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Policy Implications of User-Generated Data Network Effects

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Cover Page Footnote

* Assistant Professor, Tel Aviv University, Faculty of Law. I would like to thank Peter Menell, Niva Elkin-Koren, Michael Birnhack, Amir Khoury, Assaf Hamdani and the participants of the Tel-Aviv 8th Privacy, Cyber, and Technology Conference, the 2021 Intellectual Property Scholars Conference, and the Lab for Law, Data, and Digital Ethics at Bar-Ilan University.

Policy Implications of User-Generated Data Network Effects

Uri Y. Hacoheh*

User-generated data (UGD) network effects are an exciting and novel economic force. They upset conventional market competition dynamics, and they lead to the formation of dominant data platforms with market power that spans different and seemingly unrelated markets. This article explains that UGD network effects are a blessing and a curse. They provide dominant data platforms with the opportunity to generate welfare-enhancing efficiencies as well as welfare-reducing anticompetitive harms. After exploring the economic opportunities and social threats, this article explores the implications of UGD network effects on competition policy. Drawing on traditional network effects theory, this article proposes and critically examines a host of remedial approaches for policymakers to consider. These remedies include modernized public utility-style regulation, open access policies, and adjusted standards for anti-monopolization and merger scrutiny.

* Assistant Professor, Tel Aviv University, Faculty of Law. I would like to thank Peter Menell, Niva Elkin-Koren, Michael Birnhack, Amir Khoury, Assaf Hamdani, and the participants of the Tel-Aviv 8th Privacy, Cyber, and Technology Conference, the 2021 Intellectual Property Scholars Conference, and the Lab for Law, Data, and Digital Ethics at Bar-Ilan University.

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INTRODUCTION

A positive feedback loop is emerging: the more users use data platforms' services, the better and more diverse these services become.¹ The more services data platforms offer and the better these services are, the more users these platforms attract, the more users use these platforms' services, and the better and more diverse these platforms' services become. Data analytics and machine learning technologies empower data platforms to optimize, personalize, and continuously diversify their services by identifying hidden patterns in user-generated data ("UGD") to predict future trends and unsatisfied user demands. This article calls this special economic phenomenon "UGD network effects."²

Consider Gmail. The more people use Gmail, the more they help Google optimize the Gmail service. They participate in A/B testing that improves Gmail's features and design,³ and they train Gmail

¹ See Uri Y. Hacoen, *User-Generated Data Network Effects and Market Competition Dynamics*, 33 *FORDHAM INTELL. PROP., MEDIA & ENT. L.J.* (forthcoming 2022) (manuscript at 10) (on file with author).

² For a more extensive definition of UGD network effects and their impact on market dynamics, see generally *id.* For deeper explanation on machine learning, see SHAI SHALEV-SHWARTZ & SHAI BEN-DAVID, *UNDERSTANDING MACHINE LEARNING: FROM THEORY TO ALGORITHMS* 19 (Cambridge Univ. Press, 2014) (defining machine learning as "program[ming] computers so that they can 'learn' from input available to them").

³ See Brian Christian, *The A/B Test: Inside the Technology That's Changing the Rules of Business*, *WIRED* (Apr. 25, 2012, 8:47 PM), <https://www.wired.com/2012/04/ff-abtesting/> [<https://perma.cc/5BSJ-8X64>] (discussing how companies, including Google, extensively use A/B testing); see also Abbey Stemler et al., *The Code of the Platform*, 54

machine learning algorithms to tab emails better or to better filter out spam.⁴ Users also help Google to personalize the Gmail user experience by feeding Gmail’s recommender systems, such as “Smart Compose” and “Smart Reply,” with their unique writing tone and style.⁵ Finally, they simultaneously help Google create, optimize, and personalize many of its other services.⁶ Users empower Google’s Assistant, Maps, and Cloud Search to provide them with notifications, navigations, and query results, all based on their Gmail UGD.⁷

UGD network effects are a new and exciting economic phenomenon.⁸ Supply-driven and demand-driven economies of scale existed before, but UGD network effects mix the two in a unique and unprecedented way.⁹ Unlike past types of scale economies, UGD

GA. L. REV. 605, 617 (2020) (“Platform companies run countless experiments on users to inform their design choices. . . .”); Ron Kohavi & Stefan Thomke, *The Surprising Power of Online Experiments*, HARV. BUS. REV. (Sept.–Oct. 2017), <https://hbr.org/2017/09/the-surprising-power-of-online-experiments> [<https://perma.cc/HC6X-TEQX>].

⁴ Maalika Manoharan, *New Settings for Smart Features and Personalization in Gmail*, GOOGLE (Nov. 16, 2020), <https://blog.google/products/gmail/new-settings-smart-features-and-personalization-gmail/> [<https://perma.cc/B9AB-M9DY>] (exploring Gmail’s “smart features”).

⁵ Natt Garun, *How to Enable and Use Gmail’s AI-Powered Smart Reply and Smart Compose Tools*, VERGE (July 6, 2020, 5:34 PM), <https://www.theverge.com/21315189/gmail-ai-smart-reply-compose-tools-enable-turn-on-how-to> [<https://perma.cc/X2N8-3ZVQ>] (“You can also choose to allow Gmail’s machine learning to personalize the suggestions based on the way you write your emails by choosing ‘Smart Compose personalization.’ For example, if you greet your colleagues with ‘Hi, team’ versus ‘Hello, everyone,’ it will automatically drop in whatever you use most often.”).

⁶ Kate O’Flaherty, *How Private is Your Gmail, and Should You Switch?*, GUARDIAN (May 9, 2021, 4:00 AM), <https://www.theguardian.com/technology/2021/may/09/how-private-is-your-gmail-and-should-you-switch> [<https://perma.cc/NT8M-UJNL>] (noting that Gmail’s UGD is used, “in Google’s words, ‘to build better services’— including purchase history, location, email address, photos and search history.”).

⁷ *Id.*; see also *Turn on or off Gmail, Chat, and Meet Smart Features and Personalization*, GOOGLE WORKSPACE ADMIN HELP, <https://support.google.com/a/answer/10095404?hl=en> [<https://perma.cc/7GQD-YLVB>] (naming smart features and personalization for other Google products).

⁸ See Hacothen, *supra* note 1 (manuscript at 22–23); see also MARCO IANSITI & KARIM R. LAKHANI, *COMPETING IN THE AGE OF AI: STRATEGY AND LEADERSHIP WHEN ALGORITHMS AND NETWORKS RUN THE WORLD* 176 (2020) (exploring how AI disrupts traditional market competition dynamics).

⁹ Traditional supply-side effects refer to efficiencies from increased production, whereas traditional demand-side effects refer to efficiencies from increased consumption.

network effects empower modern data platforms to grow more efficiently beyond their primary and complementary markets.¹⁰ Consider how Alphabet successfully diversified from web search (Google) to seemingly unrelated product markets such as equipment manufacturing (Nest) or autonomous driving (Waymo).¹¹ Better still, consider how Tencent's WeChat, the Chinese super-platform, successfully incorporated the "functionality of Facebook, iMessage, Uber, Expedia, eVite, Instagram, Skype, PayPal, Grubhub, Amazon, LimeBike, WebMD, and many more."¹²

Along with other economic phenomena,¹³ UGD network effects have contributed to the growing concentration in digital markets,

Both phenomena may lead to increasing returns to scale. ROBERT S. PINDYCK & DANIEL L. RUBINFELD, *MICROECONOMICS* 187 (3d ed. 1995); W. Brian Arthur, *Increasing Returns and the New World of Business*, *HARV. BUS. REV.* (July 1996), <https://hbr.org/1996/07/increasing-returns-and-the-new-world-of-business> [<https://perma.cc/9VM9-KNAG>]; W. BRIAN ARTHUR & KENNETH J. ARROW, *INCREASING RETURNS AND PATH DEPENDENCE IN THE ECONOMY* 3–17 (Michigan Press 1994).

¹⁰ See Hacoen, *supra* note 1 (manuscript at 11) (explaining the UGD network effects mix supply and demand side effects); Jens Prüfer & Christoph Schottmüller, *Competing with Big Data*, 69 *J. INDUS. ECON.* 967, 968 (2021); see also Marc Bourreau & Alexandre de Stree, *Digital Conglomerates and EU Competition Policy* (Mar. 2019), https://www.researchgate.net/publication/332174857_Digital_Conglomerates_and_EU_Competition_Policy [<https://perma.cc/5TRV-BK2A>] ("With data-driven network effects, firms thus have incentives to diversify into connected markets. Note that two markets can be connected because they share the same data, while being weakly related from a product market definition point of view."); Panos Constantinides et al., *Introduction-Platforms and Infrastructures in the Digital Age*, 29 *INFO. SYS. RSCH.*, 381, 382 (2018) ("[D]igital complements are product-agnostic.").

¹¹ See generally Avery Hartmans & Mary Meisenzahl, *All the Companies and Divisions Under Google's Parent Company, Alphabet, Which Just Made Yet Another Shake-Up to its Structure*, *BUS. INSIDER* (Feb. 12, 2020, 10:58 AM), <https://www.businessinsider.com/alphabet-google-company-list-2017-4> [<https://perma.cc/3AVJ-LJ3H>]. See also Paolo Aversa et al., *Customer Complementarity in the Digital Space: Exploring Amazon's Business Model Diversification*, 54 *LONG RANGE PLAN* 1, 14 (2021) (explaining how UGD powers diversification); Mohan Subramaniam et al., *Competing in Digital Ecosystems*, 62 *BUS. HORIZONS* 83, 84 (2019).

¹² KAI-FU LEE, *AI SUPERPOWERS: CHINA, SILICON VALLEY, AND THE NEW WORLD ORDER* 77 (2018).

¹³ Especially the economics of two-sided (or more) markets, which benefit from connecting different categories of consumers. See David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 *YALE J. REG.* 325, 331–33 (2003); Lapo Filistrucchi et al., *Identifying Two-Sided Markets*, 36 *WORLD COMPETITION* 33, 37–39 (2013). Somewhat confusingly, two-side market economics are also commonly known as

unleashing a recent upheaval in competition policy circles.¹⁴ Economists, lawyers, politicians, and journalists have begun calling for a recalibration of antitrust laws to the realities of the digital age.¹⁵ The Biden administration pushed these trends even further.¹⁶ In line with a recent comprehensive Congressional investigation of digital market competition,¹⁷ President Biden issued an executive order calling for aggressive scrutiny of the tech industry.¹⁸ The President also appointed a team of outspoken tech critics to influential positions in his administration and top regulatory agencies.¹⁹ A slew of confrontational bills, lawsuits, and regulatory enforcement actions have since followed.²⁰ Competition policy has not seen such hype since

network effects, albeit “indirect.” See, e.g., Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424, 424 (1985); Nicholas Economides, *The Economics of Networks*, 14 INT’L J. INDUS. ORG. 673, 679 (1996). See also S. J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. ECON. PERSP. 133, 139 (1994) (differentiating direct and indirect network effects).

¹⁴ See Carl Shapiro, *Antitrust in a Time of Populism*, 61 INT’L J. INDUS. ORG. 714, 717–21 (2018).

¹⁵ *Id.* at 742.

¹⁶ See, e.g., Lauren Feiner, *Biden Is Loading Up His Administration with Big Tech’s Most Prominent Critics*, CNBC (Mar. 9, 2021, 9:48 AM), <https://www.cnbc.com/2021/03/09/biden-loads-administration-with-big-techs-most-prominent-critics.html> [<https://perma.cc/2LPB-X8LL>]; John Cassidy, *The Biden Antitrust Revolution*, NEW YORKER (July 12, 2021), <https://www.newyorker.com/news/our-columnists/the-biden-antitrust-revolution> [<https://perma.cc/V9AQ-YWFK>].

¹⁷ STAFF OF S. COMM. ON THE JUDICIARY, 117TH CONG., INVESTIGATION COMPETITION DIGIT. MKTS. (Comm. Print 2022).

¹⁸ Exec. Order No. 14,036, 86 Fed. Reg. 36987 (July 9, 2021).

¹⁹ See, e.g., Cecilia Kang, *A Leading Critic of Big Tech Will Join the White House*, N.Y. TIMES (Mar. 5, 2021), <https://www.nytimes.com/2021/03/05/technology/tim-wu-white-house.html> [<https://perma.cc/3N6U-HF23>]; David McCabe & Cecilia Kang, *Biden Names Lina Khan, a Big-Tech Critic, As FTC Chair*, N.Y. TIMES (June 15, 2021), <https://www.nytimes.com/2021/06/15/technology/lina-khan-ftc.html> [<https://perma.cc/T267-V8MH>]; Lauren Feiner, *Biden to Nominate Google Critic and Progressive Favorite Jonathan Kanter to Lead DOJ Antitrust Division*, CNBC (July 20, 2021, 3:08 PM), <https://www.cnbc.com/2021/07/20/biden-to-nominate-jonathan-kanter-to-lead-doj-antitrust-division.html> [<https://perma.cc/KV66-6PGX>].

²⁰ See, e.g., Kate E. Gehl et al., *One Year of Action Since President Biden’s Executive Order on Competition*, NAT’L L. REV. (July 27, 2022), <https://www.natlawreview.com/article/one-year-action-president-biden-s-executive-order-competition> [<https://perma.cc/2L6K-DVF4>]; Daniel S. Bitton et al., *United States: E-Commerce and Big Data Merger Control*, GLOB. COMPETITION REV. (Dec. 7, 2021), <https://globalcompetitionreview.com/guide/digital-markets-guide/second->

the heyday of the Gilded Age. As Carl Shapiro put it, “[a]ntitrust is sexy again.”²¹

Yet much of the so-called neo-Brandeisian antitrust sentiment, including calls to lift the “curse of bigness,”²² to break up digital monopolies,²³ or to separate “platform and commerce,”²⁴ seemingly disregards the economics of UGD network effects.²⁵ This Article addresses this dramatic oversight. Section I explores the complex implications of UGD network effects from a social welfare perspective. As this Section explains, UGD network effects are both a blessing and a curse.²⁶ On the one hand, UGD network effects

edition/article/united-states-e-commerce-and-big-data-merger-control [https://perma.cc/E94D-RSDH]; Sara Morrison & Shirin Ghaffary, *The Case Against Big Tech*, VOX (Dec. 8, 2021), <https://www.vox.com/recode/22822916/big-tech-antitrust-monopoly-regulation> [https://perma.cc/459X-G34F].

²¹ Shapiro, *supra* note 14, at 714.

²² TIM WU, THE CURSE OF BIGNESS: ANTITRUST IN THE NEW GILDED AGE 15 (2018).

²³ See, e.g., Paula Dwyer, *Should America’s Tech Giants Be Broken Up?*, BLOOMBERG: BUSINESSWEEK (July 20, 2017, 4:00 AM), <https://www.bloomberg.com/news/articles/2017-07-20/should-america-s-tech-giants-be-broken-up> [https://perma.cc/5W2E-PVBN]; Jonathan Taplin, *Opinion: Is It Time to Break Up Google?*, N.Y. TIMES, (Apr. 22, 2017), <https://www.nytimes.com/2017/04/22/opinion/sunday/is-it-time-to-break-up-google.html> [https://perma.cc/6V8X-QNPN].

²⁴ See Lina M. Khan, *The Separation of Platforms and Commerce*, 119 COLUM. L. REV. 973, 1082 (2019).

²⁵ These voices seem to disregard the efficiencies driven by UGD network effects. On the other hand, other voices disregard the negative implications of UGD network effects. See, e.g., Hal R. Varian, *Use and Abuse of Network Effects*, in TOWARD A JUST SOCIETY: JOSEPH STIGLITZ AND TWENTY-FIRST CENTURY ECONOMICS 227–39 (2018) [hereinafter Varian, *Use and Abuse*] (dismissing UGD network effects as “learning by doing”); Hal R. Varian, *Recent Trends in Concentration, Competition, and Entry*, 82 ANTITRUST L.J. 807, 826 (2019) [hereinafter Varian, *Recent Trends*]; Robert H. Bork & J. Gregory Sidak, *What Does the Chicago School Teach About Internet Search and the Antitrust Treatment of Google?*, 8 J. COMPETITION L. & ECON. 663, 687–92 (2012); Geoffrey A. Manne & Joshua D. Wright, *Google and the Limits of Antitrust: The Case Against the Case Against Google*, 34 HARV. J.L. & PUB. POL’Y 171, 208–11 (2011).

²⁶ Cf. Richard T. Ford, *Save the Robots: Cyber Profiling and Your So-Called Life*, 52 STAN. L. REV. 1573, 1575 (2000) (“The concerns I’m about to raise take the form of ambiguities and ambivalences—almost everything I’m about to describe could be interpreted as a positive advance”); Joshua A.T. Fairfield & Christoph Engel, *Privacy as a Public Good*, 65 DUKE L.J. 385, 398 (2015) (“[I]nformation produces both positive and negative network effects, and both positive and negative externalities.”); Jane R. Bambauer, *The New Intrusion*, 88 NOTRE DAME L. REV. 205, 227 (2012) (“[P]rivacy losses are the negative externalities from an otherwise productive and worthwhile activity—information flow.”).

create powerful incentives for data platforms to innovate and compete for dominance within and across UGD-driven markets.²⁷ This competitive process unleashes tremendous economic value that benefits users and society. On the other hand, the same network effects also empower data platforms to detect, neutralize, or outperform any “disruptive” competitive threat and to engage in price discrimination and behavioral manipulation.²⁸ These practices will likely stagnate innovation, disadvantage users, and reduce social welfare.

Section II builds on these conflicting dynamics and explores the ramifications for law and competition policy.²⁹ This Section proposes three bold sets of remedial policies inspired by traditional network regulation. The first set focuses on utility regulation.³⁰ In line with the traditional view of this concept, the proposed policies call for regulators to (1) access the UGD held by the dominant data platforms, (2) audit their algorithms’ performance, and (3) regulate the price and quality of their offerings.

The proposed set of policies, however, goes beyond conventional views. Drawing on Albert Hirschman’s seminal scholarship, these policies propose governing data platforms in a way that empowers each user’s “voice.”³¹ To that end, the proposed policies suggest that regulators create public trusts to govern UGD, facilitate market conditions for the emergence of trusted UGD-governing intermediaries, or require the data platforms themselves to make structural changes to their internal corporate governance.³² Subsection II.A. extensively explores these proposals’ benefits and shortcomings.

