Algorithmic Transparency and Explainability for EU Consumer Protection: Unwrapping the Regulatory Premises

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Abstract

The principles of transparency and explainability are landmarks of the current EU approach to artificial intelligence. Both are invoked in the policy guidelines as values governing algorithmic decision-making, while providing rationales for existing normative provisions, on information duties, access rights and control powers. This contribution addresses the debate on transparency and explainability from the EU consumer market perspective. The consumers' position relative to algorithmic decision-making is considered, and their risks concerning mass surveillance, exploitation, and manipulation are discussed. The concept of algorithmic opacity is analyzed, distinguishing technology-based opacity that is intrinsic to design choices, from relational opacity toward users. The response of EU law is then considered. The emerging approach to algorithmic transparency and explainability is connected to the broader regulatory goals concerning transparency in consumer markets. It is argued that EU law focuses on adequate information being provided to lay consumers (exoteric transparency), rather than on understandability to experts (esoteric transparency). A discussion follows on the benefits of transparency, on its costs, and on the extent to which transparency can be implemented without affecting performance. Finally, the merits of a transparency-based regulation of algorithms are discussed and insights are provided on regulating transparency and explainability within the EU law paradigm.

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ISSN 2291-9732

I. Introduction

The principles of transparency and explainability emerge as guideposts in the ongoing policy debate on artificial intelligence.[1] Both are invoked in policy guidelines as inspiring values that should guide algorithmic decision-making. They also provide rationales for normative provisions—on information duties, access rights and control powers—established under the existing regulatory frameworks.

The present paper delves into this debate from the European Union consumer market perspective. It focuses on the use of algorithmic decision-making by businesses to frame their relations with consumers, as in the case of personalized pricing, assessment of creditworthiness and individualized advertising. This is a field of interplay between two complementary EU policies: the protection of consumers, who have an interest in not being misled, manipulated and subjected to market-power abuses, and the regulation of digital transactions within the Digital Single Market agenda. The paper explores how EU law has so far promoted the provision of information in consumer markets and how ongoing initiatives concerned with algorithmic transparency and explainability fit into this broader picture. Building upon prior critiques of the information paradigm as well as interdisciplinary insights on opaque automated processing, this paper attempts to elucidate how the regulation of transparency and explainability can contribute to the protection and empowerment of consumers, as well as the preservation of other fundamental values.

To this end, the paper sheds light on the risks to consumer interests posed by the growing presence of automated decision-making. Particular attention is paid to the issue of the opacity of automated processing and associated autonomy and fairness-based concerns. Subsequently, we turn to the existing regulatory framework at EU level, including the most recent developments as part of the digital agenda. Throughout the analysis, we consider both the individual dimension and the collective one of consumer protection and regulatory instruments, including those concerned with transparency and explainability. From this twofold perspective, the paper approaches transparency and explainability as a means of, on the one hand, furthering individual understanding and trust, and thus more informed decision-making and, on the other hand, promoting societal accountability and improving the effectiveness of the legal system. It concludes with generalized insights on the present-day relevance of the EU regulatory premises and the corresponding role of transparency and explainability.

II. The Consumer at the Digital Market: Problems of Informational Asymmetry

The asymmetry of information between businesses and consumers is well-known. It is recognized that suppliers tend to have superior access to product-specific information and

[1] Jessica Fjeld et al., Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-Based Approaches to Principles for AI, Berkman Klein Center for Internet & Soc'y 41 (2020) (http://nrs.harvard.edu/urn-3:HUL.InstRepos:42160420).

can benefit from experience they obtain as repeat market players. The consequences of imperfect information for markets and consumers have long been factored into regulatory debates, concerned with market failures and consumer self-determination.[2] Despite initial optimism, debates of this kind have not become superfluous with the rise of the digital age.[3]

The initial high hopes in terms of consumers' access to information with the advent of online commerce can be recognized in the early debates, including at the EU level.[4] With an instantaneous access to a variety of online services, Internet users were to become empowered as both market actors and citizens. It was assumed that information and communication technologies would deliver a new economic environment, making for new exciting opportunities for both producers and consumers: disintermediation, unlimited access to information, larger and open markets, global interactions. In particular—the forecast continued—the Internet would strengthen the market power of consumers relative to traders; any consumer would be able to access a global marketplace, where he or she would select the most advantageous opportunities.[5] The market would discipline the behavior of merchants; consumers would obtain information on products and prices through search tools, and this information would be expanded and validated through collaborative tools, such as consumers' ratings on their purchasing experience.[6]

While this positive sentiment is not entirely lost, an awareness of risks embedded in the digital transformation is growing.[7] Firstly, it is becoming increasingly apparent that a larger quantity of accessible information does not solve all consumer problems. Consumers are unable to process the huge amount of available information and assess the comparative merit of the vast set of choices available to them.[8] In this context, they rely on new kinds of

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[2] Franziska Rischkowsky & Thomas Döring, Consumer Policy in a Market Economy: Considerations from the Perspective of the Economics of Information, the New Institutional Economics as Well as Behavioural Economics, 31 J. Consumer Pol'y 285, 287 (2008); Hanneke Luth, Behavioural Economics in Consumer Policy 28 (unpublished Ph.D. thesis, Erasmus University, 2010); Christoph Busch, The Future of Pre-contractual Information Duties: From Behavioural Insights to Big Data, in Research Handbook on EU Consumer and Contract Law 222 (Christian Twigg-Flesner ed., 2016).

[3] Cf. Jane K. Winn, Is Consumer Protection an Anachronism in the Information Economy?, in Consumer Protection in the Age of the Information Economy 1 (Jane K. Winn ed., 2016).

[4] See, e.g., High-Level Expert Group, Building the European Information Society for Us All: Final Policy Report of the High-Level Expert Group 15, 32, 48 (1997) (https://op.europa.eu/s/orbo).

[5] A shadow on these hopes was cast rather quickly. Cf. John Markoff, Technology; Not a Great Equalizer After All?, N.Y. Times, June 21, 1999, at 4.

[6] See, e.g., Yochai Benkler, The Wealth of Networks: How Social Production Transforms Markets and Freedom (2006). For a recent reconstruction and critique, see Paolo Bory, The Internet Myth: From the Internet Imaginary to Network Ideologies (2020).

[7] Ryan Calo, Digital Market Manipulation, 82 Geo. Wash. L. Rev. 995 (2013); Danielle Keats Citron & Frank Pasquale, The Scored Society: Due Process for Automated Predictions, 89 Wash. L. Rev. 1 (2014); Yochai Benkler, Power and Productivity: Institutions, Ideology, and Technology in Political Economy (2019) (https://ssrn.com/abstract=3503962).

