



Leopoldina
Nationale Akademie
der Wissenschaften



2021
Statement

Digitalisation and Democracy



German National Academy of Sciences Leopoldina | www.leopoldina.org
acatech – National Academy of Science and Engineering | www.acatech.de
Union of the German Academies of Sciences and Humanities | www.akademienunion.de

Imprint

Publisher

German National Academy of Sciences Leopoldina (lead)
Deutsche Akademie der Naturforscher Leopoldina e. V.,
Jägerberg 1, 06108 Halle (Saale), Germany

acatech – National Academy of Science and Engineering
acatech – Deutsche Akademie der Technikwissenschaften e. V.,
Karolinenplatz 4, 80333 München, Germany

Union of the German Academies of Sciences and Humanities
Union der deutschen Akademien der Wissenschaften e. V.,
Geschwister-Scholl-Straße 2, 55131 Mainz, Germany

Editors

Dr. Henning Steinicke, Dr. Elke Witt,
German National Academy of Sciences Leopoldina
Contact: politikberatung@leopoldina.org

Translation

Peschel Communications GmbH, Freiburg

Title graphics

Sisters of Design – Anja Krämer & Claudia Dölling GbR, Halle (Saale)

Design and typesetting

Klötzner Company, Hamburg

DOI: 10.26164/leopoldina_03_00407

Published under: CC BY-ND 4.0

Bibliographic information published by the German National Library

The German National Library lists this publication in the German National Bibliography.
Detailed bibliographic data is available online at <http://dnb.d-nb.de>.

Recommended citation

German National Academy of Sciences Leopoldina, German National Academy of Science and Engineering acatech, Union of the German Academies of Sciences and Humanities (2021): Digitalisation and Democracy. Halle (Saale).

Editorial deadline

May 2021

Digitalisation and Democracy

Table of contents

1	Summary and recommendations	4
2	Introduction.....	10
3	Analysis.....	15
3.1.	Platforms as infrastructures	14
3.1.1.	The increase in infrastructures in democratic public spheres	14
3.1.2.	Coexistence of press, broadcast media and platforms	17
3.1.3.	The power of platforms	18
3.1.4.	Current state of platform regulation	19
3.1.5.	Challenges	21
3.2.	Information and communication.....	23
3.2.1.	Opportunities for the democratic public sphere	24
3.2.2.	Selection of information.....	25
3.2.3.	Assessment of information.....	26
3.2.4.	Pluralism.....	28
3.2.5.	Civility.....	30
3.2.6.	Challenges.....	31
3.3.	Participation.....	32
3.3.1.	Between euphoria and disillusionment.....	32
3.3.2.	Diverse means of participation.....	34
3.3.3.	Role of civic bodies and movements.....	36
3.3.4.	Means of participation through data.....	37
3.3.5.	Challenges.....	38
3.4.	Self-determination.....	38
3.4.1.	Self-determined development in digital public spheres	39
3.4.2.	Influence in digital public spheres	39
3.4.3.	Challenges.....	42

4	Recommended actions	43
4.1.	Regulate the curating practices of digital information and communication platforms	43
4.2.	Strengthen online content from public service broadcasters	44
4.3.	Facilitate research on platform databases	44
4.4.	Ensure civility within the discourse	46
4.5.	Promote the democracy-friendly design of digital technologies and infrastructures	47
4.6.	Strengthen the development of digital and media skills	49
4.7.	Promote quality and data journalism	51
4.8.	Increase digital participation	52
5	Contributors	54
6	References	56

1. Summary and recommendations

In the course of digitalisation, the democratic public sphere has already changed fundamentally. Alongside traditional media such as press and broadcast media, new digital forms of communication such as online media and social networks have emerged. With respect to their democratisation potential, these have given rise to great expectations, but they also facilitate critical developments. This change has enabled easier access to information for the general public as well as greater opportunities for political participation and to strengthen civil society. However, it has also resulted in an increase in misinformation, attempts to manipulate and hate speech.

In order to properly understand the relationship between digitalisation and democratic public spheres, four aspects need to be considered: (a) the digitalisation of infrastructures of democratic public spheres, (b) changes in information and communication effected by digital media, (c) the increase in democratic participation due to new, digital formats and (d) the shift in political self-determination.

Democratic public spheres rely on infrastructures that enable fair and open discourse and provide access to diversified and reliable information. In the past, press and broadcast media represented such infrastructures. However, digital infrastructures – in particular digital information and communication platforms (hereafter: platforms) – are playing an increasingly important role. Traditional mass media largely produce their own content which is curated, that is to say selected and prioritised by editorial departments, in accordance with professional criteria. Platforms, on the other hand, generally present the content of third parties – for example users, traditional mass media or advertisers. Algorithms are used to select this content for individual platform users (personalised curation) to increase the time that users remain on the platforms in order to generate income from advertisements (attention-based business model). For this purpose, the algorithms underlying the personalised curation use extensive observation and analysis data on user behaviour to try to attract the attention of platform users and influence their behaviour.

The omnipresence of smartphones in everyday life and the importance of social media for both social and professional life enhance the importance of platforms still further. In addition, economic network effects result in a massive concentration of the platform market, which is characterised by a few major providers. These providers therefore have considerable power, which, in view of the key importance of platforms for the democratic public sphere, need urgent legal regulation. The existing approaches for requiring platforms to delete illegal content and make their curating criteria transparent do not suffice.

Information and communication of citizens are essential for democratic public spheres. Digitalisation is greatly broadening the sources of information and means of communication, as evidenced by the prominent online encyclopaedia Wikipedia,

new developments in sensor technology and data analysis that enable high-precision information to be provided in real time, and increasing global networking through new communication services. However, digitalisation also involves risks for information and communication. For example, the selection and reception of information present a significant challenge because the vast array of sources of information overwhelms peoples' cognitive capacities and platforms' curating practices can result in an inadequate prioritisation of information. Furthermore, adequately assessing information is often nearly impossible, as it is extremely difficult to gauge the correctness of information and the reliability of the underlying sources as relevant preconditions for normative statements. One reason for this, for example, is the rapid, far-reaching and mass dissemination of fake news in digital public spheres. In addition, the algorithmic curation practice and users' selection behaviour present a risk to plurality and perceptions, that is to say the diversity of opinions and information in democratic public spheres. For example, consumers with extreme political views in particular select mainly sources that support their own existing opinion. Moreover, social media groups in which the members reinforce each other in their homogeneous opinions increase in number. As a result, positions can become radicalised and the tone of political debate can become charged. Finally, the civility of political discourse is threatened by phenomena such as hate speech and online harassment. In many cases criminal offences are committed, which in view of the large number of these offences can only rarely be prosecuted. Such breaks in civility can make the moderate majority of a democratic public sphere shy away from political engagement, thus reinforcing political and social polarisation.

Digitalisation of the public sphere has also had a huge impact on democratic participation. For example, political participation through platform activity has increased significantly. Users can regularly communicate with journalists, activists can organise large online campaigns, people who previously did not have access to active public communication can comment publicly on platforms and influencers reach an audience that is often broader than audiences of traditional mass media. Such means of communication enable a political discourse to take place across all social classes and environments as well as beyond geographical boundaries. However, digitalisation-enabled participation is not restricted to the use of these new forms of participation, but rather also includes the participation of civil society in the creation of digital technologies and infrastructures. For example, the open data community champions free access for all users to data which, as in the case of numerous research projects, is generated with the help of public funds, and the open source movement develops freely available software. The civic technology movement then uses these data and tools for digital services to strengthen civil society and democracy. In addition, the pioneer journalism movement establishes new practices for journalistic production and the dissemination of information with huge potential for democracy. A further new development in this regard is participation through the voluntary donation of data, which can be continuously collected through the use of digital devices and in particular smartphones.

Ultimately, the digitalisation of democratic public spheres also affects an individual's self-determination, that is, an individual's ability to independently develop desires, expectations and goals and to make decisions freely. Digital public spheres support said self-determination because they offer people additional means to express their opinions and participate in public discourse. However, social pressure to adapt and breaks of civility can outweigh these opportunities altogether. A further risk for self-

determination is presented by microtargeting, a process in which digital services collect information about their users and analyse these data algorithmically in order to influence users individually. Microtargeting is a problem in particular in the political arena. While it remains unclear how successful such attempts to influence users really are, such an attempt alone can have a negative impact on users' political engagement. In Germany and Europe, political microtargeting has played an insignificant role up until now. However, it is expected that the number and impact of data-based attempts to influence individual users will continue to increase as a result of technological advancements.

Against this background, the German National Academy of Sciences Leopoldina, the German National Academy of Science and Engineering acatech and the Union of the German Academies of Sciences and Humanities recommend the following measures:

Regulate the curating practices of digital information and communication platforms

- (1) Platform operators should be required to involve an independent, pluralistic body with binding decision-making powers which is funded by them and made up of the representatives of governmental and civic bodies and users and which makes decisions on principles and procedures for content curation. Through its composition and actions, the body should contribute to the adequate representation on the platforms of the full range of topics and positions that are relevant to the public.
- (2) The platform operators should be required to publish information on the design of their platform and the principles of curation in order to create transparency and enable public discussion of this information. All parties involved should be granted the right to contact the independent body and suggest that the curating criteria be reviewed.
- (3) A mechanism should be established that enables users to have individual curation decisions (such as the deletion of or commenting on certain posts) placed under review.

Strengthen online content from public service broadcasters

(1) The telemedia mandate (Telemedienauftrag) of public service broadcasters in Germany should be extended. In particular the prohibition of press-like telemedia services should be lifted. The current three-stage test which decides on the admissibility of telemedia services from public service broadcasters protects commercial providers adequately against unfair competition.

(2) The broadcasters should publish programmes increasingly under public licences, in particular educational content such as documentaries, explanatory films and contemporary history programmes.

Facilitate research on platform databases

(1) Platform operators should be required to make their databases available for non-commercial research projects that meet scientific standards, for example for the research of the relationship between digitalisation and democracy. However, this should not violate the legitimate confidentiality interests of platform operators.

(2) The platform operators should be required to provide scientists with information in general form on the data that is available and might be of use for research purposes and to provide more specific information upon request.

(3) In cases of very complex research projects, platform operators should be required to make their own processing resources (in terms of technology and personnel) available for scientific purposes for a reasonable fee.

(4) In order to protect business secrets and personal data effectively, an independent body should be created that decides on requests for access. This body should be funded by the platform operators.

(5) The existing legal requirements for the further processing of collected research data should be reviewed, as copyright and data protection currently present large obstacles for the publication of research results and the transfer of data for validation purposes or for the undertaking of further research projects.

Ensure civility within the discourse

(1) Non-governmental organisations (NGOs) that work on behalf of the victims of digital violence and against the brutalisation of public discourse should have the right to take legal action so that they can prosecute legal violations that carry significance beyond an individual case.

(2) The prosecution authorities should use personnel development, targeted training and appropriate technical support to ensure expertise and awareness of the problem as well as to make resources available for effectively punishing criminal acts of digital violence.

(3) Governmental and civic institutions should join together and cooperate in order to strengthen prevention, victim support and law enforcement.

Promote the democracy-friendly design of digital technologies and infrastructures

- (1) Digital service user environments should promote transparency – for instance concerning the curation criteria used – and user autonomy. One important measure for the design of such usage environments would be the provision of additional information concerning the reliability and epistemic quality of sources.
- (2) Research and development of platform-independent tools that can support users in the extraction and assessment of digital information and communication should be promoted, for instance by providing them with an understandable overview of relevant arguments and positions concerning a specific topic.
- (3) More research should be conducted on explainable and fair algorithms based on artificial intelligence (AI), and they should be implemented in practice. Being explainable means that important decision-making criteria are understandable for human users. Fairness means that AI decisions are consistent with fundamental democratic values and fundamental rights, in particular the principles of equal treatment and protection against discrimination.

Strengthen the development of digital and media skills

- (1) Low-threshold measures should enable users to be architects of their own digital information environment. To this end, the usage environment must be designed accordingly, platform-independent tools must be made available and simple rules must be in place that can be learned and applied quickly.
- (2) Digital skills should be developed in pre-school, school, university and beyond. Suitable concepts already exist in the area of school education that should be implemented. In particular, measures should be in place to ensure that teachers are suitably qualified.
- (3) The handling of data should be an important part of school education as a topic that bridges many subjects, and a basic knowledge of statistics and probability theory as well as the skills for acquiring and interpreting relevant contextual knowledge should be taught.
- (4) At the university level, relevant expertise in the humanities and the social and behavioural sciences should be integrated into the curricula of STEM disciplines and basic technical mathematics and methodological skills should be promoted in all subjects. In addition, there should be compulsory courses in research and data ethics.
- (5) Media skills should be promoted as part of lifelong learning, namely in adult education (for example, in adult education centres) and with a specific focus on senior citizens (for example, in welfare institutions and care centres).

Promote data journalism

(1) High-quality, data-based journalism should be promoted that, instead of focusing on individual anecdotes and narratives, analyses empirical data covering as wide an area as possible as well as long-term trends

Increase digital participation

(1) A government-funded initiative for a term of at least six years that is dedicated to new forms of digital participation and journalism aimed at this should be established. The initiative should promote humanities and social sciences research as well as technical developments based on this. It should focus on alternative platforms as well as pioneer and non-profit journalism, with special attention paid to local and regional journalism, which has been put under massive pressure as a result of digitalisation. The initiative should also promote civic organisations dedicated to developing infrastructures for new means of participation, for example in the area of data donation. In particular, those projects should be supported that involve young people from socio-economically disadvantaged or politically disengaged backgrounds and focus on the integration of all, in particular previously excluded social groups.

2. Introduction

Thirty years after the internet was introduced commercially, it is obvious that the democratic public sphere has been fundamentally changed by digitalisation. Alongside press and broadcasting, a communication infrastructure has emerged that is characterised by a multitude of digital platforms, online media, social networks, messenger services and search engines. The new conditions of public communication have challenged the institutions and processes of information acquisition as well as the way people form opinions and participate in representative democracy with regard to their forms and functions. On the one hand, this raises hope for further development of democracy in the sense of increased opportunities for participation in civil society and easier access to information. On the other hand, abundant cases of misinformation, manipulation and hate speech demonstrate that the variety of the information available in the age of Web 2.0 often results in political debates which are unfair, disrespectful and not based in fact. Hence, there is a growing fear in civil society and politics that digitalisation poses a threat to democracy and, in particular, to the democratic public sphere.

Functioning democracies depend on individuals' ability to obtain a broad range of information and to exchange ideas with each another. As a result of digitalisation, the public sphere is characterised by an increase in modes of communication and a pluralisation of audible voices, but also by the lack of structure and coherence of vast amounts of information as well as shifts towards polarisation. Digital platforms are characterised by the logic of digital capitalism, technically determined information architectures and algorithmic curation, and they force traditional mass media, such as the press and broadcast media, to rethink their established business models and their journalistic functions.

Digitalisation is changing the framework conditions of the democratic public sphere with respect to the opportunities members of a society have to participate and their informational self-determination. This situation requires an updated description and analysis of the state of affairs. This must be based in part on empirically proven knowledge about mechanisms of digital change, such as the nature and dynamics of political information flows. The focus should also be shared by the opportunities and the problems that determine the democratic discourse between individuals among themselves and with politics in the press and in broadcasting, as well as in digital public spheres.¹ This statement analyses the state of the scientific evidence of the interplay between digitalisation and democracy and, based on this, formulates recommendations for how politics and civil society can both contribute to actively shaping future developments.

¹ Today, public spheres are increasingly spoken of in the plural in order to take account of the growing diversity of public discussion spaces.

A central concept in the context of this statement is the public sphere, which is used in social science studies as a measure of democratic communication.² In western democracies, the term public sphere also describes a communication and mediation system that organises the exchange of information among individuals as well as between entire populations and political institutions in a comprehensible way. This system should represent topics and opinions from all social groups and present their voices in a transparent manner. It should also enable the discussion of the opinions expressed, promote critical self-reflection within a society and generate public opinions that provide politically effective guidance within a democracy.³ Thus, the public sphere is at the heart of democracy. It is a space for the formation of ideas, of political options for action and collective identities, but also for the legitimisation of political stakeholders between elections.

The democratic value of public spheres can be determined by the extent to which they enable openness and transparency, balance, inclusion, civility and discursiveness. These norms already formed the basis for assessing the mass media public sphere in the 20th century. The effects of the internet on democracy were initially discussed almost exclusively with regard to the potential of network communication to promote democracy. Meanwhile, in view of the economic and political structures of digital public spheres, it has become apparent that these reflect the “multiple logics of differentiation” (*multiple Differenzierungslogiken*)⁴ of modern societies. This means that not only diverse opinions, but sometimes conflicting interests, positions and values are visible in digital public spheres, without necessarily leading to a democratic resolution of the existing contradictions or a correspondingly regulated resolution of conflicts. In this situation, it would make sense to use the normative requirements for the democratic public sphere of the 20th century as a benchmark for the democratic quality of digital public spheres in the 21st century as well.

In the course of digitalisation, the infrastructure for forming public opinion is shaped, among other things, by the technical architectures and features of the corresponding platforms, as well as their connections (e.g. hyperlinks, tweets, hashtags) and networks. This infrastructure comprises many different channels, forums and networks with their respective feedback systems, and it is highly dynamic and volatile due to continuous technical development through algorithms in general and self-learning systems in particular. These technical conditions influence both the subject matter in the public space and the quality of the available information as well as the tone of opinion formation. All of this also shapes the way in which users handle information, how they act toward one another and how they perceive their opportunities to participate in democratic society.

This statement discusses the shift in democracy in the course of digitalisation with a view to four critical aspects of democratic public spheres: (a) the digitalisation of the infrastructure of public spheres; (b) the change in information and communication through digital media; (c) the expansion of democratic participation through new digital formats; (d) the shift in political self-determination. The focus lies on the following questions.

2 Peters 1994.

3 Neidhardt 1994.

4 Wefler 2002.

- What does the rise of digital information and communication platforms mean for the democratic public sphere, to what extent are these platforms accountable to users, and how can their power as intermediaries – that is, brokers of content – be regulated by civil society and legislation?
- What are the key characteristics of information flows and communication dynamics in digital public spheres and how can both the truthfulness and quality of information as well as the civility of communication be guaranteed?
- How have participation opportunities and processes changed in response to new digital formats and how can these opportunities and processes be productively enhanced for democratic self-determination?
- How are the opportunities offered by democratic self-determination changing through digital attempts to influence users, and what dangers or opportunities does digitalisation present for self-determined development?

This statement addresses the questions formulated here on the basis of the current state of research. In the corresponding sections of the analysis, we summarise the need for action, from which the concrete recommendations for action for politics are then derived. These are aimed at politics, civil society and science and relate to regulatory measures, the improvement of skills, technology development and research activities, and are targeted in particular at decision-makers at the national and European levels. Since effective control of digitalisation developments can only succeed at the international and global levels, the academies see the need to work towards an international or even global process similar to that established by the case of the European General Data Protection Regulation (GDPR) with the help of initial regional initiatives.

Due to the nature of analysing public spheres, the interplay between digitalisation and democracy can hardly be described in terms of causalities. At best, research data can illustrate the changes in public communication that have occurred so far, as well as their preconditions and consequences. It must be taken into account that interactions between digital communication infrastructures and democratic processes are in turn superimposed and permeated by general processes of social change, individualisation and the weakening of political and social ties.⁵ These processes are related to a legally spelled-out system of mass media that has evolved over time and has been shaped by cultural practices, as well as to a political order that ties democratic representation to the party principle. It must therefore be borne in mind that many current problems of democratic politics (e.g. the loss of trust in political institutions) cannot be attributed to digitalisation alone.

The specific political, social and cultural contexts of communication and opinion formation in Germany ensure that changes in the democratic public sphere are often not observed in the same form or to the same extent as they are described in academic literature for the USA, for example. Nevertheless, the digital public spheres discussed in this statement are for the most part technically made available and designed by globally operating companies, which can also result in parallels in the development of different societies. However, comparative research is still in its infancy. Analysis of

5 Hofmann 2019.

digitalisation-related opportunities and challenges for democracy is also subject to the proviso that the contexts that can be observed have been extremely dynamic over time. For example, during the period that the working group was active (2019–2021), the role of messenger services in the spread of misinformation – e.g. in the context of the COVID-19 pandemic – has only gradually come into the focus of public debate and research.

