 from EUMEPLAT Work package 1, deliverable D1.4 (Grassmuck and Thomass, 2022) that extensively discusses European media legislation, with focus on regulation of algorithms or AI. The first section will build on the deliverable, extend it and summarize important milestones in algorithm regulation in the EU law, that addresses the issue of algorithm transparency and accountability of platform corporations.

In sections 4.2 and 4.3, we look at the workings of recommendation systems, and try to evaluate, on the basis of extrapolation, if the workings of algorithms can be exposed, i.e., made more transparent. Work Package 3, deliverable D3.4 (Miconi et al., 2023), addresses recommendation systems in VOD platforms. The section 4.2 takes this deliverable as a starting point to evaluate the role of agency and structures in the algorithm-driven and human-curated recommendation systems. The section 4.3 offers analysis of Twitter algorithm on examples from Work Package 2 and Work Package 4 data. It is an attempt to assess the relative influence of the algorithm, although limited (on the edge of "guesswork"), because previously we did not look at the workings of the algorithm itself but only partially at its effects.

This limitation results from the fact that WP2 and WP4 methodologies were not designed to research the algorithm but only the most relevant or popular posts on social media platforms (Cardoso et al., 2021; Carlson et al., 2022).

4.1 Algorithm regulation in EU law

EU law addresses algorithms from different and historically evolving perspectives. It protects them as literary works in copyright law.[i] It posits them as solutions to the problem of detecting online crimes and copyright infringements. It protects citizens against algorithms processing their data and taking decisions on them. And it demands growing degrees of transparency of algorithms which increasingly create and control the European platformized public sphere.[ii]

The first pillar of European platform law was the eCommerce Directive (2000).[iii] It established horizontal rules for different categories, exempting hosting providers from liability for the uploads of their users and prohibiting general monitoring obligations. At that time, hosting platforms were assumed to passively provide technical means for their users to share content. Yet, they increasingly became curators, promoters, marketers of their users' content, e.g. by changing from a chronological feed to an algorithmically curated one or by recommending and autoplaying videos.[iv] With more control over content comes more responsibility.

The EU lawmakers acknowledged this in the 2018 AVMSD, which introduced "video-sharing platform services" where before it had only addressed linear and on-demand services. They are defined as providing content to the general public, "for which the video-sharing platform provider does not have editorial responsibility" but for which it determines the organization, "including by automatic means or algorithms in particular by displaying, tagging and sequencing".[v] The concept of 'sharing' was generalized to "online content-sharing service providers" in Article 17 of the 2019 Copyright in the Digital Single Market Directive (DSMD).

At this point, algorithms had evolved into solutions to the problem of detecting online crimes and copyright infringements at scale. Content recognition technology is able to find copies of copyright protected music or known child abuse depictions by means of 'fingerprints'. In case a match is found in an upload, an automated decision module can demonetize or block the upload, inform law enforcement authorities etc.

The General Data Protection Regulation (GDPR, 2016) does not use the term "algorithm" at all, but does address issues of "automated processing of personal data" and "automated decision-making and profiling". It aims to protect natural persons, called data subjects, with regard to the processing of their personal data. This processing is subjected to purpose and storage limitations and to the principles of data minimization, accuracy, integrity, confidentiality and accountability.[vi] The GDPR then defines conditions under which processing is lawful. These include the necessity of processing based on legal obligations, for the performance of a contract and – most controversial – the consent of the data subject.[vii] This consent is defined as "any freely given, specific, informed and unambiguous indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her".[viii] Article 9 introduces a set of "special categories" of personal data of which paragraph 1 categorically says that:

> "(…) processing of personal 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 orientation shall be prohibited."

In contrast to this very clear prohibition, the remainder of the Article gives a long list of conditions under which it does not apply, including consent by the data subject. The GDPR primarily addresses the risks of data processing by means of the neoliberal concept of choice. Consent presupposes a user's freedom to refuse it. The Right to Data Portability[ix] supposes her freedom to move to another platform. The data subject has a right to transparency, including information about the purposes of the processing and its legal basis, on the existence of automated decision-making, and information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject.[x] The right to know does not include mandatory access to the source code of the underlying algorithms.

The final and likely strongest right of the data subject is the right to object to processing of personal data[xi] and "the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her."[xii] The DSA package[xiii] which amends and complements the eCommerce Directive is currently being implemented by the member states. Its subject matter are intermediary services in the internal market. The DSA provides layered obligations for different kinds of online providers with the largest number of cumulative obligations applying to Very Large Online Platforms (VLOPs) and Very Large Online Search Engines (VLOSEs) which have a monthly average of 45 million active users or more in the Union.[xiv]

Intermediaries must inform their users about any tools used for the purpose of content moderation, including algorithmic decision-making. At least once a year, they have to report on their actual moderation practices, including whether the order or notice came from a national authority, a trusted flagger or an automated system and the specification, indicators of the accuracy and error rate of such systems.[xv] The DSA does not allow for entirely automated decisions on users' content. Platforms must ensure that the decisions on complaints (about demonetizing or removing content, suspending or terminating account) "are taken under the supervision of appropriately qualified staff, and not solely on the basis of automated means."[xvi]

VLOPs and VLOSEs must conduct in-depth self-assessments of systemic risks. At least once a year, they shall be subject to independent audits. Providers must preserve the supporting documents of the risk assessments for at least three years and, upon request, communicate them to the Commission and to the Digital Services Coordinator of establishment. Platforms must explain the design, the logic, the functioning and the testing of their algorithmic systems. The Commission has the power to conduct inspections at the premises of the providers of VLOPs and VLOSEs, ask any member of staff for explanations and order them to provide access to their databases and algorithms. In addition, they must provide access to data to independent "vetted" researchers, including, where technically possible, access to real-time data.

On 18 April 2023, the Commission launched the European Centre for Algorithmic Transparency (ECAT) in Sevilla as an EU Commission's Joint Research Centre (JRC).[xvii] Its task is to help enforce the DSA. At ECAT, an interdisciplinary team of around 30 data scientists, artificial intelligence experts, social scientists and lawyers technically analyze and evaluate relevant programme routines of VLOPs and VLOSEs.[xviii] At the time of writing, the AI Act is in its final negotiations between EP and Council.[xix] It strives to establish the rules for safe and transparent AI. Like the DSA/DMA, the AI Act follows an approach of graduated risks. AI systems that pose an unacceptable risk and are therefore prohibited, in the EP proposal include remote biometric identification and categorization systems, systems for predictive policing and for emotion recognition and the scraping of biometric data from social media or CCTV footage to create face recognition databases.

For low-risk industrial solutions the MEPs propose to create a suitable environment to facilitate innovation and investments, including by exempting AI components provided under free and open-source licenses from the Regulation. The EP also proposes to add general principles applicable to all AI systems such as 'human agency and oversight', 'transparency',[xx] 'diversity, non-discrimination and fairness' and 'social and environmental well-being'. The class of high-risk AI systems[xxi] and the rules on their risk management make up the bulk of the AI Act. These include AI systems used for biometric identification, the operation of critical infrastructure, assessing humans in education and work, evaluating the eligibility for public healthcare and other essential services, for credit and insurance services, in law enforcement and in migration, asylum and border control management. MEPs added AI systems used to influence citizens in election campaigns and in recommender systems used by very large social media platforms to the high-risk list. These systems have to be registered in an EU database and adhere to transparency obligations.[xxii]

High-risk providers have to produce technical documentation that allows competent authorities to assess the compliance of their AI systems.[xxiii] Where the DSA requires record-keeping for three years, the AI Act proposes to require logs to be kept "over the duration of the life cycle of the system".[xxiv] National authorities[xxv] and the European Artificial Intelligence Board[xxvi] have rights of access to algorithms. A remarkable innovative approach proposed by the Commission and expanded upon by Council and Parliament is the "AI regulatory sandbox".[xxvii] Possibly the strongest instrument the AI Act proposes to introduce is the primacy of human agency and oversight: "High-risk AI systems shall be designed and developed in such a way, including with appropriate human-machine interface tools, that they can be effectively overseen by natural persons during the period in which the AI system is in use".[xxviii]

4.2 Recommendation systems

In the context of the EUMEPLAT research, two different kinds of recommendation systems – as user information regimes – are relevant, the algorithms' recommendations and the human-curated recommendation systems, especially used by HBO. Human-curated recommendation systems are based on the organization of objects by users with the help of explicit feedback (e.g. start rating, liking, etc.) and implicit feedback (e.g. watching a video). According to the findings of the EUMEPLAT research (Miconi et al., 2023) about the global consumption of VoD content, two different tendencies could be identified. North American content consumption on all platforms is predominant, as expected (Boshnakova et al., 2023). On Netflix but also on Amazon Prime, it could be observed that the predominance of North American content cannot

be challenged by smaller regional markets. When the European content consumption dropped it was replaced by content from Asia and Latin America.