[8] David Bawden & Lyn Robinson, The Dark Side of Information: Overload, Anxiety and Other Paradoxes and Pathologies 35 J. Info. Sci. 180 (2009).

intermediaries, which have emerged in multiple domains, from access to the Internet infrastructure, to search engines, to platforms for sharing online content, to e-commerce, to cloud services, to online payments.[9] These new intermediaries tend to enjoy monopoly or oligopoly positions, as a consequence of the fact that service size is usually an advantage in information technology. Larger providers are indeed favoured by well-known aspects of the information economy, such as network effects (the more users, the better a service), returns to scale (a larger user base gives economic advantages) and learning by doing (the provision of a service provides information on how to improve it).[10] Much information is collected in the context of the provision of services. In online services to consumers, a two-way transmission of information takes place: from the provider to the consumer, and also from the consumer to the provider.[11] Computer systems run by providers/merchants can observe, verify and analyze any aspect of the transaction, recording every character typed on a keyboard and every link clicked. Thus, monopolies over the online provision of services tend to become monopolies over the collected data.

With regard to the online provision of information services—search engines, online repositories, social networks—the business model has emerged according to which services are offered for free to final users, but such services are backed by advertising revenues. Thus, such key services for the information society are offered on two-sided markets; providers have two different classes of clients—advertisers and users—and have to take both into account. There is an interdependence between advertisers and users: to satisfy advertisers, intermediaries must attract and retain users. We may also say that consumers' attention as well as information about consumers are the key commodities that providers sell to advertisers.

The dark sides of commodifying data and attention have been vividly brought to light by the Cambridge Analytica scandal, exposed in 2018.[12] The case revealed an enormous potential for so-called microtargeting, i.e., a practice of collecting personal information and using that information to create communications which optimally reflect the characteristics of individuals, and influence them on this basis. While the background of that event remained highly political, which additionally reinforced its public resonance, the potential of individualized communications is certainly not limited to the domain of politics. Most notably, the wealth of consumers' information can also be exploited to better target individuals in the economic context. Indeed, as we discuss further below, over the past two decades big consumer data and AI have converged, providing a new infrastructure for addressing and managing consumers.

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[9] As it was already recognized at the OECD, The Economic and Social Role of Internet Intermediaries, DSTI/ICCP(2009)9/FINAL (2010); see also Giovanni Sartor, Providers Liability: From the eCommerce Directive to the Future, IP/A/IMCO/2017-07 (2017).

[10] Hal R. Varian, Use and Abuse of Network Effects (2017) (https://ssrn.com/abstract=3215488).

[11] Id.; Hal R. Varian, Computer Mediated Transactions, 100 Am. Econ. Rev. 1 (2010).

[12] Christopher Wylie, Mindf*ck: Cambridge Analytica and the Plot to Break America (2019).

As noted, the goal of sending increasingly effective ads to consumers provides a key incentive for mass surveillance, leading to the massive collection of consumer data. As the market practice shows, interfaces can be designed in such a way as to favor data collection, often without consumers being aware.[13] All online activity, every click or message, can be recorded in order to subsequently discover possible correlations that may be useful in influencing consumers through the most effective ads. With the rise of the Internet of Things, sensors can also be embedded in the offline context, making data connection and analysis even more pervasive. A widespread mechanism for behavioral modification has thus emerged, whose final purpose is to modify people's purchasing behavior through targeted ads. However, as just noted, this final goal also determines the instrumental goal of attracting the attention of online users by sending them engaging or addictive information, in particular to users of social networks and online ad repositories. As will be shown below, when the merchants' informational advantage reaches massive proportions and their corresponding practices remain opaque, the problem becomes even more serious.

While the dynamic behind personalized advertising is key to understanding the broader socioeconomic model,[14] the impact of automated decision-making in consumer markets is not limited to the marketing sphere. Most importantly, personalized advertising also leads to personalized consumer management, as offers or rejections of requests as well as further interactions can be based on the knowledge obtained about consumers. Thus, automated computations can be used to adjust contractual conditions offered to particular consumers. Decisions of this kind can be limited to price-setting, in certain instances taking the form of price discrimination,[15] or they may help determine whether an identified consumer qualifies for a given product in the first place, as in the case of creditworthiness assessment.[16] In this context, a new imbalance emerges between merchants (supported by AI-driven technology) and consumers. Not only do merchants know their products and services better than consumers do, but they may know much more about consumers than the latter know about themselves. Consumers, in turn, are typically unable to grasp both the extent of the asymmetry just described and the more direct effects it may exert upon their lives. The reasons behind this state of affairs are linked, at least in part, to the issue of opacity.

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[13] Forbrukerrådet, Deceived by Design: How Tech Companies Use Dark Patterns to Discourage Us from Exercising Our Rights to Privacy (2018) (https://fil.forbrukerradet.no/wp-content/uploads/2018/06/2018-06-27-deceived-by-design-final.pdf); Jamie Luguri & Lior Strahilevitz, Shining a Light on Dark Patterns, University of Chicago, Public Law Working Paper No. 719 (2019) (https://ssrn.com/abstract=3431205).

[14] Shoshana Zuboff, The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power (2019).

[15] Christopher Townley et al., Big Data and Personalized Price Discrimination in EU Competition Law, 36 Yearb. Eur. Law 683 (2017); Oren Bar-Gill, Algorithmic Price Discrimination: When Demand is a Function of Both Preferences and (Mis)perceptions, 86 U. Chi. L. Rev. 217 (2019).

[16] Amy J. Schmitz, Secret Consumer Scores and Segmentations: Separating "Haves" from "Have-Nots," 2014 Mich. St. L. Rev. 1411 (2014).

The opacity of information processing can be addressed from two different, yet linked perspectives: a relational one and a technology-based one. Relational opacity pertains to the degree to which particular individuals, groups, or social actors have access to the data-processing activities that are relevant to them. For instance, a system providing targeted advertising presents a very different level of opacity towards its owner (e.g., a social network or search-engine company), the advertisers that are paying for the service, and the target users, consumer organizations, and public authorities. The first will have full access to data and software. The second will know the goals that are being pursued (attracting consumers into services and exposing them to ads) and the measure of the attainment of such goals (e.g., the number of clicks or purchases). Consumers will usually just see the ads they receive, and the notices and consent requests popping up from time to time (e.g., for cookies). Finally, what information is concretely accessible to consumer protection organizations and law enforcement agents will depend on their technical competence, on the supplier's availability, and on the legal means through which information can be obtained.