In preparing this statement, it became clear that there is no simple answer to the question regarding the connection between democracy and digitalisation. Systematic research on the topic has only been conducted for a few years, and the state of knowledge continues to develop month by month. The breakdown of complex interdependencies requires new, sophisticated research designs and methods as well as comprehensive data. However, the latter are not readily accessible because commercial information and communication platforms have not yet allowed this to the required extent. Nonetheless, numerous meaningful studies on the political consequences of digitalisation have been published which, based on various empirical and theoretical approaches,⁶ have revealed far-reaching changes in the democratic public sphere.⁷ Many of these studies originate from the USA, which makes it difficult to transfer their results to the German or European situation in view of the cultural differences.⁸ The working group is aware of this problem and has taken it into account in formulating this statement and its recommendations.

In the area of conflict between digitalisation and democracy, this statement focuses on the central area of political public spheres. However, the authors are aware that digitalisation is initiating a comprehensive shift in society and fundamentally altering other areas relevant to democracy, for example within the entertainment and education sectors or the working world. For instance, this begs the question of how to deal with data-based technologies for decision-making support, which are already finding their way into many different areas. These can, for example, exacerbate inequalities (e.g. in the labour market), but also help to dismantle them (e.g. by exposing discrimination). Another problem in this respect is the reliance on a few global companies with headquarters outside of the European Union, which provide the infrastructure for digital technologies and in many cases also store the data of their users. This reliance on globally operating companies results in challenges for sovereign state action. And finally, our democracy is confronted with undemocratic systems like that of China, which are very successful, particularly with regard to the development and use of digital technologies. These and other issues will also require careful, science-based study and appropriate recommendations for action in the future.

6 These include (field) experiments, theoretical models and conceptual arguments.

7 For example, the detailed report by Lewandowsky, S. et al. 2020.

8 One example is the much greater reach and importance of public service television and radio in Germany.

3. Analysis

3.1. Platforms as infrastructures

For individuals in a democracy to form and express political opinions and decide their political preferences in order to elect representatives to parliament, they need lively democratic public spheres. These provide the opportunity for fair, open and pluralistic debate and access to diverse, extensive and reliable information; without them, political debates and decision-making processes would be almost impossible to comprehend. Such pluralistic public spheres are therefore essential for democracy.

Democratic public spheres are based on media infrastructures that enable a wide dissemination of information and understanding across great geographical distances.⁹ Although the traditional mass media of press and broadcasters remain the most important infrastructure for democratic public spheres, new infrastructures are playing an increasingly important role. First and foremost among these are digital information and communication platforms¹⁰, such as the US social networks Facebook, Twitter and Instagram, but also video portals such as YouTube and the Chinese TikTok. Messenger services such as WhatsApp and Telegram, websites of traditional mass media, government and private institutions, blogs and above all search engines such as Google are also helping to create and shape digital democratic public spheres.¹¹

In view of the huge increase in importance of these digital platforms, portals, services and offerings, there is an urgent need for their reappraisal in the context of democratic public spheres. The focus of this statement is on platforms, as platform operators possess considerable power to shape democratic public spheres through their curation activities (selection and prioritisation of content – see the infobox “Platforms and the curation of content”). This leads us to the question whether, how and to what degree such activities themselves can be tied to democratic processes and controls.¹²

3.1.1. The increase in infrastructures in democratic public spheres

Press and broadcast media are intrinsically heterogeneous: public service and commercial broadcasters, as well as the quality and tabloid press differ in parts greatly in terms of the way they operate, their objectives and financing. The respective business models and ensuing dependencies range from licence fee funding in the public service media sector to the mixed concepts of commercial media, which are financed by sales revenue, user fees and advertising income, to donation-based solutions. However, what the press and broadcast media have in common is that they mainly produce their own

⁹ Hofmann 2019.

¹⁰ In the following these are referred to as “platforms” for short.

¹¹ Plantin et al. 2018.

¹² Jørgensen 2019.

content and make it available to the public. This content is curated by professional editorial teams, known as “gatekeepers”, who produce, sort, prioritise and select news and information based on professional, standard criteria such as the currentness, political relevance or geographical proximity of a certain event, but also taking into account the interests of potential readers and listeners or advertising customers.

Platforms and the curation of content

Digital information and communication platforms such as Facebook, Twitter, YouTube and Instagram play an important role in the structure of democratic public spheres. They present both content produced by their users and content produced by third parties, for example by mass media. Users can react to this content, for example by clicking on it, liking, commenting or sharing. Compared to traditional mass media, these platforms provide greater opportunities for the individual selection of content. The users can choose the online activities of other individuals, groups or institutions they would like to follow and what of their own content they might like to share. Many platforms decide, however, with what priority such content of other users is presented and what additional offerings and recommendations are shown. This procedure is known as “curation” or “content management”. For their curation, these platforms that are by and large commercial platforms generally use algorithms that analyse the behaviour of users primarily with the goal of keeping their attention for as long as possible with the help of personalised information and of steering it towards targeted advertising content. This is how the platforms generate advertising income. People only intervene in the curation process in exceptional cases, for example when a breach of the terms of use is reported or when assessing algorithmically filtered content. Although users have an indirect influence on the curation through their production of content and their selection behaviour, the exact criteria and mechanisms are usually not transparent and therefore evade public debate.

By contrast, platforms do not produce news and information themselves. Instead they present content produced by third parties such as users, traditional mass media and advertisers. On the face of it, this makes them appear to be neutral infrastructures. Yet many platforms actually select content individually for their users with the help of complex algorithms. Unlike mass media, they therefore curate the content of third parties on a personalised basis. This curation performed by the platforms is mainly based on the expected popularity of content. It aims to maximise both the interaction time of users and the probability of them reacting to customised advertising.¹³ For this purpose, the platform operators leverage a range of psychological mechanisms. That said, it remains unclear just how effective and productive personalised advertising actually is – including compared to traditional, non-personalised advertising.¹⁴

Personalised curation is made possible because users, by individually selecting content, leave behind a user-specific data trail and because platforms collate and analyse such data profiles in detail – for example content preferences, communication content and contact management. As a result, content can be presented on a customised basis. This analysis is largely hidden from users. With the help of usage data, the platforms can continually improve their digital architecture¹⁵ and influence or even steer¹⁶ the interest,

¹³ Zuboff 2018.

¹⁴ Karpf 2019.

¹⁵ Kaufman, Pitchforth, and Vermeer 2017.

¹⁶ Lamla 2019.

attention and to some degree the behaviour of users through for example targeted but hardly noticeable nudging, gamification etc.¹⁷ The business models of numerous platforms are based on such methods of data-based steering of attention and prediction and influencing of behaviour.¹⁸ However, data-based business models in democratic public spheres are not limited to just platforms. Search engines also present and curate the content of third parties and in doing so follow the principle of algorithmic optimisation.

Messenger services, on the other hand, do not curate information flows. While they also provide infrastructures for political debate, these are generally used by specific segments of the public, i.e. public sub-spheres, and are access-restricted. Their political influence is a new phenomenon that has not yet been sufficiently researched.¹⁹

Messenger services

Messenger services such as WhatsApp, Signal and Telegram represent an innovation in communication. They enable direct, encrypted communication between two persons or in groups, with group size varying greatly between a few and many thousands of members. For this reason, messenger services also perform functions that enable self-organised public spheres, without the content being curated as in the case of platforms.

In some countries, including Brazil, messenger services have already played an important role in political mobilisation and election campaigning.²⁰ Such services are also politically important because in some cases they are used to bypass the regulation of content by platforms. This appears to be the case in particular with extreme right-wing groups, which can expect their content to be blocked on platforms.²¹ There is therefore a growing fear that messenger service groups could become a rallying point for anti-democratic forces and another source of disinformation that is difficult to monitor. At the same time it should be stressed that specifically protected communication in closed groups is a basic requirement for a functioning democracy and liberal society.²²

The handling of data and data analysis have now also become a highly lucrative source of added value beyond platforms and messenger services. The exploitation of data has resulted in a new type of economic relationship that is serving as a model for more and more industries.²³ The characteristic feature of this so-called digital capitalism is a major concentration of economic power as a result of the monopolisation of data and privatisation of markets: the big digital companies are in a sense becoming markets themselves and setting their own rules.²⁴

17 Andrejevic 2011.

18 Zuboff 2018.

19 Treré 2020.

20 Bursztyn and Birnbaum 2019; Evangelista and Bruno 2019; Moura and Michelson 2017.

21 Amadeu Antonio Stiftung 2020.

22 Seubert and Helm 2017.

23 Dolata 2015.

24 Staab 2019.

3.1.2. Coexistence of press, broadcast media and platforms

Despite these findings, it is in no way the case that democratic public spheres today are completely controlled by platforms. The press and broadcast media continue to play an important role,²⁵ and these media also have a selective curation effect, albeit different to that of digital platforms. With media libraries, websites and apps, they create their own digital offerings and coexist in this respect with platforms; the coexistence is characterised, however, by competing business models, different professional standards and considerable differences in the generation of profits.²⁶ As platforms are able to register huge increases in use and a high share of advertising income, they currently decide the conditions for cooperation with the press and broadcast media – for example for the inclusion of editorial content in the offerings of the platforms. These large numbers of platform users prompt the press and broadcast media to publish on platforms, even under unfavourable conditions that are damaging to their own business model, in order to reach their younger audience.²⁷ In turn, the platforms provide them with the opportunity to monitor the popularity of posts based on current access figures and to add links to further content. The personalised analysis of for instance reading time and forwarding paths ultimately makes it possible to tailor content to a mass audience and allocate it to individual users. In this case an individualised analysis helps to better define what is suitable for a mass audience and adapt the media offering accordingly in a targeted manner. In addition, access to certain content can be adjusted on a case-by-case basis, for example by restricting the access to specific content with a paywall as its popularity increases. This shows that these new business models go beyond platforms and are having a big impact on press and broadcast media as well.

Although research on media use confirms that traditional mass media remain relevant for broad sections of the population,²⁸ platforms are becoming increasingly important for the young generation in particular. Consequently, there is a gradual shift towards the platforms when it comes to channels for receiving mass media content. As a result, policymakers and parts of society fear a growing fragmentation of the public sphere,²⁹ the loss of reference points in public debate because there is no common basis of information that can be referred to,³⁰ and the manipulation of users.³¹ The digital transformation in the public sphere is also held responsible for the rising populism and political swing to the right in some democracies.³² At the same time, a degree of glorification of the pre-digital media era can be observed.³³ The scientific findings behind these assumptions and fears will be discussed in the following chapters of this statement.

²⁵ Die Medienanstalten 2019.

²⁶ Nielsen and Ganter 2018; Rashidian et al. 2019.

²⁷ Nielsen and Ganter 2018.

²⁸ Die Medienanstalten 2019.

²⁹ Rau and Stier 2019.

³⁰ Ingold 2017.

³¹ Susser, Roessler, and Nissenbaum 2019.

³² Rauchfleisch and Kaiser 2020.

³³ Hamilton und Tworek 2017.

3.1.3. The power of platforms

We have seen that platforms are becoming increasingly important as infrastructures for public debate. Their decisions and the way in which they operate have a significant impact on how public communication processes function in a democracy. It follows that they are in no way neutral intermediaries, but powerful players who have an active role in the shaping of democratic public spheres. What's more, digital communication now also plays a key role for most people in everyday life, due in particular to the omnipresence of smartphones. With social and professional life now being organised to a large degree through social media, there is considerable pressure to use digital platforms and services, in particular for the younger generation. This pressure often prevents individuals from choosing for themselves what digital services on the internet they use, also including not using specific platforms. Thus, the infrastructural power of platforms is based on the growing dependency of users and traditional mass media on the intermediation services of platforms, which means that the rules for using the platforms are increasingly influencing the public sphere.

The growing power of platforms is characterised by so-called economic network effects which result in an oligopoly of supply, that is to say a market dominated by a few providers. Network effects are expressed in self-reinforcing concentration dynamics. These are based on the value of a platform for potential users rising in proportion to its market share. This makes specifically those platforms that are already used by many of their contacts of interest to users. However, network effects not only make it difficult for new providers to enter the market, they also result in a high concentration of user data among a small number of platforms. The resulting oligopoly of providers restricts the choices of users and creates dependencies, so-called lock-in effects, which make a change even more difficult: if platforms are also used by persons who act as important points of reference, a history of shared content is created, for example the "time-line" on Facebook. Due to a lack of interoperability between platforms users are then unable to transfer this history to other platforms. As a result, the ability to react to adverse changes in functionality or terms of use by switching to a different provider is very limited. Nevertheless, new platforms keep emerging which are recording strong growth in the younger age groups, though it is not yet understood sufficiently when and why these manage to establish themselves.³⁴ In the past, established platforms have often responded to potential competitors by buying them up (for example the takeovers of WhatsApp and Instagram by Facebook).

Their relevance to everyday life, the concentration dynamics and dependencies therefore give successful platforms a position of considerable power, which is reinforced by the non-transparent design of the platform services. For example, the curation criteria are only known and accessible to the platform operators, and even they do not always understand the results of the curating.³⁵ The problem is exacerbated by the incalculable number of algorithmic curation decisions made daily for users. This lack of transparency makes it difficult for third parties to credibly criticise or influence curation decisions.³⁶ Facebook has meanwhile reacted to this fundamental criticism and set up an Oversight Board whose task is to review selected contro-versial curation decisions and

³⁴ Genuinely new formats of use and communication might also have played a role. This was for example the case with SnapChat, which introduced the deletion of messages after a specific period of time, or with TikTok, a service in which short videos can be used to communicate in a new way.

³⁵ Pasquale 2015.

³⁶ Dolata 2019.

rule on these with binding effect for Facebook.³⁷ The fact remains though that much greater transparency and traceability are essential for the researching of the actual influence of digital infrastructures on democratic public spheres and the development and assessment of regulatory proposals.³⁸

3.1.4. Current state of platform regulation

In liberal democracies, any form of exercising power has to be rooted in the principles of the rule of law. Sovereign power is thus controlled and regulated by numerous principles such as separation of powers and the greatest possible transparency for sovereign acts. If key infrastructures relevant for the democratic system are in the hands of privately-owned organisations such as companies, the state and development of these infrastructures have to at least be monitored continuously. Should serious faults emerge which might impair the democratic function of these infrastructures, then the state has to respond to these with an appropriate legal framework. It follows that societal and technological developments need to at a minimum be accompanied by legislative measures. Should such developments pose a risk to legally-protected interests or even have a negative effect on the pillars of the democratic order of society, they also need to be guided by a regulatory framework. Current legislation regulates platforms with different goals and instruments. A few regulatory approaches particularly relevant for the theory of democracy are presented below.

Problems in law enforcement and solution strategies

The transnational communication infrastructure of the internet is dominated by platform providers whose head offices are not in Europe. Many platforms grant their users (at least seemingly) pseudonymous or anonymous communication. This poses challenges for the enforcement of national and European legal standards when it comes to the operation of platforms (for example regulations concerning the handling of user data) and the content published on platforms (for example regulations limiting freedom of expression).

In order to overcome these challenges, a number of regulatory counter-strategies have been developed. Gaps in law enforcement have been bridged at least in part with the help of a legal territorialisation³⁹ of network communication. This legal territorialisation takes several forms:

In order to bind platform operators and in some cases also platform users outside of Europe to the legal requirements that are applicable here, the territorial scope of important regulations has been extended significantly. An example of such a regulatory strategy is European data protection law. While its territorial scope was already far-reaching under the previous legal framework,⁴⁰ the General Data Protection Regulation (GDPR) that came into effect in 2018 has extended it still further with its so-called marketplace rule. According to this, players outside of Europe are still bound by European data protection law if they focus their activity on the European market

37 Klonick 2019.

38 Rieder and Hofmann 2020; Ananny and Crawford 2018.

39 Cornils 2017.

40 ECJ 2014.

or monitor the behaviour of persons in the Union.⁴¹ What's more: if players who are directly responsible for the breach of a law cannot be prosecuted for legal or factual reasons, others who have contributed to or who could stop the breach of law can face significant claims. For example, users of platforms will be legally responsible for certain breaches of law committed by platform operators, in particular in the case of data privacy breaches in the processing of user data, for which the commercial platform users can be jointly responsible under data protection law.⁴² Individual persons or supervisory authorities can make claims for such breaches against companies who present themselves on a platform. As a result of this, pressure is placed indirectly on platform operators to change the way in which they handle user data.

On the other hand, platform operators have extensive obligations to check and delete illegal content disseminated by users. They can be required to delete content – due to their liability as a co-liable party (Störerhaftung)⁴³ – on the basis of civil, data protection and youth protection laws. Content that is illegal under youth protection law includes for example insults, defamations, incitement of masses, public incitement to commit offences and the use of symbols of unconstitutional organisations or the dissemination of propaganda material of unconstitutional organisations. In addition, the Network Enforcement Act (Netzwerkdurchsetzungsgesetz) requires the operators of social networks to set up a reporting procedure where users can report certain criminal content so that it can be reviewed. At the same time, operators have to ensure that such content is deleted or blocked within a defined timeframe. However, there is criticism that the reporting procedure is too time-consuming for the data subject. A further criticism is that the wording of the law leads to operators deleting legal content by way of precaution, and that users do not have a sufficiently effective right to complain against unjustified deletions.⁴⁴ A law recently passed by the German parliament will therefore create a so-called reconsideration procedure for those users who consider the deletion of their content to be unjustified.⁴⁵ In addition, platform operators will be required from February 2022 to report certain illegal content to the Federal Criminal Police Office (BKA).⁴⁶

At European level, a draft Digital Services Act was presented at the end of 2020.⁴⁷ This is intended, like the German Network Enforcement Act, to establish a procedure through which illegal content can be reported to the responsible platform operators. The platform operators would also have to set up a complaints management system which users can use to complain against unjustified deletions or blocking. In addition, they could also turn to an out-of-court dispute-resolution board, which could make a decision that is binding for the platform operators. And finally, according to the legislative proposal, there will be an obligation for platform operators to report criminal content to prosecution authorities, although this will be limited to serious criminal offences and therefore does not go as far as the reporting obligation that will be applicable in Germany from 2022.

41 Uecker 2019.

42 ECJ 2018.

43 Wagner 2020.

44 Ladeur and Gostomzyk 2017.

45 Deutscher Bundestag 2020a; 2020b.

46 Bundesgesetzblatt 2021.

47 EC 2020.

Initial guidelines for the curation of public communication

Much less clearly outlined and wide-ranging guidelines currently exist for the curation of public communication posts by the platform operators. Such guidelines could be based, however, for one on the principles of civil law, as many platform operators establish their own communication rules (so-called community standards) and get their users to grant them the contractual right to delete or block illegal content. The question is whether this procedure might be inadmissible under contract law because it excessively curtails users' freedom of expression. What limits, if any, result from such considerations for community standards is the subject of contentious debate and has yet to be resolved in practice.⁴⁸

In addition, at least some curating decisions are now subject to regulation under media law.⁴⁹ The State Media Treaty (Medienstaatsvertrag, MedStV) that entered into force in November 2020 contains special regulations for so-called media intermediaries with more than one million users per month in Germany. This term covers electronic communication services (so-called telemedia) which also bring together, select and present journalistic and editorial content of third parties in a manner that is generally accessible without turning it into one combined offering. Among other things, there is a transparency obligation that applies to these services concerning the criteria for the presentation of such content and concerning the workings of the underlying algorithms. Moreover, in the absence of objective reasons, the journalistic and editorial content of third parties is not allowed to be discriminated against as part of the curation process. In the case of political, ideological or religious advertising, the role of the advertising person or institution has to be clearly indicated. Furthermore, content placed by so-called social bots, that is to say automated programmes that write texts, has to be identified as such if it might give the impression that it had been written by a natural person.

However, current law does not contain any standards for the curation of content produced by the platform users themselves. Nor are there any guidelines for the participation of civil society in the formulation of controls and curation criteria. There are also currently no plans for such guidelines. However, under the planned European Digital Services Act, platform operators will have to publish information on the guidelines, procedures, measures and tools used for the moderation of content. In addition, the operators should be required when restricting content to give full consideration to the rights of all parties involved, including the fundamental rights of their users.

3.1.5. Challenges

The realisation that commercial platforms provide the democratic public sphere with infrastructures suggests that the existing regulatory framework needs to be updated. The considerable power of these platforms raises the question of how they can be made to be more committed to democratic and rule of law objectives than previously. In the opinion of the working group, this power cannot be curtailed sufficiently by the principles of economic competition. In particular, there are significant differences between platforms and the press, for which it is assumed that there is a functioning, journalis-

⁴⁸ Raue 2018.

⁴⁹ Paal and Heidtke 2020.

tic competition between different offerings, thus creating a diverse media landscape. Competition between competing platform operators, however, is restricted significantly by network and lock-in effects. In the opinion of the working group, neither competition law controls nor instruments of data or consumer protection laws, such as the right to transfer a user profile from one provider to another, can lessen these effects sufficiently. In addition, platform operators display user-generated content without selecting it on the basis of journalistic criteria and editing it. The service offered by platforms of disseminating virtually any content with a low threshold and therefore the potential to reach a large number of people provides considerable communication opportunities, for example for members of marginalised population groups; these opportunities can be negated, though, by economically rational curation decisions by the platform operators.