On the contrary, a complementary relationship between European and North American content could be identified on HBO (and for instance, on iTunes). When the consumption of European content dropped, the consumption of North American increased, and vice versa. It could be found that on Netflix platforms in different countries, the consumption for all genres in all countries follows the same trend throughout different periods of time. The only exceptions are the genres of comedy and animation. It shows that in the context of the movie choices based on cultural aspects are almost absent. One explanation for the recorded patterns on the Netflix platforms is that audiences' consumption is less grounded on cultural-based choices but mainly driven by the algorithmic promotion of certain titles (see Miconi et al., 2023, pp. 50-54). On the other hand, HBO with its human-curated recommendation system reveals more individual consumption patterns; the consumption in Bulgaria and the Czech Republic follow in most cases similar patterns. This can be taken as an indication that human-curated recommendation systems allow individuals to act to a higher extent independently and make their own free choices (agency) while recommender systems like NRS consist of recurrent patterned arrangements which limit the choices as described by Pajkovic (2022).

However, to counteract the Americanization (Schiller, 1969) of the media and TV market, the Audiovisual Media Service Directive (AVMSD) was adopted by the European Parliament and Council of the European Union in order to protect European culture and media industries. Especially, Article 13 of the AVMSD defines that Member States of the EU have to ensure that at least 30% of the on-demand catalogues should be allocated to European works (Micova, 2023). But the success of the quota system depends on a precise definition of what European content is. Although algorithmic recommendations play a vital part making the public more aware of the existence of European content, a quota system is no guarantee of a real cultural Europeanization (Miconi et al., 2023, p. 84).

4.3 Recommendation systems on Twitter

As Twitter observes a change in ownership from Dorsey to Musk this year, it has undergone some major changes in its recommendation algorithm and part of it was made open source on GitHub. The main focus of this section will be on the ranking factor of tweets and how it has changed after Musk's acquisition. Those changes in the platform owners/developers structures have a direct impact on the agency of platform users (Courtois & Timmermans, 2018).

Because the Twitter algorithm is evolving on a daily basis mostly by evaluating the action of its users and using several methods for its recommendation system (Twitter, 2023), we will be comparing the algorithm's ranking factors from 2021, our data collection time window, with ranking factors manifest after the algorithm has been made publicly available. We compare 2023 to 2021 because our data were collected in 2021, thus reflecting the operation of the algorithm back then, before the "major" change in early 2023.

We observe that the 2023 model is focusing more on conversations (Replies) as the top most engagement factor for the popularity of a tweet, while likes and retweets have taken a backseat (Toraman et al., 2022, p. 13). In 2021, however, the model was still using likes and retweets

as its top-ranking factor for evaluating the popularity of a tweet. Both in 2021 and 2023, the Twitter timeline could be interchanged between a purely reverse chronological feed and an algorithmic feed ranking tweets from the accounts followed (Clark, 2023). It is important to note, that the chronological feed is also produced by an algorithm, but not a curatorial one.

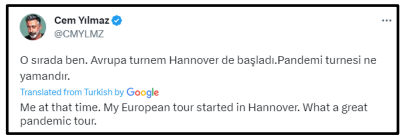
These subtle yet noticeable changes in the Twitter algorithm contributed to downplay the previous ranking factors, such as likes or retweets and focus more on the engagement of the tweet in terms of replies (GitHub, 2023). However, either considering likes, retweets or comments as the main driving factors of the operation of the algorithm, it is the users' choice to engage or not in a conversation that contributes to the structuring performance of the algorithm.

4.3.1 Ranking factors

Inside the EUMEPLAT research project, WP2, dedicated to "The Platformisation of News", researched posts from Facebook, Twitter and YouTube (Cardoso et al., 2021), and WP4, dedicated to the representations of gender and migration on social media, researched posts from Facebook and Twitter (Carlson et al., 2022). Neither of those two work packages focused specifically on researching the algorithms, but on researching the contents of the publications. However, those publications' reach and relevance is, to some extent, also the result of the operation of algorithms, in part fed by the agency of the users.

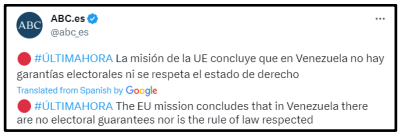
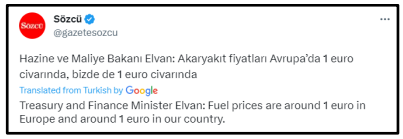
From WP2 (Cardoso et al., 2023), tables 2, 3 and 4, below, display the most relevant tweets from all 10 countries between September and November 2021, according to the number of followers, estimated reach and interaction rate (the percentage of likes and retweets relative to the number of followers).

Table 2 – Top ranking tweets from WP2 data sample according to the number of followers

1	2	3
		
Account: Recep Erdogan (Turkey) Link: http://twitter.com/RTErdogan/statuses/1458070766793199630 Followers: 18 092 791 Reach: 2 371 945 Interactions: 7344 Interaction rate: 0.041%	**Account: Recep Erdogan (Turkey)** Link: http://twitter.com/RTErdogan/statuses/1449343118311149572 Followers: 18 062 560 Reach: 2 433 320 Interactions: 6263 Interaction rate: 0.035%	**Account: Cem Yılmaz (Turkey)** Link: http://twitter.com/CMYLMZ/statuses/1456329105398456326 Followers: 15 049 029 Reach: 1256258 Interactions: 916 Interaction rate: 0.006%

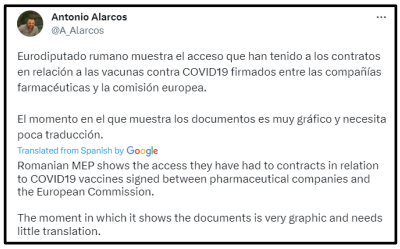
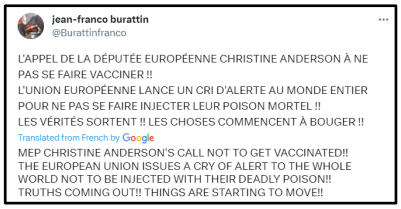
Source: Twitter, Brandwatch. Authors own elaboration.

Table 3 – Top ranking tweets from WP2 data sample according to the estimated reach

1	2	3
		
Account: Yldiz Kalas (Turkey) Link: http://twitter.com/YildizYidiz2020/statuses/1450094211357884419 Followers: 21 580 Reach: 5 509 975 Interactions: 6392 Interaction rate: 29.62%	**Account: ABC (Spain)** Link: http://twitter.com/abc_es/statuses/1463176782610411523 Followers: 2 149 760 Reach: 4 384 432 Interactions: 9619 Interaction rate: 0.447%	**Account: Sözcü (Turkey)** Link: http://twitter.com/gazetesozcu/statuses/1459236946836955137 Followers: 3 041 313 Reach: 3 747 142 Interactions: 2998 Interaction rate: 0.099%

Source: Twitter, Brandwatch. Author's own elaboration.

Table 4 – Top ranking tweets from WP2 data sample according to the interaction rate

1	2	3
		
Account: Bon Augure (Belgium) Link: http://twitter.com/b0n_augure_/statuses/1465096881374212103 Followers: 164 Reach: 243 511 Interactions: 1078 Interaction rate: 657.31%	**Account: Antonio Alarcos (Spain)** Link: http://twitter.com/A_Alarcos/statuses/1454528941977391116 Followers: 644 Reach: 775 713 Interactions: 3266 Interaction rate: 507.14%	**Account: Jean-Franco Burattin (Belgium)** Link: http://twitter.com/Burattinfranco/statuses/1454918187724705797 Followers: 210 Reach: 148 156 Interactions: 525 Interaction rate: 250%

Source: Twitter, Brandwatch. Author's own elaboration.

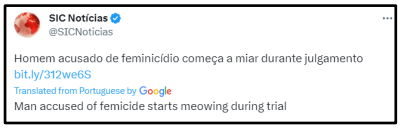
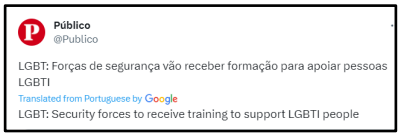
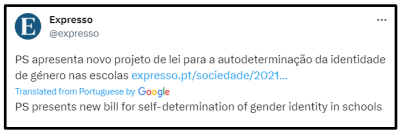
Conclusions from WP2 indicate that far-right populist politicians[4] attract more engagement than other politicians, suggesting a correlation between more extremist content and algorithmic amplification (Cardoso et al., 2023). This may mean that those actors are better at taking advantage of the amplification effect of the algorithm, which, in turn, points to a manifestation of their agency in operating the affordances of the social media platform and its algorithm. Also, media accounts on Twitter tend to generate much less engagement than other accounts, with a large following, but with a significantly lower engagement rate. Smaller Twitter accounts, with less followers tend to have more interactions and, especially, better interaction rates, suggesting a better use of the mechanics of the algorithm.