The second set of proposed policies builds on the tradition of “open access” regulation.³³ Open access regulation effectuates Albert Hirschman’s second seminal principle by creating a valid

²⁷ See *infra* section II.i.

²⁸ See *infra* section II.ii.

²⁹ See *infra* section III.

³⁰ See *infra* section III.i.

³¹ See generally ALBERT O. HIRSCHMAN, EXIT, VOICE, AND LOYALTY: RESPONSES TO DECLINE IN FIRMS, ORGANIZATIONS, AND STATES (Harv. Univ. Press, 1972).

³² See *infra* section III.i.

³³ See *infra* section III.ii.

“exit.”³⁴ These policies encourage or compel dominant data platforms to open up their networks by sharing UGD with competitors, users, and regulators, resulting in a spark to market competition and effective user mobility.³⁵ Subsection II.B. explores the technical complexities of open access regulation and its inherent tradeoffs with UGD-driven innovation and privacy.

The last set of proposed policies aims to revise traditional antitrust scrutiny, particularly monopolization and merger assessment.³⁶ Although the standardized tools of antitrust enforcement are ill-fit to deal with UGD-driven market dynamics, Subsection II.C. nevertheless explores and critically evaluates several adjustments that could mitigate anticompetitive leverage of UGD network effects, if adopted by competition authorities.

I. USER-GENERATED DATA NETWORK EFFECTS

Traditional economic network effects describe a situation where the value consumers derive from using a good increases as other users use the same good.³⁷ The quintessential example of a traditional network good is the telephone.³⁸ The world’s only telephone is valueless to its single user until other users also obtain

³⁴ See HIRSCHMAN, *supra* note 31, at 4. Valid exit is also essential to effectuate Hirschman’s principle of “voice.” See Gideon Parchomovsky & Adi Libson, Entry at 14 (“Voice is sometimes most powerful when it operates in the shadow of exit. The credible threat of exit may be required for the voice of the speaker to be heard and for her opinion to be heeded.”).

³⁵ See *infra* section III.ii.

³⁶ See *infra* section III.iii.

³⁷ Hacoen, *supra* note 1 (manuscript at 6) (defining traditional network effects). See Katz & Shapiro, *supra* note 13, at 424 (1985) (“[T]he utility that a user derives from consumption of a good increases with the number of other agents consuming the good.”); Philip H. Dybvig & Chester S. Spatt, *Adoption Externalities as Public Goods*, 20 J. PUB. ECO, 231, 231–32 (1983); CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES 174 (1999).

³⁸ Liebowitz & Margolis, *supra* note 13 at 139–40 (“The paradigmatic case for a direct network effect, if not an externality, is the network of telephone users.”); Katz & Shapiro, *supra* note 13, at 424–25 (limiting their discussion of direct network effects to communications technologies). See also Roland Artle & Christian Averous, *The Telephone System as a Public Good: Static and Dynamic Aspects*, 4 BELL J. ECON. & MAN. SCI. 89, 89 (1973); Jeffrey Rohlfs, *A Theory of Interdependent Demand for a Communications Service*, 5 BELL J. ECON. & MAN. SCI. 16, 17 (1974).

telephones and become interconnected and reachable through the network.³⁹

Similarly, UGD network effects describe a situation where the value that users derive from a data platform's services increases the more UGD users invest in that platform.⁴⁰ Data platforms are service providers that rely on Big Data analytics and machine learning technologies to generate value for their users.⁴¹ By identifying hidden patterns in data and predicting future trends and unsatisfied user demand, data analytics and machine learning technologies enable data platforms to optimize, personalize, and continuously diversify their services.⁴² A positive feedback loop that mimics the logic of traditional network effects then emerges: The more users use these platforms (and the more UGD they surrender in the process), the better and more diverse these platforms' services become.⁴³ The more (and better) services these platforms can offer, the more users are attracted to repeat the cycle.⁴⁴

In the UGD-driven economy, users share UGD with data platforms—consciously or not—whenever they interact with the

³⁹ *Id.* at 26.

⁴⁰ Hacothen, *supra* note 1 (manuscript at 9) (defining traditional network effects). *See also* K. Sabeel Rahman, *Regulating Informational Infrastructure: Internet Platforms As the New Public Utilities*, 2 GEO. L. TECH. REV. 234, 241 (2018) (“An information platform is more valuable the more people use it.”); OECD, *Exploring the Economics of Personal Data: A Survey of Methodologies for Measuring Monetary Value*, 220 OECD DIGIT. ECON. PAPERS 4, 34 (2011) (“Potential non-linear returns means network effects[.]”); Erik Brynjolfsson & Andrew McAfee, *The Business of Artificial Intelligence*, HARV. BUS. REV. (July 18, 2017), <https://hbr.org/2017/07/the-business-of-artificial-intelligence> [<https://perma.cc/EY5G-3ZHD>] (“The performance of most machine learning systems improves as they're given more data to work with.”); Charles A. Miller, *Big Data and the Non-Horizontal Merger Guidelines*, 107 CAL. L. REV. 309, 326 (2019) (defining “Network Effects Arising from Data”); MAURICE E. STUCKE & ALLEN P. GRUNES, *BIG DATA AND COMPETITION POLICY* 170 (Oxford 2016) (explaining how UGD network effects impact market competition).

⁴¹ *Cf.* Bourreau & De Streel, *supra* note 10, at 14 (“[W]e could adopt a broader definition of a platform as a product or service characterized by strong direct and/or indirect network effects, and not necessarily multi-sided.”).

⁴² Hacothen, *supra* note 1 (manuscript at 9) (defining UGD network effects). *See also* Shalev-Shwartz & Shai Ben-David, *supra* note 2, at 21.

⁴³ Hacothen, *supra* note 1 (manuscript at 10).

⁴⁴ *See* Hacothen, *supra* note 1 (manuscript at 5–19).

platforms' services.⁴⁵ "UGD" includes both the creative content that users generate, share, or post online, and the demographic or behavioral information (clickstreams, browsing history, etc.) that users generate when interacting with the data platforms' services.⁴⁶

UGD network effects are similar but analytically distinct from traditional network effects. Some services, particularly social media, benefit from both traditional and UGD network effects.⁴⁷ Social media services benefit because users value these services more when they can contact friends who also use the same (or interconnected) services.⁴⁸ Also, users' value social media services more when they benefit from the UGD-driven optimization and personalization of these services' design, functionality, content, and advertising.⁴⁹

⁴⁵ See, e.g., *About Us*, WAZE (Aug. 3, 2014), <https://web.archive.org/web/20140803080158/http://www.waze.com/about> (explaining how their service relies on both passive and active surrender of UGD by describing how "users just drive with the app open on their phone to passively contribute traffic and other road data, but they can also take a more active role by sharing road reports on accidents, police traps, or any other hazards along the way, helping to give other users in the area a 'heads-up' about what's to come.")

⁴⁶ See, e.g., Jose Ramon Saura et al., *From User-Generated Data to Data-Driven Innovation: A Research Agenda to Understand User Privacy in Digital Markets*, 60 INTER. J. OF INFO. MGMT. 1, 1–4 (2021) (defining UGD). See also Art. 4 (1) EU General Data Protection Regulation (GDPR): 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 at 33 (providing the definition for "personal data"); OECD, *supra* note 40, at 34. Some ambiguity exists with respect to smart devices that are partially user-driven but partially autonomous. For purposes of this Article, such data is considered UGD.

⁴⁷ To complicate things even further, social media platforms also enjoy from the so-called "indirect" network effects. As more users join Facebook the more appealing the platform becomes to advertisers and application developers and vice versa. See Evans, *supra* note 13 and accompanying text.

⁴⁸ See *supra* note 40 and accompanying text.

⁴⁹ See e.g., Nick Statt, *Facebook Is Unleashing Universal Search Across Its Entire Social Network*, THE VERGE (Oct. 22, 2015, 1:00 PM), <https://www.theverge.com/2015/10/22/9587122/new-facebook-search-all-public-posts> [<https://perma.cc/NSU7-WXUT>] (discussing how UGD improves Facebook search); Catherine Tucker & Alexander Marthews, *Social Networks, Advertising, and Antitrust*, 19 GEO. MASON L. REV. 1211, 1224 (2012) (describing how UGD improves targeted advertising); Catherine Tucker, *Social Advertising: How Advertising that Explicitly Promotes Social Influence Can Backfire* (June 1, 2016) (discussing how connected UGD empowers social ads).

Other services, such as web searches, benefit only from UGD network effects and not from traditional network effects.⁵⁰ Users rarely concern themselves with the question of whether other users use the same search engine.⁵¹ Users are, however, concerned with the question of how well their search engine performs.⁵² And search engines perform better when they can utilize UGD to optimize and personalize the accuracy of their search results, suggest better terms, and improve their spellchecking functionalities.⁵³

UGD network effects also differ from traditional network effects in their impact on market competition dynamics. Traditional network effects prompt traditional network markets—such as telecommunications—to “tip” into a so-called “natural” monopoly.⁵⁴ Because the value of a network good increases when other users use it, once a single provider has amassed more users than its rivals, that provider is likely to gain a competitive edge and attract even more users at its rivals’ expense.⁵⁵ As the lead network grows, its competing networks get smaller.

Traditional network markets have clear boundaries; UGD-driven markets, however, do not. When AT&T monopolized the telephone industry, policymakers could conceptually separate the so-called “natural monopoly” portion of the business, namely the telecommunication services, from other complementary businesses,

⁵⁰ VARIAN, USE AND ABUSE, *supra* note 25, at 227–39 (“[T]here are no traditional network effects in search.”); Varian, *Recent Trends*, *supra* note 25, at 826 (2019). *See also*, Mark A. Lemley, *Antitrust and the Internet Standardization Problem*, 28 CONN. L. REV. 1041, 1052 (1996) (“[C]ertain Internet application product markets, such as the market for search engines, do not exhibit these [network effect] characteristics, and so may remain competitive indefinitely.”).

⁵¹ VARIAN, USE AND ABUSE, *supra* note 25, at 227–39.

⁵² *Id.*

⁵³ *See* Hacothen, *supra* note 1 (manuscript at 10–11) (discussing Google Search optimization).

⁵⁴ Assuming that network is privately owned and “closed” to competitors. *See* Hacothen, *supra* note 1 (manuscript at 26) (exploring market dynamics in the presence of UGD network effects). *See generally* Paul A. Geroski, *Competition in Markets and Competition for Markets*, 3 J. OF INDUS., COMPETITION & TRADE 151, 151–66 (2003).

⁵⁵ Stanley M. Besen & Joseph Farrell, *Choosing How to Compete: Strategies and Tactics in Standardization*, 8 J. ECON. PERSP. 117, 118–19 (1994) (“[N]etwork market equilibria often cannot be understood without knowing the pattern of technology adoption in earlier periods.”). *See generally* Mark J. Roe, *Chaos and Evolution in Law and Economics*, 109 HARV. L. REV. 641 (1996).

such as equipment manufacturing.⁵⁶ Traditional network monopolists cannot gain network benefits from extending their monopoly into new markets. Therefore, in the absence of other clearly identified efficiencies, such extension is potentially anticompetitive.⁵⁷ The competition authorities may reverse anticompetitive market extension by imposing divestiture remedies.⁵⁸

Monopoly boundaries are different in UGD-driven markets. In these markets, the “tipping” tendency is not confined to any single market but rather transfers from one market to another.⁵⁹ The value of the data platforms’ services increases the more (and the more varied) UGD they amass. Data platforms with the most comprehensive UGD troves are likely to gain a competitive edge in

⁵⁶ See generally Timothy J. Brennan, *Why Regulated Firms Should Be Kept Out of Unregulated Markets: Understanding the Divestiture in United States v. AT&T*, 32 ANTITRUST BULL. 741 (1987).

⁵⁷ There will be cases where monopolists would find venturing into adjacent markets efficient, and these cases will usually be limited to vertical relationships and justified by transaction-specific efficiencies. See generally Christopher S. Yoo, *Vertical Integration and Media Regulation in the New Economy*, 19 YALE J. ON REG. 171, 190–200 (2002); William F. Baxter, *Conditions Creating Antitrust Concerns with Vertical Integration by Regulated Industries—“For Whom the Bell Doctrine Tolls”*, 52 ANTITRUST L.J. 243, 245–46 (1983); Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 HARV. J.L. & TECH. 85, 97 (2003).

⁵⁸ *United States vs. AT&T*, 552 F. Supp. 131, 152–53 (D.D.C. 1982). AT&T allegedly had no efficiency-enhancing justification to vertically integrate into complementary markets, such as equipment manufacturing, and instead it pursued this end to override regulatory restrictions in their primary network market. See Brennan, *supra* note 56, at 764; Farrell & Weiser, *supra* note 57, at 105; Baxter, *supra* note 57, at 245–46.

⁵⁹ See Hacothen, *supra* note 1 (manuscript at 27–34) (exploring market dynamics in the presence of UGD network effects); Nicolas Petit, *Technology Giants, The “Moligopoly” Hypothesis and Holistic Competition: A Primer* (Oct. 20, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2856502 [<https://perma.cc/5PEC-QT45>] (“[T]he tech giants are conglomerates that compete three-dimensionally as oligopolists across industries, and not within itemized relevant markets where they (inevitably) are monopolists.”); DIGITAL COMPETITION EXPERT PANEL, UNLOCKING DIGITAL COMPETITION 32 (2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf [<https://perma.cc/A76N-BXY7>] [hereinafter DIG. COMPETITION] (“[S]trong economies of scope are one reason why the same small number of large digital companies have successfully built ecosystems across several adjacent markets.”).

any UGD-driven market.⁶⁰ In this environment, data platforms can often point to UGD-driven efficiencies to justify extending their monopoly to different markets.⁶¹ In other words, divesting Google from Nest is nothing like divesting AT&T from Western Electric, even though both Google and AT&T offer information services, and Nest and Western Electric offer physical equipment.⁶²

These dynamics pose a serious challenge to policymakers, who cannot easily separate UGD-driven markets from one another. If left untamed, the competition dynamics in UGD-driven markets will lead to the “natural” formation of multi-industry conglomerates.⁶³ The welfare implications of these dynamics are assessed in greater detail elsewhere,⁶⁴ but a brief overview is provided below.

A. Economic Benefits

UGD network effects produce economic benefits by empowering data platforms to optimize, personalize, and diversify their services. Data platforms are incentivized to realize these efficiencies in their quest for dominance in their primary markets as well as in other UGD-driven markets.⁶⁵

Optimization occurs when data platforms collect and analyze UGD to improve the performance of their services, which they do in three ways.⁶⁶ First, by gaining a scale-of-UGD advantage over their rivals, data platforms can improve their services by making

⁶⁰ Hacothen, *supra* note 1 (manuscript at 27–34) (exploring market dynamics in the presence of UGD network effects); Prüfer & Schottmüller, *supra* note 10, at 969.

⁶¹ Prüfer & Schottmüller, *supra* note 10, at 969.

⁶² See Inge Graef, *Market Definition and Market Power in Data: The Case of Online Platforms*, 38 *WORLD COMPETITION*, 473, 493 (2015) (providing the example of Google and Nest as connected yet unrelated markets); Stucke & Grunes, *supra* note 40, at 128; Brennan, *supra* note 56, at 764–65 (explaining the divestiture is inefficient in the presence of strong economics of scope).

⁶³ *Supra* note 10 and accompanying text. See also Yong Lim, *Tech Wars: Return of the Conglomerate—Throwback or Dawn of a New Series for Competition in the Digital Era?*, 19 *J. OF KOREAN L.* 47, 58 (2020); Miller, *supra* note 40, at 311.

⁶⁴ See generally Hacothen, *supra* note 1.

⁶⁵ *Id.*; Prüfer & Schottmüller, *supra* note 10, at 969.

⁶⁶ Hacothen, *supra* note 1 (manuscript at 13–18). See also Howard A. Shelanski, *Information, Innovation, and Competition Policy for the Internet*, 161 *PENN. L. REV.* 1663, 1680 (2013) (“Customer information is an input of production when platforms use it to improve their services and make user interactions more efficient.”).

them more authoritative, engaging, or otherwise valuable to users. For example, the more users use the Google search engine to search the web, the more authoritative Google Trends—a feature that enables users to evaluate the worldwide popularity of their queries in real-time—becomes.⁶⁷ The same dynamics apply to crowdsourcing websites such as Quora or Yelp.⁶⁸

Second, optimization occurs when the data platforms feed UGD into their machine learning models to improve their performance. In this way, past users' searches improve the relevance of Google Search's future results,⁶⁹ past users' conversations improve the functionality of Amazon Alexa's future assistance,⁷⁰ and past users' driving improves Tesla's future autonomous driving capabilities.⁷¹ Lastly, data platforms optimize the look and feel of their services'

⁶⁷ Simon Rogers, *What Is Google Trends Data—And What Does It Mean*, GOOGLE NEWS LAB (July 1, 2016), <https://medium.com/google-news-lab/what-is-google-trends-data-and-what-does-it-mean-b48f07342ee8> [<https://perma.cc/534Q-FEQH>] (“Trends data can provide a powerful lens into what Google users are curious about and how people around the world react to important events.”).

⁶⁸ Daniel L. Rubinfeld & Michal S. Gal, *Access Barriers to Big Data*, 59 ARIZ. L. REV. 339, 355–56 (2017) (“[T]he more data about the quality of hotels based on reviews from past users can be found on TripAdvisor, the more valuable the data-based information to each user.”). Unsurprisingly, these websites incentivize users to submit content. See Andres V. Lerner, *The Role of ‘Big Data’ in Online Platform Competition*, COMPASS LEXECON 25 (Aug. 26, 2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2482780 [<https://perma.cc/S7DJ-Q7GA>] (explaining how TripAdvisor and Amazon offer incentives to users to write reviews).

⁶⁹ See Cédric Argenton & Jens Prüfer, *Search Engine Competition with Network Externalities*, 8 J. COMPETITION L. & ECON. 73, 74–76 (2012); STUCKE & GRUNES *supra* note 40, at 173–74.