The second notion of opacity—technology-based opacity—concerns the internal functioning of a computer system, namely, the extent to which experts having full access to the system are able to understand its internal behavior, or even to explain its outputs. Issues related to technology-based opacity have emerged decades ago, in connection with the increasing complexity of computer programs.[17] In general, all machine-learning systems used to manage consumers' relations are opaque towards consumers, who have no real possibility of inspecting the system and its training set, examining the predictors included in the system's model, or obtaining explanations of why a certain outcome has been provided. This is related to the fact that suppliers may benefit from the opacity or, more generally, have no economic interest in investing the resources needed to provide transparency.

Opacity in machine-learning systems is exacerbated by the fact that such systems tend to be highly complex. A meaningful analysis of their behavior—including, potentially, by external auditors—requires understanding the ways in which multiple factors interact in determining a particular output. Moreover, some machine-learning technologies, such as neural networks, are intrinsically hard to interpret. Unfortunately, in many contexts, the better-performing systems are the less explainable ones. In particular, neural networks are often the most effective approach to deal with pattern recognition and natural language processing. Thus, predictive performance and transparency are often conflicting objectives and there will have to be a trade-off between the two.[18]

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[17] Johanna D. Moore & William Swartout, Explanation in Expert Systems: A Survey, Information Sciences Institute Tech Report ISI/RR-88-228 (1988); Alun Preece, Asking "Why" in AI: Explainability of Intelligent Systems—Perspectives and Challenges, 25 Intelligent Sys. Acct., Fin. & Mgmt. 63, 64 (2018).

[18] Alex A. Freitas, A Critical Review of Multi-objective Optimization in Data Mining: A Position Paper, 6 ACM SIGKDD Explorations Newsl. 77 (2004); Philipp Hacker et al., Explainable AI under Contract and Tort Law: Legal Incentives and Technical Challenges, 28 Artif. Intell. L. 415, 430-31 (2020).

In general, the opacity of automated decision-making in consumer markets entails that consumers will not know the reasons for which they are being offered or denied an opportunity and will be unaware of attempts to profit from their vulnerabilities and biases. Opacity may limit consumers' understanding and trust and increase the extent to which the suppliers' market power can be arbitrarily used. As a consequence, consumers may be deceived and led into choices they may regret; they may be unable to challenge the behavior of suppliers by exposing unfairness and illegality or to access legal or other redress.

It may be doubted to what extent transparency alone may be an adequate remedy to the current predicament of consumers, who are faced with AI systems that use their vast data sets and enormous computing powers to implement suppliers' and intermediaries' goals. However, we believe that an approach to transparency that fits the cognitive and social conditions of consumers may provide a valuable contribution, especially when individual awareness is matched by collective powers to inquire and ask for redress. Elements of such an approach are gradually emerging from law and policy as will be shown in the following sections.

III. Algorithms and the Regulatory Agenda of EU Consumer Law

Wide-scale algorithmic decision-making in consumer markets poses a challenge to consumer law, broadly understood as including consumer protection, as well as to aspects of digital market regulation. In the EU both spheres are traditionally subject to harmonization. The goals of consumer law have been twofold.

At the most basic level, EU consumer law pertains to the active position of individual consumers in market dealings. From its outset, EU consumer law has been concerned primarily with the ability of non-professional individuals to make independent and well-informed decisions. Consumer sovereignty has also gained a political dimension, being perceived as one of the components of individual rights in a democratic society. Citizens should be capable of making their consumption choices in connection with their involvement in the community's life and their endorsement of fundamental values (e.g., with regard to fair trade and environmental protection).[19] Accordingly, EU consumer law aims not only to protect consumers as weaker participants in the market, but also to empower them as active societal agents.

In addition, EU consumer law has a significant collective dimension. It aims to enhance consumer trust and confidence in the market, domestically as well as within the EU. In so doing, it aspires to further integrate the EU internal market. From this perspective, ensuring fairness in individual consumer contracts contributes to collective-political goals, i.e., strengthening the internal market and increasing overall welfare.[20]

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[19] Sonia Livingstone et al., Citizens, Consumers and the Citizens: Articulating the Citizen Interest in Media and Communications Regulation, 1 Discourse & Comm. 63 (2007).

[20] Hans-W. Micklitz, The Consumer: Marketised, Fragmentised, Constitutionalised, in The Images of the Consumer in EU Law: Legislation, Free Movement and Competition Law 21, 27-29 (Dorota Leczykiewicz & Stephen Weatherill eds., 2016).

Such intertwining of individual and collective interests has been recently taken up in the EU policy and legislative agenda concerning algorithms in the consumer market. "Trustworthiness" of AI has become one of its major themes, combining the perspective of individuals concerned with the broader prospects of AI deployment and uptake.[21] Crucially for the present discussion, transparency is recognized consistently among the vital steps towards trustworthiness.[22] The importance of ensuring that decisions made by an AI system can be understood and tracked by human beings is underlined, in line with the ongoing debates on explainability. It is worth highlighting, however, that the understanding of transparency in EU digital agenda is much broader and includes not only data and the system, but also business models.[23]

The emerging EU debate on explainability of technology-based opaque systems is linked to broader and more long-standing efforts concerned with a relational dimension of transparency. Indeed, transparency has long been a major part of the EU regulatory framework on consumer protection and beyond. With the rise of the consumer society and the increasing variety and complexity of goods and services, rules requiring consumers to be provided with adequate information have been adopted by national legislators concerned about the asymmetry of information between consumers and merchants. As European integration has moved forward, the information paradigm has been taken over by the EU legislature and has become a leading theme of EU consumer law and policy. Information rules were politically uncontroversial, being comparably less intrusive than legal constraints on contractual agreements, and thus consistent with different approaches to market regulation.[24]

Accordingly, harmonized provisions aimed at improving consumers' decision-making capacities have, over time, established themselves as a characteristic feature of the EU regulatory framework. This framework includes various kinds of provisions, from marketing standards for different products and services,[25] to rules on pre-contractual

[21] European Commission, White Paper on Artificial Intelligence: A European Approach to Excellence and Trust (COM(2020) 65 final) 9 (2020).

[22] See, e.g., High-Level Expert Group on Artificial Intelligence, Ethics Guidelines for Trustworthy AI 18 (2019) (https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=60419). The guidelines describe this as elements of "explicability." See also European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Building Trust in Human Centric Artificial Intelligence (COM(2019) 168 final) 5 (2019).

[23] See also Fjeld et al., supra note 1, at 42.

[24] Information norms have been claimed to be "ecumenical," aligning with both efficiency and autonomy-based concerns. See Busch, supra note 2, at 222.