The overall visibility of a given publication on Twitter seems to be influenced not only by the number of interactions and the interaction rate, but also by the number of followers of each Twitter account (Twitter, 2023). Publications with high engagement rate (resulting from users' interactions with the publication) can outpace the lower number of followers thanks to the algorithm.

Regarding data from WP4, tables 5 and 6 display examples of Portuguese publications on Twitter from accounts with large following and with high number of interactions.

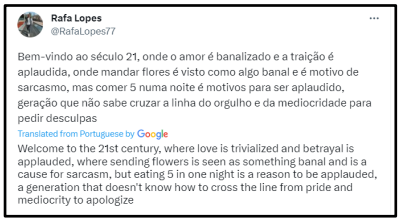
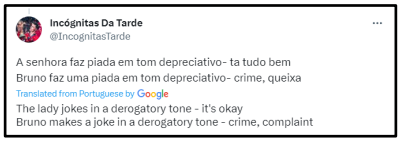
[4] The far-right populist narrative may not fit entirely all examples from all the countries. Any further research would need to take into consideration political-cultural and system-specific differences.

Table 5 – Example of tweets from WP4 data from Portugal, for Gender and Migration, with large number of followers

1	2	3
		
Account: SIC Noticias (Media) Link: https://twitter.com/SICNoticias/status/1450029162346033154 Followers: 936 613 Interactions: 33 Interaction rate: 0.0035%	**Account: Publico (Media)** Link: Followers: 874 008 Interactions: 622 Interaction rate: 0.071%	**Account: Expresso (Media)** Link: https://twitter.com/expresso/status/1448962061032202244 Followers: 558 163 Interactions: 28 Interaction rate: 0.005%

Source: Twitter, Brandwatch. Authors own elaboration.

Table 6 – Example of tweets from WP4 data from Portugal, for Gender and Migration, with high interaction rates

1	2	3
		
Account: Rafa Lopes (Non-Media) Link: https://twitter.com/RafaLopes77/status/1443894924513005573 Followers: 108 Interactions: 197 Interaction rate: 182.41%	**Account: Incógnitas da Tarde (Non-Media)** Link: https://twitter.com/IncognitasTarde/status/1457825448449265666 Followers: 31 Interactions: 42 Interaction rate: 135.48%	**Account: Pássaro Azulinho (Non-Media)** Link: https://twitter.com/passaroazulinho/status/1437947255806365699 Followers: 210 Interactions: 525 Interaction rate: 250%

Source: Twitter, Brandwatch. Authors own elaboration.

In these publications we can see that the accounts with most followers publishing on Twitter about gender and migration are frequently news media Twitter accounts and that, on the contrary, Twitter posts' better interaction rate come predominantly from non-media accounts. This suggests the reach of a publication on Twitter is both the result of the number of followers of the publishing account and of the number of interactions generated by the publication (Twitter, 2023). As far as the approach structure vs. agency is concerned, this means it is the agency of the users that partially feeds the data on which the algorithm operates.

4.3.2 Limitations of this approach

Neither WP2 nor WP4 methodology was designed specifically to investigate the workings of the Twitter algorithm. Although the effects of the algorithm are manifested in the data collected in both work packages, namely in the reach and interactions metrics of each post, we can only

see the effect but not the cause. This means, we have to rely only on the principle of extrapolation.

On the other hand, these algorithms operate on different and combined criteria, rendering impossible to attribute the results only to engagement or reach or followers. This means this approach is limited when trying to disentangle the role played by the structuring role of the platform and the agentic role of the users in feeding the workings of the algorithms.

Finally, looking at the open-sourced Twitter algorithm on Github is like looking at the inner mechanics of a car months after it came out of the assembly line: it may tell us something about the car, but less about the assembly line. Mostly because these social media algorithms are dynamic entities, and the combination of its multiple criteria changes frequently over time. The issues of algorithm transparency repeatedly appeared in the future analysis section that follows.

5. Future Scenarios

The analysis focuses on one of the five pre-given themes, namely algorithms and choices. In the Delphi+ workshops, each subgroup of participants was asked to produce 3 future scenarios, which resulted in a total of 37 scenarios (see *Table 7*). Three corpuses of text will be analyzed, namely: The Delphi+ workshops output in the form of a database of scenario cards (1) produced by the participants during the sessions described above. These scenario cards will be complemented with the transcriptions of the discussions during our workshops (2). Lastly, the authors of this text also wrote future scenario essays themselves (3), always connected to one of five themes in Work Package 5, using one Maieutic question ("what if") as a starting point. Essays were meant as more elaborate explorations of a particular topic. All scenarios were written before the data analysis, as part of a EUMEPLAT future scenario writing project, which added an auto-ethnographic dimension (Ellis, Adams & Bochner, 2010) to the data gathering process.

Delphi+ workshop location	**Number of scenarios**
Sofia	6
Malmö	9
Rome	7
Sofia 2	8
Essays	7
N	37

Table 7

For the interpretation of these three different types of data, we used a qualitative research approach and coding methods inspired by Grounded Theory Method (GTM) (Bryant & Charmaz, 2008). We followed the GTM's coding procedure, but we have not adopted the methodological approach as a whole. To support the qualitative analysis, we performed a quantitative content analysis on 37 scenarios, identifying the frequency of different actors (clusters of scenarios highlighting the role of particular agent/actor) and the European dimension of the scenarios (see *Table 8*). The actors are concepts that emerged from the content analysis of our data, which were enriched by the conceptual model used by Cortouis & Timmermans (2018) presented in the theoretical section. Scenarios related to these actors were then sub-divided into clusters.

Type of actor	Frequency (N=37)	European dimension
Algorithms	15	2
Platform users	5	1
Platform corporations	7	4
Institutions	10	9

Table 8

Although the GTM's procedures can vary and some authors attribute to it methodological eclecticism (Charmaz, 2009, p. 134), the multiple and multilevel coding is in the core of the analysis (Charmaz, 2006, p. 45). It usually starts with more open initial coding with shorthand labelling (p. 47), continuing to focused coding which filters relevant codes (pp. 57–58), then leading to axial coding which establishes relations between codes and finally theoretical coding which specifies these relations (pp. 60–63). To strengthen ties between the emerging analysis and data, researchers can use in vivo codes: "In vivo codes help us to preserve participants' meanings of their views and actions in the coding itself" (Charmaz, 2006, p. 55).

In order to support the last two levels of coding, we created a future scenarios map to better visualize relationships between scenarios and dominant categories (see *Figure 1*). The coding was driven by the theoretical framework, presented in the previous sections, that provided sensitizing concepts (Blumer, 1969) for the analysis. The sensitizing concepts we employ came from structuration theory (Giddens, 1984) and its more current applications, like structuration of algorithmically governed platform environments (Courtois and Timmermans, 2018), and from assemblage theory (DeLanda, 2006), which helped to acknowledge the multidimensional relationships between actors. Additional sensitizing concepts were inspired by human-centric vs. tech-centric approaches (Degeling & Berendt, 2018; Sigfrids et al., 2023) to AI governance, which helped to further structure and consolidate the analysis.

It is important to mention that we use an updated conceptual model of actors in structuration processes of platform environments (Courtois and Timmermans, 2018). The variations that emerged from our data, were: (1) In the case of machine learning algorithms, we will refer to these non-human actors as algorithms, because our data do refer in most cases to algorithms in general (and not one specific type). (2) Platform developers/owners will be retitled to Platform corporations because our data were not that much concerned with the role of individuals behind platforms but refer to them as entities or structures. The focus on the development of platform interfaces and design will be maintained. (3) With respect to Cellard's specific mention of legal rules in the workings of algorithmic assemblage (as outlined in the section 2.3), and to the concepts that emerged from our data, we add a fourth type of actor, namely Institutions. The conceptualization of this type of actor is enriched by the findings from the semantic map of Europeanity and its 19 approaches (Carpentier et al., 2023, p. 117), so it provides another tie with the previous work of the EUMEPLAT consortium (in Work Package 1). The updated model of actors (platform users, algorithms, platform corporations and institutions) created the structure of the analysis.