⁷⁰ See Bernard Marr, *Machine Learning In Practice: How Does Amazon’s Alexa Really Work?*, FORBES (Oct. 5, 2018), <https://www.forbes.com/sites/bernardmarr/2018/10/05/how-does-amazons-alexa-really-work/> (last visited Nov 10, 2022) [<https://perma.cc/MDL7-5QDP>]; STUCKE & GRUNES *supra* note 40, at 181–82; Christopher Mims, *Ask M for Help: Facebook Tests New Digital Assistant: Single Interface Could Replace Web Searches and Apps on Mobile Devices*, WALL ST. J. (Nov. 9, 2015), <https://www.wsj.com/articles/ask-m-for-help-facebook-tests-new-digital-assistant-1447045202> [<https://perma.cc/T552-3CKC>].

⁷¹ Martin Landis, *Data Monetization—Tesla’s Principles for Data-Driven Success*, USU (Aug. 19, 2021), <https://blog.usu.com/en-us/tesla-principles-for-data-driven-success> [<https://perma.cc/FZ5J-5JHH>] (explaining that Tesla cars generate data that “is used to develop and refine their self-driving assist system”).

through UGD-driven experimentation.⁷² For instance, Netflix decides how best to design its user homepage,⁷³ and Google decides how many entries it should post on each of its results pages.⁷⁴

In addition to optimization, data platforms use UGD to better personalize their services.⁷⁵ Personalization is a highly granular level of optimization designed to improve the performance of the data platforms' services in accordance with the unique preferences of each user.⁷⁶ Facebook's News Feed,⁷⁷ Amazon's product

⁷² See Abbey Stemler et al., *The Code of the Platform*, 54 GA. L. REV. 605, 617 ("Platform companies run countless experiments on users to inform their design choices."); Christian, *supra* note 3; Ron Kohavi & Stefan Thomke, *The Surprising Power of Online Experiments*, HARV. BUS. REV. (Sept.–Oct. 2017), <https://hbr.org/2017/09/the-surprising-power-of-online-experiments> [<https://perma.cc/XS58-KW2S>]; STUCKE & GRUNES, *supra* note 40, at 173–74.

⁷³ Janko Roettgers, *This Simple Trick Helped Netflix Increase Video Viewing by More Than 20 Percent*, VARIETY (Jan. 7, 2016), <https://variety.com/2016/digital/news/netflix-ab-tests-image-optimization-trick-1201674325/> [<https://perma.cc/M8B5-NV75>]; Steve Urban et al., *It's All A/Bout Testing: The Netflix Experimentation Platform*, MEDIUM (Apr. 29, 2021), <https://netflixtechblog.com/its-all-a-bout-testing-the-netflix-experimentation-platform-4e1ca458c15> [<https://perma.cc/8VWQ-2KWV>].

⁷⁴ Christian, *supra* note 3 (noting that Google, which started back in 2000 with a single A/B test to optimize the number of results it displays on each web page, has grown by 2011 to more than 7,000 A/B tests).

⁷⁵ Lerner, *supra* note 68, at 12 ("User data also can help personalize the services of online providers."); Frederik J. Zuiderveen Borgesius et al., *Should We Worry About Filter Bubbles?*, 5 INTERNET POL'Y R. 1, 2 (Mar. 31, 2016), <https://policyreview.info/articles/analysis/should-we-worry-about-filter-bubbles> [<https://perma.cc/K2E8-V6N2>] ("[P]ersonalisation is described as the phenomenon that media content is not the same for every user, but tailored to different groups or individuals.").

⁷⁶ Christoph B. Graber, *The Future of Online Content Personalisation: Technology, Law and Digital Freedoms* 6 (Univ. of Zurich Pub, i-call Working Paper, Paper No. 2016/01, 2016) (arguing that personalization technologies function as recommenders); Catalina Goanta & Jerry Spanakis, *Influencers and Social Media Recommender Systems: Unfair Commercial Practices in EU and US Law* 4 (Stanford L. Sch. Pub. TTLF Working Papers, Paper No. 54, 2020), <https://law.stanford.edu/publications/no-54-influencers-and-social-media-recommender-systems-unfair-commercial-practices-in-eu-and-us-law/> [<https://perma.cc/GVZ7-D9RV>]. See generally Nava Tintarev & Judith Masthoff, *Designing and Evaluating Explanations for Recommender Systems*, in RECOMMENDER SYS. HANDBOOK (Francesco Ricci et al. eds., 2015).

⁷⁷ See, e.g., Akos Lada et al., *How Machine Learning Powers Facebook's News Feed Ranking Algorithm*, ENG'G AT META (Jan. 26, 2021), <https://engineering.fb.com/2021/01/26/ml-applications/news-feed-ranking/> [<https://perma.cc/Y4VT-N9WD>]; Avantika Monnappa, *How Facebook Uses Big Data: The Good, the Bad, and the Ugly*, SIMPLILEARN (July 21, 2022), <https://www.simplilearn.com/how-facebook-is-using-big-data-article> [<https://perma.cc/F7JR-457F>].

recommendations,⁷⁸ and even Google Search results⁷⁹ are personalized and differ to some extent from user to user.

Finally, UGD empowers data platforms to diversify their services by introducing new and better (more optimized and personalized) services.⁸⁰ Data platforms diversify their services by recycling UGD that they acquired in one market to amplify the performance of another service in a different market.⁸¹ For example, the same query data that Google Search uses to optimize the functionality of its spellchecking can also serve to optimize

⁷⁸ See, e.g., Muffaddal Qutbuddin, *Comprehensive Guide on Item Based Collaborative Filtering*, MEDIUM (Mar. 7, 2020), <https://towardsdatascience.com/comprehensive-guide-on-item-based-recommendation-systems-d67e40e2b75> d [https://perma.cc/CSK8-DEJZ] (“Item-item collaborative filtering . . . was developed by Amazon in 1998 and plays a great role in Amazon’s success.”).

⁷⁹ See Barry Smyth et al., *On Communities, Collaboration, and Recommender Systems in Personalized Web Search* in RECOMMENDER SYS. HANDBOOK Sec. 1.1 (Springer 2011); Tobias D. Krafft et al., *What Did You See? A Study to Measure Personalization in Google’s Search Engine*, 8 EPJ DATA SCIENCE 1, 38 (2019); Nick Statt, *Google Personalizes Search Results Even When You’re Logged Out, New Study Claims*, VERGE (Dec. 4, 2018), <https://www.theverge.com/2018/12/4/18124718/google-search-results-personalized-unique-duckduckgo-filter-bubble> [https://perma.cc/L5FK-JRAX]; Frank Pasquale, *Paradoxes of Digital Antitrust: Why the FTC Failed to Explain Its Inaction on Search Bias*, HARV. J. L. & TECH. 1, 8 (2013), <https://jolt.law.harvard.edu/assets/misc/Pasquale.pdf> [https://perma.cc/42GZ-MRCT]. But see Jillian D’Onfro, *We Sat in On an Internal Google Meeting Where They Talked About Changing the Search Algorithm—Here’s What We Learned*, CNBC (Sept. 18, 2018), <https://www.cnbc.com/2018/09/17/google-tests-changes-to-its-search-algorithm-how-search-works.html> [https://perma.cc/DRF4-V5P9] (“Right now, there is very little search personalization and what exists is focused on a user’s location or immediate context from a prior search.”).

⁸⁰ Bourreau & De Streel, *supra* note 10, at 9 (“Since data is non-rival, it can be viewed as a sharable input for product development, leading to economies of scope in product development.”); JACQUES CRÉMER ET AL., EUROPEAN COMMISSION, COMPETITION POLICY FOR THE DIGITAL ERA 28 (2019), <https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf> [https://perma.cc/4LAX-DZRL]; *Competition Policy: The Challenge of Digital Markets, Special Report by the Monopolies Commission Pursuant to Section 44(1)(4) of the Act Against Restraints on Competition*, MONOPOLKOMMISSION (June 1, 2015), <https://www.monopolkommission.de/index.php/en/press-releases/52-competition-policy-the-challenge-of-digital-markets> [https://perma.cc/5LBK-VPTR].

⁸¹ See *supra* note 80 and accompanying text; see also Rubinfeld & Gal, *supra* note 68, at 36 (“[D]ataset could be valuable to many different users, operating in unrelated and distinct markets.”); Shelanski, *supra* note 66, at 1677 (“Google’s scale and scope might appear to give it substantial power in a wide range of markets . . .”).

spellchecking across other Google services such as Docs, Translate, and Gmail.⁸²

Data platforms also diversify their services through a synergetic merger of otherwise siloed UGD sets from different markets to create new services and functionalities that could not be created otherwise.⁸³ For example, Google can merge content from Calendar and location data from Maps to calculate routes and traffic and to notify users when they should leave one event to arrive in time for another.⁸⁴

Users benefit tremendously from the realization of these efficiencies. UGD-driven optimization, personalization, and diversification have helped transform the digital economy in less than a decade.⁸⁵ Moreover, while UGD network effects lead to outstanding market concentration, for the first time in history, this concentration in market power does not immediately seem detrimental to social welfare.⁸⁶ While monopolists—even natural

⁸² Privacy Policy–Privacy & Terms, GOOGLE (Feb. 10, 2022), <https://policies.google.com/privacy?hl=en-US> [https://perma.cc/WVP3-6VLF] (“[U]nderstanding which search terms are most frequently misspelled helps us improve spell-check features used across our services.”); Charlie Warzel & Ash Ngu, *Opinion: Google’s 4,000-Word Privacy Policy Is a Secret History of the Internet*, N.Y. TIMES (July 10, 2019), <https://www.nytimes.com/interactive/2019/07/10/opinion/google-privacy-policy.html> [https://perma.cc/AA5J-H6N Y]; See Prüfer & Schottmüller, *supra* note 10, at 989 n.25.

⁸³ OECD, DATA-DRIVEN INNOVATION: BIG DATA FOR GROWTH AND WELL-BEING: INTERIM SYNTHESIS REPORT 26–29 (2015) (defining data-driven innovation); STUCKE & GRUNES, *supra* note 40, at 21; Iain M. Cockburn et al., *The Impact of Artificial Intelligence on Innovation* 26 (Nat’l Bureau of Econ. Rsch., Working Paper No. 24449, 2018).

⁸⁴ Abner Li, *Google Calendar Side Panel Adds Useful Google Maps Add-On*, 9TO5 GOOGLE (Apr. 19, 2021), <https://9to5google.com/2021/04/19/google-calendar-maps-add-on/> [https://perma.cc/2E7L-DE29].

⁸⁵ Madeleine Hillyer, *How Has Technology Changed—and Changed Us—in the Past 20 Years?*, WORLD ECON. F. (Nov. 18, 2020), <https://www.weforum.org/agenda/2020/11/heres-how-technology-has-changed-and-changed-us-over-the-past-20-years/> [https://perma.cc/M3LB-HA2J]; Tyler Cowen, *Artificial Intelligence Could Be a Great Equalizer*, BLOOMBERG.COM (Sept. 9, 2022), <https://www.bloomberg.com/opinion/articles/2022-09-09/artificial-intelligence-will-be-a-great-equalizer>; Sam Altman, *Moore’s Law for Everything* (Mar. 16, 2021), <https://moores.samaltman.com/> [https://perma.cc/66D5-G22K].

⁸⁶ Cf. Hal R. Varian, *Economic Scene: If There Was a New Economy, Why Wasn’t There a New Economics?*, N.Y. TIMES (Jan. 17, 2002), <https://www.nytimes.com/2002/01/17/>

ones—are usually motivated to raise prices, limit output, and stifle innovation,⁸⁷ UGD-driven monopolies apparently challenge this usual premise.

Because the users of UGD-driven products provide the raw material needed for these products' production, data platforms are incentivized to increase user consumption, which implies keeping prices low and output plentiful.⁸⁸ Furthermore, the more accessible UGD-driven products become, the better the data platforms' ability to continuously improve and create services will be.⁸⁹ Yet the situation is not as rosy as it appears. UGD network effects also empower data platforms to engage in anticompetitive practices which can (and do) reduce social welfare.

B. Social Harms

UGD network effects may generate social harm by empowering data platforms to hinder innovation, engage in price discrimination

business/economic-scene-if-there-was-a-new-economy-why-wasn-t-there-a-new-economics.html [https://perma.cc/F26U-AYQH] (suggesting that the new economy makes mega corporations more efficient); Peter Thiel, *Competition Is for Losers*, WALL ST. J. (Sept. 12, 2014), <https://www.wsj.com/articles/peter-thiel-competition-is-for-losers-1410535536> [https://perma.cc/7P5Z-Q3N6] (“Creative monopolists give customers more choices by adding entirely new categories of abundance to the world. Creative monopolies aren’t just good for the rest of society; they’re powerful engines for making it better.”).

⁸⁷ See KARL E. CASE & RAY C. FAIR, *PRINCIPLES OF MICROECONOMICS* 316 (Prentice Hall 1996).

⁸⁸ See, e.g., Lee, *supra* note 12, at 172 (“[T]he requirement in U.S. law that plaintiffs prove the monopoly is actually harming consumers. AI monopolists, by contrast, would likely be delivering better and better services at cheaper prices to consumers.”); Rubinfeld & Gal, *supra* note 68, at 375 (“[I]t is these very barriers which create an incentive for firms to compete over the provision of products or services from which they can get access to such information, sometimes even providing them free of charge.”); Ford, *supra* note 26, at 1576 (“The genius of this system is that it will be absolutely free to the consumer”); Lerner, *supra* note 68, at 4. See also Crémer, *supra* note 80, at 88; Adam Davidson, *A Washing Machine That Tells the Future*, NEW YORKER (Oct. 23, 2017), <https://www.newyorker.com/magazine/2017/10/23/a-washing-machine-that-tells-the-future> [https://perma.cc/H4V5-6WQF] (“[T]he best way to expand market share is ‘to push prices as low as possible’”); Matt McFarland, *Your Car’s Data May Soon Be More Valuable Than the Car Itself*, CNN: BUS. (Feb. 7, 2017, 9:05 AM), <http://money.cnn.com/2017/02/07/technology/car-data-value/index.html> [https://perma.cc/R66P-Y85J].

⁸⁹ See OECD, *supra* note 83; STUCKE & GRUNES, *supra* note 40, at 21; Iain M. Cockburn et al., *The Impact of Artificial Intelligence on Innovation* 26 (Nat’l Bureau of Econ. Rsch., Working Paper No. 24449, 2018).

among the platforms' users, and manipulate user behavior.⁹⁰ Data platforms can hinder innovation at two different points. First, once a large enough portion of UGD-driven markets tip in favor of a single dominating data platform (or a few coordinated ones⁹¹), this platform becomes, on average, more capable of innovating than many of its potentially disruptive competitors. As competitors become aware that the incumbent data platform can innovate more efficiently, their incentives to innovate dissipates.⁹² When facing no feasible threats of disruption, the incumbent data platforms' incentives to invest in innovation also hits a nadir.⁹³

Second, this detrimental process to innovation may happen even before a large enough portion of UGD-driven markets tip in favor of one dominating data platform. The mere advantage of having substantial UGD-driven intelligence enables a dominant data platform to detect and neutralize potential disruptors at an early stage—a practice called “nowcasting.”⁹⁴ Nowcasting creates a negative feedback loop that mirrors the positive feedback loop: the more users' data platforms have and the more data those users generate, the better the data platforms become at nowcasting—namely at identifying and neutralizing competitive risks in real-

⁹⁰ Hacothen, *supra* note 1 (manuscript at 36–37).

⁹¹ *Cf. infra* notes 344–3349 and accompanying text (explaining that dominant data platforms can form a cartel).

⁹² But not completely. Competitors may still innovate—if not for the prospect of disrupting and displacing the incumbent data platforms, at least in hope to be acquired by them—but their innovation incentives in this environment are nevertheless distorted. For example, they might overinvest in innovation that complements the status quo rather than trying to disrupt it. DIG. COMPETITION, *supra* note 59, at 49; Khan, *supra* note 24, at 978–79 (explaining how the aura of the dominant data platforms negatively project on venture capital).

⁹³ See, e.g., Prüfer & Schottmüller, *supra* note 10, at 969.

⁹⁴ Daniel McIntosh, *We Need to Talk About Data: How Digital Monopolies Arise and Why They Have Power and Influence*, 23 J. TECH. L. & POL'Y. 185, 193 (2019). See also Colleen Cunningham et al., *Killer Acquisitions* (Apr. 22, 2020) (unpublished manuscript), <https://ssrn.com/abstract=3241707> [<https://perma.cc/YR7H-3T73>]; STIGLER COMMITTEE ON DIGITAL PLATFORMS, FINAL REPORT 75 (2019), available at <https://research.chicagobooth.edu/stigler/media/news/committee-on-digital-platforms-final-report> [<https://perma.cc/4WLV-BUBM>] [hereinafter STIGLER REPORT] (“Incumbents have the incentive and ability to stand in the way of possibly disruptive innovation.”); Crémer, *supra* note 80, at 65, 121.

time.⁹⁵ Dominant data platforms are better nowcasters, meaning they are less threatened and more capable and motivated to further improve their nowcasting capabilities.⁹⁶

Because accessing more UGD-driven markets enables them to become better nowcasters, data platforms may extend across markets by excluding more efficient competitors and make a profit even without realizing UGD-driven efficiencies.⁹⁷ Achieving inter-market tipping in this way clearly undermines social welfare. Meta, for example, was accused of acquiring Onavo not to improve Meta's services but to surveil and neutralize its competitors.⁹⁸

The same concern applies to UGD-driven price discrimination and behavioral manipulation. Namely, data platforms' ability to leverage UGD-driven intelligence to tailor their product prices to each users' maximal willingness to pay (at the extreme: "perfect price discrimination")⁹⁹ or each user's behavior to further its own business agenda (at the extreme: "perfect behavioral manipulation").¹⁰⁰ In both cases, the more access a data platform has

⁹⁵ See McIntosh, *supra* note 94, at 193.

⁹⁶ Cf. Farrell & Weiser, *supra* note 57, at 109 (explaining that the ability to eliminate disruptive innovation may encourage a monopoly to inefficiently extend its reign across markets).