The notion of a democracy-promoting regulation of platform activities and their providers envisages the targeted and reliable limiting of power by way of procedural, content-related and organisational obligations which controls the entrepreneurial freedom of platform operators in a democratic sense (primacy of politics). However, the platform operators are not state, but private institutions, and companies are not under direct pressure to justify themselves like the state and its institutions. Unlike public authorities, which have to perform certain tasks in clearly defined procedures and ways and are bound by fundamental rights, companies operate within a framework that is not bound by fundamental rights. However, the scope of entrepreneurial freedom can only be determined when opposing interests are also taken into consideration. In this connection, especially fundamental obligations to protect and the constitutional principles of democracy and the rule of law need to be mentioned.

Despite their infrastructural relevance for the democratic public sphere, the activities of commercial platform operators are not geared, as stated above, to the objective of constructive democratic debate. The challenge therefore lies in controlling and regulating the power of platforms on the basis of rule of law principles in such a way that the democratic public sphere is strengthened. Even so, this has to happen in such a way that the fundamental freedoms of the platform operators as private companies remain intact. One way of achieving this that is both capable of and in need of improvement is the State Media Treaty, which through the term media intermediaries extends the scope of media legislation explicitly to digital platforms. The provisions of the planned European Digital Services Act are also a step in the direction recommended by the working group.

For public service broadcasting, which also holds a position of considerable power in the democratic public sphere, there is a complex body of rules for external and internal control, including with the involvement of civil society. This body of rules should ensure that the broadcasters, in their combined offering, enable a public debate that is fact-based, accompanied by scientific and other views, but that also enables diversity of opinion and allows a critical analysis. In principle, such a body of rules must also be developed for private digital platforms, so that these can fulfil their role as infrastructures of democracy. Here it is not about the simplistic assignment of conventional media standards because these standards are tailored to journalistic professionals, and not to the curation of user-generated content based on non-journalistic criteria.

Instead, the objective is a network-adequate regulation.⁵⁰ In particular governance structures can contribute to this – which, based for example on the model of the programme advisory boards of commercial broadcasters that is to be suitably modified, enable the participation of different social groups in the shaping of the platforms and their curation practices.

It cannot be ruled out that tighter regulation of the major platforms will prompt extremist groups to migrate to platforms that are less regulated, or not regulated at all, or to messenger services, as happened in the US election campaign in 2020. It should be borne in mind, though, that such a bypassing of regulatory measures usually results in a reduced communication reach. In order to determine the effect of the curation activities of platforms more precisely and to better assess suitable regulatory proposals, research needs access to the corresponding data of the platforms. It should be noted that the commercial interests of the companies must not be unduly affected by such access.

Finally it needs to be considered whether, in addition to the regulation of commercial platforms, democracy-promoting counter-offerings could be supported. On the one hand, democratic public spheres would be strengthened by state support for non-commercial platforms which focus their activities and curation criteria on democratic debate. This would be facilitated by greater interoperability between digital platforms, as the hurdles for new providers might be lowered as a result. On the other hand, public service broadcasters, which have always focused on ensuring journalistic diversity and have a democratic mission to inform, also need to be mentioned in this regard. Broadcasters have until now been allowed to extend their offerings to web-based formats (so-called telemedia mandate) but they are subject to a number of restrictions here. These include an obligatory examination of the necessity and economic viability of all online offerings of public service broadcasters (so-called three-stage test, section 32 (4) MedStV) and the prohibition of press-like online offerings (section 30 (7) MedStV). It appears to the academies that it needs to be reviewed whether these restrictions are still entirely appropriate for the fundamental mission of public service broadcasting of ensuring a democratic public sphere or whether they need to be relaxed in view of the increasing shift of the democratic public sphere to commercial platforms.

3.2. Information and communication

Digitalisation is not only changing the infrastructure of democratic public spheres significantly, but also the inner dynamics of these public spheres. Information and communication are changing under the conditions of digitalisation and they are essential for democratic public spheres. All parties have to have access to sufficient information that provides them with a diverse range of opinions and be able to select, assess and place it in its proper perspective. In addition, they need to be able to have a free and fair discussion with other parties. Without this, democratic opinion formation and decision-making will not be possible.

⁵⁰ Vesting 2020.

As outlined under 3.1, today's information and communication infrastructure is hybrid: press, broadcast media and digital services coexist, whereby the latter are increasingly dominant⁵¹. Digitalisation is resulting in far greater complexity: countless producers and sources are providing huge amounts of information that can be disseminated quickly, with a great reach and at low cost,⁵² for example via platforms or search engines. This growing complexity is also reflected in the dynamics of public debate, which is characterised by topics emerging and disappearing again very quickly⁵³ – and in this way public spheres also change and evolve without delay, virtually in real-time. At the same time, though, the tone is becoming ever more dissonant and discordant. Not only the information culture and the dynamics of debate have become more complex, the means of communication have also multiplied. Nowadays, communication can seamlessly take place across borders and quickly take on a global dimension given the reach of platforms and messenger services.

This chapter focuses on the question of how digitalisation has affected the quality of information and communication in democratic public spheres.⁵⁴ In the course of digitalisation, the scope and accessibility of information and communication are growing, which is in itself desirable from a democracy point of view. At the same time, digitalisation entails significant risks. The following questions are being asked increasingly: Can players, for example individuals, groups or parties, filter out, assess and place in its proper perspective the information that is relevant to them adequately from the vast, complex offering? Or will such democratically essential activities be hampered, for example by the dependence on a few platforms and their attention-based curation practices (see 3.1)? Do the wide-reaching digital communication services enable dialogue between different political groups and factions or do they contribute instead to a fragmentation and polarisation of the political landscape? And do phenomena such as hate speech and online harassment render civilised digital communication, which is essential for functioning democratic public spheres, increasingly more difficult?⁵⁵

3.2.1. Opportunities for the democratic public sphere

The sources of information that have increased hugely in the course of digitalisation are of extreme importance for democratic opinion formation and decision-making. This is illustrated by a few examples: With Wikipedia, a hugely effective online encyclopaedia of on the whole high quality and currentness that is freely available worldwide⁵⁶ has emerged within 20 years. In addition, progress in sensor technology and data analysis allow detailed information on politically-relevant topics to be provided in real-time, for example information on the development of the COVID-19 pandemic. Using their smartphones, all players in a democratic public sphere can document politically-relevant events in videos and publish these immediately, as in the case of the violent arrest of George Floyd and his death in Minneapolis in May 2020. As shown

51 Surveys indicate that a significant portion of Germans use for example social media as a source of news (Hölig, Hasebrink, and Behre 2020), a trend that is even more marked at international level (Shearer and Mitchell 2021).

52 Hilbert and Lopez 2011.

53 Lorenz-Spreen et al. 2019.

54 The authors are aware that digitalisation and democratic public spheres influence each other but this statement concentrates on the effects of digitalisation.

55 Christoph Neuberger has suggested nine values for measuring the quality of democratic public spheres. For the issue addressed in this section, in particular the values of information quality, debate quality, freedom, diversity and integration are relevant. See Neuberger 2020.

56 In authoritarian political systems such as China's, however, access to Wikipedia is blocked.

by a recent study, increasing mobile access to news also correlates positively with a diverse consumption of news sources.⁵⁷ In addition, special-interest internet groups are also allowing expert knowledge to be acquired outside of traditional information channels.⁵⁸

Yet not only the provision and availability of information have changed, the conditions of communication have also shifted. The many digital communication services today offer considerable opportunities for the democratic public sphere because they facilitate global networking and far-reaching interaction. For example, in 2015 over 400 journalists from 24 countries joined forces to analyse the so-called Panama Papers (data volume: 2.6 terabytes) and were able to uncover tax evasion, money laundering and other criminal offences in their respective countries on a large scale.⁵⁹ And political groups can build new international audiences relatively easily and quickly, as highlighted for example by Fridays for Future or Black Lives Matter. As will be shown under 3.3, digitalisation also offers great opportunities for political participation.

3.2.2. Selection of information

The huge offering of information that goes hand in hand with digitalisation may present great potential, but it also overwhelms individual players, as it exceeds the limited cognitive capacity of people to process numerous pieces of information at the same time.⁶⁰ This, though, limits the opportunity for the individual to use the immense and complex offering of information presented by the digital information and communication ecology for their own opinion formation and decision-making and to select relevant information.⁶¹ In addition, the use of the new sources of information requires digital skills, something individuals do not possess in equal measure.⁶²

A further barrier to the adequate selection of information is that, as already mentioned above, democratic public spheres are becoming more and more fragmented and polarised, that is to say characterised by seemingly irresolvable conflicts – increasingly turning consensus-building into a challenge.⁶³

Ultimately, citizens at least partly depend on curation by service providers in their use of the vast amounts of information and copious means of communication and therefore have to rely on the curating described under 3.1. However, as already explained, the goal of such curation is to keep the attention of users for as long as possible and to steer it towards lucrative advertising content; this, though, is often at odds with the provision of information in an objective and comprehensive manner. For example, news items with the highest numbers of clicks are ranked and displayed preferentially, regardless of their political importance and qualitative value,⁶⁴ which in turn favours the spread of emotional and moralising content.⁶⁵ Since 2020, platforms have occasionally

⁵⁷ Yang et al. 2020.

⁵⁸ Nida-Rümelin, Zuber, and Greger 2019.

⁵⁹ Obermayer et al. 2016.

⁶⁰ Simon 1971.

⁶¹ Hills 2019; Lorenz-Spreen et al. 2020.

⁶² Kozyreva, Lewandowsky, and Hertwig 2020.

⁶³ Pfetsch 2020.

⁶⁴ Munger 2020.

⁶⁵ Klinger and Svensson 2015; Brady, Gantman, and van Bavel 2020.

deviated from their attention-based curation practice, for example in order to place prominently official health information during the COVID-19 pandemic or in order to put a brake on the spread of fake news in the run-up to the US election.⁶⁶ However, a fundamental departure from the established form of curation has not been seen to date, nor can it realistically be expected (see 3.1.1).

In order to successfully overcome such obstacles and those described below, some promising initiatives have already been developed by civil society to support users with digital tools. Examples of this are browser add-ons which indicate the trustworthiness of news sites with icons or make personalised political advertising transparent.⁶⁷ However, such attempts often still fail because of the very limited release of data by the platforms – data which would be needed for the development and operation of such programmes.

3.2.3. Assessment of information

People need to be able to assess the information presented to them, first and foremost to assess whether a factual claim is correct (facticity). For example, false claims can be found online that children cannot be infected with the SARS-CoV-2 virus⁶⁸, which can result in disastrous wrong decisions on protective measures being taken, for instance in schools. Other fake news reported through social media have had a proven negative impact on the readiness of the population to be vaccinated.⁶⁹ In order to be able to assess properly whether information is correct, its epistemic quality is important (what evidence is cited, are the sources trustworthy?).

By the same token, people also need to be able to assess normative statements; for example in connection with the question whether the current quota of women in listed companies should be increased. In order to be able to answer this question properly, however, it is important that they understand the relevant premises, that is to say know whether the practice or notion in question is based on recognised standards such as the Basic Law or an extremist ideology. Knowledge about the range of opinions, about consensus or dissent and specific points of contention in a given topical context also play an important role in the normative assessment.

As already outlined under 3.1, in the case of traditional mass media journalists are generally expected to examine the veracity of information and to investigate and throw journalistic light on its possible background or political context – albeit they do this well or not so well depending on the individual medium. Likewise, some digital offerings such as the aforementioned online encyclopaedia Wikipedia have quality assurance procedures. For all that, many commercial digital services and especially platforms provide such quality control only to a very limited degree, as outlined under 3.1, because they select their content based on the principle of keeping the attention of users, whereby the context needed to place the information in its proper perspective is

66 For example Twitter in the case of the US election: https://blog.twitter.com/en_us/topics/company/2020/2020-election-update.html. Or Google in the case of Covid-19: https://support.google.com/websearch/answer/9814707?p=cvd19_statistics&hl=de&visit_id=637507962082666920-985946249&rd=1.

67 A few examples: newsguard <https://www.newsguardtech.com/de/>; whotargetsme, <https://whotargets.me/en/tracemap>, <https://www.tracemap.info/home>.

68 <https://www.independent.co.uk/news/world/americas/trump-covid-press-conference-children-immune-shooting-coronavirus-a9664106.html>.

69 Loomba et al. 2021.

often not provided. Recently and in exceptional cases, platforms and other commercial digital services have sought to implement quality assurance measures, for example when content clearly conflicts with statutory regulations or their own statutes. Prominent examples of this are tweets with false claims by the former US President Donald Trump, on which Twitter placed warning labels. At the same time, there are also services such as the Russian platform Vkontakte, which do not even meet minimum quality assurance standards as they do not or only inadequately implement law applicable in Europe.

A further key obstacle to ensuring democratic public spheres is so-called fake news, that is to say misleading information that is false or has been taken out of context, and is shared deliberately or out of ignorance. Although this is not a new phenomenon as such, in digital public spheres fake news spread much further and faster than correct information⁷⁰ – probably as a result of the attention-based business model.⁷¹ A particular problem is fake news that is not identifiable as such, for example so-called deepfakes, i.e. fake videos made using artificial intelligence.⁷² Such fake news can have seriously negative consequences for a democratic public sphere, as made clear for example by the various conspiracy theories surrounding the COVID-19 pandemic. Fake news can spread virally and thus make it very difficult to have an objective political debate. It is also used strategically, for example by the former US President Donald Trump, in order to distract from problematic events and revelations.⁷³ That said, it seems to be mainly small, politically extreme groups who consume such fake news.⁷⁴ The spread of fake news and their impact are currently being actively researched.

⁷⁰ Vosoughi, Roy, and Aral 2018.

⁷¹ Mocanu et al. 2015.

⁷² Thies et al. 2016.

⁷³ Lewandowsky, Jetter, and Ecker 2020.

⁷⁴ Grinberg et al. 2019; Allcott and Gentzkow 2017.

3.2.4. Pluralism

For democratic public spheres, pluralism of perspectives is of immense importance, meaning that all relevant perspectives relating to a given issue can be put forward and that all players have access to sufficiently diverse information and communication. This is essential for being able to assess and place information and communication in their proper context and to voice criticism based on alternatives. Without this, sound political opinion-forming and informed political decision-making will not be possible. In the context of this statement, the question is to what extent digitalisation benefits or hampers such pluralism.

On closer inspection, it can be stated that digital media initially has a positive effect on the diversity of perspectives relating to a given issue. The means for participating, expressing opinions and gathering information are growing steadily under the conditions of digitalisation. Politically-interested users have easier access to communication platforms, where they can view content that is becoming increasingly more politically diverse,⁷⁵ which strengthens the plurality of perspectives and opinions. On the other hand, there are also digitalisation-related effects that hamper plurality at both individual and societal level.

With regard to possible limitations to plurality on an individual level, echo chambers in particular are being discussed, whereby the term has not yet been precisely defined. In the context of this statement, two phenomena are most relevant: The first concerns information behaviour where users of digital services mainly select sources that appear to reinforce their own opinion and world view.⁷⁶ The result is a highly one-sided consumption of content through social media.⁷⁷ However, this phenomenon chiefly concerns consumers with extreme political views,⁷⁸ whereas other users have been observed to actually become more aware of different opinions.⁷⁹ The second phenomenon, which in the opinion of the working group is more of a problem for the democratic public sphere, is the formation of groups in which the members reinforce each other in their homogeneous opinions. This especially concerns platforms such as Facebook that facilitate the networking of such groups.⁸⁰ This can exacerbate mechanisms of group polarisation, where positive social feedback also hardens extreme political convictions.⁸¹

75 Beam, Hutchens, and Hmielowski 2018; Dubois and Blank 2018.

76 Cota et al. 2019.

77 Bakshy, Messing, and Adamic 2015.

78 Stier et al. 2020.

79 Yang et al. 2020.

80 Aiello et al. 2012; Cinelli et al. 2021; Mosleh et al. 2021.

81 Sunstein 2018; Baumann et al. 2020.

Influencers

Influencers are users of platforms, portals and services such as YouTube, Twitter and Instagram who present their own, in some cases high-quality, but also unverified content on a variety of topics and whose posts are regularly seen by other users (followers). Influencers interact with their followers as well – often a very large number of followers. Many, but not all influencers also advertise in their posts, for instance with product placements.⁸² Influencers can quickly trigger loud social feedback with their posts,⁸³ even if they are not themselves the source of the content, but only spread it, for example fake news.⁸⁴ One well-known influencer is for example the German web video producer Rezo. His occasional political statements on YouTube attract the attention of a wide audience. As the activities of influencers that have public appeal are also in the interest of platform operators, they are supported by their selection algorithms (see 2.1).⁸⁵

At societal level, a possible fragmentation of the digital public sphere is a challenge to the principle of plurality. Like any social sphere, a digital public sphere is structured in a modular manner, that is to say in different groups (public sub-spheres).⁸⁶ This modularisation is in fact reinforced by digitalisation because it is possible to select like-minded persons from a large pool of potential contacts.⁸⁷ New phenomena such as the so-called influencers (see infobox) are one example of this. Modularity will turn into fragmentation, though, if public sub-spheres are formed not just for specific interests, but also for the major issues of society and if the respective groups do not connect and communicate with each other, but hardly take any notice of or even reject each other. Such a fragmentation damages a democratic public sphere because the existing desirable pluralism is not recognised as a result or is even opposed. Field experiments show that digital fragmentation is also facilitated by platforms controlling the findability of groups based on the criteria of an attention-based business model.⁸⁸ Some groups are placed particularly prominently for advertising reasons, while others remain much less visible.⁸⁹ The low visibility of other groups thereby supports the belief that one's own opinion is that of the majority,⁹⁰ which results in one's own opinion becoming hardened⁹¹ and reinforces the fragmentation still further.

The fragmentation of public debate is also a problem because it can contribute to a radicalisation of positions and the tone of political debate becoming charged. In the Anglo-Saxon majoritarian democracies a clear trend towards polarisation can already be seen. In democratic systems with proportional representation, more often than not a two-dimensional political arena develops in which above all a new battle line is drawn between authoritarian populism and liberal cosmopolitanism.⁹² In both cases

⁸² Rotz and Tokarski 2020.

⁸³ Cha et al. 2010.

⁸⁴ Brennen et al. 2020.

⁸⁵ Gupta et al. 2013.

⁸⁶ Adamic and Glance 2005; Ugander et al. 2011; Ferrara 2012.

⁸⁷ Sasahara et al. 2021.

⁸⁸ Shmargad and Klar 2020; Levy 2021.

⁸⁹ Theile 2019.

⁹⁰ Lerman, Yan, and Wu 2016.

⁹¹ Leviston, Walker, and Morwinski 2013.

⁹² De Wilde et al. 2019.

the phenomena described in connection with echo chambers contribute to a radicalisation and hate speech, particularly on the right of the political spectrum, and can also promote politically-motivated acts of violence.⁹³ A causal relationship has also been established between the use of online media as a source of information in Italy and Germany and an increase in populist rhetoric.⁹⁴

3.2.5. Civility

Ultimately, the ability to have a free and fair discussion is key for a functioning democratic public sphere. In the digital public sphere a greater variance in topics and communicative tone is noticeable (see 3.2). The breaks in civility, which are mainly summed up as hate speech and online harassment, is a particular problem in this context.

Hate speech refers to comments which deliberately disparage persons or groups or are associated with inciting others to commit criminal acts against them. Prominent examples are anti-Semitic, racist and sexist comments. The term “online harassment” covers a wide range of in-trusive behaviour, the purpose of which is to threaten or intimidate a specific person. Hate speech and online harassment can be committed anonymously or pseudonymously, but they can also occur among people who know each other or using real names. Certain types of hate speech (in particular racist and homophobic speech) are anonymous more often than others.⁹⁵ Targeted online harassment, however, is committed in most cases by someone known to the victim, and less so by identifiable strangers or anonymous persons.⁹⁶

The fact that hate speech and online harassment are a major problem is backed by empirical evidence: representative surveys showed that in 2019, 8 per cent of the 63 million internet users in Germany, i.e. over 5 million people, had been personally affected; an additional 40 per cent had noticed hate speech and online harassment on the internet. 54 per cent expressed their political opinion in the democratic public sphere less often because they feared hate speech and online harassment. People from a migrant background and who are particularly exposed were affected disproportionately; women expressed their opinion less frequently than men after directly experiencing hate speech or online harassment. Victims also reported to have suffered from emotional stress, fear and anxiety, depression and self-image problems as consequences of hate speech and online harassment; in particular young victims told of such consequences.⁹⁷ Hate speech even directly resulted in some criminal acts.⁹⁸ All these experiences therefore hamper people’s willingness to engage and active participation in public debate.