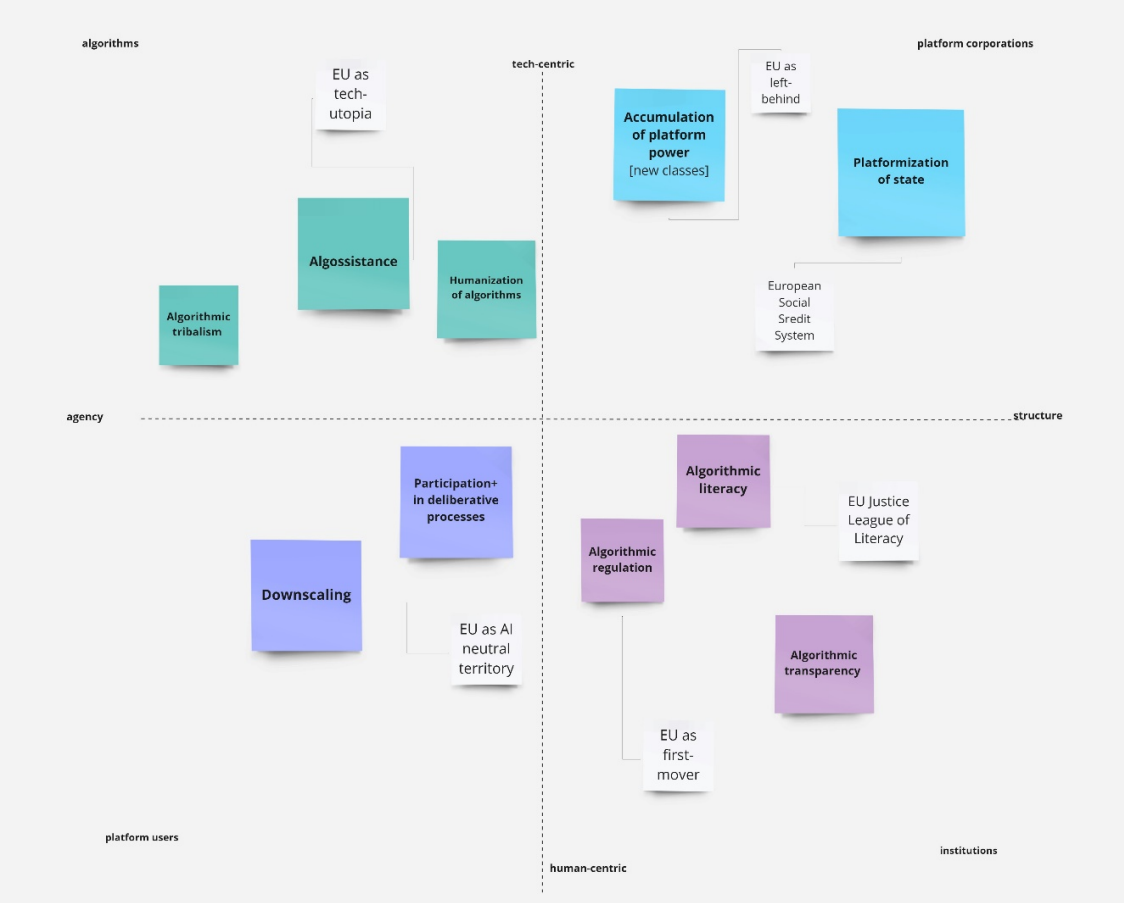


Figure 1 – Future scenarios map

5.1 Algorithms

The first type of actors in the future scenarios analysis are algorithms. They are structuring mechanisms of platforms that structure behavior, shape content, and feed (in reciprocal relationship with user data)[5]. As technological actors they enter relationships with platform users, and algorithms have the capacity to act on their own with non-human agencies. In the more tech-centric imagination that our participants have created about the future in their scenarios, algorithms will have more weight in 20 years' time, not only in the cultural or political field, but also in the medical field, meaning more fields of capitalist production will be affected.

Algorithmic tribalism

According to analyzed scenarios, one of the negative effects is the amplification of polarization – or acceleration of filter bubbles' isolationism – resulting in *Algorithmic tribalism*. In this group of scenarios, algorithms are imagined as enforcing conspiracy theories through recommendation systems, and to gather tribe-like communities (Delphi+ participant 1). In a more positive variation, subcultures and cultural scenes will be created around certain algorithms (Delphi+ participant 11). In the former context, the use of the word "tribe" emerges as a reference to the Capitol Attack following the defeat of Donald Trump in the presidential

[5] But algorithms are positioned on our map on the side of agency, with overlaps with the side of the structures, because the scenarios mainly accentuated their agentic characteristics.

campaign in 2020, while in the latter context, the concept emerges via the vocabulary of subcultural studies (Bennett, 1999) and cyber-punk literature (Attebery, 2020, p. 233).

Algossistance

The second cluster of scenarios, titled as *Algossistance* (inspired by the essay described below), addressed the idea of algorithms navigating human consumer or political choices, and helping humans make better choices. It included a particular scenario named "Algorithm caretaker" (Scenario card 1), that imagined algorithms as personal assistants, while other scenarios predicted algorithms that can assist in better decisions for climate mitigation (Scenario card 2) or take the role of social workers (Scenario essay 6). This cluster of scenarios was framed as positive, as expressed for instance in: "You can create your own best friend and it learns how to talk to you, so you would have it since you were a child, and you would teach this AI to know your needs, and then it would be guiding you throughout your life." (Delphi+ participant 2).

One particular scenario titled "Algossistance", that will serve here as case study illustrating this category, emphasized the entanglement of humans and non-humans. "Algossistance" can be installed into the human body in the form of a microchip helping with everyday decision-making. For instance, it can assist in common activities like buying ice-cream, by "activating algossistance via the power of thought" (Scenario essay 1). In line with the transhumanistic and neurofuturistic traditions (Gray-Hammond, 2023), "algossistance" establishes feedback between human mind and technology (which is already happening in the present, to some extent, for instance with menstruation prediction algorithms).

The algossistance scenario predicted that the EU will become a technological utopia in the 2050s, therefore it has a strong European dimension. According to the scenario, that puts in motion the workings of the assemblage and closely interacts with all other actors in the model (including institutions, platform corporations and users), the European Commission was the first to approve implanting these algossistance microchips into human bodies in 2042. According to the scenario, the EU saw it as economic opportunity for stimulating capitalism:

> "Europe could re-establish itself as a cutting-edge technological utopia that acts ahead of its global competitors. And it resonated well with the European tradition of public-private partnerships as the algossistance microchip was developed by ALGINO, a company jointly funded by the European Union and private capital—a global business monopoly holding the key to future prosperity" (Scenario essay 1).

Humanization of algorithms

The last set of scenarios (for Algorithms) worked with the idea of *Humanization of algorithms*. It has moral and ethical dimensions, as it concerns the issue and possible need of protecting algorithms (in their human rights to dignity, for instance) and recommendation systems as persons or animals (Scenario essay 6) – the need, in this scenario, arises from the anticipated closer relationships between humans and algorithms, also in romantic relationships. But algorithms, in this category, may become personalities with faces, which provokes questions concerning trust in connection to behavioral interfaces, marketing and the design of platforms, which is the domain of another actor, platform corporations (more exactly, of designers and

programmers behind the platform architectures). One Delphi+ participant indicated the socio-economic nature of these interfaces, that are part of the platforms' business model:

> "The algorithm itself would probably be an infrastructural thing, but the branding which brings you to that particular choice of algorithm with that particular set of constraints, that's going to be very much a marketing thing" (Delphi+ participant 3).

5.2 Platform corporations

Platform corporations are a second type of actor involved in the structuration process of algorithmically driven environments. Although Courtois & Timmermans' model (2018) accentuate human agency in the input phase by platform owners and developers, in our case this type of actors act as whole platform power structures rather than human individuals representing the companies. This type of actor is largely tech-centric and related to the accumulation of power.

Accumulation of platform power

This cluster of scenarios (Delphi+ participants 4 & 5; Scenario card 3) forecast widening gaps in society and class divisions enforced by platforms. For example, there will be only two classes, "Masters and Users", as one particular scenario envisioned: "These are the two directions we're going to right now. People who are controlled and people who produce AI. It is a crucial moment in the lifespan of a civilization now" (Delphi+ Participant 4). The scenario emphasized, in a very neoliberal-technological fashion, the importance of individual skills, through which you can work yourself up. Also, class distinctions in art consumption (represented by highbrow vs. lowbrow art) will be activated by AI and platform environments. But this time, it will be mass-AI art versus high human-produced art (Delphi+ participant 4 & 12; Scenario card 4). The role of Europe in these processes related to AI development will be, according to our data, rather passive. "EU will become passive spectator," as expressed on the scenario card 6, or always "left-behind by China" thanks to non-strategic regulation (Delphi+ participant 4).

Platformization of state

The accumulation of platform power can be mobilized by the state, leading to the platformization of the state (Bratton, 2015). One essay (Scenario essay 2) imagined Europe adopting a social credit system as in China. This state-like platform, "European Social Credit System" (as the title of one scenario essay), would foster trust, transparency, and cohesion. The system would be based on the Social Credit Quotient (SCQ) and assess and reward individuals' behavior, both online and offline. Although the essay assumes, this scenario would mean stronger structures and less individual human agency, it is framed as positive:

> "The all-encompassing surveillance and data collection raise concerns about mass surveillance and the potential misuse of personal information. In the pursuit of an idealized society, dissent and individuality may be suppressed, as the system promotes conformity" (Scenario essay 2).