⁹⁷ *Id.*

⁹⁸ Betsy Morris & Deepa Seetharaman, *The New Copycats: How Facebook Squashes Competition from Startups*, WALL ST. J. (Aug. 9, 2017), <https://www.wsj.com/articles/the-new-copycats-how-facebook-squashes-competition-from-startups-1502293444> [<https://perma.cc/LV2E-84K4>]. See also Josh Constine, *Facebook Pays Teens to Install VPN That Spies on Them*, TECHCRUNCH (Jan. 30, 2019), <https://social.techcrunch.com/2019/01/29/facebook-project-atlas/> [<https://perma.cc/FVY5-5W7V>]; Jon Fingas, *Facebook Knew About Snap's Struggles Months Before the Public*, ENGADGET (Aug. 13, 2017), <https://www.engadget.com/2017-08-13-facebook-knew-about-snap-struggles-through-app-tracking.html> [<https://perma.cc/3QV4-3L9S>].

⁹⁹ See Ramsi A. Woodcock, *Big Data, Price Discrimination, and Antitrust*, 68 HASTINGS, L.J. 1371, 1385 (2017); Aziz Z. Huq, *The Public Trust in Data*, 110 WASH. L. J. 333, 356 (2021) ("[D]ata can be used to enable first-degree price discrimination by which different consumers are presented with variable, individualized prices for the same product."); Alessandro Acquisti et al., *The Economics of Privacy*, 54 J. ECON. LIT. 442, 466 (2016).

¹⁰⁰ Hacothen, *supra* note 1 (manuscript at 5–6) (defining behavioral manipulation). See also ARIEL EZRACHI & MAURICE E. STUCKE, *VIRTUAL COMPETITION: THE PROMISE AND PERILS OF THE ALGORITHM DRIVEN ECONOMY* 117–30 (Harvard Univ. Press 2016); Maurits Kaptein & Dean Eckles, *Selecting Means to Any End: Futures and Ethics of Persuasion*

to UGD, the better it can price discriminate among its users or manipulate its users' behavior.¹⁰¹ A negative feedback loop like the one mentioned above emerges in which a dominant data platform can expand its monopoly across markets and make a profit, even without realizing UGD-driven efficiencies.¹⁰² As in the case of nowcasting, pursuing these practices can reduce user welfare by depriving them of efficient innovation and price competition.

As with innovation hindrance, once multi-market tipping materializes—whether by efficient or inefficient market integration—the incumbent data platform no longer faces any feasible competitive threats, and as such, its incentive to engage in price discrimination and behavioral manipulation dramatically increases.¹⁰³ This is cause for concern. Besides serving as an instrument to exclude efficient competition from adjacent markets, price discrimination and behavioral manipulation also have intrinsic welfare-reducing properties.¹⁰⁴

Price discrimination, while economically efficient, has disturbing moral and distributional implications for the users of data platforms—especially those who are most vulnerable.¹⁰⁵ UGD-

Profiling in PERSUASIVE TECHNOLOGY: LECTURE NOTES IN COMPUTER SCIENCE 82, 90 (2010).

¹⁰¹ Farrell & Weiser, *supra* note 57, at 107 (explaining a monopolist may inefficiently leverage its power and “extend” its monopoly to complementary markets if doing so improves its abilities to engage in price discrimination).

¹⁰² *Cf.* Farrell & Weiser, *supra* note 57, at 107 (explaining that the ability to price discriminate may encourage a monopoly to inefficiently extend its reign across markets).

¹⁰³ See Hal R. Varian, *Price Discrimination*, in 1 HANDBOOK INDUSTRIAL OF ORGANIZATION 604 (R. Schmalensee & R.D. Willig, eds., 1989) (explaining that market power is required for firms to successfully price discriminate and that price discrimination increases the firms' surplus).

¹⁰⁴ Hacoen, *supra* note 1 (manuscript at 5–6, 32) (explaining the welfare implications of UGD-driven price discrimination and behavioral manipulation).

¹⁰⁵ Nathan Newman, *How Big Data Enables Economic Harm to Low-Income Consumers*, HUFFPOST (Nov. 15, 2014), https://www.huffpost.com/entry/how-big-data-enables-econ_b_5820202 [<https://perma.cc/K22M-LWFK>]; Huq, *supra* note 99, at 367 (“Populations that are economically or socially marginal, in contrast, will not benefit from personal data’s absent public interventions.”); Morgan Wild & Marini Thorne, *A Price of One’s Own: An Investigation Into Personalised Pricing in Essential Markets*, CITIZENS ADVICE (Aug. 2018) <https://www.citizensadvice.org.uk/Global/CitizensAdvice/Consumer%20publications/A%20price%20of%20one’s%20own%20final.pdf> [<https://perma.cc/UGA4-8RQK>]. (“Personalised pricing could make things worse for vulnerable consumers.”); Jennifer Valentino-DeVries et al., *Websites Vary Prices, Deals*

driven price discrimination is also ethically controversial because it enables businesses to adjust prices based on users' most hidden biases and vulnerabilities.¹⁰⁶ Consider game designers' ability to use price discrimination to target children who are cognitively susceptible to overspending on gaming.¹⁰⁷

Behavioral manipulation is even worse. Data platforms engage in two types of welfare-reducing behavioral manipulation.¹⁰⁸ First, dominant data platforms may leverage UGD-driven intelligence to nudge users toward overconsumption of products, services, and promoted advertisements. Shoshana Zuboff famously coined the ethos that underlines this manipulation strategy as "Surveillance Capitalism."¹⁰⁹ As commercial businesses, data platforms are motivated to increase shareholder value, not to enhance user welfare.¹¹⁰ By pushing users to overconsume their services or advertised promotions, data platforms optimize for the former

Based on Users' Information, WALL ST. J. (Dec. 24, 2012), <https://www.wsj.com/articles/SB10001424127887323777204578189391813881534> [<https://perma.cc/2TB5-JUR8>] (finding that major companies systematically discriminate against marginal communities).

¹⁰⁶ John Bohannon, *Facebook Preferences Predict Personality Traits*, SCI. (Mar. 11, 2013), <https://www.sciencemag.org/news/2013/03/facebook-preferences-predict-personality-traits> [<https://perma.cc/U74L-G2KN>] ("[P]eople's likes also predicted far more sensitive personal attributes such as homosexuality, religion, political party membership, and even use of cigarettes, alcohol, and drugs."); Ryan Calo & Alex Rosenblat, *The Taking Economy: Uber, Information, and Power*, 117 COLUM. L. REV. 1623, 1634–49 (2017).

¹⁰⁷ See ARTICLE 29, DATA PROTECTION WORKING PARTY, *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679*, 17/EN WP 251 11 (2017), http://www.hldataprotection.com/files/2017/10/20171013_wp251_enpdf.pdf [<https://perma.cc/8ZZT-C2WL>]; see also COMPETITION & MKTS. AUTH., THE COMMERCIAL USE OF CONSUMER DATA: REPORT ON THE CMA'S CALL FOR INFORMATION 58 (2015), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/435817/The_commercial_use_of_consumer_data.pdf [<https://perma.cc/T4J3-KXS8>]; Chris Jay Hoofnagle & Jan Whittington, *Free: Accounting for the Costs of the Internet's Most Popular Price*, 61 UCLA L. REV. 606, 613–14 (2014).

¹⁰⁸ Hacoen, *supra* note 1 (manuscript at 5–6) (defining behavioral manipulation).

¹⁰⁹ SHOSHANA ZUBOFF, *THE AGE OF SURVEILLANCE CAPITALISM: THE FIGHT OF A HUMAN FUTURE AT THE NEW FRONTIER OF POWER*, 279–88 (2018).

¹¹⁰ *Id.* See also Hacoen, *supra* note 1 (manuscript at 5–6) (defining behavioral manipulation).

objective, not for (and often at the expense of) the latter.¹¹¹ This type of behavioral manipulation reduces user welfare directly by artificially inflating demand¹¹² and indirectly by triggering ancillary harms such as addiction,¹¹³ depression,¹¹⁴ and extremism.¹¹⁵

¹¹¹ Emily Bell & Taylor Owen, *The Platform Press: How Silicon Valley Reengineered Journalism*, COLUM. JOURNALISM REV. (Mar. 29, 2017), https://www.cjr.org/tow_center_reports/platform-press-how-silicon-valley-reengineered-journalism.php [<https://perma.cc/WY3C-6CW9>] (“[T]he structure and the economics of social platforms incentivize the spread of low-quality content over high-quality material.”); Sue Halpern, *Apologize Later*, N.Y. REV. BOOKS (Jan. 17, 2019), <https://www.nybooks.com/articles/2019/01/17/facebook-apologize-later/> [<https://perma.cc/864X-SVXQ>]; Nicholas Thompson & Fred Vogelstein, *Inside the Two Years That Shook Facebook—and the World*, WIRED (Feb. 12, 2018), <https://www.wired.com/story/inside-facebook-mark-zuckerberg-2-years-of-hell> [<https://perma.cc/A4SK-D6EY>].

¹¹² See Oren Bar-Gill, *Algorithmic Price Discrimination: When Demand Is a Function of Both Preferences and (Mis)perceptions*, 86 U. CHI. L. REV. 217, 220–21 (2019).

¹¹³ See, e.g., Mattha Busby, *Social Media Copies Gambling Methods ‘To Create Psychological Cravings’*, GUARDIAN (May 8, 2018), <https://www.theguardian.com/technology/2018/may/08/social-media-copies-gambling-methods-to-create-psychological-cravings> [<https://perma.cc/AQ4N-KP3N>]; Henry Gray, *Social Media’s Use Of Slot Machine Psychology Has Its Users Hooked, What Direction Does Big Tech Take Next?*, WE HEART (Apr. 22, 2019), <https://www.we-heart.com/2019/09/04/social-media-and-the-slot-machine/> [<https://perma.cc/A5YB-K3PB>]; ADAM ALTER, IRRESISTIBLE: THE RISE OF ADDICTIVE TECHNOLOGY AND THE BUSINESS KEEPING US HOOKED 13 (2017); Mike Snider, *Netflix’s Biggest Competition? Sleep, CEO Says*, USA TODAY (Apr. 18, 2017) <https://www.usatoday.com/story/tech/talkingtech/2017/04/18/netflixs-biggest-competition-sleep-ceo-says/100585788/> [<https://perma.cc/E6AR-HP74>].

¹¹⁴ See, e.g., Maartje Boer et al., *Attention Deficit Hyperactivity Disorder-Symptoms, Social Media Use Intensity, and Social Media Use Problems in Adolescents: Investigating Directionality*, 91 CHILD DEV. e853, e853 (2020); Hunt Allcott et al., *The Welfare Effects of Social Media*, 110 AM. ECON. REV. 629, 630 (2020); JEAN M. TWENGE, IGEN: WHY TODAY’S SUPER-CONNECTED KIDS ARE GROWING UP LESS REBELLIOUS, MORE TOLERANT, LESS HAPPY—AND COMPLETELY UNPREPARED FOR ADULTHOOD—AND WHAT THAT MEANS FOR THE REST OF US 93 (2017).

¹¹⁵ See, e.g., Claire Wardle & Hossein Derakhshan, *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*, COUNCIL OF EUROPE 46 (Sept. 27, 2017), <https://edoc.coe.int/en/media/7495-information-disorder-toward-an-interdisciplinary-framework-for-research-and-policy-making.html> [<https://perma.cc/FH9R-MA6H>]; Jonathan Stray, *Defense Against the Dark Arts: Networked Propaganda and Counter-Propaganda* (Feb. 24, 2017), <http://jonathanstray.com/networked-propaganda-and-counter-propaganda> [<https://perma.cc/VP63-V5LG>]. See generally CASS R. SUNSTEIN, #REPUBLIC: DIVIDED DEMOCRACY IN THE AGE OF SOCIAL MEDIA (2017); Zeynep Tufekci, *Opinion: YouTube, the Great Radicalizer*, N.Y. TIMES (Mar. 10, 2018), <https://www.nytimes.com/2018/03/10/opinion/sunday/youtube-politics-radical.html>

The second type of behavioral manipulation is an unintentional side effect of the data platforms' optimization and personalization practices.¹¹⁶ Consider the clueless drivers that Waze directs off-road to explore uncharted nearby territories to improve its navigation system,¹¹⁷ or people recovering from mental illness to whom YouTube keeps serving violent content based on previous tendencies that have since been treated and changed.¹¹⁸ The welfare

[<https://perma.cc/HAK8-G75Y>]; Morgan Keith, *From Transphobia to Ted Kaczynski: How TikTok's Algorithm Enables Far-Right Self-Radicalization*, BUS. INSIDER (Dec. 12, 2021), <https://www.businessinsider.com/transphobia-ted-kaczynski-tiktok-algorithm-right-wing-self-radicalization-2021-11> [<https://perma.cc/58HG-JAZ2>].

¹¹⁶ Hacothen, *supra* note 1 (manuscript at 35) (defining behavioral manipulation). Cf. Michael S. Gal, *Algorithmic Challenges to Autonomous Choice*, 25 TELECOMM. & TECH. L. REV. 59, 63 (2018); Karni A. Chagal-Feferkorn & Niva Elkin-Koren, *Lex AI: Revisiting Private Ordering by Design*, 36 BERKELEY TECH. L. J. 101, 108 (2021). Moreover, other than the inherent bias of algorithmic governance, there are non-inherent yet highly concerning biases that result from limitations in algorithms design or in access to high quality data. For examples of systematic discrimination in UGD-driven services, see, e.g., Joy Buolamwini & Timnit Gebru, *Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification*, 81 PROC. MACHINE. LEARNING RES. 77, 78 (2018) (discussing biases in gender classification systems); U.S. GOV'T ACCOUNTABILITY OFF., *FACIAL RECOGNITION TECHNOLOGY* 1, 24–26 (July 2020); Allison Koenecke, et al., *Racial Disparities in Automated Speech Recognition*, 117 PROC. NAT'L. ACAD. SCI. 7684, 7684 (2020) (identifying biases speech recognition applications); Jieyu Zhao et al., *Men Also Like Shopping: Reducing Gender Bias Amplification Using Corpus-Level Constraints*, in PROCEEDINGS OF THE 2017 CONFERENCE ON EMPIRICAL METHODS IN NATURAL LANGUAGE PROCESSING 2979–2989 (2017), <https://aclanthology.org/D17-1323> (discussing biases in image search). See generally Paresh Dave, *Fearful of Bias, Google Blocks Gender-Based Pronouns from New AI Tool*, REUTERS (Nov. 26, 2018) <https://www.reuters.com/article/us-alphabet-google-ai-gender/fearful-of-bias-google-blocks-gender-based-pronouns-from-new-ai-tool-idUSKCN1NW0EF> [<https://perma.cc/Q9WR-VRL5>] (describing biases in predictive text).

¹¹⁷ See Ryan Calo & Alex Rosenblat, *The Taking Economy: Uber, Information, and Power*, 117 COLUM. L. REV. 1623, 1669 (2017). See also Geert Martens, *What If Waze Were Evil?*, LINKEDIN (Apr. 15, 2019), <https://www.linkedin.com/pulse/what-waze-were-evil-geert-martens/> [<https://perma.cc/5TFW-Q2XR>].

¹¹⁸ See JOHN CHENEY-LIPPOLD, *WE ARE DATA: ALGORITHMS AND THE MAKING OF OUR DIGITAL SELVES* 17 (2017) (“As a general rule, Gandy reminds us that ‘the use of predictive models based on historical data is inherently conservative. Their use tends to reproduce and reinforce assessments and decisions made in the past.’”); Michal S. Gal & Daniel L. Rubinfeld, *The Hidden Costs of Free Goods: Implications for Antitrust Enforcement*, 80 ANTITRUST L.J. 521, 547 (2016) (“[W]e cannot rely on short-run consumer choice as a reflection of long-term consumer interests”); Ford, *supra* note 26, at 1577. See generally ELI PARISER, *THE FILTER BUBBLE: HOW THE NEW PERSONALIZED WEB IS CHANGING WHAT WE READ AND HOW WE THINK* (2012).

implications of such “inadvertent” behavioral manipulations are more profound than the usual conflict of interest problem that emerges from the fact that data platforms are commercial profit-maximizing entities. The mere fact that data platforms govern many aspects of users’ behavior is posing a fundamental threat to users’ liberty and agency.¹¹⁹ In an unsettling futuristic video acquired by *The Verge*, Google researchers explain how, by having the entire world’s UGD, the company could nudge the entire human species to a better future.¹²⁰ While possible in theory, and even if Google’s motivations are pure, it is unclear what gives Google the moral authority to define what is “better” for society.¹²¹ And if better for society means worse for individuals or specific communities, how can Google morally make these tradeoffs?¹²²

II. POLICY RAMIFICATIONS

While UGD network effects generate positive welfare externalities, in a competitive market setting, these externalities are

¹¹⁹ Cf. JAMES WILLIAMS, *STAND OUT OF OUR LIGHT: FREEDOM AND RESISTANCE IN THE ATTENTION ECONOMY* 88 (2019) (“[Data platforms] threaten to frustrate one’s authorship of one’s own life.”); Cheney-Lippold, *supra* note 118, at 19 (“[D]igitalized lives . . . increasingly define who we are and who we can be.”); ZUBOFF, *supra* note 109, at 94 (arguing that data platforms extraction of UGD transforms users into “means to others’ ends.”). See generally BRETT FRISCHMANN & EVAN SELINGER, *RE-ENGINEERING HUMANITY* (2018) (warning that digitalization leads to human automation).

¹²⁰ Vlad Savov, *Google’s Selfish Ledger is an Unsettling Vision of Silicon Valley Social Engineering*, *VERGE* (May 17, 2018), <https://www.theverge.com/2018/5/17/17344250/google-x-selfish-ledger-video-data-privacy> [<https://perma.cc/7JZC-VFHN>].

¹²¹ *Id.* (explaining that Google could modify individuals’ behavior in ways that would “initially” be user-driven but soon thereafter would seek to “reflect Google’s values as an organization.”). See also *Leaked Google Video: A Disturbing Concept to Reshape Humanity with Data*, *YOUTUBE* (2018), <https://www.youtube.com/watch?v=EoBAIQjWoUQ> [<https://perma.cc/6RYP-CBG3>].