[25] Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council [2005] OJ L149/22.

disclosure and withdrawal rights in contract law,[26] to less direct rules intertwined with liability provisions and fairness standards.[27] Worth highlighting is also the attention paid to the accessibility, conciseness and understandability of information. In this regard, a distinction between formal and substantive transparency has been made, whereby the former refers to availability and style, while the latter involves an assessment of the extent to which a presentation facilitates comprehension of the item communicated and the relevant consequences.[28] Both aspects have repeatedly featured both in consumer law and in data protection law.[29]

As seen from above, transparency has long been promoted through information rules under EU law, for example, in respect of standard terms and pre-contractual disclosure in online contracts. More recently, this tendency can be observed in relation to the use of algorithms in consumer markets, whereby elements of transparency begin to emerge both ex ante and ex post (i.e., before and after an automatic processing in an individual case has taken place).[30]

The importance of information rules for addressing the challenges of opaque algorithmic practices has been emphasized in the recent reform of EU consumer protection law. Most notably, the so-called Omnibus Directive[31] has introduced a range of provisions clarifying and extending the applicability of existing norms to the digital context. Among others, Directive 2005/29/EC on unfair commercial practices has been amended so as to promote (or essentially mandate) the disclosure of general information on the outcome of search queries. This information includes the main parameters for determining the ranking of products presented to consumers and the relative importance of such parameters. The provision applies to online marketplaces in which consumers can search for products offered by different suppliers through a single query.[32]

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[26] Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council [2011] OJ L304/64.

[27] Council Directive 93/13/EEC of 5 April 1993 on Unfair Terms in Consumer Contracts [1993] OJ L95/29.

[28] Joasia Luzak & Mia Junuzović, Blurred Lines: Between Formal and Substantive Transparency in Consumer Credit Contracts, 8 J. Euro. Consumer & Mkt. L. 97, 99 (2019).

[29] See e.g., judgment of the Court of 11.11.2020 in case C-61/19, Orange Romania, ECLI:EU:C:2020:901, para 40.

[30] Adrien Bibal et al., Legal Requirements on Explainability in Machine Learning, Artif. Intell. & Law 2-5 (2020) (https://link.springer.com/article/10.1007/s10506-020-09270-4).

[31] Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules [2019] OJ L328/7. The changes will become applicable as of May 28, 2022.

[32] The provision does not apply to the providers of online search engines, who are already subject to a similar requirement under Regulation (EU) 2019/1150 of the European Parliament and of the Council of June 20, 2019 on promoting fairness and transparency for business users of online intermediation services [2019] OJ L186/57.

An additional information duty was inserted in Directive 2011/83/EU on consumer rights, requiring merchants to inform consumers whether a price was personalized on the basis of automated decision-making. A further-reaching transparency obligation—covering also information about the way in which automated decision-making is being used to adjust prices in online commerce—has been favored by the European Parliament during legislative negotiations,[33] but was not eventually adopted.

In both cases, the disclosure does not extend to information about the factors which determined a specific algorithmic outcome, i.e., it does not include an ex post explanation. It only concerns the general features of the functioning of the system, which limits its significance for consumers.[34] Still, read together with the broader policy developments at EU level, the new rules testify to the importance of algorithmic transparency and explainability in EU consumer law.

The soft approach to explainability adopted so far can be linked to ongoing developments in the field and to associated concerns about stifling innovation. As research on technological approaches to transparency matures, one can expect that requirements imposed on system owners will become more stringent. As we observe in the following section, more specific explanations can often be more relevant to consumers, offering them a truly "high level of protection" in line with EU primary law.[35] Finally, it is worth noting the tendency in EU law towards strengthening the regulatory framework on both private and public enforcement of consumer law, including by way of collective redress.

In EU law, there is a close relationship between consumer and data protection.[36] The General Data Protection Regulation (GDPR)[37] indeed provides important reference points on algorithmic transparency. In particular, ex ante algorithmic transparency can be linked, among other things, to the conditions of "consent" as one of the legal bases for the lawful processing of personal data under Article 6(1)(a) GDPR. Article 4(11) GDPR defines consent as "any freely given, specific, informed and unambiguous indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her." As observed in Recital

[33] European Parliament legislative resolution of 17 April 2019 on the proposal for a directive of the European Parliament and of the Council amending Council Directive 93/13/EEC of 5 April 1993, Directive 98/6/EC of the European Parliament and of the Council, Directive 2005/29/EC of the European Parliament and of the Council and Directive 2011/83/EU of the European Parliament and of the Council as regards better enforcement and modernisation of EU consumer protection rules (COM(2018)0185 – C80143/2018 – 2018/0090(COD)).

[34] Bibal et al., supra note 30, at 13.

[35] Article 114(3) and Article 169(1) of the Treaty on the Functioning of the European Union [2012] OJ C326/47 (consolidated version), Article 38 of the Charter of Fundamental Rights of the European Union [2012] OJ C326/391.

[36] Natali Helberger et al., The Perfect Match? A Closer Look at the Relationship Between EU Consumer Law and Data Protection Law, 54 Common Mkt. L. Rev. 1427 (2017).

[37] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC [2016] OJ L119/1.

42, for consent to be informed, the data subject should at least be aware of the identity of the controller and the purposes of the processing for which the personal data are intended, while any standardized declaration of consent should be provided in an intelligible and easily accessible form, using clear and plain language. The importance of that information, along with other items, is further underlined in Articles 13 and 14 GDPR, also when the processing is not based on consent. Transparency is meant to enable privacy management, as it allows the data subject to act upon information, e.g., to deny consent to processing for marketing purposes, or to exercise the right to object. However, this power can be effectively exercised, under a condition of market dominance, only if access to services is not conditional on consent.[38]

Ex ante transparency may also concern information to the data subjects about whether and in what way their personal data are subject to processing by automated means. In the EU, this is addressed, in part, by the right to information established by the GDPR in Articles 13(2)(f) and 14(2)(g), requiring two kinds of information to be provided: information on the existence of automated decision-making, and meaningful information about the logic involved in it and its expected consequences. There is some uncertainty as to what is meant by the logic and consequences of an automated decision. With regard to complex AI processing, there is also a conflict between the need for the information to be concise and understandable, on the one hand, and the need for it to be precise and in-depth, on the other.

Ex post transparency could, in turn, be supported by Article 15, which equips data subjects with a right to know whether their data are being processed and to access such data and related information. Indeed, under Article 15(1)(b), when a request is made after processing has already begun, information about "the categories of personal data concerned" could potentially extend to inferred information.[39] An argument for the right to obtain an ex post explanation can also be made by referring to Recital 71, according to which the safeguards to be provided to data subjects in case of automated decisions include the right to obtain an explanation of the decision reached after such assessment, and the right to challenge the decision. The right to challenge automated decisions (though not a right to explanation) is also stated in Article 22, whose scope, however, is limited to processing that "produces legal effects" or "similarly significantly affects" data subjects. Overall, the potential and limits of the GDPR in delivering transparency on algorithmic outcomes are debated and it still remains unclear whether the regulation also lends support for requesting individualized explanation.[40]

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[38] Frederik J. Zuiderveen Borgesius et al., Tracking Walls, Take-It-Or-Leave-It Choices, the GDPR, and the ePrivacy Regulation, 3 Eur. Data Prot. L. Rev. 353 (2017).