Platformization of state posits opportunities for more effective and deliberative governance (Delphi+ participant 1 & Scenario essay 3), but also challenges for maintaining the balance between human and non-human agencies in the structuration processes of platform environments.

5.3 Platform users

The perspective of platform users is human-centric, focusing on communities, users, and on the good of society. This type of actors cannot be separated from the workings of the assemblage and is in contact with other actors. The scenarios in this cluster highlight human agency in deliberative processes in platform structures, envision downscaling of platform environments, or partial return to traditional societies.

Downscaling

The idea that the resistance against platforms and algorithms will have the form of partial renunciation of digital communication, and exile "away from keyboard", came into discussion repeatedly. It represents the cluster *Downscaling*. Even though some scenarios (also across other WP5 themes) worked with the idea of "EU as AI-neutral territory" ("switching off the internet for certain times of the day"; Scenario card 5), as a result of regulations, the return to the offline life cannot be accomplished in its totality, but users will have an opportunity to spend more time offline or on non-algorithm platforms (Scenario card 7). For instance, Delphi+ participants (2 & 3) titled the scenario "Cabin in the Woods" with the full awareness, that you can never completely escape but you will need to make compromises:

> "There is an opportunity to withdraw. Kind of off grid is the old cliché, but it's a recognition that you can never be completely off grid, but a much greater literacy around the exposure of being on grid and a lot more gradient of choice" (Delphi+ participant 2).

The imagination about *Downscaling*, and localization, was accentuated in the scenario "Local is the New Social" (Scenario essay 4), that will stand as a case study to illustrate this cluster of scenarios. It worked with the idea that online discourse and sociality will collapse at one point in the future – it will be the consequence of massive acceleration and platformization. For instance, VLLMs (Very large language models) will collapse, and algorithms start to hallucinate from big data (or more precisely, the hallucinations will intensify, as these processes are observable in the workings of LLMs already in the present and in principle), which simultaneously pollute public discourse with fake news. In the positive prospect, platform corporations and supranational organizations will understand that optimizing digital environments for maximum profit extracted from users is not sustainable. In the aftermath, the platform environment will downscale, return to a protected sphere that is more trustful and private: "By 2043, 'local is the new social'. It is friends and colleagues, our friendly neighborhood baker, hacker and information broker who account for the most continuous, sustainable and dense communications and the basis for trust" (Scenario essay 4). Also, algorithm learning downscales to more sensitive VSLMs (Very small language models): "Open source LLMs have shrunk so that they run on my laptop and can be trained on my life's publications, communications and other interactions, from bills to love letters" (Scenario essay 4).

Participation+ in deliberative processes

Another cluster of scenarios works with the imaginary of direct involvement of platform users in decision-making in platform structures or deliberative processes as citizens of states, like elections. The cluster *Participation+ in deliberative processes* imagines a higher degree of participation in platform environments (therefore "plus" in the title), and is closely related to the issue of regulation, and thus to the institutional level, but also to platform corporations and their structures. One scenario (Scenario essay 5), that will serve here as case example, addressed the need for direct user-platform relationship without barriers from national legal frameworks: "Because online platforms are operated by users from many national jurisdictions, maybe the solution is not to transfer power from the platforms to any national entity, but rather to the users themselves" (Scenario essay 5). This is connected to the issue of national and supra-national regulations of global platforms. The realization of this scenario is dependent on national countries and the EU creating legal space for platforms to give power directly to platform users, but also on platform corporations willingness to open their structures for participation (for instance, as Meta did with their Oversight Board).

5.4 Institutions

The last type of actor in the algorithmic assemblage are institutions, and mainly European (political) institutions, as outlined in the semantic map of Europeanisation and Europeanity. European (political) institutions have a specific role in Europeanization processes and represent "the political-institutional component of European governance, which includes the creation of supra-national political institutions (e.g., related to the EU), but also refers to privileged collaborations between national actors" (Carpentier et al., 2023, p. 117). Institutions are connected to three areas of scenarios (*Algorithmic literacy*, *Algorithmic transparency*, and *Algorithmic regulation*), and institutions-as-actors are human-centric, as they aim to maximize the agency of platform users.

Algorithmic literacy

The need for improvement in *Algorithmic literacy* and education was repeatedly mentioned, even though in most cases vaguely. One scenario titled "EU Justice League of Literacy" (Delphi+ participant 6) though was more detailed in its predictions. It accentuated the need for international cooperation in an educational organization powered by all EU member states. Its goal would be to "find an easy way to explain to people what algorithms are doing to their lives and how they affect their choices". Establishing such a governmental body would mean the transfer of powers from the national and regional level to the supranational-EU level – it would allow the "European Justice League of Literacy" to surpass the individual education systems in each country. "The European Union is built on money and trade; you do not have such complement in education and culture (Delphi+ participant 6)." In this scenario, the present EU legislation is framed as constraining (or more precisely, EU legislation is constrained by the member states not having conferred the competence for education to the EU).

Algorithmic transparency

The issue of algorithmic literacy is related to *Algorithmic transparency*, which creates another cluster. *Algorithmic transparency* was often framed as desirable but "hyper optimistic and totally "unrealistic": "We have had cars for 100 years, and how many per cent know how this

engine works even though we use it every day and it is infinitely much simpler than what's going on here" (Delphi+ Participant 5). But algorithmic literacy will not, according to our participants (Delphi+ participant 1 & 5) solve the problem alone – again the interconnectivity and workings of the assemblage were activated.

Scenarios expressed the need for international cooperation and acceleration of institutionalization to create EU bodies and agencies such as The European Centre for Algorithmic Transparency (ECAT). Such bodies were described as "realistic means for mitigation and resistance": "For example, a new agency for algorithmic control, risk assessment, partnerships, quadruple helix networks, stuff like that" (Delphi+ participant 1). Among the measures that could contribute to better transparency are policies for global platforms (or very large online platforms) to make their data/algorithms available and transparent, also readable and understandable: "Because access to the ocean of data is not like you're transparent, no you are not. You are just creating information modes" (Scenario card 8; Delphi+ participant 7).

Algorithmic regulation

This cluster of scenarios concerns the escalation of *Algorithmic regulation*. Regarding regulation, one scenario essay describes the escalation of regulation in the EU. For instance, enforcing the GDPR, data protection officers will stop government agencies from using Facebook, TikTok and other social media platforms based outside the EU (Scenario essay 4). The same scenario predicts that the VLOPs will – after many lawsuits against online trolls and platforms over content moderation – need to change their upload filters from negative to positive, "allowing only content with license or approval to go online". It counts with the possibility that the upload filters might be switched to allowing only content with a license to go online.

Other scenarios worked with the idea for algorithmic regulation that would turn off recommendation systems, for instance, during elections, so the political choices of platform users are not affected (Scenario card 10; Delphi+ participant 8). It would be the authority of a state's institution, as one particular scenario "On/Off" imagined. This group of scenarios takes a very human-centric position, that does not take into account other types of biases.

In these scenarios related to algorithmic regulation, the EU is constructed through institutions and its policies as "first-mover" (Scenario card 9). Although some of its decisions in regulation are not strategical (Delphi+ participants 4, 9 & 10), which may consequently lead to: "In 20 years scenario, you can only imagine the EU becoming weaker and more factious, potentially not existing. It is unlikely, but we risk, you know, disappearing as a political entity" (Delphi+ participant 10).

6. Conclusions

The analysis of future scenarios has showed how the imaginary about one of the topics in Work Package 5, namely Algorithms and Choices, is constructed and what shapes it can have. We aimed to capture and categorize observations of our Delphi+ workshop participants, paired with the essayistic output from the EUMEPLAT future scenarios writing project. In the case of our theme, we can speak of an "algorithmic imaginary" (Bucher, 2018), which is a theoretical

concept receiving attention in recent years, as it brings focus to “users’ appropriations of algorithmic processes operating in opacity and their imaginaries of these operations” (Schulz, 2023, p. 647).

The analysis was driven by a theoretical framework from structuration theory, focusing on the role of structure and agency in future scenarios. It was supported by sensitizing concepts from assemblage theory and tech-centric and human-centric approaches, which helped to establish relationships between concepts and further structure the analysis. The analysis was mapped around four main actors, namely: platform users, platform corporations, algorithms and institutions, which all possess agentic and structural characteristics. It allowed us to point out the workings and interdependencies of actors in the assemblage. The scenarios acknowledged the existence of other actors and their agentic or structural characteristics. This was most likely given by the diversity of the Delphi+ participants, who were recruited from various fields, from artists and researchers to policymakers, AI experts and programmers; that means experts trained in contextual and strategic thinking.

However, some particular actors in the algorithmic assemblage were more frequent. The algorithmic imaginary was mainly centered around two types of actors, namely algorithms and institutions, that had the strongest European dimension and were mainly mentioned in relation to algorithm regulation, literacy and transparency (see *Tables 7* and *8*). In the future scenarios, Europe and the EU were framed as first-movers in algorithm and platform regulation, but on the other hand, as left-behind regarding AI development (with some exceptions of scenarios that imagined the EU as tech-utopia).