¹²² See generally Alexandra Chouldechova & Aaron Roth, *A Snapshot of the Frontiers of Fairness in Machine Learning*, 63 *COMM’N OF THE ACM*, 82, 88 (2020) (describing the trade-off between exploration and exploitation); Sarah Bird et al., *Exploring or Exploiting? Social and Ethical Implications of Autonomous Experimentation in AI* 3 (2016), <https://papers.ssrn.com/abstract=2846909> [<https://perma.cc/GPU7-YB4J>] (noting that because of information asymmetries autonomous experimentation systems are likely to target the most vulnerable users); Allison J.B. Chaney et al., *How Algorithmic Confounding in Recommendation Systems Increases Homogeneity and Decreases Utility*, *ACM* (Oct. 30, 2017), <https://arxiv.org/abs/1710.11214?context=cs> [<https://perma.cc/23ND-GFQS>].

likely to be internalized by a few large data platforms and at the expense of some (often the most vulnerable) platform users.¹²³ Policymakers should seek to align the interests of data platforms and users without breaking, and thus undermining, the efficiencies created by the UGD externalities.¹²⁴ By drawing on regulatory policy in traditional network industries, this section explores three avenues for promoting the goal of internalizing negative UGD-driven externalities: public utility regulation, open access regulation, and monopolization and merger scrutiny. The first approach embraces data platforms as natural monopolies while overseeing their business operations and seeking to adjust their corporate responsibilities and governance structure. The second approach aims to induce market competition by having data platforms open up their UGD networks and share UGD with competitors. The third option risks losing some network benefits to preserve market competition. The following subsections consider these options in detail.

A. Utility Regulation

Policymakers have traditionally considered network monopolies “natural monopolies” or “public utilities” and have regulated them

¹²³ Section Iiii. Cf. Veronica Marotta et al., *The Welfare Impact of Targeted Advertising Technologies*, INFO. SYS. RSCH. (2021), <https://pubsonline.informs.org/doi/abs/10.1287/isre.2021.1024> [<https://perma.cc/FY22-YW99>] (describing the misalignment between the interests between platforms and consumers in advertising markets); Katharina Pistor, *Rule by Data: The End of Markets?*, 83 L. CONTEMP. PROB. 101, 102 (2020) (“Big Tech and its clients gain from this asymmetry of predictive power at the expense of the consumers.”).

¹²⁴ Tejas N. Narechania, *Machine Learning as Natural Monopoly*, 107 IOWA L. REV. 1543, 1595 (2022) (advocating for achieving such balance); Viktor Mayer-Schönberger & Thomas Range, *A Big Choice for Big Tech: Share Data or Suffer the Consequences*, FOREIGN AFFAIRS (Sept. 2018), <https://www.foreignaffairs.com/articles/world/2018-08-13/big-choice-big-tech> [<https://perma.cc/Q9DS-QQCV>]. The overreaching objective to “align the interests of platforms and users” means to make sure that UGD is governed—at least partially—by the users for the users, but it cannot “save” the users from their own demons. Cf. Richard Herrnstein et al., *Utility Maximization and Melioration: Internalities in Individual Choice*, 6 J. BEHAV. DECISION MAKING 149, 150 (1993) (labeling the phenomena in which users act against their own benefit “internalities”). See generally NICK BOSTROM, *SUPERINTELLIGENCE: PATHS, DANGERS, STRATEGIES* (2014) (providing a more philosophical discussion about the existential harms of UGD-driven technology).

as such.¹²⁵ Regulation enabled the network monopolists to retain their market power but obliged them to exercise that power in a way that was fair and beneficial to consumers.¹²⁶ Because policymakers feared that the network monopolies might exploit their market position to inflate prices and restrict output, regulators sought to set reasonable price rates and compel the monopolists to serve their consumers on a fair and nondiscriminatory basis.¹²⁷ To achieve these goals, policymakers required the network monopolies to share privately held information—mostly financial records—with the regulatory authorities.¹²⁸ For instance, AT&T had to file tariffs with the Federal Communication Commission (FCC) and a host of state agencies.¹²⁹

Policymakers can adjust and update traditional public utility regulations to the realities of the UGD economy in three distinctive ways.¹³⁰ The first and most straightforward way to achieve such an

¹²⁵ *Verizon Communications v. FCC*, 535 U.S. 467, 477 (2002) (“At the dawn of modern utility regulation, in order to offset monopoly power and ensure affordable, stable public access to a utility’s goods or services, legislatures enacted rate schedules to fix the prices a utility could charge.”). See Narechania, *supra* note 124, at 1560; Pindyck & Rubinfeld, *supra* note 9, at 187; Brennan, *supra* note 56, at 749. The terms “public utility” and “common carrier” overlap and are sometimes used interchangeably. “Common carrier” refers to publicly accessible entities charged with transporting people, goods, or communications from one point to another for a fee. See Susan P. Crawford, *Transporting Communications*, 89 B.U. L. REV. 871, 878 (2009). Common carriers historically faced liability for losses and were required to make their services available to all similarly situated customers on equal terms. *Id.*

¹²⁶ Daniel F. Spulber & Christopher S. Yoo, *Access to Networks: Economic and Constitutional Connections*, 88 CORNELL L. REV. 885, 889 (2003); Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1325 (1998).

¹²⁷ Narechania, *supra* note 124, at 1560.

¹²⁸ Narechania, *supra* note 124, at 1562 (“Assessing such reasonable rates, however, is not simple. It requires that regulators gain access to information typically held by the monopolist.”); Kearney & Merrill, *supra* note 126, at 1325 (“To achieve the legal regime’s goal of standardization in services and prices . . . providers were required to file their rates and services with the agency.”).

¹²⁹ The Bell operating companies are regulated by state agencies whereas AT&T, as operator of the long-distance service, is regulated by the FCC. See Communications Act of 1934, 47 U.S.C. § 151 (1964); CHRISTOPHER DECKER, *MODERN ECONOMIC REGULATION: AN INTRODUCTION TO THEORY AND PRACTICE* 104 (Cambridge Univ. Press 2015) (describing rate regulation). Narechania, *supra* note 124, at 1560.

¹³⁰ Cf. Jason Furman & Robert Seamans, *AI and the Economy*, 19 INNOVATION POL’Y & ECON. 161, 179 (2019) (reviewing potential solutions). See also K. Sabeel Rahman, *The*

update is to appoint or empower a designated government agency to audit and regulate data platforms.¹³¹ Such government agency regulation is likely to be more intensive and complex than in the context of traditional network monopolies because it would require the data platforms and the government agencies to sustain a relationship of ongoing data sharing and communications.¹³² Agencies would ideally need to access both the input UGD that fuels the data platforms' optimization and personalization algorithms (such as users' search engine queries), as well as the UGD-driven outputs that the algorithms of data platforms discharge back to their users (such as a search engine results).¹³³ Ayelet Gordon-Tapiero, Katrina Ligett, and Alexandra Wood labeled these "incoming vector data" and "outgoing vector data," respectively.¹³⁴ In addition, agencies might also need to access, and experiment with, the data platforms' trained algorithms.¹³⁵

New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept, 39 CARDOZO L. REV. 1622, 1676 (2018).

¹³¹ DIG. COMPETITION, *supra* note 59, at 9–10, 74–77 (suggesting a designated regulatory agency); Priscilla M. Regan, *A Design for Public Trustee and Privacy Protection Regulation*, 44 SETON HALL LEGIS. J. 487, 506 (2020); Jennifer Shkabatur, *The Global Commons of Data*, 22 STAN. TECH. L. REV. 354, 393 (2019) (arguing that existing regulatory agencies can assume this role); Danielle Keats Citron & Frank Pasquale, *The Scored Society: Due Process for Automated Predictions*, 89 WASH. L. REV. 1, 25 (2014) (suggesting that expert technologists from the FTC or FCC could be granted access to private scoring algorithms "to test them for bias, arbitrariness, and unfair mischaracterizations."); Woodcock, *supra* note 99, at 1376, 1411.

¹³² *Cf.* Woodcock, *supra* note 99, at 1407 (arguing that rate regulation in the age of Big Data will be simpler than in traditional network industries because government agencies will have more data but ignore the fact that access to this data is likely to be provided by the regulated data platforms themselves).

¹³³ Government agencies could potentially bypass the data platforms and acquire this data directly from consumers. *See infra* note 178. To be successful users will need to overcome the collective action associated with uncoordinated data portability. *See infra* note 261 and accompanying text.

¹³⁴ Ayelet Gordon-Tapiero, Katrina Ligett & Alexandra Wood, *The Case for Establishing a Collective Perspective to Address the Harms of Platform Personalization*, 42 VAN. J. OF ENT. & TECH. (forthcoming 2022) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4105443 [<https://perma.cc/96N8-7A3M>].

¹³⁵ *Cf.* Michal S. Gal & Nicolas Petit, *Radical Restorative Remedies for Digital Markets*, 36 BERKELEY TECH. L. J. 617, 619 (2021) (offering mandatory sharing of algorithmic learning in some cases).

Armed with access to data and the algorithms, government agencies could—alone or with the aid of third-party entities such as civil society organizations, journalists, or academic researchers¹³⁶—audit the data platforms’ optimization and personalization algorithms for patterns of user discrimination or manipulation and then address these harms with carefully tailored remedies.¹³⁷ These remedies could range from setting informed price rates and quality standards to taxing particular services or even banning them altogether.¹³⁸ For example, regulators could tax or ban addictive design features such as re-sharing functionalities, never-ending

¹³⁶ Cf. David Freeman Engstrom et al., GOVERNMENT BY ALGORITHM: ARTIFICIAL INTELLIGENCE IN FEDERAL ADMINISTRATIVE AGENCIES, REPORT SUBMITTED TO THE ADMINISTRATIVE CONFERENCE OF THE UNITED STATES, 88–90 (Feb. 2020), <https://www-cdn.law.stanford.edu/wp-content/uploads/2020/02/ACUS-AI-Report.pdf> [<https://perma.cc/3ZTF-3WAH>] (discussing the pros and cons of regulatory collaboration between the government and private entities). See generally Colleen Honigsberg et al., *Outsider Oversight: Designing a Third Party Audit Ecosystem for AI Governance*, ARTIFICIAL INTELLIGENCE, ETHICS, & SOC’Y (2022) <https://arxiv.org/pdf/2206.04737.pdf> [<https://perma.cc/VF8Y-653U>] (favoring third party auditing by the government or organization to internal auditing).

¹³⁷ Cf. GIOVANNI SARTOR, PANEL FOR THE FUTURE OF SCIENCE AND TECHNOLOGY, THE IMPACT OF THE GENERAL DATA PROTECTION REGULATION (GDPR) ON ARTIFICIAL INTELLIGENCE, EUROPEAN PARLIAMENTARY RESEARCH SERVICE 61 (June 2020), [https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU\(2020\)641530](https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU(2020)641530) [<https://perma.cc/6NEV-F9SB>] (“In the AI era, an effective countervailing power needs also to be supported by AI: only if citizens and their organizations are able to use AI to their advantage, can they resist, and respond to, AI-powered companies and governments”); Nathaniel Persily, *Perspective, Facebook Hides Data Showing It Harms Users[] Outside Scholars Need Access*, WASH. POST (Oct. 5, 2021), <https://www.washingtonpost.com/outlook/2021/10/05/facebook-research-data-haugen-congress-regulation/> [<https://perma.cc/4A7X-V7H6>] (“Unfortunately, only the platforms have access to the relevant data, and as the newest revelations suggest, they have strong incentives not to make their internal research available to the public. Independent research on how people use social media platforms is clearly essential.”).

¹³⁸ The role of regulators is twofold. First, regulators must “audit” and force transparency on the data platforms’ obscure practices. See generally Jacob Metcalf, Ranjit Singh, Emanuel Moss, & Elizabeth Anne Watkins, *Witnessing Algorithms at Work: Toward a Typology of Audits*, DATA & SOCIETY: POINTS (Aug. 11), <https://points.datasociety.net/witnessing-algorithms-at-work-toward-a-typology-of-audits-efd224678b49> [<https://perma.cc/6BME-UNDF>]. See also notes 147–153 and accompanying text. Second, regulators can engage in substantive regulation and enforcement. See Narechania, *supra* note 124, at 1596 (exploring government regulation of data platforms); Woodcock, *supra* note 99, at 1376, 1406.

newsfeeds, and auto-play defaults.¹³⁹ Similarly, regulators could heighten the quality standards for certain dangerous services such as autonomous driving software or “smart” medical devices.¹⁴⁰

More importantly, informed government agencies could target user vulnerabilities that are highly contextualized or personalized with specifically designated remedies such as affirmative actions and cross-subsidization schemes.¹⁴¹ For instance, agencies could ban the use of behavioral “dark patterns,” but just in exceptionally inflammatory contexts (such as terrorism)¹⁴² or when they target

¹³⁹ Cf. *supra* note 107 and accompanying text. See Ellen P. Goodman, *Digital Information Fidelity and Friction*, KNIGHT FIRST AMEND. INST. (Feb. 26, 2020), <http://knightcolumbia.org/content/digital-fidelity-and-friction> [<https://perma.cc/T36M-ZRQ2>] (exploring the need for artificial friction).

¹⁴⁰ Huq, *supra* note 99, at 336 (explaining that certain UGD uses may be banned or reutilized for public purpose); Narechania, *supra* note 124, at 1603 (suggesting regulation for accuracy and bias harms); Sandra Wachter & Brent Mittelstadt, *A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI*, 2 COLUM. BUS. L. REV. 494, 495 (2019) (arguing that users should have rights to not be exposed to “inferences drawn from Big Data analytics that damage privacy or reputation, or have low verifiability”). Cf. Anthony Cuthbertson, *Self-Driving Cars Are Be More Likely to Drive into Black People*, *Study Claims*, INDEP. (Mar. 6, 2019, 1:58 PM), <https://www.independent.co.uk/tech/self-driving-car-crash-racial-bias-black-people-study-a8810031.html> [<https://perma.cc/4RSS-DHWU>]; Mahboubeh Parastarfeizabadi & Abbas Z. Kouzani, *Advances in Closed-Loop Deep Brain Stimulation Devices*, 14 J. NEUROENGINEERING & REHAB. 79, 81 (2017) (reviewing advancement in autonomous brain therapy devices).

¹⁴¹ See *supra* note 110 and accompanying text (documenting cases of systematic discriminations); Bar-Gill, *supra* note 112, at 220–22 (“If sellers use personalized pricing, then regulators can respond with personalized price caps.”); OREN BAR-GILL, *SEDUCTION BY CONTRACT: LAW, ECONOMICS AND PSYCHOLOGY IN CONSUMER MARKETS* 33–36 (Oxford 2012) (suggesting personalized disclosures); Christoph Busch, *Implementing Personalized Law: Personalized Disclosures in Consumer Law and Data Privacy Law*, 86 UNIV. CHI. L. REV. 309, 313–14 (2019). See generally OMRI BEN-SHAHAR, & ARIEL PORAT, *PERSONALIZED LAW: DIFFERENT RULES FOR DIFFERENT PEOPLE* (2021).

¹⁴² Cf. *Force v. Facebook, Inc.*, 934 F.3d 53, 83 (2d Cir. 2019) (Katzmann, J., dissenting) (“The duty not to provide material support to terrorism, as applied to Facebook’s use of the algorithms, simply requires that Facebook not actively use [UGD] to determine which of its users to connect to each other.”); The Protecting Americans from Dangerous Algorithms Act, H.R. 2154, 117th Cong. (2021) (“To amend section 230(c) of the Communications Act of 1934 to prevent immunity for interactive computer services for certain claims, and for other purposes.”). See generally Danielle Citron, *Extremist Speech, Compelled Conformity, and Censorship Creep*, 93 NOTRE DAME L. REV. 1035 (2018); Margaret Harding McGill, *House Democrats Target Algorithms in Liability Shield Bill*, AXIOS (Oct. 14, 2021), <https://www.axios.com/house-democrats-liability-shield-bill-3b4b4b42-e58f-4df4-9a43-f2890f0ebb9d.html> [<https://perma.cc/R3XM-NNHF>]. The Deceptive

exceptionally vulnerable users (such as children¹⁴³ or seniors¹⁴⁴). Agencies could also hold data platforms liable for targeting certain advertisements to African American teens, but not when they target the same advertisements to Caucasian adults.¹⁴⁵ Similarly, agencies may rule that the data platforms' boilerplate terms of service are unconscionable when targeting young children but not when directed at educated adults.¹⁴⁶

Initiatives to empower government agencies with oversight powers over data platforms and access to user data are rapidly emerging in the European Union. The French Digital Act, for example, grants the government statistical authorities the right to access platform-held information under certain conditions.¹⁴⁷ Similarly, the European Commission recently adopted the

Experiences to Online Users Reduction (DETOUR) Act, S. 1084, 116th Cong. (2019) [hereinafter DETOUR Act] (requiring data platforms to adopt 'neutral' presentation of options presented to the users, in order to ensure that the user interface design does not manipulate users' choices and impeding their autonomy); The Social Media Addiction Reduction Technology Act (SMART) Act, S. 2314, 116th Cong. (2019) [hereinafter SMART Act].

¹⁴³ Peter S. Menell, *2014: Brand Totalitarianism*, 47 U.C. DAVIS L. REV. 787, 794–95 (2014) (exploring the cognitive limitations of children). Cf. Mark Bergen, *YouTube Executives Ignored Warnings, Letting Toxic Videos Run Rampant*, BLOOMBERG (Apr. 2, 2019, 5:00 AM), <https://www.bloomberg.com/news/features/2019-04-02/youtube-executives-ignored-warnings-letting-toxic-videos-run-rampant> [<https://perma.cc/QX7B-APKG>] (“Before the launch of a dedicated app for minors, YouTube Kids, several people advocated that the company only offer hand-picked videos in the service to avoid any content kerfuffles. Those arguments lost, and the app has since picked videos algorithmically.”).

¹⁴⁴ See, e.g., Julia Angwin et al., *Dozens of Companies are Using Facebook to Exclude Older Workers from Job Ads*, PROPUBLICA (Sept. 20, 2017, 5:45 PM), <https://www.propublica.org/article/facebook-ads-age-discrimination-targeting> [<https://perma.cc/B9ZS-HP9B>] (reporting that job ads placed by large companies on Facebook were only presented to users twenty-five to thirty-six years old).

¹⁴⁵ Cf. Anita L. Allen, *Dismantling the “Black Opticon”: Privacy, Race Equity, and Online Data-Protection Reform*, 131 YALE L. J. 907, 913–28 (2022) (explaining that data regulation must be particularly sensitive to disadvantaged groups).