[39] But see Sandra Wachter & Brent Mittelstadt, A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI, 2019 Colum. Bus. L. Rev. 494, 521, and the case law cited there.

[40] Cf. Sandra Wachter et al., Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation, 7 Int'l Data Privacy L. 76 (2017); Andrew Selbst & Julia Powles, Meaningful Information and the Right to Explanation, 7 Int'l Data Privacy L. 233 (2017); Gianclaudio

IV. Dimensions and Addressees of Transparency and Explainability

To meaningfully reflect upon the EU's efforts to address the use of algorithms in the consumer economy, it is useful to recall the two dimensions of opacity which were discussed in section II, i.e., relational opacity and technology-based opacity. Two parallel dimensions of transparency can be distinguished, which we hereafter refer to as esoteric and exoteric transparency:[41]

- Esoteric transparency covers the extent to which a system is not intrinsically opaque, being understandable to experts, having full access to its internal functioning.
- Exoteric transparency covers the extent to which a system is not relationally opaque, as lay people interacting with it have access to the information that is meaningful to them.

Both transparency perspectives are relevant to social and political goals and values. In particular, esoteric transparency can be linked to promoting societal accountability and institutional trust, while exoteric transparency can be linked to fostering understanding and trust in users and consumers.[42]

In AI, esoteric transparency could be improved by using technologies that enable human experts to understand the connection between the system's inputs and outputs. Transparency so understood can be pursued at the programming stage, where the task is to reduce the technology-based opacity from the very beginning, or through subsequent actions on a model, which in itself remains opaque.[43] To this end various methods can be deployed,[44] such as the following:

- Model explanation, i.e., the coupling of an opaque AI system with an interpretable and transparent model that fully captures the logic of the opaque system. This

Malgieri & Giovanni Comandé, Why a Right to Legibility of Automated Decision-Making Exists in the General Data Protection Regulation, 7 Int'l Data Privacy L. 243 (2017).

[41] The terms "esoteric" and "exoteric" are inspired by the philosophical distinction—going back to Plato and Aristotle—between works intended for the general public (exoteric) and technical works intended for students/experts (esoteric).

[42] On the twofold goals of transparency, see Ashraf Abdul et al., Trends and Trajectories for Explainable, Accountable and Intelligible Systems: An HCI Research Agenda, CHI '18: Proceedings of the 2018 CHI Conference on Human Factors, Computing Systems 1, 9 (2018); Bibal et al., supra note 30, at 7-8. For a critical perspective on transparency, see Ida Koivisto, Towards Critical Transparency Studies, 25 Res Publica 439 (2019).

[43] Amina Adadi & Mohammed Berrada, Peeking Inside the Black-Box: A Survey on Explainable Artificial Intelligence (XAI), 6 IEEE Access 52138, 52147 (2018); Cynthia Rudin, Stop Explaining Black Box Machine Learning Models for High Stakes Decisions and Use Interpretable Models Instead, 1 Nat. Mach. Intell. 206 (2019); Ronan Hamon et al., Robustness and Explainability of Artificial Intelligence, JRC Technical Report 13 (2020) (https://op.europa.eu/s/orcF).

[44] Adadi & Berrada, supra note 43; Riccardo Guidotti et al., A Survey of Methods for Explaining Black Box Models, 51 ACM Computing Surveys 1 (2018); Luciano Floridi et al., AI4People—An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations, 28 Minds & Mach. 689 (2018).

would be obtained, for instance, if a decision tree or a set of rules was provided whose activation exactly (or almost exactly) reproduces the functioning of a neural network-based system.

- Model inspection, i.e., a representation that makes it possible to understand some specific properties of an opaque model or its predictions. It may concern patterns of activation (e.g., in a neural network), or sensitivity to changes in input factors (e.g., how a change in applicants' revenue or age makes a difference in the grant of loans).
- Outcome explanation, i.e., an account of the outcomes of an opaque AI in a particular instance. For example, special decisions concerning individuals can be explained by listing the possible choices that lead to alternative conclusions (e.g., the loan was denied because the applicant's income fell below a certain threshold, his age crossed a certain threshold, and he did not have enough ownership interest in any real estate available as collateral).

The explanatory techniques and models developed in computer science pertain to esoteric transparency: they are intended for technological experts and assume broad access to the system being explained. It is important to stress that—from a consumer protection perspective—esoteric transparency is only relevant as long as it is instrumental to providing understandable, meaningful information to consumers, i.e., effective exoteric transparency. For example, to be meaningful to consumers, an explanation should enable them to gain an awareness of how the system's decisions affect or may affect their situation. A global explanation of a machine-learning model will usually not be suitable for this purpose.

Ex ante explanations may only be relevant to the extent that they provide understandable clues; more significant indications may be provided through the ex post outcome explanations. In both cases the ultimate level of transparency will depend on communicative and dialectical aspects, which we elaborate on further below.

It is worth noting that explanations provided to consumers may also be of value to collective parties, such as consumer organizations, seeking to identify certain outcomes at scale, such as patterns of manipulation or discrimination. Meaningful transparency in such a case requires, at the very least, that the parties driven by collective interests not be prevented from collecting and analyzing such data.[45]

Finally, transparency to public authorities is primarily a function of their mandate and technical competence. Since the former may be extensive, adequate transparency in relation to authorities may entail considerable insights into different stages of the processing chain, including the logic of the model and the description of data sets.[46]

Focusing on the consumer perspective, transparency may begin by communicating to the consumer that his or her data are going to be processed by an AI system having

[45] Cf. the discussion of trade secrets and contractual clauses as potential limitations of access to data on algorithmic practices in B. Bodó et al., Tackling the Algorithmic Control Crisis: The Technical, Legal, and Ethical Challenges of Research into Algorithmic Agents, 19 Yale J.L. & Tech. 133, 161-62 (2017).

[46] Hamon et al., supra note 43, at 12-13, 24.

general purposes and functioning. Consumers should further be informed about the input data that the AI system takes into consideration (e.g., for a loan application: the applicant's income, gender, assets, job, etc.), and whether such data are favoring or disfavoring the possible outcomes. Indeed, variable importance quantifies the contribution of each input variable (feature) to the predictions of a complex machine-learning model.