The future scenarios related to algorithms as actors were positioned on the tech-centric side alongside another type of actor, platform corporations. In the latter case, these scenarios emphasized the role of strong structures and were connected to the centralization of power and capitalist modes of production; they would lead to systemic configurations allowing increasing levels of surveillance/control and societal divides, but also higher effectiveness of governance. Scenarios related to algorithms as actors (and as structuring mechanisms) accentuated the non-human agency of algorithms, or were constructed as symbiotic with humans, meaning human and non-human agencies were more balanced (see *Algossistance*). This set of scenarios was constructed as positive, with prospects of more effective human minds and augmenting human cognition with artificial intelligence, but the mentions of the danger of the loss of free will were not absent. What these scenarios did not mention or consider, was the fact, that technologies are not universally accessible – even societal divides were constructed as a matter of individual skill, not access.

The future scenarios related to institutions were, along with platform users, situated as human-centric because they accentuated maximizing human agency and aimed at society, community, or individual users. In these more positive scenarios, supranational institutions were seen as protective of users and humans against platform corporations and algorithms. Humanism was valued in these scenarios, although some framed it as a weakness which would sidetrack Europe and the EU in economic and technological developments. The cluster of scenarios that accentuated the role of platform users as actors was the weakest, which came as a surprise as the concept of algorithmic imaginary initially takes the users’ point of view as a starting point (Schulz, 2023, p. 646). It was not entirely absent because scenarios with institutions as actors were also concerned with the wellbeing of people. Scenarios with

platform users worked with the idea of the sustainability of algorithmically governed platform environments and with maximization of participation for users (although environmental impact of technologies or ecological sustainability of these technologies was not mentioned). These scenarios imagined configurations with increasing levels of participation (thus decreasing control levels) and democracy within the institutional and platform systems.

The future scenarios analysis offered a more symmetrical perspective in algorithmic arrangements and imaginaries, where different actors are taken into account, as well as their agentic and structural characteristics. In this sense, Schulz criticizes the current conception of algorithmic imaginaries or folk theories (see Ytre-Arne & Moe, 2021), "primarily concerned with the users' perspective" (Schulz, 2023, p. 647), as lacking and forgetting the perspective of designers/programmers. Although the imaginaries of designers and programmers of platform architectures are underrepresented in our model (were mentioned only in relation to interface designs and *Humanization of algorithms*) we argue that our analysis of future scenarios has contributed to more balanced conceptualizations of algorithmic imaginaries by considering the perspective of institutions. Thus, it allowed a better understanding of algorithmic assemblages' workings and the relationships between macro- and micro-levels.

The relationship(s) between algorithms and human choices in media platform environments are complex and multidimensional. Accordingly, complex and multidimensional are future imaginaries about the developments concerning choices and algorithms in the European media platform landscape. As our analysis of future scenarios has shown, these imaginaries cannot be reduced to humans versus machines (or in our case, institutions versus machines; see *Table 8*) but need to be seen as a spectrum (also with their agentic and structural characteristics; see *Figure 1*). The interdependencies between different types of actors in the assemblage – algorithms, platform users, platform corporations and institutions – need to be considered. As the analysis of future scenarios has illustrated, the human agency will not pave the way towards a more sustainable media platform environment alone, because platform users are not isolated actors: the human agency might be enhanced through (European) institutions, advocating for algorithmic transparency, against platform corporations' interests. Also, rethinking algorithms from enemies to partners might bring benefits, and new dynamics in European media platform environments.

References

AI Act 2021 (EC). European Commission: Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence, 21.0.4.2021, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0206

AI Act 2022 (Council). European Council: The General Approach on Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence, 06.12.2022, https://data.consilium.europa.eu/doc/document/ST-15698-2022-INIT/EN/pdf

AI Act 2023 (EP). European Parliament: Negotiating Position on Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence, 14.06.2023, https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.html

Attebery, S. (2020). Fashion. In A., McFarlane, G. J., Murphy & L., Schmeink (Eds.), *The Routledge companion to cyberpunk culture* (pp. 228–238). Routledge: Taylor and Francis Group.

Audiovisual Media Services Directive (AVMSD) 2018 (EU). Directive amending Directive 2010/13/EU on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audiovisual media services in view of changing market realities (EU 2018/1808, 14 November 2018), https://eur-lex.europa.eu/eli/dir/2018/1808/oj

Amadae, S. M. (2003). *Rationalizing capitalist democracy: The cold war origins of rational choice liberalism.* Chicago: University of Chicago Press.

Bennett, A. (1999). Subcultures or neo-tribes? Rethinking the relationship between youth, style and musical taste. *Sociology*, *33*(3), 599–617. http://www.jstor.org/stable/42857964

Blumer, Herbert (1969). *Symbolic Interactionism: Perspective and Method*. Englewood Cliffs: Prentice Hall.

Boshnakova, D., Christova, E., Petkov, S. & Toms, J. (2023). *Patterns in Platform Video Production in Ten Countries*. Deliverable 3.2 of the project European Media Platforms: Assessing Positive and Negative Externalities for European Culture. Grant Agreement 101004488, European Union. https://www.eumeplat.eu/wp-content/uploads/2023/05/D3.2_Patterns-in-Platform-Video-Production-in-ten-Countries.pdf

Bratton, B. (2015). *The Stack: On Software and Sovereignty*. Cambridge, MA: MIT Press.

Bryant, A., & Charmaz, K. (Eds.) (2008). *The Sage Handbook of Grounded Theory*. Los Angeles: Sage Publications.

Bucher, T. (2018). *If. . .Then: Algorithmic Power and Politics*. Oxford: Oxford University Press.

Cardoso, G., Álvares, C, Moreno, J., Sepúlveda, R., Crespo, M., Foà, C., Ulzelgun, M. A., Santos, S. F. (2023). *Platformisation of News in 10 Countries.* Deliverable 2.2 of the project European Media Platforms: Assessing Positive and Negative Externalities for European Culture. Grant Agreement 101004488, European Union. https://www.eumeplat.eu/wp-content/uploads/2023/03/D2.2_Platformisation-of-News-in-10-Countries.pdf

Cardoso, G., Álvares, C., Moreno, J., Sepúlveda, R., Crespo, M., Foà, C. (2021). *A Framework and Methodological Protocol for analyzing the platformisation of news*. Deliverable 2.1 of the project European Media Platforms: Assessing Positive and Negative Externalities for European Culture. Grant Agreement 101004488, European Union. https://www.eumeplat.eu/wp-content/uploads/2022/02/D2.1_Framework-and-methodological-protocol.pdf

Carlson, J. I., Niemejer, T., Laronico, V., Lupiáñez-Villanueva, F., Miiconi, A., Cannizzaro, S., van Bauwel, S., de Sutter, F. (2022). *A Framework and Methodological Protocol for Work Package 4 – Analysing the Europeanisation and Platformization of Media Representations*. Deliverable 4.1 of the project European Media Platforms: Assessing Positive and Negative Externalities for European Culture. Grant Agreement 101004488, European Union. https://www.eumeplat.eu/wp-content/uploads/2022/11/D4.1_Methodological-Guidelines.pdf

Carpentier, N. (2017). *The Discursive-Material Knot.* New York: Peter Lang US. https://doi.org/10.3726/978-1-4331-3754-9

Carpentier, N., Hroch, M., Cannizzaro, S., Miconi , A., & Doudaki, V. (2023). Bridging the Discursive and Material Dimensions of Europeanity and Europeanisation: A Participatory Semantic Map Approach. *Observatorio (OBS*)*, *17*(1). https://doi.org/10.15847/obsOBS17120232251

Cellard, L. (2022). Algorithms as figures: Towards a post-digital ethnography of algorithmic contexts. *New Media & Society,* *24*(4), 982–1000. https://doi.org/10.1177/14614448221079032

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis.* Los Angeles: Sage Publications.

Charmaz, K. (2009). Shifting the Grounds: Constructivist Grounded Theory Methods. In J. M. Morse (Ed.), *Developing Grounded Theory: The Second Generation* (pp. 127–194). New York: Routledge.

Clark, M. (2023, January 11). Twitter defaults to a For You page now, just like TikTok. *The Verge*. Available at: https://www.theverge.com/2023/1/10/23549368/twitter-for-you-page-tiktok-following-tab

Cohen, I. J. (1989). *Structuration Theory*. Basingstoke: Macmillan Education UK. https://doi.org/10.1007/978-1-349-20255-3

Coad, A., Lisa. J., & Kholeif, A. (Eds.) (2016). Special issue: Strong structuration theory in accounting Research. *Accounting, Auditing and Accountability Journal,* 29(7).