In digital communication, however, not only informal social norms of civility are violated. Many forms of hate speech and online harassment, for example threats and insults, represent not only a break in civility, but are in themselves criminal offences as well. The effective enforcement and application of legislation stipulated in states under

93 Müller and Schwarz 2020; Rauchfleisch and Kaiser 2020.

94 Schaub and Morisi 2020.

95 Mondal, Silva, and Benevenuto 2017.

96 Duggan 2017; Mondal, Silva, and Benevenuto 2017.

97 Geschke et al. 2019; Nadim and Fladmoe 2019.

98 Müller and Schwarz 2020.

the rule of law therefore starts with a clear distinction between comments that represent a criminal offence and comments which are pointed but permitted by law. In the case of criminal offences, the relevant authors also need to be identified and referred to the prosecution authorities. In view of the large number of comments potentially punishable by law in the digital public sphere, this is a huge challenge for investigating authorities and the judiciary system and can quickly result in expectations concerning the power of a state under the rule of law to enforce the law not being met.

The tendencies with regard to changes in communication and its tone described above represent a considerable problem for the democratic public sphere. The moderate political majority, as well as vulnerable groups and persons, who feel particularly affected by this, are put off from participating in political debate, holding a political office or becoming involved in politics in some other way. In turn, this benefits politically extreme positions and also reinforces political polarisation and potentially fragmentation as well. This often discourages the finding of compromises and understanding of other views and positions inherent in a democracy.⁹⁹

3.2.6. Challenges

Nowadays active democratic participation in the shaping of the digital information and communication ecology is a prerequisite to ensuring a functioning democratic public sphere. This involves enabling users to deal with its complexity, promoting plurality and civility and counteracting fake news, polarisation and coarsening of debate.

The first challenge in this context is to support people who do participate in digital democratic public spheres. The development of skills in dealing with the digital information and communication ecology in all sections of the population is key here. This concerns for example the ability to adequately select, assess and place content in its proper perspective, the training of certain behaviours in digital communication (civility), and dealing with distortions of reality through fake news and with collapses of civility. To this end, users need to be actively supported by the design of technologies and platforms, instead of being hampered by platforms influenced by the attention economy. In addition, digital assistance programmes¹⁰⁰ can help to increase the limited cognitive capacity of people and successfully cope with the high complexity of the digital information and communication ecology.

A second challenge is posed by the problematic impact of the attention economy, which can affect in particular the selection, assessment and plurality of information and communication. In this context, regulatory measures – as discussed under 3.1 – need to ensure transparency and curation practices that are more focused on facts and relevance.

The third challenge in connection with the information and communication ecology lies in enabling free and fair debate in democratic public spheres, but also taking firm action against negative changes to the information and communication culture in the form of hate speech and fake news. Although there is already an appropriate legal

⁹⁹ Spiecker gen. Döhmann 2018.

¹⁰⁰ Examples of such digital assistance programmes are the browser add-ons referred to under 2.2.2.

framework for this particularly in Germany, which nevertheless still needs improving, the enforcement of the law presents a major problem. As mentioned earlier, there is currently an overwhelming number of potentially criminal comments and communications for investigating authorities and the judiciary system to deal with. In view of this, the use of technological tools such as digital assistance programmes would provide significant support. There is, however, also a personnel and skills problem: there needs to be adequate training and awareness in the prosecution authorities and the judiciary system. A further difficulty also lies in identifying the authors of criminal comments, as they may be posting anonymously or pseudonymously or be active on platforms that do not fall under German jurisdiction. And finally, a successful strategy to curb destructive effects in the democratic public sphere also requires steps to protect and support people affected more effectively.

All of the measures mentioned here need to be accompanied by appropriate research. However, this will not result in reliable findings and generally applicable statements without access to data of the platform and service providers. It follows that an obligation to provide the relevant data also needs to be covered by any regulatory measures.

3.3. Participation

3.3.1. Between euphoria and disillusionment

For the longest time democratic participation was largely defined in the sense of parliamentary representation as participation in elections, involvement in political parties and freedom of expression in the public sphere.¹⁰¹ Meanwhile a broader definition of participation which covers as widely as possible the active participation¹⁰² of citizens in all areas of society has become prevalent. This includes for example involvement in citizen action groups and co-determination in the workplace as well as in the public sphere. This understanding is associated with the notion of a general democratisation of society and is closely connected to the development of media.¹⁰³ The following is based on such a broad understanding of participation, but focuses on issues of social communication and public debate in the context of digitalisation.

Table 1: Selection of digital and digitalised forms of participation

Institutionalised political participation	Non-institutionalised political participation	New forms of social participation
Digital party conferences	Active participation in public debate	Citizen and pioneer journalism
E-voting	Organisation and mobilisation of demonstrations, social movements and protests	Civic tech, open data and open source initiatives
Online petitions		Data donation
		Participatory development of digital media/platforms

¹⁰¹ Zimpel 1970.

¹⁰² Dahlgren 2009.

¹⁰³ Casteltrione 2015.

Research results underline the potential that digital media harbour for participation processes and the associated social democratisation worldwide. In particular the means of participation summarised under the term “online participation” (see Table 1) play a major role here.¹⁰⁴ For example, digital platforms promise to support traditional means of participation by facilitating access to these. In Estonia, for instance, people can vote using their mobile phone; party events such as conferences are shifting increasingly to the digital sphere; and the format of online petitions has already made it much easier to start, circulate and support petitions for the German parliament.¹⁰⁵ The COVID-19 pandemic has demonstrated the need to possess digital means of participation, but also the challenges to involve people in productive online participation processes. And there are several other countries that had already been exploring this issue far more intensively than Germany before the pandemic (see the infobox “Digital democracy and the example of Taiwan”).

With regard to the means of participating in social communication and public debate discussed here, the establishment of digital media and its infrastructures, with those of the internet and mobile communications leading the way, was initially accompanied by high expectations.¹⁰⁶ New opportunities for participating in the so-called network society¹⁰⁷ were envisaged, for example Web 2.0 digital platforms making it easier for people to express their opinions and become involved in society and in public debate. At the same time, there was euphoric talk of “produsage”, that is to say the possibility of media content no longer being just consumed, but also being produced by users.¹⁰⁸ Hopes were placed on a new amateur or citizen journalism,¹⁰⁹ with which older ideas of “open channels” and “citizen media” were revisited and rethought for the digital age. Digital media were also considered to be promising tools for social movements, as they would provide interested individuals with the opportunity to connect in open networks.¹¹⁰ So-called “connective action”,¹¹¹ which is organised through digital platforms, mainly establishes protest-oriented forms of participation, for example participation in online petitions or mobilisation of people through hashtags. Technology-related movements such as the open data or civic hacking movement are increasingly helping to shape the digital media infrastructure.¹¹² Such hopes triggered research on political communication in the online world in Germany as well.¹¹³

Having said this, the continued commercialisation of the internet and the oligopoly of providers described under 3.1 have already changed the means of participation in the digital sphere again. While some hopes of more means of participation have been fulfilled, and others have been disappointed, a new problem has emerged: the underlying infrastructures are not managed democratically, but by a few commercial platform providers who are motivated not by the promotion of participation, but by the maximi-

104 Scholl, Kubicek, and Cimander 2011.

105 Kolleck 2017.

106 Hösl 2019.

107 Castells 1996.

108 Bruns 2008.

109 Deuze 2008; Reese et al. 2007.

110 Castells 2012.

111 Bennett and Segerberg 2013.

112 Dunbar-Hester 2019.

113 Vowe and Henn 2016.

sation of profit.¹¹⁴ In addition, the buzzwords clicktivism and armchair activism have been repeatedly invoked to express the fear that the increase in means of participation might even ultimately result in the population having less influence on political decision-making. Low-threshold forms of participation, for example participation in an online petition, are said to often have little effect, but are gaining in importance compared to traditional, more effective forms such as involvement in parties.¹¹⁵

Digital democracy and the example of Taiwan

Digital democracy is considered to hold great promise for participation. Three different phenomena are debated under this headline¹¹⁶: firstly the digitalisation of political debate and communication, which has already been discussed in detail in this statement; secondly digital forms of participation such as online petitions, which supplement traditional institutions of participation such as electoral processes; and thirdly concepts for the reshaping of democracy and participation in the digital society. Online forms of participation such as e-petitions or so-called participatory budgeting are now also very common in Germany, while other countries such as Estonia are considered pioneers in the digital accessibility of administrations. In order to gain an idea of what a digitalised democracy might look like, it is worth taking a look at Taiwan:

Taiwan's Digital Minister, Audrey Tang, has described the concept of a digital democracy with the three principles of radical transparency, civic deliberation and fast consensus-building. This is put into practice using simple methods: for example, public discussion and petition platforms such as *VTaiwan* bring political representatives and stakeholders together and structure their joint discussions. In addition, government data is provided in an open, machine-readable format in line with the open government principle and should strengthen transparency and innovative data use. The involvement of the country's civic tech scene should also boost technological development in civil society and administrative capacity to deal with for example the COVID-19 crisis. In that, the Taiwanese blueprint for a digital democracy stands out not so much for its remarkable tools or institutional reforms, but for its comprehensive concept for a digital democratic culture and the appointment of a political coordinator and ambassador.

3.3.2. Diverse means of participation

One significant change that has taken place in recent years is the increase in diversity when it comes to means of participation through digital media. This concerns on the one hand the positions that have become part of the public debate through the various digital media, and on the other hand the ability to organise campaigns entirely through digital means.

One low-threshold form of participation are the comments and feedback options provided as standard functionality by numerous online media. While not every form of online activity such as the liking of a page or post without political relevance can be considered participatory in the sense outlined above,¹¹⁷ the ability of users to commu-

114 van Dijck, Poell and de Waal 2018.

115 Theocharis and Deth 2017.

116 Schaal and Heidenreich 2016.

117 Theocharis and Deth 2017.

nicate continuously with journalists and other authors by commenting on and discussing their texts has changed the relationship between journalists and their audience. Today it is characterised by more immediacy, which has both led to journalists focusing more on their audience as well as the latter becoming more irritated.¹¹⁸ In addition, the position of journalism with regard to public debate and participation has changed altogether, since civic players have started running activities exclusively as online communication campaigns, as is customary for example in the case of so-called data activism¹¹⁹.

Today people who previously had no access to public communication can express their opinion with the help of platforms such as Instagram, Facebook and Twitter and create group public spheres with messenger services such as WhatsApp and Telegram.¹²⁰ Such new means and forms of communication, which are also known as tiny acts,¹²¹ have also opened up new participation channels. The influencers and YouTube stars mentioned above under 3.2.4 highlight the change strikingly because they can reach an audience that is bigger than that of many traditional mass media.¹²² In this connection, to what extent influencers such as the video blogger Rezo with his YouTube video “The destruction of the CDU” (Die Zerstörung der CDU) actually make important political contributions to public debate or whether such activities are primarily marketing measures used by bloggers to raise their profile and as a result their number of followers and advertising income, is currently the subject of critical debate.

The prerequisites for finding a huge audience through such digital channels are typically relevant cultural and social capital and relevant media literacy.¹²³ The buzzwords Digital Divide and Digital Disconnect have recently inspired research that shows some significant inequalities so far as the opportunities of players to participate are concerned, whereby Germany occupies a mid-table position compared to other countries.¹²⁴ It is clear that not all people have the same opportunity to participate in the digital sphere. People with a lower level of education and income are at a disadvantage, their political positions therefore often under-represented. One aspect that is still neglected in this context, however, concerns another form of exclusion, namely the exclusion of people with physical or mental disabilities who, due to lack of accessibility,¹²⁵ are unable to use many digital participation offerings in public debate.

Nevertheless, many more individuals and groups are attracting public attention for their positions through platforms and other digital media, who were largely excluded by the curating practice of traditional mass media. The new means of communication therefore provide on the one hand the opportunity to shape political debate across geographical boundaries, social classes and environments, to conduct intercultural dialogue and to establish new transnational or transcultural public spheres. On the

118 Loosen and Dohle 2014.

119 Milan 2017.

120 Baym and Boyd 2012.

121 Margetts 2018; Hepp and Pfadenhauer 2014.

122 Burgess and Green 2018.

123 Livingstone and Helsper 2007.

124 See for example Helsper 2021.

125 Accessibility in the digital sphere is achieved for example by websites and PDFs being in formats that can be recognised by automated reading tools. The writing of texts in plain language and the adding of subtitles to videos also contribute to accessibility.

other hand, this means that positions critical of or hostile to democracy are now also becoming increasingly visible in public debate. For example, the Pegida movement positions itself on online platforms explicitly in opposition to established journalistic media and refers for its own arguments to “alternative” sources¹²⁶ – a trend that can also be seen in the case of the COVID-19 protest movement Querdenken 711, which is currently attracting a lot of media coverage. The fact that curating algorithms of platforms even give priority to radical positions in their recommendations is a particular problem in this context (see also 3.2).¹²⁷

3.3.3. Role of civic bodies and movements

In the course of digitalisation, the importance of media has also changed significantly for civic bodies and movements, who for a long time only considered media a tool they could use to organise themselves and create audiences for their own issues.¹²⁸ Yet the relentless spread of digital media and their technical infrastructures has seen these themselves evolve into a subject of civic engagement at the same time: what is meant here is that an increasing number of civic bodies and movements are committed to actively shaping the infrastructures and practices of digital media and in addition to establishing alternative forms of offering and use. Key drivers in this context are for example the open data and the civic tech movements. Parts of the open data community support free access for all people to data which has been collected for example in research or public administration activities. Other initiatives work under the umbrella of open source to produce freely available software whose source code can be viewed by all interested parties and can be used as a basis for the further development of the software. In turn, the so-called civic tech movement uses such data and tools to set up digital services such as platforms that support civic engagement and strengthen civil society¹²⁹ – an approach that is of international importance particularly during the COVID-19 pandemic, with many crucial projects with a data-based approach to dealing with COVID-19 emerging.¹³⁰

The main objective of movements such as open data and civic tech is not to use new media to spread their own positions and messages, but to shape the digital infrastructures so that they can be used in a way that promotes democracy and the common good.¹³¹ Some of these initiatives go as far as demanding new platforms for public communication and social interaction, which are organised based not on the commercial principles of what they call surveillance capitalism¹³², but which enable participation based on cooperative principles.¹³³

126 Haller and Holt 2019.

127 Ribeiro et al. 2019.

128 Cammaerts, Mattoni, and McCurdy 2013; Mattoni and Treré 2014.

129 Schrock 2016.

130 Stefania Milan, Treré, and Masiero 2021.

131 Kubitschko and Kannengießer 2017; Hepp 2020; Milan 2017.

132 Zuboff 2019.

133 Scholz and Schneider 2017.

Likewise, journalism initiatives are starting to form under the umbrella of “pioneer journalism” which aim to establish new structures and practices of journalistic production and dissemination.¹³⁴ Prominent examples in Germany are Correctiv¹³⁵, Riffreporter¹³⁶ and Rums¹³⁷. There are also many other initiatives beyond the established publishers and media companies: such forms of journalism are often closely linked to civic engagement, which can open up considerable potential for further democratisation.

3.3.4. Means of participation through data

A further innovation in the course of digitalisation relevant to participation concerns the explicit release of data for use by third parties and the related debate surrounding issues such as data donation, data sovereignty and data security.

The use of digital devices and in particular smartphones is leaving behind a growing data trail¹³⁸. This trail allows digital service providers to create a so-called data double¹³⁹, an assemblage of data that generates detailed user profiles. However, these profiles are always reductionist given that they are above all based on criteria that focus on economic aspects. As far as users are concerned, scientific debate on this phenomenon has until now centred primarily on the risks associated with a general rise in society of self-tracking and quantification.¹⁴⁰ With regard to the companies that collect and analyse the data, the risk of its commercial exploitation in more and more areas of society has been the main focus of discussion – a scenario described as data colonialism¹⁴¹. Lastly, one further risk in addition to this is connected to the potential manipulation of users in their interests and behaviour (see 3.4) using such personalised information.

In spite of that, the data trail created by the use of digital media and devices can also be used constructively, for example when used to establish applications for the common good. One important possibility here is participation through voluntary, so-called data donation.¹⁴² In the short term, users can for instance make their data available to organisations so that these can reconstruct and reveal the workings of commercially-used algorithms.¹⁴³ In the long term, data provided voluntarily, such as mobility or other usage data, could also help to optimise projects for the common good and public infrastructures in the interest of the population, for example traffic flows. Other measures that would help to reduce energy consumption or emissions and to improve the quality of life would be conceivable and are being discussed in the context of what is known as smart city concepts.

Participation with the help of digital media and infrastructures therefore does not necessarily have to be a communicative act. However, it should be borne in mind that

134 Baack 2015; Hepp and Loosen 2019; Keiller and Charter 2014.

135 <https://correctiv.org>.

136 <https://www.riffreporter.de>.

137 <https://www.rums.ms>.

138 Karanasios et al. 2013.

139 Ruckenstein 2014.

140 Bolin and Velkova 2020; Mau 2019.

141 Couldry and Mejias 2019.

142 For example Kraft et al. 2018.

143 Spielkamp 2019.

data donations can only be participative if they are made voluntarily and in connection with a process in which opinions are formed and expressed.

3.3.5. Challenges

A significant challenge in the context of this statement is to shape participation under the conditions of digitalisation so that it enhances democratic public spheres and debate and promotes community. As participative acts through digital media and infrastructures always generate traceable and exploitable data, how such data is handled has to be examined critically. At the moment the access sovereignty for this data lies almost exclusively with a few private companies, whose handling of this data is primarily motivated by economic concerns.¹⁴⁴ However, if in the long run digital participation is to be possible not only on the terms of these platforms, services and portals, then the establishment of infrastructures that are more focused on democracy and the common good needs to be promoted. Such civic initiatives and solutions therefore need to be supported politically and financially on a long-term basis.

3.4. Self-determination

Free political decision-making and individual self-determination are necessary in order for representative democracies to function. As already explained, digital public spheres increase the means for political decision-making, but also involve risks. For example, it is the subject of wide debate that it is easier to influence and manipulate in digital public spheres due to for instance algorithm-assisted personalised political advertising, mass disinformation and conspiracy theories or targeted discrediting of persons and groups. In order to better understand, though, how digitalisation influences processes of individual self-determination in democracies, the precise impact of the practices of digital platforms, services and portals on the individual behaviour and attitudes of users needs to be analysed. It has to be taken into consideration here that human opinion formation and decision-making are highly complex and even under exclusively analogue conditions are influenced by many internal and external factors such as rationality, emotionality, social influences and external circumstances.

144 Mazzucato 2011.

3.4.1. Self-determined development in digital public spheres

Digital public spheres offer individuals many different ways of expressing themselves, voicing their opinion or presenting a particular lifestyle. They therefore provide the individual with new spheres in which to develop their own personality. These spheres are used by influencers, that is to say users of platforms who have a great reach and produce their own content.¹⁴⁵ Not only (semi-)professional presentation activities can be very relevant, though, private posts made by individuals can be too (everyday politics)¹⁴⁶, for example when fathers talk about their parental leave, mothers publish photos of themselves breast-feeding or non-heterosexual persons document their relationships online. In this way new forms of democratic participation are created (see 3.3). Digital platforms such as Twitter and Instagram also allow special-interest groups to be formed which can quickly achieve great public awareness (for example #MeToo, #BlackLivesMatter, #AbleismTellsMe). This, too, increases the means of self-determination for users.

At the same time, though, due to the large audience that can be reached by individuals in the digital sphere, there is a greater risk of social pressure to conform and harassment. For example, online harassment and hate speech are now used intensely against certain groups in order to intimidate them.¹⁴⁷ In addition, risk-averse people and people who value their privacy find it difficult to use online services securely and productively. Furthermore, the existence of so-called chilling effects has been proven: the expectation of digital behaviour surveillance alone deters many people from using their freedom.¹⁴⁸ The impression is created that use is inescapable, there are no safe alternatives. Finally, digital participation is not possible for all citizens for technical and practical reasons. Such phenomena directly affect the means of participation of the persons concerned and limit their self-determined development in the digital public sphere significantly (see 3.2).

3.4.2. Influence in digital public spheres

In democratic public spheres a wide range of players try to influence political opinion-forming and decision-making. Some attempts to influence are desirable, for example in the form of political discussion, education or deliberation. Also legitimate are for example election advertising or health education campaigns. However, other attempts to influence people can be a problem, in particular if they are non-transparent and concealed. If such attempts are noticed, this can result in the audience feeling a loss of control and limit their self-determined actions.¹⁴⁹

¹⁴⁵ Nguyen-Kim 2020; Rezo ja lol ey 2019.