¹⁴⁶ *Supra* note 137 and accompanying text.

¹⁴⁷ Loi 2016-1321 du 7 Octobre 2016 pour une République numérique [Law 2016-1321 of October 7, 2016 for a Digital Republic (“French Digital Republic Act”)], JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANCAISE [J.O.] [OFFICIAL GAZETTE OF FRANCE], Oct. 8, 2016, No. 0235, https://www.legifrance.gouv.fr/jo_pdf.do?id=JORFTEXT000033202746 [<https://perma.cc/2EYU-YZ7A>]. See generally EUR. STATISTICAL SYS., DATA ACCESS FOR OFFICIAL STATISTICS (2017).

Communication on Building a European Data Economy, which proposes that “[p]ublic authorities could be granted access to data where this would be in the ‘general interest’ and would considerably improve the functioning of the public sector.”¹⁴⁸ Likewise, the proposed EU Digital Service Act also compels data platforms to share information about how their algorithms function with academia and civil society groups.¹⁴⁹ It also requires data platforms to prepare an annual risk assessment report to be reviewed by an outside auditor, with a summary of the finding made public.¹⁵⁰

Similar efforts are gradually taking place in the United States. For instance, The Social Media DATA Act requires data platforms to provide the Federal Trade Commission with access to all the ads targeted to users, including targeting criteria and mechanisms, as well as the demographic information of users to whom the ads were presented.¹⁵¹ In another instance, the Platform Transparency and Accountability Act authorizes the Federal Trade Commission to compel data platforms to share some of their data with independent researchers.¹⁵² Finally, the American Data Privacy and Protection Act and the Algorithmic Accountability Act both require comparable disclosures.¹⁵³

¹⁴⁸ *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Building a European Data Economy* § 3.5, COM (2017) 9 final (Jan. 16, 2017), <https://data.consilium.europa.eu/doc/document/ST-5349-2017-INIT/en/pdf> [<https://perma.cc/82MJ-QQ4Q>].

¹⁴⁹ Adam Satariano, *E.U. Takes Aim at Social Media’s Harms with Landmark New Law*, N.Y. TIMES (Apr. 22, 2022) <https://www.nytimes.com/2022/04/22/technology/european-union-social-media-law.html> [<https://perma.cc/L2CN-X2WR>]; Frances Haugen, *Europe Is Making Social Media Better Without Curtailing Free Speech. The U.S. Should, Too*, N.Y. TIMES (Apr. 28, 2022), <https://www.nytimes.com/2022/04/28/opinion/social-media-facebook-transparency.html> [<https://perma.cc/X6FM-LLQ5>] (“The new requirement for access to data will allow independent research into the impact of social media products on public health and welfare.”).

¹⁵⁰ *Id.*

¹⁵¹ The Social Media Disclosure and Transparency of Advertisements Act of 2021, H.R. 3451, 117th Cong. § 2 (2021) [hereinafter Social Media DATA Act].

¹⁵² Ben Smith, *A Former Facebook Executive Pushes to Open Social Media’s ‘Black Boxes’*, N.Y. TIMES, (Jan. 2, 2022), <https://www.nytimes.com/2022/01/02/business/media/crowdtangle-facebook-brandon-silverman.html> [<https://perma.cc/EZ42-53JH>].

¹⁵³ American Data Privacy and Protection Act, H.R. 8152, § 202 117th Cong. (2022); The Algorithmic Accountability Act of 2022, H.R. 6580, § 6 117th Cong. (2022).

Despite its potential, government regulation has significant drawbacks. First, platform-using citizens cannot always trust governments to safeguard their welfare and wellbeing.¹⁵⁴ As George Orwell described in the late 1940s, there are multiple avenues for governments to misuse their power in the presence of mass technological surveillance.¹⁵⁵ Governments may, for example, exploit their access to UGD to enforce an authoritarian order while undermining the civil liberties of their citizens. Some commenters raised these concerns in the wake of China's new data privacy regulation.¹⁵⁶ More subtly, governments may try to shape the civil discourse within their territories by aiding the data platforms in interpreting and enforcing the platforms' guidelines.¹⁵⁷ For instance, the Israeli-based NGO *Adalah* recently accused the Israeli Cyber-Security Unit of systematically petitioning Facebook to censor content that the Unit considered 'terrorism-related' without

¹⁵⁴ Persily, *supra* note 137 (“[T]he government itself should not have access to the data. The risk of surveillance and mission creep from law enforcement is simply too great.”).

¹⁵⁵ See generally GEORGE ORWELL, 1984 (1961).

¹⁵⁶ See, e.g., Asad Baloch, *Orwell's Nightmare is Coming True in China*, EQBAL AHMAD CENTRE FOR PUBLIC EDUCATION (May 24, 2021), <https://eacpe.org/orwells-nightmare-is-coming-true-in-china/> [https://perma.cc/8PW9-4RN6]. Alexander McCaig & Janson Rigby, *Orwellian China and Data Governance: Is Big Brother Always Watching?* TARTLE (Dec. 22, 2021), <https://tartle.co/orwellian-china-and-data-governance-is-big-brother-always-watching/> [https://perma.cc/F7P9-MUQF]; Luca Bertuzzi, *China's Third Way on Data Governance*, EURACTIV (May 12, 2021), <https://www.euractiv.com/section/data-protection/interview/chinas-third-way-on-data-governance/> [https://perma.cc/ZYV5-5WYV] (“Article 27 of the PIPL in fact provides the legal basis for collecting images and data for reasons of public security, without the person concerned being informed. This provision might lead to abuses if there is no independent control over the work of the public authorities.”). See also Primavera de Filippi, *The Social Credit System as a New Regulatory Approach: From 'Code-Based' to 'Market-Based' Regulation*, VERFBLOG, (June 24, 2019), <https://verfassungsblog.de/the-social-credit-system-as-a-new-regulatory-approach-from-code-based-to-market-based-regulation/> [https://perma.cc/MAH8-YLDU].

¹⁵⁷ See Michael D. Birnhack & Niva Elkin-Koren, *The Invisible Handshake: The Reemergence of the State in the Digital Environment*, 8 VA. J.L. & TECH. 1, 53–59 (2003); Jake M. Balkin, *Free Speech is a Triangle*, 118 COLUM. L. REV. 11, 20, 34–37 (2018); Kate Klonick, *The New Governors: The People, Rules, and Process Governing Online Speech*, 131 HARV. L. REV. 1599, 1650–52 (2018).

providing the content creators with the procedural safeguards of due process or judicial review.¹⁵⁸

A second mirror-image concern is that government agencies would be inadvertently affected by the data platforms' commercial agenda.¹⁵⁹ This fear of "regulatory capture" is notoriously concerning in traditional network industries.¹⁶⁰ For example, in 1913, AT&T successfully convinced the federal government to drop a pending antitrust challenge against the company in return for executing a self-regulated plan, conceived of by AT&T's Vice President Nathan Kingsbury.¹⁶¹ In retrospect, this plan, known as the Kingsbury Commitment, "paved the way for the company's monopolization of the telephone industry" and became "a

¹⁵⁸ *Israeli Supreme Court Greenlights Israel's "Cyber Unit" that Works with Social Media Giants to Censor User Content*, ADALAH (Apr. 12, 2021), <https://www.adalah.org/en/content/view/10292> [<https://perma.cc/P25A-SATB>].

¹⁵⁹ George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. REG. 3, 3 (1971) ("[A]s a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit."). See also Sheldon Whitehouse, *Legal Responses to Regulatory Capture*, AM. CONST. SOC'Y (Nov. 9, 2018), <https://www.acslaw.org/acsblog/blog-post-for-the-american-constitution-society-legal-responses-to-regulatory-capture> [<https://perma.cc/LJT6-QCQ7>]; Elizabeth Warren, *Corporate Capture of the Rulemaking Process*, REG. REV. (June 14, 2016), <https://www.theregreview.org/2016/06/14/warren-corporate-capture-of-the-rulemaking-process> [<https://perma.cc/Q6NK-2BUB>] ("Under the law, it is easy for business groups to challenge a rule for being too strong or too restrictive. But it is much harder for public interest groups or ordinary citizens to challenge a rule for being too weak or riddled with loopholes."); Daniel Carpenter, *Challenges in Measuring Regulatory Capture*, REG. REV. (June 22, 2016), <https://www.theregreview.org/2016/06/22/carpenter-challenges-measuring-regulatory-capture> [<https://perma.cc/3AQG-B9GT>] ("[T]here are limitations when it comes to preventing capture. Perhaps the most important is that capture is difficult to measure"); Michael A. Livermore & Richard L. Revesz, *Regulatory Review, Capture, and Agency Inaction*, 101 GEO. L.J. 1337, 1340 (2013) ("[C]apture describes situations where organized interest groups successfully act to vindicate their goals through government policy at the expense of the public interest."); Michael E. Levine & Jennifer L. Forrence, *Regulatory Capture, Public Interest, and the Public Agenda: Toward a Synthesis*, 6 J. L. ECON. & ORG. 167, 169 (1990).

¹⁶⁰ Ernesto Dal Bò, *Regulatory Capture: A Review*, 22 OXFORD REV. ECON. POL'Y 203, 203 (2006) ("Most of the literature that is explicitly concerned with regulatory capture has been developed in the context of utility regulation").

¹⁶¹ Chris Matthews, *AT&T and the Government Have Been 'Friends' for a Really Long Time*, FORTUNE (Aug. 18, 2015), <http://fortune.com/2015/08/18/att-nsa> [<https://perma.cc/RJ3W-RYXJ>].

cautionary tale about the dangers of regulatory capture.”¹⁶² Fears of regulatory capture are no less imminent in data platform regulation, especially given the intensive and ongoing data-sharing connections that governments and data platforms are expected to have.¹⁶³

To mitigate the fears of capture and surveillance, Aziz Huq has suggested that governments should create “public trusts” for their citizens’ UGD.¹⁶⁴ As Huq explains, “[a]n asset in public trust is owed and managed by the state [t]he state can permit its use, and even allow limited alienation, provided that doing so benefits a broad public rather than a handful of firms.”¹⁶⁵ Huq’s suggestion was motivated by some initiatives that already support trusted intermediaries to govern UGD.¹⁶⁶ For instance, the Spanish city of Barcelona requires all UGD-driven companies within the city borders to share their data with the city’s local platform, Decidem, where UGD uses “will be subject to public debate and decision.”¹⁶⁷ Similarly, the Silicon Valley Data Trust integrates information streams from benefits agencies, child protection bureaus, schools, and education technology companies to create a “well-managed regional data trust.”¹⁶⁸

The model of a public trust for UGD is compelling. As trustees operating on behalf of the platforms’ users, government agencies could regulate data platforms only to the extent that such regulation

¹⁶² Ajit Pai, Comm’r, Fed. Comm’n Comm’n, Remarks at Forum on the 100th Anniversary of the Kingsburg Commitment, 1–2 (Dec. 19, 2013), <https://www.fcc.gov/document/pai-remarks-100th-anniversary-kingsbury-commitment> [<https://perma.cc/34R6-KP9T>].

¹⁶³ Julie E. Cohen, *The Regulatory State in the Information Age*, 17 THEORETICAL INQUIRIES L. 369, 375 (2016) (“[N]ontraditional regulatory models have tended to be both opaque to external observation and highly prone to capture.”); Regan, *supra* note 131, at 506.

¹⁶⁴ Huq, *supra* note 99, at 335.

¹⁶⁵ *Id.* at 333.

¹⁶⁶ *Id.* at 337–39.

¹⁶⁷ *Id.* at 337 (referencing Amy Lewin, *Barcelona’s Robin Hood of Data*, SIFTED (Nov. 16, 2018), <https://sifted.eu/articles/barcelonas-robin-hood-of-data-francesca-bria/> [<https://perma.cc/7QMF-ZNR4>]).

¹⁶⁸ *Id.* at 337 (referencing SILICON VALLEY REGIONAL DATA TRUST, <https://www.svrtdt.org> [<https://perma.cc/5QLE-US8D>]).

aligns with the interests and will of most users.¹⁶⁹ For example, assuming that regulators make controversial policy decisions such as banning certain facial recognition technologies,¹⁷⁰ limiting the business of micro-targeted advertising,¹⁷¹ or widening the holes in Section 230 immunity,¹⁷² users who feel disadvantaged by these policies could challenge them by subjecting them to a hard-look judicial review. The reviewing courts could then employ a range of procedural tools, such as requiring the agency to provide further justification or remanding the matter for additional consideration in the political sphere.¹⁷³ In this way, public trusts for UGD could ensure that the interests of the opposing parties are represented adequately in the regulatory process.¹⁷⁴

Public trusts for UGD could also adopt structural governance mechanisms that empower users to oversee and actively participate in the agency's decision-making process.¹⁷⁵ For instance, users could share how to invest or distribute revenues from fees or data taxation schemes.¹⁷⁶ Public trusts could also devise mechanisms to

¹⁶⁹ Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 559–60 (1970) (explaining that the public trust model usually serves the interest of the diffuse majority against the oppressive will of the concerted minority).

¹⁷⁰ Huq, *supra* note 99, at 336.

¹⁷¹ See, e.g., Ellen L. Weintraub, *Don't Ban Political Ads on Social Media. Stop Microtargeting*, WASH. POST (Nov. 1, 2019), <https://www.washingtonpost.com/opinions/2019/11/01/dont-abolish-political-ads-social-media-stop-microtargeting/> [<https://perma.cc/7NDV-LB9Z>]

¹⁷² See, e.g., Emily Brooks, *Greene Offers Bill to Abolish Section 230*, HILL (Apr. 28, 2022, 10:44 AM), <https://thehill.com/homenews/house/3470022-greene-offers-bill-to-abolish-section-230/> [<https://perma.cc/BA7R-BP7Q>]; Mary Anne Franks, *Reforming Section 230 and Platform Liability in STAN. CYBER POL'Y CTR, CYBER POLICY RECOMMENDATIONS FOR THE NEW ADMINISTRATION*, 1, 6 (Kelly Born ed., 2021), https://fsi-live.s3.us-west-1.amazonaws.com/s3fs-public/cpc-reforming_230_mf_v2.pdf [<https://perma.cc/VW6V-3VME>].

¹⁷³ Cf. Sax, *supra* note 168, at 557–65; Huq, *supra* note 99, at 397–99.

¹⁷⁴ Sax, *supra* note 168, at 557–65; Huq, *supra* note 99, at 397–99.

¹⁷⁵ Huq, *supra* note 99, at 395 (“Indeed, one of the advantages of a public trust structure is the possibility of subjecting personal data aggregations to greater degrees of democratic control.”).

¹⁷⁶ See, e.g., Huq, *supra* note 99, at 398. Cf. Paul Romer, *A Tax That Could Fix Big Tech*, N.Y. TIMES (May 6, 2019), <https://www.nytimes.com/2019/05/06/opinion/tax-facebook-google.html> [<https://perma.cc/7RY4-AKS4>] (proposing to tax revenue from sales of targeted online ads); Milind Dawande et al., *Robin Hood to the Rescue: Sustainable*

allow (and encourage) users and data platform employees to submit information that could corroborate or contradict the findings of the agencies' own audits or reveal evidence of misuse or fraud.¹⁷⁷ As indicated by the revelations of Edward Snowden, Christopher Wylie, Guillaume Chaslot, and, most recently, Francis Hogan, whistleblower protections and rewards are essential for keeping data-handling institutions publicly accountable.¹⁷⁸

Revenue-Allocation Schemes for Data Cooperatives (Jan. 29, 2022) (manuscript 3–4), <https://papers.ssrn.com/abstract=4020556> (suggesting how best to distribute revenues in a UGD Cooperatives). Consider, for example, using a share of the data platforms' revenues to subsidize independent journalism. See e.g., Natasha Lomas, *France's Competition Watchdog Orders Google To Pay For News Reuse*, TECHCRUNCH (Apr. 9, 2020), <https://techcrunch.com/2020/04/09/frances-competition-watchdog-orders-google-to-pay-for-news> [<https://perma.cc/N79S-7F2P>]; Ashley Cullins, *National Association of Broadcasters Warns Congress Tech Giants Could Kill Local Journalism*, HOLLYWOOD REP. (Sept. 3, 2020), <https://www.hollywoodreporter.com/business/business-news/national-association-of-broadcasters-warns-congress-tech-giants-could-kill-local-journalism-4054505/> [<https://perma.cc/HV9V-QPKL>]; Jamie Smyth & Alex Barker, *Battle Lines Drawn as Australia on Big Tech Over Paying for News*, FIN. TIMES (Sept. 2, 2020), <https://www.ft.com/content/0834d986-eece-4e66-ac55-f62e1331f7f7> [<https://perma.cc/L5KD-J3SF>].

¹⁷⁷ Indeed, serving as trusted auditors, agencies could cross use user-provided UGD to verify and corroborate the information that is provided by platforms themselves. For example, auditors could appraise the relevancy and saliency of the features declared by the platforms to be crucial for the platforms' content moderation algorithms in light of the real-world data about content removals provided to the auditors by the platforms' users. Similarly, auditors could corroborate the platforms' statements about the working of their advertising scoring algorithms with data from users and advertisers about targeting disclosures and stated campaign objectives, respectively. Cf. Honigsberg, *supra* 136, at 3 (exploring the conflict of interest associated with self-auditing); Hong Shen et al., *Everyday Algorithm Auditing: Understanding the Power of Everyday Users in Surfacing Harmful Algorithmic Behaviors*, PROC. ACM HUM.-COMPUT. INTERACT. 5, CSCW2, Article 433 (2021), <https://doi.org/10.1145/3479577>; Rumman Chowdhury & Jutta Williams, *Introducing Twitter's First Algorithmic Bias Bounty Challenge*, TWITTER BLOG (July 30, 2021), https://blog.twitter.com/engineering/en_us/topics/insights/2021/algorithmic-bias-bounty-challenge (highlighting Twitter's use of a bounty program to encourage user-based auditing).