Courtois, C., & Timmermans, E. (2018). Cracking the Tinder Code: An Experience Sampling Approach to the Dynamics and Impact of Platform Governing Algorithms. *Journal of Computer-Mediated Communication,* 23(1), 1–16. https://doi.org/10.1093/jcmc/zmx001

Coyle, D. (2018). Platform Dominance. The Shortcomings of Antitrust Policy. In M. Moore & D. Tambini (Eds.), *Digital Dominance: The Power of Google, Amazon, Facebook, and Apple* (pp. 50-70). New York: Oxford University Press.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson.

Degeling, M., & Berendt, B. (2018). What is wrong about Robocops as consultants? A technology-centric critique of predictive policing. *AI & SOCIETY*, *33*(3), 347–356. https://doi.org/10.1007/s00146-017-0730-7

DeLanda, M. (2006). *A new philosophy of society: Assemblage theory and social complexity*. London: Continuum Press.

DeLanda, M. (2016). *Assemblage theory*. Edinburgh: Edinburgh University Press.

DeSanctis, G., & Poole, M. S. (1994). Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory. *Organization Science, 5*(2), 121–147. http://www.jstor.org/stable/2635011

Digital Services Act (DSA) 2022 (EU). Regulation on a Single Market For Digital Services and amending Directive 2000/31/EC (EU 2022/2065, 19.10.2022), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R2065&qid=1666857835014

Digital Markets Act (DMA) 2022 (EU). Regulation on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (EU 2022/1925, 14.09.2022), https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32022R1925&qid=1688656284888

Directive on copyright and related rights in the Digital Single Market (DSMD) 2019 (EU). Directive on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC (EU 2019/790, 17 April 2019), https://eur-lex.europa.eu/eli/dir/2019/790/oj

Durkheim, E. (2014). *The Division of Labor in Society.* New York: Free Press. (Original work published in 1893)

EC (n.d.). DSA: Which providers are covered?, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment_en

EC (2023). Press release: DSA enforcement: Commission launches European Centre for Algorithmic Transparency, 17.04.2023, https://digital-strategy.ec.europa.eu/en/news/dsa-enforcement-commission-launches-european-centre-algorithmic-transparency

eCommerce Directive 2000 (EU). Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0031

Ellis, C., Adams, T., Bochner, A. (2010). Autoethnography: An overview. *Forum: Qualitative Sozialforschung/Forum: Qualitative Social Research*, *12*(1). Retrieved from http://www.qualitative-research.net/index.php/fqs/article/view/1589/3095

European Centre for Algorithmic Transparency. https://algorithmic-transparency.ec.europa.eu/index_en
Fisher, E. (2022). *Algorithms and Subjectivity: The Subversion of Critical Knowledge*. Abingdon: Routledge. https://doi.org/10.4324/9781003196563
Foster, C., & Zhang, R. (2022). Special Issue: Iteration and persuasion as key conditions of digital societies. *AI & SOCIETY*. https://doi.org/10.1007/s00146-022-01507-x
General Data Protection Regulation (GDPR) 2016 (EU). Regulation 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 (2016/679/EU, 27.04.2016), https://eur-lex.europa.eu/eli/reg/2016/679/oj
Giddens, A. (1997). *New rules of sociological method: A positive critique of interpretative sociologies* (2nd revised edition). Cambridge: Polity Press. (Original work published in 1976)
Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge: Polity Press.
Gillespie, T., Boczkowski, P. J. & Foot, K. A. (Eds.) (2014). *Media Technologies: Essays on Communication, Materiality, and Society.* Cambridge, MA: MIT Press.
GitHub (2023). Twitter: The Algorithm. Available at: https://github.com/twitter/the-algorithm-ml/blob/78c3235eee5b4e111ccacb7d48e80eca019e480c/projects/home/recap/README.md?plain=1 (accessed 6 October 2023)
Glaser, B. G. & Strauss, A. L. (2006). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Piscataway, NJ: Aldine Transaction. (Original work published in 1967)
Glenn, J. C. (2009). Introduction to the Futures Research Methods Series. In J. C. Glenn & T. Gordon (eds.), *Futures Research Methodology — Version 3.0* (pp. 1-106). Washington: The Millennium Project.
Gordon, T. (2009). Delphi. In J. C. Glenn and T. Gordon (Eds.), *Futures Research Methodology — Version 3.0* (pp. 1-29). Washington: The Millennium Project.
Grassmuck, V. & Thomass, B. (2022). *European Media Legislation: Overview. Milestones in European Media policies and legislation, 1990-2020*. Deliverable D1.4 of the project European Media Platforms: Assessing Positive and Negative Externalities for European Culture. Grant Agreement 101004488, European Union. https://www.eumeplat.eu/wp-content/uploads/2022/03/D1.4_European-Media-Legislation.pdf
Gray-Hammond, D. (April 21, 2023). Reclaiming Neurofuturism: Neuroqueering knowledge and its production. *Emergent Divergence*. https://emergentdivergence.com/2023/04/21/reclaiming-neurofuturism-neuroqueering-knowledge-and-its-production/
Greenhalgh, T., & Stones, R. (2010). Theorising big IT programmes in healthcare: Strong structuration theory meets actor-network theory. *Social Science & Medicine,* 70(9), 1285–1294. doi:10.1016/j.socscimed.2009.12.034
Griesbach, K., Reich, A., Elliott-Negri, L., & Milkman, R. (2019). Algorithmic Control in Platform Food Delivery Work. *Socius, 5.* https://doi-org.ezproxy.is.cuni.cz/10.1177/2378023119870041
Hroch, M. & Carpentier, N. (2021) Beyond the Meaning of Zines: A Case Study of the Role of Materiality in four Prague-Based Zine Assemblages. *Communication, Culture and Critique, 14*(2), 252–273. https://doi-org.ezproxy.is.cuni.cz/10.1093/ccc/tcab001
Higson, A. (2021). Netflix - The Curation of Taste and the Business of Diversification. *Studia Humanistyczne AGH, 20*(4), 7–25. https://doi.org/10.7494/human.2021.20.4.7
Inayatullah, S. (2012). Futures Studies. Theories and Methods. In Fernando Gutierrez Junquera (ed.), *There's a Future: Visions for a Better World* (pp. 37-65). Madrid: BBVA.
Jones, M.R. & Karsten, H. (2008). Giddens's Structuration Theory and Information Systems Research. *MIS Quarterly,* 32(1), 127–157. https://doi.org/10.2307/25148831
Kahn, H. (1962). *Thinking about the Unthinkable*. New York, NY: Horizon Press.

Kelle, U. (2019). The Status of Theories and Models in Grounded Theory. In A. Bryant & K. Charmaz (Eds.), *The Sage Handbook of Current Developments in Grounded Theory* (pp. 68–89). Los Angeles: Sage Publications.

Klinger, U., & Svensson, J. (2018). The end of media logics? On algorithms and agency. *New Media & Society, 20*(12), 4653–4670. https://doi.org/10.1177/1461444818779750

Krempl, S. (2023). EU-Amt für Algorithmenprüfung, Heise 18.04.2023, https://www.heise.de/news/Digital-Services-Act-EU-Zentrum-soll-Algorithmen-auf-Herz-und-Nieren-pruefen-8971275.html

Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change*, *73*(5), 467–482.

Miconi, A., Kompatsiaris, P., Archontaki, I., Galeazzi, A. (2023) *Catalogue of Best Practices and Main Obstacles to Europeanisation*. Deliverable 3.4 of the project European Media Platforms: Assessing Positive and Negative Externalities for European Culture. Grant Agreement 101004488, European Union. https://www.eumeplat.eu/wp-content/uploads/2023/03/D3.4_Catalogue-of-Best-Practices-and-Main-Obstacles-to-Europeanisation.pdf

Micova, B. S. (2023) From the Television without Frontiers Directive to the Audiovisual Media Services Directive, In H. Ranaivoson, S. B. Micova, & T. Raats (Eds.) *European Audiovisual Policy in Transition*. Abingdon: Routledge.

Napoli, P. M. (2014). Automated Media: An Institutional Theory Perspective on Algorithmic Media Production and Consumption: Automated Media. *Communication Theory, 24*(3), 340–360. https://doi.org/10.1111/comt.12039

Noble, S. U. (2018). *Algorithms of oppression: how search engines reinforce racism*. New York: New York University Press.

Orlikowski, W. J. (1992). The Duality of Technology: Rethinking the Concept of Technology in Organizations. *Organization Science, 3*(3), 398-427.

Pajkovic, N. (2022). Algorithms and taste-making: Exposing the Netflix Recommender System's operational logics. *Convergence*, *28*(1), 214–235. https://doi.org/10.1177/13548565211014464

Pan, S. Q., Vega, M., Vella, A. J., Archer, B. H. & Parlett, G. R. (1996). A mini-Delphi approach: An improvement on single round techniques. *Progress in Tourism and Hospitality Research*, *2*(1), 1-109.