¹⁴⁶ See Highfield 2017.

¹⁴⁷ See for example <https://www.tagesschau.de/investigativ/report-muenchen/hass-politikerinnen-101.html>.

¹⁴⁸ Penney 2016; Stoycheff et al. 2017.

¹⁴⁹ EC 2015; Pew Research Centre 2014.

Attempts to exert influence in politics have been made since time immemorial in analogue public spheres as well, for example in commentaries or editorials of traditional broadcast and press media or in the form of political election advertising. However, these attempts are usually recognisable as the expression of an opinion and also understood as such by most users. In digital public spheres, though, there is now a new or rather much more comprehensive method that is used to try to exert influence which lacks such transparency, so-called microtargeting. Digital services such as social networks and search engines collect information about their users and analyse this algorithmically with the goal of influencing them as efficiently as possible through individually tailored measures. Microtargeting is even possible if the data subject does not contribute their own data, but information about them is shared by users of the services, for example by inputting their address books or uploading photos, or when so-called tracking tools on websites of third parties generate data and make this available. On the basis of the data collected, informative user profiles and typologies are then created.

The trade in personal usage data has become a prosperous industry. Companies that are largely unknown to the public such as Datalogix and BlueKai, which are both part of the Oracle Group, and Acxiom possess huge data and market power globally. For example, Acxiom alone reportedly possessed data records of 44 million Germans in 2018, which can be purchased by third parties for commercial purposes.¹⁵⁰

In the economic sphere, microtargeting is used for personalised advertising, that is to say advertising individually tailored to groups or individuals, for index-linked and individualised pricing or so-called recommender systems. The latter enable groups or individuals to be addressed in a tailored fashion, for example in the form of personalised content, media offers or products. This personalisation is used productively particularly from a commercial point of view¹⁵¹ because it enables a better service.

In political spheres, however, addressing people directly is clearly opposed.¹⁵² That said, there have been and continue to be data-based and algorithm-controlled attempts to exert influence here as well, for example in the US presidential election campaign of 2016 and in the campaign in the run-up to the Brexit vote. Among others the British company Cambridge Analytica played an important role here;¹⁵³ it had gained access to more than 50 million Facebook accounts worldwide and used these to create personality profiles for targeted election advertising (US elections in 2015) and to influence the Brexit vote (2016). In Germany, too, there is election advertising through digital media, but political attempts to exert influence through individually tailored microtargeting appear to have played hardly any role in previous election campaigns.¹⁵⁴ In the election for the European Parliament in 2019, for example, political advertising was broadcast to specific target groups via Google and Facebook, in particular by the CDU. The actual influence of microtargeting, though, was considered in this connection to be “relatively low”¹⁵⁵. However, the technical requirements for effective microtargeting

150 Sachverständigenrat für Verbraucherfragen (SVRV) (2018).

151 Kozyreva et al., n. d.

152 Kozyreva et al., n. d.

153 Heft et al. 2019.

154 Kurz and Dachwitz 2019.

155 Hegelich and Serrano 2019, p. 7.

are already in place in Germany and Europe as well.¹⁵⁶ Digital platforms and services are now trying increasingly to limit political attempts to exert influence;¹⁵⁷ see also the infobox “Measures taken by the most important platforms in the 2020 US presidential election campaign”.

Measures taken by the most important platforms in the 2020 US presidential election campaign

Facebook, Twitter and YouTube in particular were under close scrutiny in the (primary) election campaign in the run-up to the US presidential elections in November 2020. Following the scandals surrounding Cambridge Analytica and Russian interference in the previous election campaign, many platforms took precautionary measures to reinforce democratic integrity – the appropriateness and success of which were however the subject of contentious debate. The central topics of this debate were Donald Trump’s allegations of election fraud and the growing relevance of domestic disinformation campaigns. The response of the platforms to disinformation and misinformation about COVID-19, the antitrust investigation into them by the legislative bodies and allegations of discrimination against certain political content also played a role.

Twitter had already banned professional and paid-for political election advertising worldwide in the autumn of 2019. Facebook, which generates far more income with (election) advertising, like YouTube introduced an obligation to register for election advertising and examined the content of advertisements on a partly automated basis – the precise criteria for rejecting content are still unknown today, though. At the same time the options for political microtargeting were limited and an open archive of all political advertisements placed was set up. However, it remains unclear which users were presented with these advertisements.

For the moderation of political content, further criteria applied in addition to the applicable community guidelines: for example, Facebook and YouTube announced they would remove content that aimed to dissuade users from voting. Misleading content posted or tweeted by politicians was contextualised on Facebook and in particular Twitter with the help of warning messages and links to fact checks and verifiable information. In addition, notably Twitter took new curation decisions: for example, some tweets by Donald Trump that contained lies about the election result could not be shared by followers. Furthermore, a brake was placed on the reach of viral external media content, for example by prompting users to actually read an article before sharing it.

Besides these arrangements for individual content, measures were also taken to deal with various players. For example, government bodies, politicians and candidates were labelled accordingly. In order to prevent any foreign interference, efforts to identify and remove coordinated networks and campaigns were stepped up. In the weeks before the election, there was an extensive clamp-down on Facebook pages and groups as well as content on YouTube posted by Trump supporters who were prepared to use violence and by users close to the QAnon movement that promotes conspiracy theories.

¹⁵⁶ Hegelich and Serrano 2019; <https://www.stiftung-nv.de/de/publikation/regeln-fuer-faire-digitale-wahlkaempfe>.

¹⁵⁷ EC 2018.

It is difficult to establish scientifically and it is still not clear to what extent such data-based attempts to exert influence are actually successful, given that opinion formation and decision-making is, as already mentioned, determined by many factors (for example conscious and unconscious, rational and non-rational); what's more, these factors also influence each other. Furthermore, it is almost impossible to conduct research on the effectiveness of such attempts because most providers of digital infrastructures and services make hardly any data available for such analyses. However, it seems plausible that attempts to exert influence contribute above all to mobilisation, but have less effect on attitudes and behaviour.¹⁵⁸

Even so, the lack of evidence in this case should in no way be misunderstood as evidence of such data-based influencing not being effective. There is no reason to sound the all-clear. Even if digital attempts to manipulate only have a minor effect in the short term, even small changes could have far-reaching consequences in the long term because they reach many people. This is the case in particular in situations in which a very close election or vote is expected, and in first-past-the-post election systems such as in the USA and in the United Kingdom. In addition, even attempts to manipulate and fears of this happening change public debate. And finally, it is a plausible assumption that the effect of data-based attempts to exert influence will continue to become more pronounced in future due to technological progress and driven by economic competition.

3.4.3. Challenges

Digitalisation can support democratic self-determination significantly by providing people with many opportunities to express themselves politically, to participate and to present their own views of life. At the same time, though, this self-determination is at risk due to a lack of civility in digital communication and data-based attempts to exert influence. In this situation new means of participation and the individual lifelong acquisition of skills in using digital services need to be promoted financially and politically as outlined above. Regulatory and technical measures are necessary to limit the risks. The regulatory measures concern on the one hand the support for civil communication, as explained under 3.2.; on the other hand they should also limit the possibilities for data-based, personalised manipulation. The technical development focuses in particular on transparency, traceability and fairness of algorithmic systems. Lastly, access to the databases of the platform and service providers is also necessary in this connection in order to enable systematic research of the interrelationship between digitalisation and political self-determination.

¹⁵⁸ Baldwin-Philippi 2019; Karpf 2019.

4. Recommended actions

The preceding analysis has shown that the digitalisation of democratic public spheres provides opportunities and at the same time entails significant risks. The following recommended actions should contribute to these opportunities being exploited and the risks being managed adequately. Specifically, the regulatory framework needs to be extended accordingly; the available information and communication technology needs to be shaped in a way that promotes democracy; the development of skills in the digital democratic public sphere needs to be reinforced; and new means of participation need to be developed systematically.

4.1. Regulate the curating practices of digital information and communication platforms

As outlined under 3.1, platform operators decide through curation what the criteria are for prioritising and what forms of content are prioritised, for example where it is displayed (in the “feed”), and what content is banned and deleted. Due to the importance of these platforms for the democratic public sphere which is also outlined under 3.1, their curation criteria have a say in the chances of content prevailing in public debate. The setting and application of criteria should for this reason not be left to the commercial platform operators who have not been democratically legitimised. Instead, at least in the case of platforms with greater power in debate, procedural and substantive requirements which are regulated by law and establish in concrete terms their responsibility as operators of infrastructures relevant to democracy are needed. These requirements should preferably be enshrined in European law in order to maximise their clout and manageability and prevent a fragmentation of rules. The current proceedings for adopting a European Digital Services Act provide an opportunity to extend the approaches for platform regulation contained in the draft of the European Commission.

For this purpose, a procedural framework should be created that goes beyond the requirements of the State Media Treaty and the draft Digital Services Act, as it should also apply to the content created by users and cover the entire process for the creation and revision of curation criteria (not just their application in individual cases). In all curation-related processes, platform operators should be required to involve an independent, pluralistic board which is funded by them and made up of representatives of governmental and civic bodies as well as users. Through its composition and actions, the board should contribute to the adequate representation on the platforms of the full range of topics and positions that are relevant to the public and the political arena. In particular, the board should ensure that no curation criteria are agreed that result in the unjustified unfavourable treatment (discrimination) of certain types of content or positions. This requirement does not preclude well-founded criteria aimed at preventing

misrepresentation, hate speech and online harassment. The board should have wide-ranging rights to request information from and the authority to make decisions that are binding for platform operators. In addition, anyone, even if they are not a user of the respective platform themselves, should have the right to contact the independent board and initiate a review of the curation criteria.

A mechanism should be established that enables users to have individual curation decisions (such as the deletion of or commenting on certain posts) placed under review. The dispute settlement bodies provided for in the draft Digital Services Act, which should be independent and given binding decision-making powers by the platform operators, could be a starting point here.

Finally, the platform operators should, as partially provided for in the draft Digital Services Act, be required to publish information on the design of the platform and the principles of curation in order to create transparency and enable public discussion of this information.

4.2. Strengthen online content from public service broadcasters

Journalistic selection and editing of news remain essential for individual opinion-forming, and journalistic media contribute significantly to ensuring diversity and quality in the presentation of information. This is the case in particular for public service broadcasters. However, in order for them to be able to contribute to the forming of opinions, the information offering needs to be available with a low threshold and also needs to reach young people who are obtaining news and information increasingly online. For this purpose, it is advisable that the aforementioned democratic mission of public service broadcasters to inform is extended and that they are thereby given new opportunities to fulfil their mission in a hybrid media system.

In particular, the prohibition of press-like telemedia services should be lifted. In the upstream three-stage test, which decides on the admissibility of telemedia services from public service broadcasters, the existing telemedia services and the effects on the market of a corresponding public service offering are to be considered anyway. This protects commercial providers adequately against unfair competition.

In order to extend the accessibility and possible uses of telemedia services from public service broadcasters, broadcasters should also be required to publish programmes increasingly under open licences. This applies in particular to educational content such as documentaries, explanatory films and contemporary history programmes.

4.3. Facilitate research on platform databases

The preceding analysis shows that digital information and communication platforms as infrastructures of the democratic public sphere are an important place for the self-presentation and self-examination of an open society. Statements on social change are only well-informed if the discussions that take place on these platforms are included, a trend that is likely to grow. Accordingly, the data processed by the platforms (communication content and usage data) provide an increasingly important basis for the

scientific research of social processes. This data is also needed in order to conduct credible research on the effects of the platforms on democratic debate.

However, many platform operators currently only allow scientists access to data under very restrictive conditions.¹⁵⁹ A legal framework is therefore needed that requires platform operators to make their databases available for research purposes, without violating the legitimate confidentiality interests of the platform operators or third parties (in particular of users). Only those databases that the platform operators already possess anyway are to be made available. A requirement on the part of the platform operators to collect certain data just for research purposes might conflict with principles of data protection law and should therefore be avoided. Initial steps have already been taken in this direction. For example, from 2022 platform operators will be required under the Network Enforcement Act to provide researchers with information on complaints, deletions and the automated recognition of inadmissible content. Under the draft European Digital Services Act, very big platforms will be required to enable access to data for research work on risks posed to democratically constituted societies by platform activities. However, the proposal by the working group goes beyond the issues to which the steps of the draft European law are confined in order to take into account the value of the platform data for research projects on social processes.

For the new access rules that are to be created, a distinction needs to be made between various databases. On the one hand, different levels of confidentiality interests of platform operators or users may be attached to different data. On the other hand, the access rules need to be adapted to the different technical means of access to the various data categories.

If users publish communication content on a platform so that it is generally available, use of the published data for research purposes can often be justified, although this always depends on the specific case.¹⁶⁰ Access to the data might generally be provided technically through the programming interface for the respective platform. Scientists should therefore be granted a fundamental right to access against the platform operators for specific research projects to be specified. It goes without saying that the further data processing and publication of the research results must satisfy the requirements of data protection law and research ethics.

However, the situation with regard to requests to access non-public communication content or usage data is more complex. In order to make and narrow down such access requests in the first place, information on what databases the platforms possess is needed. The platform operators should therefore be required to provide scientists with such information in general form and to provide more specific information upon request. The actual data access would then depend legally on considerations related to the specific case which would by and large not be covered by a generalisation. Technically it might be necessary, depending also on the legal considerations, to develop mechanisms which restrict access to data to the necessary degree and the necessary depth. Furthermore, the data analysis following the data collection might need the involvement of the platform operators. The platform operators should therefore be required

¹⁵⁹ Ausloos, Leerssen, and ten Thije 2020.

¹⁶⁰ Bäcker, Golla, and Hofmann 2018.

to compile and release information needed for analysis. If necessary, particularly in cases of very complex research projects, they should be required to make their own processing resources (in terms of technology and personnel) available for scientific purposes for a reasonable fee.

In order to protect business secrets and personal data effectively, while at the same time not placing data access at the discretion of the platform operators, an independent board to be funded by the platform operators should be created that decides on requests for access. The board's decision-making powers should cover the access obligations of the platform operators as well as protective measures by the scientists requesting access.

The access rules should apply only to research projects that are exclusively for the purpose of scientific knowledge and satisfy scientific standards.¹⁶¹ This means in particular that such research results are published. Access rules for the benefit of commercially-oriented industrial research geared directly towards the manufacture of products for profit should not be created. Accordingly, where access has been granted to raw data for scientific use, the use or transfer of this data for non-scientific purposes, including for market research and advertising purposes, should be excluded. Such exclusion would probably also lead to more acceptance of data access.

Lastly, existing legal requirements for the further processing of research data once it has been collected within the scientific system should be reviewed and revised. Here it is not about a general exemption of scientific research from legal requirements, but about making sure such requirements are adequate for scientific purposes. In particular copyright and data protection laws currently present in some cases large obstacles for the publication of research results and the transfer of raw data to other scientists for the validation of results or for the undertaking of further research projects. These need to be reduced.

4.4. Ensure civility within the discourse

As stated under 3.2, the digitalisation of the democratic public sphere is also bringing about a huge change in the information and in particular in the debating and communication culture. Key functions of democratic information intermediaries ("gatekeepers") such as the traditional mass media are not performed by social digital media. This includes in particular the context and reach-oriented confinement of a debate and the setting of rules of conversation that maintain the civility of communication. The mix of different forms of discourse and the public visibility of comments that under analogue conditions would more likely be received in more small-scale settings can unsettle and deter users as well as encourage undemocratic, disparaging and aggressive statements, but also promote deliberate misinformation and manipulation activities. To date, often even criminal content and formats cannot be prosecuted because anonymous and pseudonymous authors remain almost impossible to identify. Deletions are frequently ineffective because the relevant posts have already been shared, are posted again under a different name or cannot be reliably identified in the mass of content. In addition, the prosecution authorities and courts are overwhelmed by the huge volume of such comments.

¹⁶¹ For these requirements in general, see Caspar 2019.

As already shown under 3.2, hate speech, online harassment and other negative changes in the platform-based public debating culture cause many users to withdraw from the sphere of digital media; this is particularly the case for people who are risk averse or feel particularly threatened by aggression. As a result, there is a danger that the voices of these people are heard less, that their positions are no longer represented in political and social debate and that they are less willing to show civic engagement and in particular to hold offices relevant to society as well as political offices.

In order to limit extreme forms of public debate that are harmful and criminal and ensure effective prosecution in the digital sphere as well, strategies and measures are needed. However, these must not affect the open, occasionally pointed or ironic expression of opinions in order not to undermine the valuable right to freedom of expression protected by law.

For example, non-governmental organisations (NGOs) such as “HateAid” that work on behalf of the victims of digital violence against the brutalisation of public debate should have the right to take group action beyond the Network Enforcement Act so that breaches of law that carry significance beyond an individual case can be prosecuted. The prosecution authorities should use targeted personnel development, training and appropriate technical support to ensure resources, expertise and awareness for effectively punishing criminal acts of digital violence and in digital debate. The planned Central Reporting Office for Criminal Content on the Internet (Zentrale Meldestelle für strafbare Inhalte im Internet) of the BKA is a step in this direction.

In addition, the joining together and cooperation of civic institutions with governmental and private institutions which work against hate speech and for the civility of debate should be actively supported. This can take the form of support and supervision of victims and perpetrators of online harassment and hate speech, the teaching of internet etiquette in schools (see also recommended action 4.6) or targeted information on available support during and after prosecution action.

4.5. Promote the democracy-friendly design of digital technologies and infrastructures

The regulatory measures explained above should strengthen democratic principles in digital public spheres and have to be supplemented and supported by the democracy-friendly design of existing and new digital services – in a manner similar to ethically-sound design as outlined in the statement of the Data Ethics Commission.¹⁶² Such a design should, as already explained above, ensure the transparency of digital platforms and services, the quality of information and the civility of democratic debate as well as the realisation of new means of participation and support the digital self-determination of people.

Many players need to step up to the challenge for this to become reality: scientists, the providers of digital infrastructures and services (for example platforms and public service media), but also NGOs and start-ups. Scientists can develop and provide innovative concepts and technologies for a democracy-friendly design. Here, close cooperation

¹⁶² Data Ethics Commission 2019.

between computer and behavioural scientists is key. Computer scientists develop for example advanced information processing technologies, while social scientists study their effect on individuals and society and the appropriate use of such technologies. Commercial and non-commercial service providers on the other hand have to be aware of and meet their responsibility for the democratic public sphere in their design choices. The independent board recommended under 4.1, which are responsible in the case of digital platforms and services for the implementation of a democracy-friendly, transparent curation of content, should also contribute to this.

As outlined under 3.1, digital information and communication platforms and other digital services often design their usage environment so that the attention of users is kept for as long as possible and can be steered towards targeted advertising content. This steering of attention is achieved with the help of behavioural science methods and techniques. As the preceding analysis shows, this entails a substantial threat to the democratic public sphere, which is why it is recommended that a democracy-friendly design of usage environments is introduced as standard for services. At the same time the usage environment of digital services needs to be designed transparently with regard to the curation criteria used and adjusted so that the autonomy of users is promoted. The evidence-based measures for such a design of the usage environment range from the configuration of default settings, labels and filters, to very visible information concerning the reliability and epistemic quality of sources, to commenting in order to correct or present counterarguments to content that distorts reality¹⁶³. Having said that, the effective implementation of such measures also requires intensive research, which has to involve access to research-relevant databases of the platform and service providers (see 4.3). In addition, the development of democracy-friendly usage environments is closely linked to the recommendations for the development of skills presented under 4.6.

Democracy-friendly design also includes the development and provision of instruments and procedures aimed at supporting users in the extraction and assessment of digital information and communication, as suggested under 3.2. For example, apps could be developed that provide users with an easy-to-understand overview of important arguments and opinions concerning a topic and bring to attention the implementation of regulatory requirements for digital services or privacy-related risks. What matters is that the developed instruments support the self-determination of users by also providing the appropriate context for the reception of information and do not appear to be manipulative.

For the democracy-friendly design of the usage environment, for instruments for the differentiated reception of information and many other digital services, algorithms which are based on the principle of so-called artificial intelligence (AI) are used. In order to ensure a democracy-friendly design of digital infrastructures, algorithms should have in particular two properties: they should be explainable and fair. Being explainable means that important decision-making criteria are easy for users to understand, and is therefore essential for transparency, which is shown to be a key challenge by the preceding analysis. Nevertheless, making the workings of AI algorithms transparent and understandable is a difficult challenge. If such algorithms use the principle of machine learning, it will be almost impossible to reconstruct their workings from the

¹⁶³ Lorenz-Spreen et al. 2020.

outside. In addition, the requirements concerning explainability change depending on the skills of users and the purpose for which they need to understand the algorithms: the information needed by users who would like to know why they have not been granted a loan is not the same as information needed by experts who have to examine whether a software might be discriminating illegally. The academies therefore recommend the funding of research into explainable AI algorithms.