¹⁷⁸ Digital Regulation Cooperation Forum, *Auditing Algorithms: the Existing Landscape, Role of Regulators and Future Outlook*, GOV.UK (Sept. 23, 2022), <https://www.gov.uk/government/publications/findings-from-the-drcf-algorithmic-processing-workstream-spring-2022/auditing-algorithms-the-existing-landscape-role-of-regulators-and-future-outlook> (discussing the role of whistleblowers in algorithm auditing); Jeff Horwitz, *The Facebook Whistleblower, Frances Haugen, Says She Wants to Fix the Company, Not Harm It*, WALL ST. J. (Oct. 3, 2021), <https://www.wsj.com/articles/facebook-whistleblower-frances-haugen-says-she-wants-to-fix-the-company-not-harm-it-11633304122>; Paul Lewis, *"Fiction is Outperforming*

Nevertheless, the public trust model cannot solve all the problems associated with agency regulation. Government agencies may still suffer from operational dysfunction due to the limited size of their national jurisdictions.¹⁷⁹ Because the major data platforms are international behemoths, national governments—especially those of small jurisdictions—are inherently limited in their capacity to oversee and hold the data platforms accountable for their actions.

Size limitations disadvantage government regulators in three significant ways. First, given their limited local perspective, government agencies cannot perceive distributional inequalities that occur on a global scale.¹⁸⁰ For example, a Namibian regulator cannot determine whether dark patterns on a data platform target the venerable Namibian users more intensively than, say, Italian users. To make such a judgment, the Namibian regulator must also access and analyze the data related to Italian users alongside that of Namibian users.¹⁸¹ Second, concurrent oversight by multiple

reality”: *How YouTube’s Algorithm Distorts Truth*, GUARDIAN (Feb. 2, 2018), <https://www.theguardian.com/technology/2018/feb/02/how-youtubes-algorithm-distorts-truth> [<https://perma.cc/9QDM-8P96>]. See generally Peter S. Menell, *Tailoring a Public Policy Exception to Trade Secret Protection*, 105 CAL. L. REV. 1 (2017). While generic whistleblower statutes such as the False Claims Act and the Whistleblower Protection Act will be applicable to the public trust in UGD, additional *sui generis* whistleblower provisions might be needed. For example, users could be rewarded by flagging opaque content removals or suspected personalized suggestions. Regulators could compare the data provided by the users to the data provided by the data platforms to detect systematic biases or inaccuracies in their algorithmic audits.

¹⁷⁹ Lisa Quest et al., *The Digital Economy Cannot Be Managed With 18th-Century Regulation*, BRINK (July 28, 2021), <https://www.brinknews.com/the-digital-economy-cannot-be-managed-with-18th-century-regulation/> [<https://perma.cc/ZYP9-MNZY>].

¹⁸⁰ Cf. *Commission Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A European Strategy for Data*, 6, COM (2020) 66 final (Feb. 19, 2020) [hereinafter EU Data Strategy] (“Fragmentation between Member States is a major risk for the vision of a common European data space and for the further development of a genuine single market for data.”); Hacoen, *supra* note 1 (manuscript at 27) (arguing that in the digital platform environment, economies of scale support concentration on a global rather than national or regional scale).

¹⁸¹ Gordon-Tapiero et al., *supra* note 134, at 9 (explaining that only platforms have the ability to fully perceive the “picture of [] personalization landscape”). Cf. Binh Le et al., *A Crowdsourcing Methodology to Measure Algorithmic Bias in Black-Box Systems: A Case Study with COVID-Related Searches*, in ADVANCES IN BIAS AND FAIRNESS IN INFORMATION RETRIEVAL 43 (Ludovico Boratto et al. eds., 2022) (a study investigating misinformation spread in search engines about COVID-19 and finding different results for the same queries

jurisdictions may lead to severe regulatory conflicts, and ultimately, render the regulation of each specific jurisdiction ineffective.¹⁸² This problem is already manifesting in privacy regulation, triggering an unofficial *de facto* standardization process that is sometimes labeled “the Brussels effect.”¹⁸³ Finally, government agencies—especially of small jurisdictions—have noticeably weak bargaining positions when attempting to enforce their regulatory agenda on the data platforms.¹⁸⁴ For example, when the Australian government recently sought to impose a new pro-journalism regulatory scheme that Facebook and Google disfavored, the data platforms simply threatened to cut their services from the country.¹⁸⁵

Stemming from the limited size of local jurisdictions, these challenges run parallel to the market competition dynamics in the presence of UGD network effects. Just as businesses tend to consolidate across markets and national borders to utilize the value locked in UGD fully, regulators must also consolidate to govern these businesses fully. This realization, coupled with the coordination problems associated with fragmentation, suggests that public trusts for UGD should ideally be formed at the international

depending on the country in which they reside). *See generally* Yochai Benkler, *Degrees of Freedom, Dimensions of Power*, 145 DAEDALUS 18 (2016).

¹⁸² Huq, *supra* note 99, at 399 (“To be sure, municipal-level data-use regimes would make regulatory conflict possible.”); ANU BRADFORD, THE BRUSSELS EFFECT: HOW THE EUROPEAN UNION RULES THE WORLD 149 (2020), <https://oxford.universitypressscholarship.com/view/10.1093/oso/9780190088583.001.0001/oso-9780190088583-chapter-6> [<https://perma.cc/8B39-C5E7>] (“[C]ompanies . . . fear[] the emergence of a complex patchwork of potentially conflicting state privacy laws.”).

¹⁸³ *Id.* at 142; Carol Li, *A Repeated Call for Omnibus Federal Cybersecurity Law*, 94 NOTRE DAME L. REV. 2211, 2227 (2019) (calling the effect in the U.S. the “California effect”); Mark Scott & Laurens Cerulus, *Europe’s New Data Protection Rules Export Privacy Standards Worldwide*, POLITICO (Jan. 31, 2018), <https://www.politico.eu/article/europe-data-protection-privacy-standards-gdpr-general-protection-data-regulation/> [<https://perma.cc/AN4M-F4JV>].

¹⁸⁴ *Cf.* Chris Reed, *Facebook’s Negative Effects Are Far Worse in Poor Nations than in U.S.*, SAN DIEGO UNION-TRIBUNE (Oct. 29, 2021), <https://www.sandiegouniontribune.com/opinion/commentary/story/2021-10-29/facebook-negative-effects-far-worse-in-poor-nations-murder-rape-political-violence> [<https://perma.cc/8WQK-JNQK>] (citing Frances Haugen’s documents which show nearly 90% of Facebook’s global spending on combating misinformation in 2020 was invested in the US which has less than 10% of the platforms’ global users).

¹⁸⁵ *Facebook and Google News Law Passed in Australia*, BBC NEWS (Feb. 25, 2021), <https://www.bbc.com/news/world-australia-56163550> [<https://perma.cc/B5XN-DBWF>].

rather than national level.¹⁸⁶ As a first step toward this vision, government regulators should work together to promote initiatives such as data sharing,¹⁸⁷ data standardization and interoperability,¹⁸⁸ and collaboration with nonprofits and academic institutions to uncover global policy concerns.¹⁸⁹

A second way that public utility regulation could be updated to the UGD economy is through indirect interventions to create a new ecosystem of trusted UGD intermediaries.¹⁹⁰ Bounded by public values, trusted new intermediaries could take the role of governments and empower user governance of UGD.¹⁹¹ For example, the proposed Data Freedom Act, drafted by the RadicalXChange Foundation, “would establish a new class of regulated entity called Data Coalitions, whose purpose is to work on behalf of Data Producers [users] to help them protect their privacy, control how their data is used by others, and receive a share of income generated from data pertaining to them.”¹⁹² Similarly, the newly enacted European Data Governance Act (DGA) defines an intermediary layer of trusted “data sharing services” that must handle the sharing of their users’ UGD without being able to utilize

¹⁸⁶ See Bradford, *supra* note 182; Shkabatur, *supra* note 131.

¹⁸⁷ Shkabatur, *supra* note 131.

¹⁸⁸ See Michal S. Gal & Daniel L. Rubinfeld, *Data Standardization*, 94 N.Y.U. L. REV. 737, 758 (2019).

¹⁸⁹ Cf. Klint Finley, *Twitter Opens Its Enormous Archives to Data-Hungry Academics*, WIRE (Feb. 6, 2014), <https://www.wired.com/2014/02/twitter-promises-share-secrets-academia/> [https://perma.cc/VCZ7-AML4].

¹⁹⁰ See, e.g., *Proposal for a Regulation of The European Parliament and of the Council on European data Governance (Data Governance Act)*, COM (2020) 767 final (Nov. 25, 2020), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0767> [https://perma.cc/3KD9-Z8W5] [hereinafter DGA]; Sylvie Delacroix & Neil D. Lawrence, *Bottom-Up Data Trusts: Disturbing the ‘One Size Fits All’ Approach to Data Governance*, 9 INT’L DATA PRIVACY L. 236, 238 (2019); RadicalxChange, *The Data Freedom Act*, <https://www.radicalxchange.org/media/papers/data-freedom-act.pdf> [https://perma.cc/S99P-NRZU]; Neil Lawrence, *Data Trusts Could Allay Our Privacy Fears*, GUARDIAN (June 3, 2016), <https://www.theguardian.com/media-network/2016/jun/03/data-trusts-privacy-fears-feudalism-democracy20voters> [https://perma.cc/SR29-KHHP].

¹⁹¹ Cf. Huq, *supra* note 99, at 336 (noting that a trust model “simultaneously addresses both the risks of private and public abuse.”); Michele Loi et al., *Towards Rawlsian ‘Property-Owning Democracy’ through Personal Data Platform Cooperatives*, CRIT. REV. INT’L SOC. & POL. PHIL. 1, 8 (2020) (similar.); Pistor, *supra* note 123, at 119.

¹⁹² RadicalxChange, *supra* note 190, at 19.

it for any other purpose.¹⁹³ According to the DGA, data sharing services must be registered,¹⁹⁴ and commit to protecting the sensitive and confidential data of their users,¹⁹⁵ and subject themselves to ongoing oversight by numerous government authorities.¹⁹⁶

Adherents to these proposals claim that trusted UGD intermediaries would empower users vis-à-vis the data platforms by affording the former a collective voice and strengthening their bargaining position to impact policy.¹⁹⁷ The same adherents advocate for the creation of a competitive marketplace for UGD intermediaries, where users can “shop around, [and] switch[] from one trust to another as and when their preferences or aspirations evolve.”¹⁹⁸ To facilitate such a competitive environment, the proposed Data Freedom Act expressly forbids Data Coalitions from contracting with users for a period longer than six months to afford users “the opportunity to abandon Data Coalitions with which they are not satisfied.”¹⁹⁹ The motivation that underlines these sentiments is laudable. The hope is that a diverse and competitive UGD intermediary ecosystem will celebrate diversity and encourage pluralism of thought and opinion.²⁰⁰ Sylvie Delacroix and Neil Lawrence shared this sentiment when observing that:

¹⁹³ DGA, *supra* note 190 at art. 11; *Council Approves Data Governance Act*, EUROPEAN COUNCIL (May 16, 2022), <https://www.consilium.europa.eu/en/press/press-releases/2022/05/16/le-conseil-approuve-l-acte-sur-la-gouvernance-des-donnees/> [<https://perma.cc/Y8QF-H7Z2>].

¹⁹⁴ DGA, *supra* note 190, at art. 10.

¹⁹⁵ *Id.* at art. 11.

¹⁹⁶ *Id.* at arts. 12–13. In addition, Chapter VI creates a formal expert group called “European Data Innovation Board” which will facilitate the emergence of best practices by Member States’ authorities in particular with respect to the notification framework for data sharing service providers.

¹⁹⁷ Loi et al., *supra* note 191.

¹⁹⁸ Delacroix & Lawrence, *supra* note 190, at 18,

¹⁹⁹ RadicalxChange, *supra* note 190, at 16.

²⁰⁰ *See also* THEO BASS & ROSALYN OLD, COMMON KNOWLEDGE: CITIZEN-LED DATA GOVERNANCE FOR BETTER CITIES, 17 (2020), https://media.nesta.org.uk/documents/DECODE_Common_Knowledge_Citizen_led_data_governance_for_better_cities_Jan_2020.pdf [<https://perma.cc/D4NS-Q6WE>] (defining their goal as creating “new types of local data commons where people are empowered to collect and share data in response to local challenges”); Kelsey Finch & Omer Tene, *Smart Cities: Privacy, Transparency, and Community*, in *THE CAMBRIDGE HANDBOOK OF CONSUMER PRIVACY* 126–27 (Evan

[The] fostering of such competition between a wide variety of data trusts will not only serve to raise awareness of the fact that there are many ways of apprehending data risks and responsibilities. It will also make it more likely that our data governance structures remain in touch with the evolving needs and aspirations of multi-faceted societies.²⁰¹

Unfortunately, the vision of fostering a competitive UGD intermediary ecosystem ignores the economics of UGD network effects.²⁰² To avoid the pitfalls of fragmentation, the different entities in a federated intermediary ecosystem will need to collaborate efficiently and share UGD among themselves.²⁰³ Such coordination will be hard to achieve and harder to administer.²⁰⁴ Nevertheless, the dynamics of UGD network effects do leave some hope that coordination will succeed. If a coalition of coordinated intermediaries could grow large enough to cross the tipping point to become effective, smaller intermediaries are likely to join in (or risk

Selinger ed., 2018) (Arguing for cities to be subject to “fiduciary-like responsibilities to consider the ethical and privacy impacts of particular data activities and to act with the best interests of individuals and society in mind”).

²⁰¹ Delacroix & Lawrence, *supra* note 190, at 18.

²⁰² See Hacoen, *supra* note 1 (manuscript at 26–34) (explaining the competition is inefficient in the presence of network effects). See also *supra* notes and accompanying text (describing the shortcomings of fragmentation in a network environment).

²⁰³ Cf. EU Data Strategy, *supra* note 180, at 12 (“Cross-sectoral (or horizontal) measures for data access and use should create the necessary over-arching framework for the data-agile economy, thereby avoiding harmful fragmentation . . .”).

²⁰⁴ See KIERON O’HARA, DATA TRUSTS: ETHICS, ARCHITECTURE AND GOVERNANCE FOR TRUSTWORTHY DATA STEWARDSHIP (Univ. Southampton WSI White Papers, 2019) <https://eprints.soton.ac.uk/428276/> [<https://perma.cc/V5FJ-8YQR>] (“The bottom-up approach, as with many others such as personal data stores and indeed the data protection regime as a whole, requires a somewhat proactive attitude from data subjects; it is not impossible to imagine, but would undoubtedly place a burden on data subjects however willing a cohort of trustees can be mustered”); Pistor, *supra* note 123, at 121; Delacroix & Lawrence, *supra* note 190, at 22; Fairfield & Engel, *supra* note 26, at 387 (“[P]rivacy protection requires group coordination”); see also Huq, *supra* note 99, at 399 (“To mitigate the risk of conflicting rules, cities could coordinate policy approaches”). Cf. Henry Hansmann, *Worker Participation and Corporate Governance*, 43 UNIV. TORONTO L. J. 589, 597 (1993) (“[W]orker ownership appears viable if, but only if, the workers sharing ownership have highly homogeneous interests.”).

becoming irrelevant).²⁰⁵ Once this group of coordinated UGD intermediaries grows large enough, it could force the dominant data platforms to share some of their governance powers with users.²⁰⁶

Lastly, governments could try to delegate the “aura” of public utility regulation to the data platforms themselves. Governments can pursue this goal by encouraging or mandating data platforms to adopt public responsibilities or change their corporate governance structure.²⁰⁷ Jack Balkin offered that data platforms should assume fiduciary obligations towards their users in a similar way that doctors, attorneys, and accountants are fiduciarily responsible to their clients.²⁰⁸ Instead of imposing these duties directly, Balkin

²⁰⁵ Such a dynamic could happen within the EU following the DGA or even on a global scale if the “Brussels Effect” took hold and more jurisdictions fostered a DGA-like regulation. Cf. BRADFORD, *supra* note 182, at 3–4 (noting that the EU “leverage its ‘market size’” in a way that allows it to “unilaterally supply rules for the global marketplace with the help of market forces.”).

²⁰⁶ This does not mean the production will become any less concentrated. However strong, intermediary UGD trusts might still prefer large platforms to have access to all the data to reap the benefits of UGD network effects. The only difference will be that these platforms will become limited in their governance, and they will have to be transparent and adhere to their users when devising and exercising their UGD-driven policies.

²⁰⁷ This line of thought was advanced by Jack Balkin in his work of “information-fiduciaries.” See, e.g., Jack M. Balkin, *Information Fiduciaries in the Digital Age*, BALKINIZATION (Mar. 5, 2014, 4:50 PM), <https://balkin.blogspot.com/2014/03/information-fiduciaries-in-digital-age.html> [<https://perma.cc/ELG3-FNLD>]; Jack M. Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. DAVIS L. REV. 1183, 1209 (2016); Jack M. Balkin, *The Three Laws of Robotics in the Age of Big Data*, 78 OHIO ST. L.J. 1217, 1228 (2018); Balkin, *supra* note 157, at 2043–44; Jack M. Balkin, *The First Amendment in the Second Gilded Age*, 66 BUFF. L. REV. 979, 1006 (2018); see generally Jack M. Balkin, *Fixing Social Media’s Grand Bargain* (Hoover Working Grp. Nat’l Sec., Tech., L., Aegis Series Paper No. 1814, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3266942 [<https://perma.cc/SC32-HLTA>]; Jack M. Balkin, *The Fiduciary Model of Privacy*, 134 HARV. L. REV. F. 11 (2020) [hereinafter: Fiduciary Model]. Professor Jonathan Zittrain has also been an important theorist and advocate of the information-fiduciary concept. See, e.g., Jonathan Zittrain, *Facebook Could Decide an Election Without Anyone Ever Finding Out*, NEW REPUBLIC (June 1, 2014), <https://newrepublic.com/article/117878/information-fiduciarysolution-facebook-digital-gerrymandering> [<https://perma.cc/AA7E-LT5Q>]; Jonathan Zittrain, *How to Exercise the Power You Didn’t Ask For*, HARV. BUS. REV. (Sept. 19, 2018), <https://hbr.org/2018/09/how-to-exercise-the-power-you-didnt-ask-for> [<https://perma.cc/9ZYZ-3F6E>]; Jonathan Zittrain, *Opinion: Mark Zuckerberg Can Still Fix This Mess*, N.Y. TIMES (Apr. 7, 2018), <https://www.nytimes.com/2018/04/07/opinion/sunday/zuckerberg-facebook-privacy-congress.html> [<https://perma.cc/LMA7-EVKE>].