Meaningful explanation may also involve information about the target values that the system is meant to compute (e.g., a level of creditworthiness and possibly the threshold to be reached in order for the loan to be approved), as well as the envisaged consequence of the automated assessment/decision (e.g., approval or denial of the loan application). It has been argued that meaningful explanation of a system's functionality may include an anticipation of specific decisions and their reasons, so that the distinction between ex ante and ex post explanations is overcome.[47]

Different degrees of exoteric (relational) transparency can also be provided ex post, i.e., with respect to particular decisions already taken. For instance, explanations can relate to all features considered in reaching a given outcome or to the way in which the features are combined to arrive at a certain decision. As was rightly observed,[48] information about all processed features may be hard to grasp for lay users, particularly if the relevant list is extensive. To address this challenge, attempts have been made to reduce models' complexity or improve information visualization, thereby making explanations more understandable to users.

References to the comprehensibility of explanations draw attention to the latter's communicative and dialectical dimensions explored in social science. In particular, it has been argued that the following approaches should be taken into account: (i) contrastive explanation; (ii) selective explanation; (iii) causal explanation; and (iv) social explanation.[49] Contrastive explanation consists of specifying what input values have determined the adoption of a certain decision (e.g., the level of income determining a loan denial) rather than alternative choices (e.g., the loan application's acceptance). Selective explanation consists in referring to factors that are most relevant according to human judgments and may be particularly valuable for lay consumers who lack specific domain competence. Causal explanation focuses on causes rather than merely statistical correlations.[50] If we consider consumers, NGOs, and legal experts as addressees, referring to probabilities and statistical generalizations is not as meaningful as referring to causes.

Finally, recognition that explanations have a social nature favors the adoption of a conversational approach, in which information is tailored to the recipient's beliefs and ways

[47] Selbst & Powles, supra note 40, at 241.

[48] Bibal et al., supra note 30, at 14.

[49] Tim Miller, Explanation in Artificial Intelligence: Insights from the Social Sciences, 267 Artif. Intell. 1, 6 (2019). On a related idea of counter-factual explanations, see Sandra Wachter, Counterfactual Explanations Without Opening the Black Box: Automated Decisions and the GDPR, 31 Harv. J.L. & Tech. 841 (2018).

[50] Cf. Dino Pedreschi et al., Meaningful Explanations of Black Box AI Decision Systems, 33 Proc. AAAI Conf. on Artif. Intell. 9780, 9783 (2019).

of understanding. Ongoing research on human-computer interactions (HCI) can play a major role in exploring the potential of interactive explanations.[51]

Overall, as seen above, actions required for delivering transparency depend on a range of factors, including but not limited to the degree of technology-based opacity to be overcome. Transparency can be directed at different actors, most notably consumers, regulatory bodies and NGOs. Transparency toward consumers generally requires focusing on the communicative dimension, which may favor more selective, yet prominent, information. Disclosures to consumers can also give valuable insights to the actors safeguarding their collective interests, such as organizations and authorities. To illustrate, a recent study carried out by three NGOs in Poland analyzed the scale and nature of targeted political advertising during national election campaigns by relying on information sources which Facebook makes available to its users.[52]

While explanations directed at individual consumers may contribute to societal accountability, additional oversight mechanisms may still be needed to fully reach this goal. One argument along these lines is that it would be important to enable citizens to engage in "black box tinkering," i.e., in a limited reverse-engineering exercise that consists of submitting test cases to a system and analyzing the system's responses to detect faults and biases.[53] This approach, which involves a distributed and non-systematic attempt at sensitivity analysis, has the advantage of democratizing controls but is likely to have limited success given the complexity of AI applications and the limitations on access to them.

Ultimately, safeguarding consumer interests may require some degree of access—by qualified collective or institutional actors—to algorithmic models, or at least the possibility of subjecting such models to extensive testing. In the case of machine-learning approaches, it may also ideally involve access to training sets. In choosing particular pathways towards transparency, regulators should keep their relative potential in mind while also remaining mindful of the associated costs.

V. Can Algorithmic Transparency Deliver Its Promise?

The benefits that transparency and explainability may provide must not be outweighed by their negative externalities for the functioning of consumer markets. Disproportionate or over-extended duties to inform may indeed increase transaction costs beyond what is reasonable, ultimately harming consumers.[54]

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[51] Cf. Abdul et al., supra note 42, at 9-10.

[52] Karolina Iwańska & Katarzyna Szymielewicz, Who (Really) Targets You? Facebook in Polish Election Campaigns (2019) (https://panoptykon.org/political-ads-report).

[53] Maayan Perel & Niva Elkin-Koren, Black Box Tinkering: Beyond Disclosure in Algorithmic Enforcement, 69 Fla. L. Rev. 181 (2017).

[54] On the general conceptual and economic framework of regulation of information on consumer market see, e.g., Howard Beales et al., The Efficient Regulation of Consumer Information, 24 J.L. & Econ. 491 (1981).

Transparency and explainability standards have at least three advantages. First, their implementation increases the overall trustworthiness of the online consumer market by ensuring that consumers are provided with adequate information about algorithmic decision-making. The focus is on the exoteric dimension, i.e., on information provided to lay consumers, even though the esoteric transparency of algorithmic models may also contribute. More transparent models may facilitate the provision of adequate information to consumers. Moreover, since understanding the system is vital to ensuring its reliability, transparency and explainability are also intertwined with robustness.[55]

Secondly, transparency and explainability may empower consumers, who would otherwise be unable to challenge the outcomes of inaccessible "black boxes."[56] In particular, information about the premises on which a personalized decision will or has been made may empower individuals to proactively protect their own economic and non-economic (e.g., privacy-related) interests. Thus, transparency paired with ex post explanations of algorithmic decisions may decrease the risk of abuse and manipulation, allowing consumers to make meaningful choices on whether to enter a particular algorithmic decision-making scheme or to challenge its outcome.

In this way, algorithmic transparency and explainability make individuals more aware of their own market standing and assist them in choosing the way they want to stay involved in the community's life. This dimension is most salient with regard to personalized content on social media (e.g., Facebook and Twitter) and news media,[57] where knowledge about the use of an algorithm may directly affect the way individuals engage in social and political discourse.[58] Even in market-related settings, however, this general feature of algorithms remains important. The awareness of algorithmic decision-making strongly empowers individuals as participants in the market and provides them with an opportunity to reject or challenge automated decision-making schemes.[59] At the same time, transparency and explainability can be vital to actors driven by public interests, such as regulatory and judicial bodies. Most notably, they support effective control over the legality of algorithmic practices and act as a disincentive for decision-makers who could otherwise engage in unlawful conduct (e.g., by exploiting protected characteristics).[60]

Thirdly, transparency and explainability standards over algorithms may contribute to fairness without interfering with the autonomy of market actors. This idea is vividly

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[55] See, e.g., Hamon et al., supra note 43, at 4, 23.