Fairness, the second important democracy-friendly requirement of AI algorithms, in this context means that AI decisions need to be consistent with fundamental democratic values.¹⁶⁴ For example, they must not disadvantage people on the basis of their gender, descent or religion. Such racist discrimination has been found for example in algorithms to detect hate speech.¹⁶⁵ Such distortions occur when insufficient data is used for the training of an AI algorithm. For the democracy-friendly use of AI algorithms, reference training data that mirrors (and as a result implicitly defines) the desired fairness is therefore needed. Initial steps have been taken to algorithmically establish such a degree of fairness; however, the complexity of the problem urgently requires additional research activities, which the academies strongly recommend are funded.

4.6. Strengthen the development of digital and media skills

For the acquisition of knowledge, processing and assessment of information, communication and discussion, political and social participation, informed decisions and responsible action, a broad range of skills is needed. Digital technologies are a key resource for the acquisition of this broad range of skills. At the same time, skills in using such technologies need to be developed and promoted. Such skills, which are often described as “digital skills”, “algorithmic skills”, “media literacy”, “data skills”, “data literacy” or “computational literacy”, cover a wide variety of aspects. For example, media skills today range from the ability to verify sources,¹⁶⁶ to respectful and fact-oriented communication (civility) in digital public spheres, to the secure and responsible handling of one’s own data. In addition to knowledge on the workings of digital services and technologies, sometimes knowledge about the underlying business models of relevant information and communication platforms is important in order to be able to assess one’s own behaviour and its possible consequences. “Data skills” or “data literacy” on the other hand covers not only handling one’s own data, but also knowledge about the collection, processing and interpretation practices of the platforms and services. In this connection not only IT knowledge (for example about the use or development of software and databases) and mathematical knowledge (in particular about statistics and probability theory) are of vital importance, so too are empirical knowledge, relevant context knowledge and as a consequence expertise in the humanities and the social sciences. In turn, “algorithmic skills” cover basic knowledge of the workings of algorithms and data structures and as a consequence also programming skills.

In addition to the acquisition of such digital skills, which vary significantly depending on the individual and their needs, there also needs to be extensive promotion of the abi-

¹⁶⁴ Herzog 2021.

¹⁶⁵ Sap et al. 2019.

¹⁶⁶ How can information in the digital sphere be placed in its proper perspective? What are valid quality criteria and markers?

lity to reflect on the ethical, epistemological and social requirements and consequences of digital technologies. To this end, a range of measures that differ in terms of their effort and the duration of their effect can be taken. Due to the huge importance of digital skills for almost all areas of life, low-threshold services for the development of skills are recommended initially. The aim here is to enable users to shape their own information environment virtually like architects in order to strengthen their autonomy.¹⁶⁷ Here, the development of skills should take place “in action”, either with the usage environment designed in a manner that promotes skills through external aids such as browser add-ons or apps (see 4.5) or with simple rules that can be learned and applied quickly.

Thinking, acting and decision-making in the digital world can be strengthened by a range of in-dividual skills. Among these are for example being able to recognise (1) how algorithm-controlled services (for example Facebook Newsfeed) or recommender systems steer and control attention, contacts and information offerings, (2) how the reliability of information sources and the state of a political discussion can be assessed, (3) how political content is tailored on the basis of individual personality traits or personal preferences and (4) how access to personal data is given unintentionally¹⁶⁸.

Initial research results suggest which of these skills can be strengthened specifically, for example by adding hyperlinks to content which point to other relevant sources and invite the user to read around a subject.¹⁶⁹ Other digital decision-making aids such as plug-ins and pop-ups can repeatedly remind users to take simple, systematic steps to assess information, steps which after a while will become routine for users.¹⁷⁰ Short online games for skills training are also an option.¹⁷¹ Such digital aids should be offered not least by the platform operators – but civil society should not rely on these alone. In addition, the dissemination of information and promotion of skills should also take place with the help of non-digital measures, for example with posters, brochures and broader media campaigns as in the case of the AIDS information campaign. It also needs to be stressed in this connection that the systematic research of skills-promoting intervention in the digital sphere requires targeted support in order to better understand and improve its effectiveness and as a result strengthen democratic debate for the long term.

Beyond these low-threshold services, digital skills should also be developed in traditional educational institutions in pre-school, school, university and beyond. Here the federal, state and local authorities, as well as many private educational and care institutions (such as churches, welfare organisations, parent associations, etc.) have a duty to promote digital skills with appropriate offerings. Concepts already exist particularly for schools,¹⁷² but in many cases it has not been possible to implement them. A particular challenge here lies in the teaching staff often not having received sufficient training themselves. What is also important in this connection is to understand “digital skills” as a topic that bridges many subjects, a topic that should be established on a cross-subject and cross-discipline basis through syllabuses, school curricula and vocational training regulations. In universities, as well as in schools and in vocational training,

167 Kozyreva, Lewandowsky, and Hertwig 2020; Lorenz-Spreen et al. 2020.

168 These skills require basic knowledge in the areas of data protection, privacy and information security.

169 Wineburg and McGrew 2017.

170 For examples see Kozyreva, Lewandowsky, and Hertwig 2020.

171 Roozenbeek and Linden 2019.

172 See for example “Bildung in der digitalen Welt” (Kultusministerkonferenz 2016).

where social partners are involved in shaping the offering, the handling of data in particular should be implemented as a topic that bridges many subjects in addition to media and digital skills. For this purpose, basic knowledge of statistics and probability theory, as well as skills in the acquisition and interpretation of relevant contextual knowledge are needed. For example, especially at university level, relevant expertise in the humanities and the social and behavioural sciences should be integrated into the curricula of STEM disciplines, while it should be compulsory to develop basic technical mathematical and methodological skills in all subjects. In order for there to be greater reflection on the scientific basis and the potential social consequences of scientific and professional practice, compulsory courses in epistemology and ethics (in particular research and data ethics) are recommended.

The acquisition of skills for the digital sphere and for responsible and mature participation in the platform-based democratic public sphere does not end with the completion of a formal education, but should continue as part of lifelong learning throughout an individual's entire life.¹⁷³ Therefore services that enable the acquisition of media and digital skills in adult education should be widely available (for example, in adult education centres, libraries) and with a specific focus on senior citizens (for example, in welfare institutions).¹⁷⁴

4.7. Promote quality and data journalism

Finally, the academies recommend the further development of quality journalism and the targeted promotion of data journalism. High-quality journalism plays a key role for political education and democratic processes, although it has come increasingly under pressure in the course of digitalisation. Measures should therefore be taken in order to assure and raise the quality of journalism and to support existing initiatives.¹⁷⁵ In particular public service media play a prominent role in promoting a critical, constructive journalism and have at the same time a great responsibility.

Also of particular importance in this connection is the promotion of high-quality, data-based journalism that, instead of focusing on individual cases, anecdotes and narratives, analyses extensive empirical data and long-term trends, ideally accompanied by neat visualisations.¹⁷⁶ It is important to stress, however, that data-based journalism alone does not guarantee high quality or objective assessment. Data journalism should in no way replace traditional journalism, but rather complement it. In data journalism, too, quality criteria and distortion factors need to be considered. This concerns specifically established news criteria such as currentness, surprisal value and negativity.¹⁷⁷ In other words, people are intuitively inclined to focus on current, surprising and negative content, whereas long-term, systematic and positive developments are not recognised. For example, in recent decades life expectancy has risen globally, extreme poverty has reduced massively¹⁷⁸ and the general level of violence has fallen.¹⁷⁹ Greater consid-

173 Brödel and Kreimeyer 2004.

174 Gebrande and Friebe 2015.

175 Jarren 2019.

176 Rosling, Rönnlund, and Rosling 2018.

177 Kepplinger 1998.

178 Roser, Ortiz-Ospina, and Ritchie 2013; United Nations 2015.

179 Pinker 2011.

eration of these long-term developments, which were accompanied by increasing democratisation worldwide,¹⁸⁰ may possibly boost the positive self-image of democracies and make them more resistant to and easier to defend against attacks by parties hostile to democracy. The widely-held view that “bad news is good news” will certainly be difficult to eradicate – which is why the targeted promotion of constructive journalism is all the more important.¹⁸¹

4.8. Increase digital participation

Digitalisation not only results in problems for democracy and the public sphere, it also creates numerous opportunities. As stated under 3.3, this concerns in particular new means of social and political participation, which help to improve the public engagement of individuals and civic players. It is not just about issues of communication, but also about the appropriate use of automatically generated data.

In order to strengthen the principle of participation under the conditions of digitalisation permanently, the academies recommend a government-funded initiative to promote digital participation. The aim of the funding initiative would be to support and permanently establish the participation of civil society in a public sphere that is changing rapidly as a result of digitalisation. For this purpose, new forms of participation need to be established by the promotion of journalistic pioneer projects, civic players and corresponding research. Such a funding programme would be an important instrument in order to react effectively and adequately to the challenges presented under 3.3.5. In this connection it is particularly important that the funding is available long term, so that in addition to the research and development of suitable participation concepts and processes, their implementation and establishment would also be assured. Innovative participation approaches should also be promoted in a targeted manner, as established platform operators and service providers are likely to be very attached to their current business and participation models, which might be an obstacle to support from the private sector for democracy-friendly, commercially less attractive formats.

The working group considers such a funding programme to be another key pillar alongside the existing government funding of established newspaper and magazine publishers, which focuses in particular on the digitalisation of existing structures, and the Live Democracy! programme of the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (BMFSFJ), which basically aims to promote democracy, shape diversity and prevent extremism. In addition, the programme suggested here directly serves digital participation in the public sphere in a hybrid media system. The funding programme should promote the two following areas.

The first concerns pioneer journalism, non-profit journalism and alternative platforms in a digital media environment. What is relevant here is the promotion of ideas in order to establish an innovative journalism that is an integral part of civil society, gives greater consideration to the digital means of (data) research, production and distribution and is willing to explore new avenues in participation and in building a relationship with people in their everyday lives. It would be important to include participative approaches to the development of digital media and platforms, such as the concept of “co-creation”,

¹⁸⁰ Marshall and Elzinga-Marshall 2017.

¹⁸¹ Haagerup 2015.

where users and other players are involved throughout the development process from the start. This even goes beyond the promotion of quality journalism recommended under 4.7. Special attention should be paid in this connection to the development of new business, organisational and participation models for journalistic and participation-relevant platforms that have not just a commercial focus. An eye needs to be kept in particular on local and regional journalism, as in the course of digitalisation and with the massive reduction in funding contributed until now by advertisers, more and more local and regional newspapers have been closing. Particularly in this area, there is therefore clearly a considerable need for new news platform concepts with alternative business models. It is important to have an integrative perspective here which does not reduce the challenges to technical problems. An approach that addresses the social and societal problems from the point of view of the people is key. It follows that humanities and social sciences research should be promoted which should be linked to technical developments prompted by it and social and civic projects that promote democracy. The projects should be supported in such a way that the transition from research-based concepts and prototypes to permanent establishment in society is assured.

The second area concerns support for civic players and open forms of digital participation. Many civic bodies which are active in the area of digital participation are faced with considerable financial uncertainties, which have been exacerbated by the COVID-19 crisis. In order to provide greater financial security at a time of extensive change in the democratic public sphere, fixed-term structural funding is needed that would see civic bodies promoted that are dedicated to the sustainable development of infrastructures for new means of participation and corresponding quality assurance – for example in the area of data donation, crowdsourcing, self-help, smart cities, citizen science and open forms of innovation such as platforms for collective intelligence or “City Olympics” (Städteolympiaden). In addition, digital participation projects also need to be promoted, in particular those that involve young people from socio-economically disadvantaged or politically-disengaged backgrounds and focus on the integration of social groups that until now have been largely excluded. It is important that there is no rigid list of topics to be promoted as part of these projects in order to enable and foster the development of new ideas.

Due to the general societal and political relevance of the topic “digital participation”, the funding programme suggested here should have a wide remit and address a range of scientific disciplines and interdisciplinary cooperations, namely activities involving humanities, social sciences and engineering sciences. In order for research-generated ideas, concepts and technologies to become permanently established in society, the programme should be established for a term of at least six years and support projects for longer periods into the realisation and establishment phase. Such a strategy would create major opportunities for democracy and serve as a model of great influence.

5. Contributors

Members of the working group

Prof. Dr. Johannes Buchmann	Department of Computer Science, Technical University of Darmstadt, Co-speaker of the Working Group
Prof. Dr. Jeanette Hofmann	Research Group Politics of Digitalization, WZB Berlin Social Science Center and Alexander von Humboldt Institute for Internet and Society (HIIG), Co-speaker of the Working Group until November 2020
Prof. Dr. Judith Simon	Ethics in Information Technology, Department of Informatics, University of Hamburg, Co-speaker of the Working Group since November 2020
Prof. Dr.-Ing. Reiner Anderl	Data Processing in Construction, Department of Mechanical Engineering, Technical University of Darmstadt
Prof. Dr. Elisabeth André	Chair for Human-Centered Artificial Intelligence, Institute of Computer Science, University of Augsburg
Prof. Dr. Matthias Bäcker	Chair for Public Law and Information Law specialising in Data Protection Law, Faculty of Law, Management and Economics, Department of Law, Johannes Gutenberg University of Mainz
Prof. Dr. Andreas Breiter	Lab "Information Management and Media", Centre for Media, Communication and Information Research (ZeMKI), University of Bremen
Ass.-Prof. Dr. Tobias Dienlin	Assistant Professor of Interactive Communication, Department of Communication, University of Vienna, Austria
Prof. Dr. Thorsten Faas	Center for Political Sociology of Germany, Otto Suhr Institute of Political Science, Freie Universität Berlin
Prof. Dr. Andreas Hepp	Lab "Mediatization and Globalization", Centre for Media, Communication and Information Research (ZeMKI), University of Bremen
Prof. Dr. Ralph Hertwig	Center for Adaptive Rationality, Max Planck Institute for Human Development, Berlin
Prof. Dr. Lisa Herzog	Professorship of Political Philosophy, Centre for Philosophy, Politics and Economics, Department of Ethics, Social and Political Philosophy, University of Groningen, Netherlands
Prof. Dr. Frauke Kreuter	Chair of Statistics and Data Science in Social Sciences and the Humanities (SODA), Department of Statistics, Ludwig-Maximilians-Universität München and Professor at the Joint Program in Survey Methodology, University of Maryland, USA
Prof. Dr. Jörn Lamla	Sociological Theory, Faculty of Social Sciences and Centre for Information System Design (ITeG), University of Kassel
Prof. Dr. Dr. Thomas Lengauer	Research Group Computational Biology, Max Planck Institute for Informatics, Saarbrücken
Prof. Dr. Martina Löw	Sociology of Planning and Architecture, Institute of Sociology, Technische Universität Berlin
Prof. Dr. Barbara Pfetsch	Division Communication Theory and Media Effects, Institute for Media and Communication Studies, Freie Universität Berlin

Prof. Dr. Indra Spiecker gen. Döhmnn, LL. M. (Georgetown University)	Chair in Public Law, Information Law, Environmental Law, Legal Theory, Data Protection Research Institute, Institute for Public Law, Johann Wolfgang-Goethe University, Frankfurt
Prof. Dr. Michael Zürn	Research Unit Global Governance, WZB Berlin Social Science Center and Professor of Transnational Relations, Foreign and Security Policy, Otto Suhr Institute of Political Science, Freie Universität Berlin

Research Assistants

Dr. Jens Geisse	Technical University of Darmstadt
Joschua Helmer	WZB Berlin Social Science Center
Dr. Philipp Lorenz-Spreen	Max Planck Institute for Human Development, Berlin
Dr. Henning Steinicke	Department of Science-Policy-Society, National Academy of Sciences Leopoldina
Dr. Elke Witt	Department of Science-Policy-Society, National Academy of Sciences Leopoldina

Reviewers

Prof. Dr. Mark Eisenegger	Department of Public Sphere and Society, University of Zurich, Switzerland
Jun.-Prof. Dr. Malte Elson	Department of Psychology of Human Technology Interaction, Ruhr University Bochum
Prof. Dr. Iryna Gurevych	Computer Science Department, Technical University Darmstadt
PD Dr. Jessica Heesen	Research Focus Media Ethics and Information Technology, Eberhard Karls University of Tübingen
Prof. Dr. Claudia Ritzl	Chair for Political Theory and History of Political Ideas, University Trier
Prof. Dr. Wolfgang Schulz	Hans-Bredow-Institut for Media Research (HBI) and Chair for Media Law and Public Law including Theoretical Foundations, Universität Hamburg

Andreas Breiter is member of the ZDF Television Council (ZDF-Fernsehrat).

Thorsten Faas is involved in the „Measuring Privacy Across Cultural, Political and Expressive Contexts“ that is funded by Facebook. He is also a member in the „State Council for Digital Development and Culture“ („Landesrat für digitale Entwicklung und Kultur“), which advises the Minister President of Rhineland-Palatinate. He further co-hosts the Phoenix-Podcasts „unter3“.

Jeanette Hofmann is Co-Director at the HIIG, which is funded annually with 1.5 million Euros by Google from 2011 until 2022. She is also a member of a Facebook discussion board.

Frauke Kreuter is Co-Director of the Social Data Science Center at the University of Maryland, which is funded by Facebook, among others. She leads the UMD Global COVID-19 Trends and Impact Survey (CTIS), organised in partnership with Facebook and she advised Facebook between 2018–2020 on Data Privacy.

The academies would like to thank Prof. Dr. Dirk Helbing, ETH Zurich for his invaluable contribution to the preparation of this statement.

6. References

- Adamic, Lada A., and Natalie Glance. 2005. "The political blogosphere and the 2004 U.S. election: Divided they blog". In: *Proceedings of the 3rd international workshop on link discovery* (pp. 36–43). New York, New York: Association for Computing Machinery. <https://doi.org/10.1145/1134271.1134277>.
- Aiello, Luca Maria, Alain Barrat, Rossano Schifanella, Ciro Cattuto, Benjamin Markines, and Filippo Menczer. 2012. "Friendship prediction and homophily in social media". *ACM Transactions on the Web* 6(2). <https://doi.org/10.1145/2180861.2180866>.
- Allcott, Hunt, and Matthew Gentzkow. 2017. "Social media and fake news in the 2016 election". *Journal of Economic Perspectives* 31(2): 211–236. <https://doi.org/10.1257/jep.31.2.211>.
- Amadeu Antonio Stiftung. 2020. "Alternative Wirklichkeiten: Monitoring rechts-alternativer Medienstrategien". Berlin: Amadeu Antonio Stiftung. https://www.amadeu-antonio-stiftung.de/wp-content/uploads/2020/01/Monitoring_2020_web.pdf.
- Ananny, Mike, and Kate Crawford. 2018. "Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability". *New Media & Society* 20(3): 973–989. <https://doi.org/10.1177/1461444816676645>.
- Andrejevic, Mark. 2011. "The work that affective economics does". *Cultural Studies* 25(4–5): 604–620. <https://doi.org/10.1080/09502386.2011.600551>.
- Ausloos, Jef, Paddy Leerssen, and Pim ten Thije. 2020. "Operationalizing research access in platform governance: What to learn from other industries?" Berlin: AlgorithmWatch.
- Baack, Stefan. 2015. "Datafication and empowerment: How the open data movement re-articulates notions of democracy, participation, and journalism". *Big Data & Society* 2(2): 2053951715594634. <https://doi.org/10.1177/2053951715594634>.
- Bäcker, Matthias, Sebastian J. Golla, and Henning Hofmann. 2018. "Connecting the dots: Sozialwissenschaftliche Forschung in Sozialen Online-Medien im Lichte von DS-GVO und BDSG-neu". *Datenschutz und Datensicherheit* 42(2), 89–100.
- Bakshy, Eytan, Solomon Messing, and Lada A. Adamic. 2015. "Exposure to ideologically diverse news and opinion on Facebook". *Science* 348(6239): 1130–1132. <https://doi.org/10.1126/science.aaa1160>.
- Baldwin-Philippi, Jessica. 2019. "Data campaigning: Between empirics and assumptions". *Internet Policy Review* 8(4). <https://policyreview.info/articles/analysis/data-campaigning-between-empirics-and-assumptions>.
- Baumann, Fabian, Philipp Lorenz-Spreen, Igor M. Sokolov, and Michele Starnini. 2020. "Modeling echo chambers and polarization dynamics in social networks". *Physical Review Letters* 124(4): 048301. <https://doi.org/10.1103/PhysRevLett.124.048301>.
- Baym, Nancy K., and Danah Boyd. 2012. "Socially mediated publicness: An Introduction". *Journal of Broadcasting & Electronic Media* 56(3): 320–329. <https://doi.org/10.1080/08838151.2012.705200>.
- Beam, Michael A., Myiah J. Hutchens, and Jay D. Hmielowski. 2018. "Facebook news and (de)polarization: Reinforcing spirals in the 2016 US election". *Information, Communication & Society* 21(7): 940–958. <https://doi.org/10.1080/1369118X.2018.1444783>.
- Bennett, W. Lance, and Alexandra Segerberg. 2013. "The logic of connective action: Digital media and the personalization of contentious politics." Cambridge, United Kingdom: Oxford University Press.
- Bolin, Göran, and Julia Velkova. 2020. "Audience-metric continuity?: Approaching the meaning of measurement in the digital everyday". *Media, Culture & Society* 42(7–8): 1193–1209. <https://doi.org/10.1177/0163443720907017>.
- Brady, William J., Ana P. Gantman, and Jay J. van Bavel. 2020. "Attentional capture helps explain why moral and emotional content go viral". *Journal of Experimental Psychology – General* 149(4): 746–756. <https://doi.org/10.1037/xge0000673>.
- Brennen, J. Scott, Felix Simon, Philip N. Howard, and Rasmus Kleis Nielsen. 2020. "Types, sources, and claims of COVID-19 misinformation". 7 April. Oxford, United Kingdom: Reuters Institute for the Study of Journalism. <https://reutersinstitute.politics.ox.ac.uk/types-sources-and-claims-covid-19-misinformation>.
- Brödel, Rainer, and Julia Kreimeyer (eds.). 2004. "Lebensbegleitendes Lernen als Kompetenzentwicklung: Analysen, Konzeptionen, Handlungsfelder (1st ed.)". Bielefeld: Bertelsmann.
- Bruns, Axel. 2008. "Blogs, Wikipedia, second life, and beyond: From production to produsage". New York, New York: Peter Lang.