Park, Y. J., Chung, J. E., & Shin, D. H. (2018). The Structuration of Digital Ecosystem, Privacy, and Big Data Intelligence. *American Behavioral Scientist, 62*(10), 1319–1337. https://doi.org/10.1177/0002764218787863

Parikka, J. (2015). *A Geology of Media.* Minneapolis: University of Minessotta Press.

Pasquale, F. (2015). *The black box society: The secret algorithms that control money and information*. Cambridge, MA: Harvard University Press.

Poli, R. (2018). A note on the classification of future-related methods. *European Journal of Futures Research, 6*(1), 15.

Robinson, J. B. (1988). Unlearning and Backcasting: Rethinking Some of the Questions We Ask about the Future. *Technological Forecasting and Social Change*, 33, 325-338.

Rutz, H. (2016). Agency and algorithms. *Journal of Science and Technology of the Arts, 8*(1), 73–83.

San-Jose, L. & Retolaza, J. L. (2016). Is the Delphi method valid for business ethics? A survey analysis. *European Journal of Futures Research, 4*(1). 19.

Schiller, H. I. (1969). *Mass Communications and American Empire*. New York: Augustus M. Kelley Publishers.

Schuilenburg, M., Peeters, R. (Eds.) (2021). *The Algorithmic Society: Technology, Power, and Knowledge*. Abingdon: Routledge.

Schulz, C. (2023). A new algorithmic imaginary. *Media, Culture & Society*, *45*(3), 646–655. https://doi.org/10.1177/01634437221136014

Seefried, E. (2014). Steering the future. The emergence of 'Western' futures research and its production of expertise, 1950s to early 1970s. *European Journal of Futures Research, 2*(1), 29.

Sigfrids, A., Leikas, J., Salo-Pöntinen, H., & Koskimies, E. (2023). Human-centricity in AI governance: A systemic approach. *Frontiers in Artificial Intelligence*, 6, 976887. https://doi.org/10.3389/frai.2023.976887

Software Directive 1991/2009 (EEC/EC). Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programmes, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31991L0250, recast by Directive 2009/24/EC of 23 April 2009, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0024

Srnicek, N. (2017). *Platform Capitalism*. Oxford: Polity Press.

Steinberg, M., & Li, J. (2017). Introduction: Regional Platforms. *Asiascape: Digital Asia, 4*(3), 173–183. https://doi.org/10.1163/22142312-12340076

Stones, R. (2005). *Structuration Theory*. London: Macmillan Education UK. https://doi.org/10.1007/978-0-230-21364-7

Stones, R. (2017). Agency and Structure. In B.S. Turner (Ed.), *The Wiley-Blackwell Encyclopedia of Social Theory*. New Jersey: John Wiley & Sons. https://doi.org/10.1002/9781118430873.est0006

Stones, R. (2020). Anthony Giddens, Structuration Theory, and Radical Politics. In P. Kivisto (Eds.), *Cambridge Handbook of Social Theory* (pp. 395-421). Cambridge, UK: Cambridge University Press.

Terranova, T. (2022). *After the Internet: Digital Networks between Capital and the Common*. Los Angeles: Semiotext(e).

Toraman, C., Şahinuç, F., Yilmaz, E. H., & Akkaya, I. B. (2022). Understanding social engagements: A comparative analysis of user and text features in Twitter. *Social Network Analysis and Mining*, *12*(1), 47. https://doi.org/10.1007/s13278-022-00872-1

Twitter (2023, March 31). *Twitter's Recommendation Algorithm*. https://blog.twitter.com/engineering/en_us/topics/open-source/2023/twitter-recommendation-algorithm

Vaccari, C. & Valeriani, A. (2021). *Outside the bubble: Social media and political participation in western democracies*. Oxford: Oxford University Press.

Van Dijck, J. (2013). *The culture of connectivity: A critical history of social media*. Oxford: Oxford University Press.

Van Dijck, J., Poell, T., & De Waal, M. (2018). *The Platform Society: Public Values in a Connective World*. Oxford: Oxford University Press.

Webster, J. G. (2011). The Duality of Media: A Structurational Theory of Public Attention. *Communication Theory, 21*(1), 43–66. https://doi.org/10.1111/j.1468-2885.2010.01375.x

Whittington, R. (2015). Giddens, structuration theory and strategy as practice. In D. Golsorkhi, L. Rouleau, D. Seidl, & E. Vaara (Eds.), *Cambridge Handbook of Strategy as Practice* (pp. 145-164). Cambridge: Cambridge University Press. doi:10.1017/CBO9781139681032.009

Winkler, J. & Moser, R. (2016). Biases in future-oriented Delphi studies: A cognitive perspective. *Technological Forecasting and Social Change*, 105, 63–76.

Ytre-Arne, B., & Moe, H. (2021). Folk theories of algorithms: Understanding digital irritation. *Media, Culture & Society*, *43*(5), 807–824. https://doi.org/10.1177/0163443720972314

Zeigler, S.L. & Fisher, D. (2023). Communications Decency Act and Section 230 (1996), in The First Amendment Encyclopedia, MTSU, https://mtsu.edu/first-amendment/article/1070/communications-decency-act-and-section-230

Zuboff, S. (2019). *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. London: Profile Books.

i *Software Directive 1991/2009* (EEC/EC).
ii For more on EU digital networked media and platform regulation, see Grassmuck & Thomass (2022), Ch. 4.
iii *eCommerce Directive 2000*, which was modelled after the US Communications Decency Act of 1996 (see Zeigler & Fisher, 2023).
iv Algorithmic control of content interactions has fundamental and far-reaching impact, as the DSA explains: “A core part of the online platform’s business is the manner in which information is prioritised and presented on its online interface to facilitate and optimise access to information for the recipients of the service. This is done, for example, by algorithmically suggesting, ranking and prioritising information, distinguishing through text or other visual representations, or otherwise curating information provided by recipients. Such recommender systems can have a significant impact on the ability of recipients to retrieve and interact with information online, including to facilitate the search of relevant information for recipients of the service and contribute to an improved user experience. They also play an important role in the amplification of certain messages, the viral dissemination of information and the stimulation of online behaviour.” (Rec. 70, *DSA, 2022*)
v Art 1(1)(aa), *AVMSD 2018*.
vi Art. 5, *GDPR 2016*.
vii Art. 6, *GDPR 2016*.
viii Art. 4, *GDPR 2016*. The conditions for consent, in particular of a child’s consent, are further laid down in Arts. 7 and 8.
ix Art. 20, *GDPR 2016*.
x Art. 13(2)f, 14(2)g and 15(h) *GDPR 2016*.
xi Art. 21, *GDPR 2016*.
xii Art. 22, *GDPR 2016*.
xiii *DSA 2022* and *DMA 2022*. They will be fully in force in March 2024 (s. Timeline: https://digital-strategy.ec.europa.eu/en/policies/digital-services-act-package).
xiv EC n.d.
xv Art. 15, *DSA 2022*.
xvi Art. 20(6), *DSA 2022*.
xvii EC 2023.
xviii Internal Market Commissioner Thierry Breton said on the occasion: with the DSA, the legislator has provided the legal tools “to open the ‘black box’ of platform algorithms” (Krempl, 2023).
xix S. the proposals *AI Act 2021*, *2022* and *2023*. The aim is to reach an agreement by the end of 2023.
xx “‘Transparency’ means that AI systems shall be developed and used in a way that allows appropriate traceability and explainability, while making humans aware that they communicate or interact with an AI system as well as duly informing users of the capabilities and limitations of that AI system and affected persons about their rights” (Art. 4a, *AI Act 2023*).
xxi Listed in Annex III; Art. 6 ff., *AI Act*.
xxii MEPs do not consider the new and fast-evolving generative foundation models, like GPT, high risk, but propose special obligations, including transparency, extensive documentation and registration as well as monitoring by the AI Office (amendments 99-102, *AI Act 2023*).
xxiii Art. 11(1), *AI Act*. The required documentation elements are listed in Annex IV. These include a detailed description of the elements of the AI system and of the process for its development, namely the general logic of the AI system and of the algorithms; the key design choices including the rationale and assumptions made, also with regard to persons or groups of persons on which the system is intended to be used; the main classification choices; what the system is designed to optimise for and the relevance of the different parameters; the description of the expected output of the system, where relevant, the data requirements in terms of datasheets describing the training methodologies and techniques and the training data sets used.
xxiv Art. 12(2a), *AI Act 2023*.
xxv Art. 59, *AI Act*.
xxvi Arts. 56-58, *AI Act*.
xxvii This is a controlled, functionally isolated environment at national or Union level, in which AI systems can be developed, tested and validated under the direct supervision of the authority, before those systems are placed on the market (Arts. 53-55, *AI Act*).
xxviii Art. 14, *AI Act*.