[56] Cf. Julie E. Cohen, The Biopolitical Public Domain: The Legal Construction of the Surveillance Economy, 31 Phil. & Tech. 213 (2018).

[57] Nicholas Diakopoulos & Michael Koliska, Algorithmic Transparency in the News Media, 5 Digit. J. 809 (2017).

[58] See, e.g., Brent Mittelstadt, Auditing for Transparency in Content Personalization Systems, 10 Int'l J. Comm. 4991, 4992 (2016).

[59] See also Joseph Turow, The Aisles Have Eyes: How Retailers Track Your Shopping, Strip Your Privacy, and Define Your Power 269 (2017).

[60] Bibal et al., supra note 30, at 8.

illustrated by the approach taken by EU consumer law towards algorithmic personalization of prices.[61] The law remains, in principle, averse to direct intervention in the price/value relation established by free market dynamics, as long as the process of price-setting is procedurally fair (i.e., free of fraud or undue influence of one party over the other).[62] Following this general paradigm, the recent reform of EU consumer law introduced a requirement of disclosure to consumers whenever the price was set by personalizing algorithms.[63] On the flip side of this picture, the provision of information to consumers may create costs and regulatory risks. One of them—namely, the possible information overflow beyond individual's cognitive capacity—has been already signaled above.[64] Indeed, the problem of poor reading and understanding of pre-contractual information is well-known,[65] and one can wonder whether further items of disclosure can bring added value. Certainly, for consumers to be empowered by information, communicative aspects of B2C disclosures must be duly considered.[66]

Apart from this, the requirements of transparency and explainability also involve other regulatory trade-offs.

First of all, requiring firms to reveal information about the algorithms they use may exert a chilling effect on market innovation and on devising new ways of analyzing consumer data. Revealing the premises of algorithmic decision-making to consumers means also revealing them to competitors on the market, calling into question the reasonableness of investing in the development and application of algorithms.[67]

Secondly, designing transparent and explainable algorithms entails additional costs and poses a higher technical challenge,[68] raising the general level of transaction costs in the consumer market. The costs of an algorithmic architecture that could comply with these

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[61] For further analysis on price personalization in EU consumer law, see, e.g., Frederik Zuiderveen Borgesius & Joost Poort, Online Price Discrimination and EU Data Privacy Law, 40 J. Consumer Pol'y 347 (2017).

[62] This attitude has been most vividly reflected in Article 4(2) of the 93/13/EEC directive on unfair terms in consumer contracts, which excludes the review of fairness vis-à-vis the "core terms" of a contract (including, in particular, the price determination). On the role of this provision for algorithmic price-setting, see Mateusz Grochowski, European Consumer Law After the New Deal: A Triptych, 39 Yearb. Eur. Law 1, 16-21 (2020).

[63] Cf. the Omnibus Directive discussed in Section III.

[64] Cf. Sections II and IV.

[65] Omri Ben-Shahar & Carl E. Schneider, More Than You Wanted to Know: The Failure of Mandated Disclosure (2014); Geraint Howells, The Potential and Limits of Consumer Empowerment by Information, 32 J.L. & Soc'y 349 (2005).

[66] See, e.g., Maartje Elshout et al., Study on Consumers' Attitudes Towards Terms and Conditions (T&Cs) (2016) (https://ec.europa.eu/info/sites/info/files/terms_and_conditions_final_report_en.pdf).

[67] In certain settings, however, this relationship may be less obvious; for automated creditworthiness assessment on consumer credit market and the cost/innovation link, see Citron & Pasquale, supra note 7, at 31.

[68] On the mathematical model for establishing these costs, see Emrah Akyol et al., Price of Transparency in Strategic Machine Learning, arXiv preprint (2016) (https://arxiv.org/abs/1610.08210).

prerequisites can be ultimately shifted to consumers, by increasing in price or decreasing the quality or availability of goods and services.

Thirdly, the costs of transparency and explainability may also be reflected in the technical design of the algorithms themselves. A widespread concern in this regard relates to the possible trade-off between the transparency and accuracy of AI models, as in many cases the opaquest systems are the best-performing ones. However, it may be possible to provide satisfactory explanations to consumers even if experts cannot provide an interpretable model of the system.[69] In particular, ex post explanations may often provide sufficient information without significantly affecting the performance of the original model.[70]

Since the accuracy-transparency trade-off is real for many models,[71] the scholarship has sought to identify the fields of application in which explanations are especially needed and useful. In areas with a high resistance to errors (such as targeted advertising), a lower level of explainability may be sufficient,[72] while the case for explainability is strong in application domains (such as in medical diagnostics or finance) where errors can have particularly far-reaching consequences.

However, opacity may be a cause of concern also for the error-free operation of an AI system. For example, in price personalization we may wonder whether the relevant business interest in favor of opacity can indeed outweigh the public interest in transparency as a way to promote consumer self-determination and societal accountability.

To extrapolate these findings upon EU law, we need to distinguish, first of all, two layers of transparency and explainability for automated decision-making.[73] On the one hand, disclosure duties may target the cognitive needs of individual consumers. They aim to provide consumers with the ability to make informed decisions and—more generally—to enhance their sovereignty vis-à-vis machine-based profiling and automated outcomes. On the other hand, the requirement to reveal information about an algorithm plays a crucial role in the scrutiny of algorithmic fairness by public (e.g., consumer protection agencies) and private (e.g., trade associations) bodies.

Unfortunately, the existing policy proposals—along with the insular rules in Omnibus Directive and GDPR—do not seem entirely convincing from the standpoint of individual consumers. The strong focus on transparency and disclosure rests tacitly on the assumption that consumers will be capable of understanding and processing information about algorithms and further using this information to protect themselves and make meaningful market decisions.

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[69] Rudin, supra note 43, at 206-07.

[70] Zachary C. Lipton, The Mythos of Model Interpretability, 16 ACM Queue 1, 15 (2018).

[71] Hacker et al., supra note 18, at 430-33.

[72] Adadi & Berrada, supra note 43, at 52143.

[73] See also Sections III and IV.

Ex ante and ex post transparency might indeed play some role in engendering a sense of agency and, in case of the GDPR, could assist consumers in contesting arbitrary outcomes. However, it is unlikely that the information thus provided will be sufficient to identify deeply entrenched market dysfunctions and, above all, instances of undue influence and exploitation. On a positive note, attention paid to the pervasiveness of automated processing may gradually increase public awareness of the associated dangers, putting pressure on merchants to become more forthcoming.[74] However, transparency and explainability may not provide an adequate response to the negative externalities of algorithms in the consumer market. EU law seems to share much overoptimism about individuals' cognitive powers. Consumers' inability to understand, or at any rate to make use of, the information provided to them may eventually make transparency ineffective and purely ostensible.[75]

At the same time the requirements of explainability and transparency create a strong plea for proper design of enforcement mechanisms. At this point the individual dimension of transparency is mingled—to the most vivid and meaningful extent—with collective considerations. Undoubtedly, enforcement schemes based on the classic public and private law toolbox are woefully inadequate to address the risks of algorithmic consumer management.[76] The present-day EU consumer rules do not answer this question conclusively as well. Both the Omnibus Directive[77] and the GDPR provide only a general framing for sanctions and enforcement, leaving more detailed solutions to each Member State.