- Bundesgesetzblatt. 2021. *Gesetz zur Bekämpfung des Rechtsextremismus und der Hasskriminalität vom 30. März 2021*, Bundesgesetzblatt 2021 I S. 441.
- Burgess, Jean, and Joshua Green. 2018. *YouTube: Online video and participatory culture*. Cambridge, United Kingdom: Polity Press.
- Bursztyn, Victor S., and Larry Birnbaum. 2019. "Thousands of small, constant rallies: A large-scale analysis of partisan WhatsApp groups". In: *Proceedings of the 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (pp. 484–488). New York, New York: Association for Computing Machinery. <https://doi.org/10.1145/3341161.3342905>.
- Cammaerts, Bart, Alice Mattoni, and Patrick McCurdy. 2013. *Mediation and protest movements*. Chicago, Illinois: Intellect.
- Castells, Manuel. 1996. *The rise of the network society* [The information age: Economy, society and culture, Vol. I]. Oxford, United Kingdom: Blackwell.
- Castells, Manuel. 2012. *Networks of outrage and hope: Social movements in the internet age*. Cambridge, United Kingdom: Polity Press.
- Casteltrione, Isidoropaolo. 2015. "The Internet, social networking web sites and political participation research: Assumptions and contradictory evidence". *First Monday* 20(3). <https://doi.org/10.5210/fm.v20i3.5462>.
- Cha, Meeyoung, Hamed Haddadi, Fabricio Benevenuto, and Krishna P. Gummadi. 2010. "Measuring user influence in Twitter: The million follower fallacy". In: *Proceedings of international AAAI Conference on Weblogs and Social*. Menlo Park, California: Association for the Advancement of Artificial Intelligence.
- Cinelli, Matteo, Gianmarco de Francisci Morales, Alessandro Galeazzi, Walter Quattrociocchi, and Michele Starnini. 2021. "The echo chamber effect on social media". In: *Proceedings of the National Academy of Sciences* 118(9): e2023301118. <https://doi.org/10.1073/pnas.2023301118>.
- Cornils, Matthias. 2017. "Entterritorialisierung im Kommunikationsrecht". *Veröffentlichungen der Vereinigung der deutschen Staatsrechtslehrer* 76: 391–442.
- Cota, Wesley, Silvio C. Ferreira, Romualdo Pastor-Satorras, and Michele Starnini. 2019. "Quantifying echo chamber effects in information spreading over political communication networks". *EPJ Data Science* 8(1): 35. <https://doi.org/10.1140/epjds/s13688-019-0213-9>.
- Couldry, Nick, and Ulises A. Mejias. 2019. *The costs of connection: How data is colonizing human life and appropriating it for capitalism*. Stanford, California: Stanford University Press.
- Dahlgren, Peter. 2009. *Media and political engagement: Citizens, communication, and democracy*. Cambridge, United Kingdom: Oxford University Press.
- Data Ethics Commission 2019. *Gutachten der Datenethikkommission*. Berlin: Datenethikkommission der Bundesregierung. <https://www.bmi.bund.de/SharedDocs/downloads/DE/publikationen/themen/it-digitalpolitik/gutachten-datenethikkommission.html>
- De Wilde, Peter, Ruud Koopmans, Wolfgang Merkel, Oliver Strijbis, and Michael Zürn (eds.). 2019. *The struggle over borders: Cosmopolitanism and communitarianism*. Cambridge, United Kingdom: Cambridge University Press.
- Deutscher Bundestag. 2020a. *Entwurf eines Gesetzes zur Änderung des Netzwerkdurchsetzungsgesetzes vom 27. April 2020*. Bundestags-Drucksache 19/18792.
- Deutscher Bundestag. 2020b. *Beschlussempfehlung und Bericht des Ausschusses für Recht und Verbraucherschutz zu dem Entwurf eines Gesetzes zur Änderung des Netzwerkdurchsetzungsgesetzes vom 5. Mai 2021*, Bundestags-Drucksache 19/29392.
- Deuze, Mark. 2008. "The changing context of news work: Liquid journalism for a monitorial citizenship". *International Journal of Communication* 2: 848–865.
- Die Medienanstalten. 2019. *Intermediäre und Meinungsbildung: Medien-Gewichtungs-Studie 2019-II*.
- Dijck, José van, Thomas Poell, and Martijn de Waal. 2018. *The platform society*. Oxford, Oxford University Press.
- Dolata, Ulrich. 2015. "Volatile Monopole: Konzentration, Konkurrenz und Innovationsstrategien der Internetkonzerne". *Berliner Journal für Soziologie* 24(4): 505–529. <https://doi.org/10.1007/s11609-014-0261-8>.
- Dolata, Ulrich. 2019. "Plattform-Regulierung: Koordination von Märkten und Kuratierung von Sozialität im Internet". *Berliner Journal für Soziologie* 29(3-4): 179–206. <https://doi.org/10.1007/s11609-020-00403-9>.
- Dubois, Elizabeth, and Grant Blank. 2018. "The echo chamber is overstated: The moderating effect of political interest and diverse media". *Information, Communication & Society* 21(5): 729–745. <https://doi.org/10.1080/1369118X.2018.1428656>.
- Duggan, Maeve. 2017. *Pew Research Center, Online Harassment 2017*. <https://www.pewresearch.org/internet/2017/07/11/online-harassment-2017/>.
- Dunbar-Hester, Christina. 2019. *Hacking diversity: The politics of inclusion in open technology cultures*. Princeton, New Jersey: Princeton University Press.
- EC. 2015. "Special Eurobarometer 431 [Data Protection]". https://data.europa.eu/data/datasets/s2075_83_1_431_eng?locale=en
- EC. 2018. "Code of practice on disinformation". Text. Shaping Europe's Digital Future - European Commission. 26 September 2018. <https://ec.europa.eu/digital-single-market/en/news/code-practice-disinformation>.

- EC. 2020. *Proposal for a Regulation of the European Parliament and of the Council on a Single Market for Digital Services (Digital Services Act) and amending Directive 2000/31/EC from 15 December 2020*.
- ECJ. 2014. *Judgement of the Court (Grand Chamber) from 13 May 2014, Google Spain SL and Google Inc. against Agencia Española de Protección de Datos (AEPD) and Mario Costeja González. Vorabentscheidungsersuchen der Audiencia Nacional*.
- ECJ. 2018. *Urteil vom 5. Juni 2018, Rechtssache C-210/16 – Wirtschaftskademie Schleswig-Holstein*.
- Evangelista, Rafael, and Fernanda Bruno. 2019. "WhatsApp and political instability in Brazil: Targeted messages and political radicalisation". *Internet Policy Review* 8(4). 1–23. <https://doi.org/10.14763/2019.4.1434>.
- Ferrara, Emilio. 2012. "A large-scale community structure analysis in Facebook". *EPJ Data Science* 1(1): 9. <https://doi.org/10.1140/epjds9>.
- Gebrande, Johanna, and Jens Friebe. 2015. "Grundkompetenzen, Bildungsverhalten und Lernen im höheren Lebensalter: Ergebnisse der Studie 'Competencies in later life' (CiLL)". *Zeitschrift für Pädagogik* 61(2): 192–204.
- Geschke, Daniel, Anja Klaffen, Matthias Quent, and Christoph Richter. 2019. *Hass im Netz: Der schleichende Angriff auf unsere Demokratie*. Jena: Institut für Demokratie und Zivilgesellschaft.
- Grinberg, Nir, Kenneth Joseph, Lisa Friedland, Briony Swire-Thompson, and David Lazer. 2019. "Fake news on Twitter during the 2016 U.S. presidential election". *Science* 363(6425): 374–378. <https://doi.org/10.1126/science.aau2706>.
- Gupta, Pankaj, Ashish Goel, Jimmy Lin, Aneesh Sharma, Dong Wang, and Reza Zadeh. 2013. "WTF: The who to follow service at Twitter". In: *Proceedings of the 22nd International Conference on World Wide Web* (pp. 505–514). Rio de Janeiro, Brazil: Association for Computational Machinery. <https://doi.org/10.1145/2488388.2488433>.
- Haagerup, Ulrik. 2015. *Constructive news: Warum 'bad news' die Medien zerstören und wie Journalisten mit einem völlig neuen Ansatz wieder Menschen berühren*. Salzburg, Austria: Oberauer.
- Haller, André, and Kristoffer Holt. 2019. "Paradoxical populism: how PEGIDA relates to mainstream and alternative media". *Information, Communication & Society* 22(12): 1665–1680. <https://doi.org/10.1080/1369118X.2018.1449882>.
- Hamilton, John Maxwell, and Heidi J. S. Tworek. 2017. "The natural history of the news: An epigenetic study". *Journalism – Theory, Practice & Criticism* 18(4): 391–407. <https://doi.org/10.1177/1464884915625630>.
- Heft, Annett, Eva Mayerhöffer, Susanne Reinhardt, and Curd Knüpfer. 2019. "Beyond Breitbart: Comparing right-wing digital news infrastructures in six western democracies". *Policy & Internet* [August]. <https://doi.org/10.1002/poi3.219>.
- Hegelich, Simon, and Juan Carlos Medina Serrano. 2019. "Microtargeting in Deutschland bei der Europawahl 2019". Düsseldorf: Landesanstalt für Medien NRW. https://www.blm.de/files/pdf2/studie_microtargeting_deutschlandeuropawahl2019_hegelich-1.pdf.
- Helsper, Ellen. 2021. *The digital disconnect: The social causes and consequences of digital inequalities*. London, United Kingdom: SAGE Publications.
- Hepp, Andreas. 2020. *Deep mediatization: Key ideas in media and cultural studies*. London, United Kingdom: Routledge.
- Hepp, Andreas, and Wiebke Loosen. 2019. "Pioneer Journalism: Conceptualizing the Role of Pioneer Journalists and Pioneer Communities in the Organizational Re-Figuration of Journalism". *Journalism* 22(3): 577–595. <https://doi.org/10.1177/1464884919829277>.
- Hepp, Andreas, and Michaela Pfadenhauer. 2014. "Mediatized Participation?". In: Friedrich Krotz, Cathrin Despotović, Merle-Marie Kruse (eds.), *Die Mediatisierung sozialer Welten* (pp. 235–262). Wiesbaden: Springer.
- Herzog, Lisa. 2021 (Forthcoming). "Algorithmic bias and access to opportunities". *Oxford Handbook of Digital Ethics*, ed. Carissa Veliz. Oxford: Oxford University Press.
- Highfield, Tim. 2017. *Social media and everyday politics*. John Wiley & Sons, 2017.
- Hilbert, Martin, and Priscila Lopez. 2011. "The world's technological capacity to store, communicate, and compute information". *Science* 332(6025): 60–65. <https://doi.org/10.1126/science.1200970>.
- Hills, Thomas T. 2019. "The dark side of information proliferation". *Perspectives on Psychological Science* 14(3): 323–330. <https://doi.org/10.1177/1745691618803647>.
- Hofmann, Jeanette. 2019. "Mediated democracy: Linking digital technology to political agency". *Internet Policy Review* 8(2): 1–18. <https://doi.org/10.14763/2019.2.1416>.
- Hölig, Sascha, Uwe Hasebrink, and Julia Behre. 2020. "Reuters Institute Digital News Report 2020: Ergebnisse für Deutschland". *Arbeitspapiere des Hans-Bredow-Instituts – Projektergebnisse* 50. <https://doi.org/10.21241/SSOAR.71725>.
- Hösl, Maximilian. 2019. "Semantics of the internet: A political history". *Internet Histories* 3(3–4): 275–292. <https://doi.org/10.1080/24701475.2019.1656921>.
- Ingold, Albert. 2017. "Digitalisierung Demokratischer Öffentlichkeiten". *Der Staat* 56(4): 491–533. <https://doi.org/10.3790/staa.56.4.491>.

- Jarren, Otfried. 2019. "Rückhalt für den Journalismus: Wie das Bewusstsein der Öffentlichkeit für journalistische Leistung im digitalen Zeitalter gestärkt werden könnte. Ein Diskussionsbeitrag". Biel, Schweiz: Eidgenössische Medienkommission. https://www.emek.admin.ch/inhalte/D_Rueckhalt_Journalismus_final_2019.pdf.
- Jørgensen, Rikke Frank. 2019. "Introduction". In: Rikke Frank Jørgensen (ed.), *Human rights in the age of platforms* (pp. XVII–XLV). Cambridge, Massachusetts: The MIT Press.
- Karanasios, Stan, Dhavalkumar Thakker, Lydia Lau, David Allen, Vania Dimitrova, and Alistair Norman. 2013. "Making sense of digital traces: An activity theory driven ontological ap-proach". *Journal of the American Society for Information Science and Technology* 64(12): 2452–2467. <https://doi.org/10.1002/asi.22935>.
- Karpf, David. 2019. "On digital disinformation and democratic myths". *MediaWell* [Blog]. <https://doi.org/10.35650/MD.2012.d.2019>.
- Kaufman, Raphael Lopez, Jegar Pitchforth, and Lukas Vermeer. 2017. "Democratizing online controlled experiments at Booking.com". *arXiv:1710.08217*. <http://arxiv.org/abs/1710.08217>.
- Keiller, Scott, and Martin Charter. 2014. "Grassroots innovation and the circular economy: A global survey of repair cafés and hackerspaces". <https://cfsd.org.uk/site-pdfs/circular-economy-and-grassroots-innovation/Survey-of-Repair-Cafes-and-Hackerspaces.pdf>.
- Kepplinger, Hans Mathias. 1998. "Der Nachrichtenwert der Nachrichtenfaktoren". In: Christina Holtz-Bacha, Helmut Scherer, and Norbert Waldmann (eds.), *Wie die Medien die Welt erschaffen und wie die Menschen darin leben: Für Winfried Schulz* (pp. 19–38). Wiesbaden: VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-322-90440-9_3.
- Klinger, Ulrike, and Jakob Svensson. 2015. "The emergence of network media logic in political communication: A theoretical approach". *New Media & Society* 17(8): 1241–1257. <https://doi.org/10.1177/1461444814522952>.
- Klonick, Kate. 2019. "The Facebook oversight board: Creating an independent institution to adjudicate online free expression". *The Yale Law Journal* 129: 2418–2499.
- Kolleck, Alma. 2017. "Politische Diskurse online: Einflussfaktoren auf die Qualität der kollektiven Meinungsbildung in internetgestützten Beteiligungsverfahren". Baden-Baden: Nomos.
- Kozyreva, Anastasia, Stephan Lewandowsky, and Ralph Hertwig. 2020. "Citizens versus the internet: Confronting digital challenges with cognitive tools". *Psychological Science in the Public Interest* 21(3): 103–156. <https://doi.org/10.1177/1529100620946707>.
- Kozyreva, Anastasia, Philipp Lorenz-Spreen, Ralph Hertwig, Stephan Lewandowsky, and Stefan Herzog. n.d. "Public attitudes towards algorithmic personalization and use of personal data online: Evidence from Germany, Great Britain, and the US". <https://doi.org/10.31234/osf.io/3q4mg>.
- Kubitschko, Sebastian, and Sigrid Kannengießer. 2017. "Acting on media: Influencing, shaping and (re)configuring the fabric of everyday life". *Media and Communication* 5(3): 1–4. <https://doi.org/10.17645/mac.v5i3.1165>.
- Kultusministerkonferenz. 2016. "Bildung in der digitalen Welt – Strategie der Kultusministerkonferenz". *Beschluss der Kultusministerkonferenz vom 08.12.2016 in der Fassung vom 07.12.2017*. Berlin: Kultusministerkonferenz. https://www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2016/2016_12_08-Bildung-in-der-digitalen-Welt.pdf.
- Kurz, Constanze, and Ingo Dachwitz. 2019. "Microtargeting und Manipulation: Von Cambridge Analytica zur Europawahl". *Digitale Desinformation*. Bonn: Bundeszentrale für politische Bildung. <https://www.bpb.de/gesellschaft/digitales/digitale-desinformation/290522/microtargeting-und-manipulation-von-cambridge-analytica-zur-europawahl>.
- Ladeur, Karl-Heinz, and Tobias Gostomzyk. 2017. "Das Netzwerkdurchsetzungsgesetz und die Logik der Meinungsfreiheit". *Kommunikation & Recht* (6): 390–394.
- Lamla, Jörn. 2019. "Selbstbestimmung und Verbraucherschutz in der Datenökonomie". *Aus Politik und Zeitgeschichte* 24–26: 49–54.
- Lerman, Kristina, Xiaoran Yan, and Xin-Zeng Wu. 2016. "The 'majority illusion' in social networks". *PLOS One* 11(2): e0147617. <https://doi.org/10.1371/journal.pone.0147617>.
- Leviston, Zoe, Iain Walker, and Sarah Morwinski. 2013. "Your opinion on climate change might not be as common as you think". *Nature Climate Change* 3(4): 334–337. <https://doi.org/10.1038/nclimate1743>.
- Levy, Ro'ee. 2021. "Social media, news consumption, and polarization: Evidence from a field experiment". *American Economic Review* 111(3): 831–870. <https://doi.org/10.1257/aer.20191777>.
- Lewandowsky, Stephan, Laura Smillie, David Garcia, Ralph Hertwig, Jim Weatherall, Stefanie Egidy, Ronald E. Robertson, Cailin O'Connor, Anastasia Kozyreva, Philipp Lorenz-Spreen, Yannic Blaschke, and Mark Leiser. 2020. *Technology and Democracy: Understanding the Influence of Online Technologies on Political Behaviour and Decision Making*. LU: Publications Office. <https://data.europa.eu/doi/10.2760/709177>.
- Lewandowsky, Stephan, Michael Jetter, and Ullrich K. H. Ecker. 2020. "Using the president's tweets to understand political diversion in the age of social media". *Nature Communications* 11(1): 5764. <https://doi.org/10.1038/s41467-020-19644-6>.

- Livingstone, Sonia, and Ellen Helsper. 2007. "Gradations in digital inclusion: Children, young people and the digital divide". *New Media & Society* 9(4): 671–696. <https://doi.org/10.1177/14614448070335>.
- Loomba, Sahil, Alexandre de Figueiredo, Simon J. Piatek, Kristen de Graaf, and Heidi J. Larson. 2021. "Measuring the impact of COVID-19 vaccine misinformation on vaccination intent in the UK and USA". *Nature Human Behaviour* 5: 337–348. <https://doi.org/10.1038/s41562-021-01056-1>.
- Loosen, Wiebke, and Marco Dohle. 2014. "*Journalismus und (sein) Publikum: Schnittstellen zwischen Journalismusforschung und Rezeptions- und Wirkungsforschung*". Wiesbaden: Springer.
- Lorenz-Spreen, Philipp, Stephan Lewandowsky, Cass R. Sunstein, and Ralph Hertwig. 2020. "How behavioural sciences can promote truth, autonomy and democratic discourse online". *Nature Human Behaviour* 4: 1102–1109. <https://doi.org/10.1038/s41562-020-0889-7>.
- Lorenz-Spreen, Philipp, Bjarke Mørch Mønsted, Philipp Hövel, and Sune Lehmann. 2019. "Accelerating dynamics of collective attention". *Nature Communications* 10(1): 1–9. <https://doi.org/10.1038/s41467-019-09311-w>.
- Margetts, Helen. 2018. "Rethinking democracy with social media". *Political Quarterly* 90(S1): 107–123.
- Marshall, Monty G., and Gabrielle Elzinga-Marshall. 2017. "*Global report 2017: Conflict, governance and state fragility*". Vienna, Virginia: Center for Systemic Peace.
- Mattoni, Alice, and Emiliano Treré. 2014. "Media practices, mediation processes, and mediatization in the study of social movements". *Communication Theory* 24(3): 252–271. <https://doi.org/10.1111/comt.12038>.
- Mau, Steffen. 2019. "*The metric society: On the quantification of the social*". Cambridge, United Kingdom: Polity Press.
- Mazzucato, Mariana. 2011. "*The entrepreneurial state*". London, United Kingdom: Demos.
- Milan, Stefania. 2017. "Data activism as the new frontier of media activism". In: Viktor Pickard, and Goubin Yang (eds.), *Media activism in the digital age*, (151–163). New York, New York: Routledge.
- Milan, Stefania, Emiliano Treré, and Silvia Masiero (eds.). 2021. "*COVID-19 from the margins: Pandemic invisibilities, policies and resistance in the datafied society*". Amsterdam, Netherlands: Institute of Network Cultures. <https://networkcultures.org/blog/publication/covid-19-from-the-margins-pandemic-invisibilities-policies-and-resistance-in-the-datafied-society/>.
- Mocanu, Delia, Luca Rossi, Qian Zhang, Marton Karsai, and Walter Quattrociochi. 2015. "Collective attention in the age of (mis)information". *Computers in Human Behavior* 51(B): 1198–1204. <https://doi.org/10.1016/j.chb.2015.01.024>.
- Mondal, Mainack, Leandro Araújo Silva, and Fabrício Benevenuto. 2017. "A measurement study of hate speech in social media". In: *Proceedings of the 28th ACM Conference on Hypertext and Social Media* (pp. 85–94). Prague, Czech Republic: Association for Computing Machinery. <https://doi.org/10.1145/3078714.3078723>.
- Mosleh, Mohsen, Cameron Martel, Dean Eckles, and David G. Rand. 2021. "Shared partisanship dramatically increases social tie formation in a Twitter field experiment". *Proceedings of the National Academy of Sciences* 118(7): e2022761118. <https://doi.org/10.1073/pnas.2022761118>.
- Moura, Mauricio, and Melissa R. Michelson. 2017. "WhatsApp in Brazil: Mobilising voters through door-to-door and personal messages". *Internet Policy Review* 6(4): 1–18. <https://doi.org/10.14763/2017.4.775>.
- Müller, Karsten, and Carlo Schwarz. 2020. "Fanning the flames of hate: Social media and hate crime". *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3082972>.
- Munger, Kevin. 2020. "All the news that's fit to click: The economics of clickbait media". *Political Communication* 37(3): 376–397. <https://doi.org/10.1080/10584609.2019.1687626>.
- Nadim, Marjan, and Audun Fladmoe. 2019. "Silencing women?: Gender and online harassment". *Social Science Computer Review* 39(2): 245–258. <https://doi.org/10.1177/0894439319865518>.
- Neidhardt, Friedhelm. 1994. "*Öffentlichkeit, öffentliche Meinung, soziale Bewegungen*". Opladen: Westdeutscher Verlag.
- Neuberger, Christoph. 2020. "Funktionale und defekte Öffentlichkeit in der Demokratie: Analyse und Anwendung am Beispiel der Schweiz [Wissenschaftliche Studie im Auftrag des Bundesamtes für Kommunikation]".
- Nguyen-Kim, Mai Thi. 2020. "*Corona geht gerade erst los*". <https://www.youtube.com/watch?v=3zognXgK8Do&t=339s>.
- Nida-Rümelin, Julian, Niina Zuber, and Timo Greger. 2019. "Digitalisierung und Demokratie: Ein neues Kapitel in der Geschichte?" *AVISO – Magazin für Kunst und Wissenschaft in Bayern* 19(3): 16–19.
- Nielsen, Rasmus Kleis, and Sarah Anne Ganter. 2018. "Dealing with digital intermediaries: A case study of the relations between publishers and platforms". *New Media & Society* 20(4): 1600–1617. <https://doi.org/10.1177/1461444817701318>.
- Nymo, Ole, and Wolfgang M. Schmitt. 2021. "*Influencer: Die Ideologie der Werbekörper*". Berlin: Suhrkamp.
- Obermayer, Bastian, Frederik Obermaier, Vanessa Wormer, and Wolfgang Jaschensky. 2016. "*Das sind die Panama Papers*". Newspaper article, 2016.

- Paal, Boris P., and Aron Heidtke. 2020. "Vielfaltssichernde Regulierung der Medienintermediäre nach den Vorschriften des Medienstaatsvertrags der Länder". *Zeitschrift für Urheber- und Medienrecht* 64(3): 230–241.
- Pasquale, Frank. 2015. *The black box society: the secret algorithms that control money and information*. Cambridge, Massachusetts: Harvard University Press.
- Penney, Jonathon W. 2016. "Chilling effects: Online surveillance and Wikipedia use". *Berkeley Technology Law Journal* 31: 117.
- Peters, Hans Peter. 1994. "Wissenschaftliche Experten in der öffentlichen Kommunikation über Technik, Umwelt und Risiken". In: Friedhelm Neidhardt (ed.), *Öffentlichkeit, öffentliche Meinung, soziale Bewegung* (pp. 162–190). Opladen: Westdeutscher Verlag.
- Pew Research Centre. 2014. "Public perceptions of privacy and security in the post-Snowden era". <https://www.pewinternet.org/2014/11/12/public-privacy-perceptions/>.
- Pfetsch, Barbara. 2020. "Democracy and digital dissonance: The co-occurrence of the transformation of political culture and communication infrastructure". *Central European Journal of Communication* 13(1): 96–110. [https://doi.org/10.19195/1899-5101.13.1\(25\).7](https://doi.org/10.19195/1899-5101.13.1(25).7).
- Pinker, Steven. 2011. *The better angels of our nature: Why violence has declined*. New York, New York: Viking.
- Plantin, Jean-Christophe, Carl Lagoze, Paul N Edwards, and Christian Sandvig. 2018. "Infrastructure studies meet platform studies in the age of Google and Facebook". *New Media & Society* 20(1): 293–310. <https://doi.org/10.1177/1461444816661553>.
- Rashidian, Nushin, Georgios Tsiveriotis, Peter D. Brown, Emily J. Bell, and Abigail Hartstone. 2019. "Platforms and publishers: The end of an era". *Columbia Journalism Review*, 1–63. <https://doi.org/10.7916/D8-SC1S-2J58>.
- Rau, Jan Philipp, and Sebastian Stier. 2019. "Die Echo-kammer-Hypothese: Fragmentierung der Öffentlichkeit und politische Polarisierung durch digitale Medien?" *Zeitschrift für Vergleichende Politikwissenschaft* 13: 399–417. <https://doi.org/10.1007/s12286-019-00429-1>.
- Rauchfleisch, Adrian, and Jonas Kaiser. 2020. "The German far-right on YouTube: An analysis of user overlap and user comments". *Journal of Broadcasting & Electronic Media* 64(3): 373–396. <https://doi.org/10.1080/08838151.2020.1799690>.
- Raue, Benjamin. 2018. "Meinungsfreiheit in sozialen Netzwerken". *Juristenzeitung* 73(20): 961–970.
- Reese, Stephen D., Lou Rutigliano, Kideuk Hyun, and Jaekwan Jeong. 2007. "Mapping the blogosphere: Professional and citizen-based media in the global news arena". *Journalism* 8(3): 235–261.
- Rezo ja lol ey. 2019. "Die Zerstörung der CDU". <https://www.youtube.com/watch?v=4Y1lZQsyuSQ>.
- Ribeiro, Manoel Horta, Raphael Ottoni, Robert West, Virgílio A. F. Almeida, and Wagner Meira. 2019. "Auditing radicalization pathways on YouTube". *arXiv: 1908.08313*. <http://arxiv.org/abs/1908.08313>.
- Rieder, Bernhard, and Jeanette Hofmann. 2020. "Towards platform observability". *Internet Policy Review* 9(4): 1–28.
- Rozenbeek, Jon, and Sander van der Linden. 2019. "The fake news game: Actively inoculating against the risk of misinformation". *Journal of Risk Research* 22(5): 570–580. <https://doi.org/10.1080/13669877.2018.1443491>.
- Roser, Max, Esteban Ortiz-Ospina, and Hannah Ritchie. 2013. "Life Expectancy". *Our World in Data*. <https://ourworldindata.org/life-expectancy>.
- Rosling, Hans, Anna Rosling Rönnlund, and Ola Rosling. 2018. *Factfulness: Ten reasons we're wrong about the world and why things are better than you think*. New York, New York: Flatiron Books.
- Rotz, Jonas von, and Kim Oliver Tokarski. 2020. "Social Influencer: Eine Analyse ausgewählter visueller und auditiver Stile erfolgreicher Social Influencer auf YouTube". In: Jochen Schellinger, Kim Oliver Tokarski, and Ingrid Kissling-Näf (eds.), *Digitale Transformation und Unternehmensführung*, 407–434. Wiesbaden: Springer Fachmedien. https://doi.org/10.1007/978-3-658-26960-9_15.
- Ruckenstein, Minna. 2014. "Visualized and interacted life: Personal analytics and engagements with data doubles". *Societies* 4(1): 68–84.
- Sachverständigenrat für Verbraucherfragen. 2018. "Verbrauchergerechtes Scoring 2018". <http://www.svr-verbraucherfragen.de/dokumente/verbrauchergerechtes-scoring/>.
- Sap, Maarten, Dallas Card, Saadia Gabriel, Yejin Choi, and Noah A. Smith. 2019. "The risk of racial bias in hate speech detection". In: *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, 1668–78. Florence, Italy: Association for Computational Machinery. <https://doi.org/10.18653/v1/P19-1163>.
- Sasahara, Kazutoshi, Wen Chen, Hao Peng, Giovanni Luca Ciampaglia, Alessandro Flammini, and Filippo Menczer. 2021. "Social influence and unfollowing accelerate the emergence of echo chambers". *Journal of Computational Social Science* 4: 381–402. <https://doi.org/10.1007/s42001-020-00084-7>.
- Schaal, Gary S., and Felix Heidenreich. 2016. *Einführung in die politischen Theorien der Moderne* [3., erw. und vollst. überarb. Aufl.]. Opladen: Verlag Barbara Budrich.

- Schaub, Max, and Davide Morisi. 2020. "Voter mobilisation in the echo chamber: Broadband internet and the rise of populism in Europe". *European Journal of Political Research* 59: 752–773. <https://doi.org/10.1111/1475-6765.12373>.
- Scholl, Hans Jochen, Herbert Kubicek, and Ralf Cimander. 2011. "Interoperability, enterprise architectures, and IT governance in government". In: Marijn Janssen, Hans J. Scholl, Maria A. Wimmer, and Yao-hua Tan (eds.), *Electronic Government* (pp. 345–354). Berlin: Springer. https://doi.org/10.1007/978-3-642-22878-0_29.
- Scholz, Trebor, and Nathan Schneider. 2017. *Ours to hack and to own: The rise of platform cooperativism, a new vision for the future of work and a fairer internet*. London, United Kingdom: OR Books.
- Schrock, Andrew R. 2016. "Civic hacking as data activism and advocacy: A history from publicity to open government data". *New Media & Society* 18(4): 581–599.
- Seubert, Sandra, and Paula Helm. 2017. "Privatheit und Demokratie". *Forschungsjournal Soziale Bewegungen* 30(2). <https://doi.org/10.1515/fjsb-2017-0032>.
- Shearer, Elisa, and Amy Mitchell. 2021. "News use across social media platforms in 2020". *Pew Research Center*. <https://www.journalism.org/2021/01/12/news-use-across-social-media-platforms-in-2020/>.
- Shmargad, Yotam, and Samara Klar. 2020. "Sorting the news: How ranking by popularity polarizes our politics". *Political Communication* 37(3): 423–446. <https://doi.org/10.1080/10584609.2020.1713267>.
- Simon, Herbert. 1971. "Designing organizations for an information rich world". In *Computers, communications, and the public interest*. <https://www.bibsonomy.org/bibtex/260e6dfadb584ea3bca5c176039d9ee0/cirrus>.
- Spiecker genannt Döhmann, Indra. 2018. "Fragmentierungen: Kontexte der Demokratie – Parteien, Medien, Sozialstrukturen", *Veröffentlichungen des Vereins der Deutschen Staatsrechtler* (VVDStRL) 77:9–65. De Gruyter, Berlin.
- Spielkamp, Matthias. 2019. *Automating society: Taking stock of automated decision-making in the EU* [Bertelsmann Stiftung Studies]. Berlin: AW AlgorithmWatch.
- Staab, Philipp. 2019. *Digitaler Kapitalismus: Markt und Herrschaft in der Ökonomie der Unknappheit*. Berlin: Suhrkamp.
- Stier, Sebastian, Nora Kirkizh, Caterina Froio, and Ralph Schroeder. 2020. "Populist attitudes and selective exposure to online news: A cross-country analysis combining web tracking and surveys". *The International Journal of Press/Politics* 25(3): 426–446. <https://doi.org/10.1177/1940161220907018>.
- Stoycheff, Elizabeth, Kunto A. Wibowo, Juan Liu, and Kai Xu. 2017. "Online surveillance's effect on support for other extraordinary measures to prevent terrorism". *Mass Communication and Society* 20(6): 784–799. <https://doi.org/10.1080/15205436.2017.1350278>.
- Sunstein, Cass. 2018. *#Republic*. Princeton, New Jersey: Princeton University Press.
- Susser, Daniel, Beate Roessler, and Helen Nissenbaum. 2019. "Technology, autonomy, and manipulation". *Internet Policy Review* 8(2). <https://doi.org/10.14763/2019.2.1410>.
- Theile, Gustav. 2019. "Sorge um neue Filterblasen: Facebook startet bislang größte Werbekampagne in Deutschland". *FAZ.NET*. 14 October 2019. <https://www.faz.net/1.6432798>.
- Theocharis, Yannis, and Jan W. van Deth. 2017. *Political participation in a changing world: Conceptual and empirical challenges in the study of citizen engagement*. London, United Kingdom: Routledge.
- Thies, Justus, Michael Zollhofer, Marc Stamminger, Christian Theobalt, and Matthias Niessner. 2016. "Face2face: Realtime face capture and reenactment of RGB videos". In: *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*: 2387–95. https://openaccess.thecvf.com/content_cvpr_2016/html/Thies_Face2Face_Real-Time_Face_CVPR_2016_paper.html.
- Treré, Emiliano. 2020. "The banality of WhatsApp: On the everyday politics of backstage activism in Mexico and Spain". *First Monday* 25(1–6). <https://doi.org/10.5210/fm.v25i12.10404>.
- Uecker, Philipp. 2019. "Extraterritorialer Anwendungsbereich der DS-GVO". *Zeitschrift für Datenschutz* (2): 67–71.
- Ugander, Johan, Brian Karrer, Lars Backstrom, and Cameron Marlow. 2011. "The anatomy of the Facebook social graph". *arXiv*: 1111.4503. <http://arxiv.org/abs/1111.4503>.
- United Nations. 2015. *Sendai framework for disaster risk reduction 2015–2030*. The United Nations Office for Disaster Risk Reduction. http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf.
- Vargo, Chris J., Lei Guo, and Michelle A. Amazeen. 2018. "The agenda-setting power of fake news: A big data analysis of the online media landscape from 2014 to 2016". *New Media & Society* 20(5): 2028–2049. <https://doi.org/10.1177/1461444817712086>.
- Vesting, Thomas. 2020. "Die Rundfunkfreiheit und die neue Logik der »Content-Curation« in elektronischen Netzwerken". *JuristenZeitung*, 975–982.
- Vosoughi, Soroush, Deb Roy, and Sinan Aral. 2018. "The spread of true and false news online". *Science* 359(6380): 1146–1151. <https://doi.org/10.1126/science.aap9559>.

- Vowe, Gerhard, und Philipp Henn (eds.). 2016. *“Political communication in the online world: Theoretical approaches and research designs”*. New York, New York: Routledge.
- Wagner, Gerhard. 2020. “Haftung von Plattformen für Rechtsverletzungen”. *Gewerblicher Rechtsschutz und Urheberrecht*, 329–338 and 447–457.
- Weßler, Hartmut. 2002. “Multiple Differenzierung und kommunikative Integration: Symbolische Gemeinschaften und Medien”. In: Kurt Imhof, Otfried Jarren, and Roger Blum (eds.). *Integration und Medien* (pp. 56–76). Wiesbaden: VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-322-97101-2_5.
- Wineburg, Sam, and Sarah McGrew. 2017. “Lateral Reading: Reading Less and Learning More When Evaluating Digital Information”. *SSRN Electronic Journal*. <https://doi.org/10.2139/SSRN.3048994>.
- Yang, Tian, Sílvia Majó-Vázquez, Rasmus K. Nielsen, and Sandra González-Bailón. 2020. “Exposure to news grows less fragmented with an increase in mobile access”. *Proceedings of the National Academy of Sciences* 117(46): 28678–28683. <https://doi.org/10.1073/pnas.2006089117>.
- Zimpel, Gisela. 1970. *“Der beschäftigte Mensch. Beiträge zur sozialen und politischen Partizipation”*. Munich: Juventa.
- Zuboff, Shoshana. 2018. *“Das Zeitalter des Überwachungs-kapitalismus”*. Frankfurt am Main: Campus.
- Zuboff, Shoshana. 2019. “Surveillance capitalism and the challenge of collective action”. *New Labor Forum* 28(1): 10–29.

Selected publications from the Series on Science-Based Policy Advice

2021

Re-evaluating the protection of in vitro embryos in Germany

Resilience of digitalised energy systems

2020

Biodiversity and Management of Agricultural Landscapes Wide-ranging action is now crucial

Additive Fertigung – Entwicklungen, Möglichkeiten und Herausforderungen*

Centralized and decentralized components in the energy system. The right mix for ensuring a stable and sustainable supply

2019

Towards a scientifically justified, differentiated regulation of genome edited plants in the EU

Über eine CO₂-Bepreisung zur Sektorenkopplung: Ein neues Marktdesign für die Energiewende*

Air Pollution and Health

Reproductive medicine in Germany – towards an updated legal framework

Warum sinken die CO₂-Emissionen in Deutschland nur langsam, obwohl die erneuerbaren Energien stark ausgebaut werden?*

What is the Significance of Nuclear Energy to the Future of Global Power Generation?

* available only in German

All publications from the series are available for free in PDF format on the websites of the academies.

**German National Academy
of Sciences Leopoldina**

Jägerberg 1
06108 Halle (Saale)
Phone: 0049 345 472 39-867
Fax: 0049 345 472 39-839
Email: politikberatung@leopoldina.org

Berlin Offices:
Reinhardtstraße 14 Unter den Linden 42
10117 Berlin 10117 Berlin

**acatech – National Academy
of Science and Engineering**

Karolinenplatz 4
80333 München
Phone: 0049 89 52 03 09-0
Fax: 0049 89 52 03 09-900
Email: info@acatech.de

Berlin Office:
Pariser Platz 4a
10117 Berlin

**Union of the German Academies
of Sciences and Humanities**

Geschwister-Scholl-Straße 2
55131 Mainz
Phone: 0049 6131 218528-10
Fax: 0049 6131 218528-11
Email: info@akademienunion.de

Berlin Office:
Jägerstraße 22/23
10117 Berlin

The German National Academy of Sciences Leopoldina, acatech – National Academy of Science and Engineering, and the Union of the German Academies of Sciences and Humanities provide policymakers and society with independent, science-based advice on issues of crucial importance for our future. The Academies' members and other experts are outstanding researchers from Germany and abroad. Working in interdisciplinary working groups, they draft statements that are published in the series of papers *Schriftenreihe zur wissenschaftsbasierten Politikberatung* (Series on Science-Based Policy Advice) after being externally reviewed and subsequently approved by the Standing Committee of the German National Academy of Sciences Leopoldina.

Series on Science-Based Policy Advice

DOI: 10.26164/leopoldina_03_00407