Every attempt to thoroughly enforce the transparency and explainability of algorithms faces an inherent epistemic issue. Effective application of an enforcement toolbox may require piercing the "black box" veil and understanding the relevant aspects of the design and operation of algorithms. From this vantage point, an interdependence exists between transparency and enforcement to the extent that the increase in transparency may trigger a surge in enforcement abilities. More clarity about the general architecture of an algorithm and the factors taken into account in making a particular decision substantially enhances the position of enforcement authorities. This facilitates both checking algorithms ex ante (by preventing negative spillovers, such as consumer exploitation and discrimination), as well as verifying ex post the lawfulness and fairness of particular personalized decisions.

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[74] Tami Kim et al., Why Am I Seeing This Ad? The Effect of Ad Transparency on Ad Effectiveness, 45 J. Consumer Res. 906, 907 (2019).

[75] Grochowski, supra note 62, at 35.

[76] On the general ineffectiveness of traditional remedies and enforcement schemes for algorithms and data protection see, Omri Ben-Shahar, Data Pollution, 11 J. Leg. Analysis 104, 188 (2019). On how AI technologies can be brought to the side of consumers and their organisations, see Marco Lippi et al., The Force Awakens: Artificial Intelligence for Consumer Law, 67 J. Artif. Intell. Res. 169 (2020); Marco Lippi et al., Consumer Protection Requires Artificial Intelligence, 1 Nat. Mach. Intell. 168 (2019).

[77] Cf. Section III.

Unfortunately, the interdependence between transparency and enforcement means that opacity may prevent effective enforcement, also concerning transparency requirements. This calls attention to other ways of countering algorithmic opacity. It seems that the plausible set of methods encompasses a combination of internal audits with associated transparency norms.[78] Such an approach could further encourage self-regulatory solutions, thereby reinforcing other, non-legal incentives (e.g., social or political pressure on the firms using algorithms in the consumer market to provide a higher degree of disclosure and clarity). This may promote voluntary self-commitment to a higher degree of quality of consumer algorithms, as well as to the creation of cross-sector solutions and fora (such as the OPAL project).[79] Finally, a promising approach builds on increasing consumer awareness of algorithmic profiling and its potential perils, through education programs. In this way consumers may both enhance their ability to make informed decisions about contracting with particular firms, as well as exercise higher "soft" pressure on better transparency of algorithmic decision-making.

VI. Conclusion

The regulation of algorithms in the consumer market still constitutes a fresh and immature element in the EU policy basket. The existing agenda consists mostly of the general policy blueprint, accompanied by a few rules, contained mostly in the Omnibus Directive and the GDPR. The latter are barely developed, both in terms of their content and the underlying policy considerations.

Undoubtedly, the legal framework based on transparency may enable non-intrusive and relatively cheap regulation of algorithms. Its main goal is to increase clarity of algorithms, not to frame the premises and outcomes of the automated decisions. It seeks neither to intervene in the process of making a decision by an algorithm nor to shape the decision as such. An impact of this kind, should it occur, could only be a spill-over of making an algorithm more transparent and explainable.

However, the regulatory agenda currently pursued by the EU seems to be quite clearly rooted in a well-established (and indeed somewhat obsolete) attitude towards consumer protection. It rests on the premise that the essence of consumer weakness stems from information deficits, so that it can be remedied by forcing professionals to disclose essential data. This approach builds on a poorly grounded premise that information is all a consumer needs to make meaningful market choices. Various cognitive biases and natural

[78] Consider the data protection impact assessments required under the GDPR or the role of independent review boards envisaged in the proposed US bill to prohibit the use of exploitative and deceptive practices by large online operators and to promote consumer welfare in the use of behavioral research by such providers, S. 1084. See also Hamon, supra note 43, at 22-23; Philipp Hacker, Teaching Fairness to Artificial Intelligence: Existing and Novel Strategies Against Algorithmic Discrimination under EU Law, 55 Common Mkt. L. Rev. 1143, 1170 (2018).

[79] Bruno Lepri et al., Fair, Transparent, and Accountable Algorithmic Decision-Making Processes, 31 Phil. & Tech. 611, 622 (2018).

constraints on human rationality make this way of regulating the consumer market highly questionable and raise substantial doubts as to its actual effectiveness.

Algorithmic transparency as endorsed in EU law assumes that well-informed consumers can both have higher trust in algorithmic decision making and make reasonable decisions about subjecting themselves to an automated decision-making scheme. The assumption that disclosure of the use and premises of algorithmic decisions may substantially empower individual consumers seems rather doubtful and somewhat utopian. In the case of highly specialized computer programs the consumer's cognitive constraints may easily be amplified. At the same time, it is hard to imagine that knowledge of algorithmic profiling may on its own induce many consumers to avoid a transaction. This may be especially problematic in markets where the use of algorithms is commonplace (e.g., in the ridesharing industry, where all platforms provide consumers with dynamic prices) and where consumers do not enjoy much flexibility in switching between competing offers.

These shortcomings may drive attention to the collective dimension of transparency, pertaining especially to administrative scrutiny of algorithms and enforcement of consumer protection measures. Current enforcement schemes refer mostly to the already existing institutional framework in consumer and data protection. The use of classic enforcement modes seems, however, rather questionable in the context of algorithms. It first of all raises an interdependency issue—since the enforcement of transparency is dependent on disclosure of the use of an algorithm and its basic premises. Secondly, the classic enforcement modes do not make a good fit with the specificity of many firms (especially online platforms) that use algorithmic profiling. They usually operate in "patchwork" regulatory environments, consisting of state-issued and self-regulatory schemes.

All in all, EU law seems to be rather at the beginning of the path towards well-suited and effective regulation of algorithms. Admittedly, however, it does not lag behind the global dynamic. The use of algorithms in consumer transactions poses everywhere almost the same set of policy questions, which in none of the present-day jurisdictions seems to receive a comprehensive answer. At the same time, the strong propensity of the EU towards regulating consumer contracts (with particular regard to the use of data, as envisaged in the GDPR) makes EU consumer law a particular "laboratory" for developing and testing various regulatory solutions. For these reasons, the current EU struggle over algorithms may also prove valuable for a wide transnational debate over framing and regulating the digital consumer economy.