²⁰⁸ See, e.g., Fiduciary Model, *supra* note 207, at 15.

suggested that regulators would encourage data platforms to take these responsibilities voluntarily in return for incentives such as tax breaks, safe harbors, or legal immunities.²⁰⁹ Balkin's creative proposal attracted praise as well as criticism.²¹⁰ Most critics emphasize that data platforms operate as commercial businesses, and therefore owe fiduciary obligations to their shareholders, not their users.²¹¹ Adding additional fiduciary obligations toward users, as Balkin proposes, may put data platforms in an inevitable conflict of interest once the interests of users and shareholders diverge.²¹² Divergence of interests is quite foreseeable in today's profit-driven online environment and may render Balkin's proposal ineffective.²¹³

Data platforms can potentially mitigate this conflict by scaling back on their profit-maximization motives.²¹⁴ In this vein, in 2019, the artificial intelligence company OpenAI adopted a novel "capped-profit" business model.²¹⁵ Investors in a capped-profit company can expect no more than a limited return on their initial financial investment which is dictated by a built-in ceiling, determined by the company in advance.²¹⁶ In the case of OpenAI, funders could get 100 times their original investment (compared to the more than 1,000 times return seen by the founders of Google and

²⁰⁹ *Id.* at 31–33.

²¹⁰ Lina M. Khan & David E. Pozen, *A Skeptical View of Information Fiduciaries*, 133 HARV. L. REV. 498, 500 (2019) (citing support for Balkin's proposal).

²¹¹ *See, e.g., id.* at 503; Delacroix & Lawrence, *supra* note 190, at 14.

²¹² *See* Khan & Pozen, *supra* note 210, at 507; Delacroix & Lawrence, *supra* note 190, at 14.

²¹³ *See generally* Zuboff, *supra* note 109. *See also* Khan & Pozen, *supra* note 210, at 541 ("[D]oubt that the information-fiduciary idea should play any significant role in the struggle to rein in the leading online platforms"); Delacroix & Lawrence, *supra* note 190, at 14.

²¹⁴ David Meyer, *Facebook Whistleblower Frances Haugen Tells Lawmakers the Only Way to Fix the Company is to Partially Destroy Its Business Model*, FORTUNE (Oct. 25, 2022), <https://fortune.com/2021/10/25/facebook-business-model-selective-friction-frances-haugen-whistleblower-uk-parliament/> [<https://perma.cc/L8RS-DZKD>].

²¹⁵ *OpenAI LP*, OPENAI (Mar. 11, 2019), <https://openai.com/blog/openai-lp/> [<https://perma.cc/83QL-SK97>]. *See also* Steven Johnson & Nikita Iziev, *A.I. Is Mastering Language. Should We Trust What It Says?*, N.Y. TIMES (Apr. 15, 2022), <https://www.nytimes.com/2022/04/15/magazine/ai-language.html> [<https://perma.cc/X3GW-PKU4>].

²¹⁶ *Id.*

Facebook).²¹⁷ Additional profits beyond that capped ceiling circle back to the company to support its mission.²¹⁸

By adopting a capped-profit model, data platforms could alleviate the first behavioral manipulation pathology discussed above—namely, the one motivated by the need to maximize shareholder profit. With less vigilant incentives to maximize profit and, accordingly, user engagement and consumption, data platforms could genuinely explore friction-inducing designs²¹⁹ and other so-called “desirably inefficient” technologies.²²⁰ These technologies can potentially improve users’ welfare but are currently unexplored for lack of commercial viability.²²¹

Yet, reducing (or even removing) the data platforms’ financial motives will not address the second and more profound pathology of behavioral manipulation. As data platforms grow and collect more UGD, the leaders of these businesses are likely to face even more ethically controversial social issues.²²² In this environment, even if the data platforms’ leaders aspire solely to maximize social welfare and not shareholders’ value, these leaders will nevertheless end up manipulating their users’ behaviors to reflect their conception of social welfare. As Steven Johnson and Nikita Iziev of the *New York Times* said while reflecting on OpenAI’s capped-profit model:

²¹⁷ *Id.*

²¹⁸ *Id.*

²¹⁹ See generally Goodman, *supra* note 139; Meyer, *supra* note 214,

²²⁰ Paul Ohm & Jonathan Frankle, *Desirable Inefficiency*, 70 FLA. L. REV. 777, 790 (2018).

²²¹ See Karissa Bell, *What Facebook Should Change, According to its Whistleblower*, ENGADGET (Oct. 6, 2021, 10:30 AM), <https://www.engadget.com/what-facebook-whistleblower-frances-haugen-said-should-change-143051354.htm> 1 [<https://perma.cc/X6CU-CBCY>] (citing Facebook’s whistleblower Frances Hugen saying that Facebook scaled back on “friction” measures because it “wanted that growth back”). Cf. Lauren Feiner, *Facebook Spent More On Lobbying Than Any Other Big Tech Company In 2020*, CNBC (Jan. 22, 2021), <https://www.cnbc.com/2021/01/22/facebook-spent-more-on-lobbying-than-any-other-big-tech-company-in-2020.html> [<https://perma.cc/5Y6J-6PFR>]; Keach Hagey et al., *Facebook’s Pushback: Stem the Leaks, Spin the Politics, Don’t Say Sorry*, WALL ST. J. (Dec. 29, 2021), <https://www.wsj.com/articles/facebook-whistleblower-pushback-political-spin-zuckerberg-11640786831> [<https://perma.cc/7277-ZBP3>].

²²² See *supra* notes 121–122 and accompanying text.

Altman and his OpenAI colleagues think that they have created a structure that will ensure that those decisions will not be corrupted by shareholders clamoring for ever-larger returns. But beyond the charter itself, and the deliberate speed bumps and prohibitions established by its safety team, OpenAI has not detailed in any concrete way who exactly will get to define what it means for A.I. to “benefit humanity as a whole.” Right now, those decisions are going to be made by the executives and the board of OpenAI—a group of people who, however admirable their intentions may be, are not even a representative sample of San Francisco, much less humanity. Up close, the focus on safety and experimenting ‘when the stakes are very low’ is laudable. But from a distance, it’s hard not to see the organization as the same small cadre of Silicon Valley superheroes pulling the levers of tech revolution without wider consent, just as they have for the last few waves of innovation.²²³

To address this more fundamental concern, data platforms would need to change not only their business models, but their entire corporate governance structure.²²⁴ Data platforms could grant users decision-making power in their board of directors and equity interests.²²⁵ Many corporations already provide workers with some

²²³ Johnson & Iziev, *supra* note 215.

²²⁴ Cf. TOM SYMONS & THEO BASS, *ME, MY DATA AND I: THE FUTURE OF THE PERSONAL DATA ECONOMY* 52 (2017), <https://www.nesta.org.uk/report/me-my-data-and-i-the-future-of-the-personal-data-economy/> [<https://perma.cc/8T4X-KGCY>] (“Much of the opportunity will only be realized where individuals are able to pool their data together to leverage its potential economic and social value. Platform co-operatives offer a feasible model, highlighting the potential of digital technologies to help members to govern themselves.”); Anouk Ruhaak, *Data Commons & Data Trusts*, MEDIUM (May 15, 2020), <https://medium.com/@anoukruhaak/data-commons-data-trust-63ac64c1c0c2> [<https://perma.cc/CHD8-4RP2>] (“Data trusts, therefore, should be seen as a legal relationship that allows for the protection of a data commons, rather than as a governance model that is distinct from a data commons.”).

²²⁵ See, e.g., Hansmann, *supra* note 204, at 590 (“Corporate law and labor law are likely to become increasingly merged in years to come.”). See also Aline Conchon, *Workers’ Voice in Corporate Governance: A European Perspective*, TRADES UNION CONGRESS 7

managerial rights, from an appearance at annual general meetings to full-blown Board representation with decision-making powers.²²⁶ Moreover, some corporations are organized as “worker cooperatives,” where the management acts as a fiduciary on behalf of the corporation’s workers.²²⁷

Adherents to the UGD-as-labor movement would also have data platforms pay users for UGD or negotiate with UGD “labor unions” for better “employment” conditions.²²⁸ Initiatives along these lines are gradually emerging. Microsoft, for instance, pays users loyalty points for conducting searches using the Bing search engine.²²⁹

(2013), <https://www.tuc.org.uk/publications/workers-voice-corporate-governance-european-perspective> [<https://perma.cc/DN7W-69K7>]; Stilpon Nestor, *Corporate Governance 2030: Thoughts on the Future of Corporate Governance*, HARV. L. SCH. F. ON CORP. GOVERNANCE (2018), <https://corpgov.law.harvard.edu/2018/12/26/corporate-governance-2030-thoughts-on-the-future-of-corporate-governance/> [<https://perma.cc/4VF7-P8HE>] (“In other words, the importance of stakeholders is increasing and will increase even more in the coming 12 years.”).

²²⁶ *Id.* at 14–20 (exploring different forms of work participation). Indeed, even the United Kingdom, where corporate governance was traditionally dominated by the financialized shareholder primacy model, recently adopted a patchwork of reforms designed to empower worker-voice in corporate governance. See Charlotte Villiers, *Corporate Governance, Employee Voice and the Interests of Employees: The Broken Promise of a ‘World Leading Package of Corporate Reforms’*, 50 INDUS. L. J. 159, 164–68 (2021).

²²⁷ Hansmann, *supra* note 204, at 598.

²²⁸ Imanol Arrieta-Ibarra et al., *Should We Treat Data as Labor? Moving Beyond “Free”*, 108 AM. ECON. ASS’N. PAPERS & PROC. 38, 41 (2018); Eric A. Posner & E. Glen Weyl, *Want Our Personal Data? Pay for It*, WALL ST. J. (Apr. 20, 2018, 11:19 AM), <https://www.wsj.com/articles/want-our-personal-data-pay-for-it-1524237577> [<https://perma.cc/9TZE-MZ5T>]; ERIC A. POSNER & E. GLEN WEYL, RADICAL MARKETS: UPROOTING CAPITALISM AND DEMOCRACY FOR A JUST SOCIETY 243–49 (2018) (defining “data labor unions”); see JARON LANIER, WHO OWNS THE FUTURE 50–51 (2014); Press Release, Mark R. Warner, Warner & Hawley Introduce Bill to Force Social Media Companies to Disclose How They Are Monetizing User Data (June 24, 2019), <https://www.warner.senate.gov/public/index.cfm/2019/6/warner-hawley-introduce-bill-to-force-social-media-companies-to-disclose-how-they-are-monetizing-user-data> [<https://perma.cc/D662-BTHC>]; Mat Travizano, *The Tech Giants Get Rich Using Your Data, What do You Get in Return?*, ENTREPRENEUR (Sept. 28, 2018), <https://www.entrepreneur.com/article/319952> [<https://perma.cc/JUP9-SARW>]; Will.I.Am, *We Need To Own Our Data As A Human Right—And Be Compensated For It*, ECON. (Jan. 21, 2019), <https://www.economist.com/open-future/2019/01/21/we-need-to-own-our-data-as-a-human-right-and-be-compensated-for-it> [<https://perma.cc/6WRX-DNNH>].

²²⁹ *Search. Find. Earn.*, MICROSOFT, <https://www.microsoft.com/en-us/bing/defaults-rewards> [<https://perma.cc/5USS-2FBS>].

Similarly, Datacoup, CitizenMe, and other so-called Personal Information Management Services (PIMS) offer users payments and other benefits in exchange for accessing their UGD.²³⁰ More ambitiously, the Data Freedom Act requires the proposed Data Coalitions to remit at least 80% of their income after expenses to their Members.²³¹ The Own Your Own Data Act of 2019 goes as far as to stipulate that “each individual owns and has an exclusive property right [to] the data that [the] individual generates.”²³²

In practice, most data platforms utilize a highly concentrated corporate governance structure that cannot be more distant from the proposed cooperative models.²³³ Data platforms like Google and Meta employ a novel dual-class voting share structure that guarantees the unabridged founders control over their businesses.²³⁴ For instance, Mark Zuckerberg serves as Meta’s founder, as well as a controlling shareholder, chairperson, and CEO.²³⁵ Given the size of his voting privileges and executive position on the company’s board, Zuckerberg wields ultimate decisional control over Meta’s future and present corporate agenda.

That said, novel forms of cooperative business governance may still emerge. For example, in October 2018, Alphabet subsidiary Sidewalk Labs proposed creating a “Civic Data Trust” to govern the UGD collected as part of its ambitious “smart city” initiative in Toronto.²³⁶ Sidewalk defined the trust as “an independent entity to control, manage, and make publicly accessible all data that could reasonably be considered a public asset and a set of rules that would apply to all entities operating in Quayside, including Sidewalk

²³⁰ Symons & Bass, *supra* note 224, at 53; CMA, *supra* note 107, at 83 (describing PIMS).

²³¹ RadicalxChange, *supra* note 190, at 16.

²³² Own Your Own Data Act, S.806, 116th Cong. (2019-2020).

²³³ Alan Dignam, *Artificial Intelligence, Tech Corporate Governance and The Public Interest Regulatory Response*, 13 CAMBRIDGE J. REGIONS, ECON. SOC’Y. 37, 44 (2020).

²³⁴ *Id.* at 45–46 (noting that Google pioneered this practice that before was exercised only by small family media companies such as the *New York Times*).

²³⁵ *Id.* at 45.

²³⁶ Sean McDonald, *Reclaiming Data Trusts*, CTR. INT’L GOVERNANCE INNOVATION (Mar. 5, 2019) <https://www.cigionline.org/articles/reclaiming-data-trusts/> [<https://perma.cc/J2FF-HBQ4>].

Lab[s].”²³⁷ As such, the proposed trust could “carry a fiduciary responsibility to serve and balance data subject and public interest within a framework that treats privacy from both a public as well as a private good perspective.”²³⁸ Unfortunately, Sidewalk’s vision failed.²³⁹ Soon after its introduction, Ontario’s Information and Privacy Commissioner raised concerns about the proposed trust’s “lack of independent oversight.”²⁴⁰ The Sidewalk project was officially canceled in March 2020.²⁴¹

B. Open Access

Traditional network monopolists often refuse to grant network access to competitors because exclusive control over their networks is key to sustaining market power.²⁴² When this happens, instead of regulating network monopolists as public utilities, policymakers may encourage or even compel the network monopolists to unbundle their networks.²⁴³ Open access empowers competitors to compete with the incumbent network monopolists on equal terms,

²³⁷ *Digital Governance Proposals for DSAP Consultation*, SIDEWALK LABS 10 (Oct. 2018) <https://www.waterfrontoronto.ca/sites/default/files/documents/18-10-16-swt-draft-proposals-regarding-data-use-and-governance-tuesday-730pm.pdf> [<https://perma.cc/GH9P-3ZW4>].

²³⁸ Anna Artyushina, *Is Civic Data Governance the Key to Democratic Smart Cities? The Role of The Urban Data Trust in Sidewalk Toronto*, 55 *TELEMATICS AND INFORMATICS* 1, 8 (2020) (quoting Sidewalk Labs Plan Development Agreement).

²³⁹ *Id.* at 2.

²⁴⁰ Letter from Brian Beamish, Info. & Priv. Comm’r of Ontario, to Stephen Diamond, Chairman of the Bd. of Dirs., Waterfront Toronto (Sept. 24, 2019), https://www.ipc.on.ca/wp-content/uploads/2019/09/2019-09-24-ltr-stephen-diamond-waterfront_toronto-residewalk-proposal.pdf [<https://perma.cc/47D3-DSDW>].

²⁴¹ Artyushina, *supra* note 238, at 1–2.

²⁴² Joseph Farrell, *Creating Local Competition*, 49 *FED. COMM. L.J.*, 201, 203–04 (1996). Network monopolists may be encouraged to open up their network to complementary services, which may reinforce the value of its network. Nevertheless, the providers of complementary services may end up competing with the network monopolist by evolving into a disruptive substitute. *See* Farrell & Weiser, *supra* note 57, at 110–11 (“In the *Microsoft* case . . . Netscape’s web browser was a complementary application in the short term, but could have facilitated operating systems competition in the long term.”); Bresnahan, *infra* note 268, at 186.

²⁴³ Stanley M. Besen, *Competition, Privacy, and Big Data*, 28 *CATH. U. J. L. & TECH.* 63, 77–80 (2020).

thereby effectively dissolving the latter monopoly power.²⁴⁴ Open access was always a vital component of traditional network monopoly regulation.²⁴⁵ As Eli Noam observed, “[a]s a matter of empirical fact, interconnection is regulated everywhere where competitive telecommunications exist.”²⁴⁶

Policymakers regulate open access in one of two ways. One approach is through the antitrust “essential facilities” doctrine, which requires owners of bottleneck elements unavailable elsewhere in the marketplace to make these elements available to competitors on reasonable terms.²⁴⁷ The essential facilities doctrine played a significant role in regulating the telecommunication industry during the 1970s and early 1980s²⁴⁸ but has since lost favor

²⁴⁴ Mark A. Lemley & David McGowan, *Could Java Change Everything? The Competitive Propriety of a Proprietary Standard*, 43 ANTITRUST BULL. 715, 748 (1998) (“If consumer choice is constrained by value inhering in an installed base, social welfare will be enhanced by freeing the consumer to purchase technology that differs from the installed base while preserving the benefits of interoperation with that installed base.”) (emphasis in original).

²⁴⁵ See, e.g., Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 YALE J. REG. 56, 68 (2007); Daniel F. Spulber & Christopher S. Yoo, *Network Regulation: The Many Faces of Access*, 1 J. COMPETITION L. & ECON. 635–78 (2005).

²⁴⁶ Eli M. Noam, *Interconnection Practices*, in HANDBOOK OF TELECOMM. ECON. 390 (Martin E. Cave ed., 2002).

²⁴⁷ Daniel F. Spulber & Christopher S. Yoo, *Mandating Access to Telecom and the Internet: The Hidden Side of Trinko*, 107 COLUM. L. REV. 1822, 1824 (2007); LAWRENCE A. SULLIVAN & WARREN S. GRIMES, *THE LAW OF ANTITRUST: AN INTEGRATED HANDBOOK* § 14.7(a)(1), at 817 (2d ed. 2006) (arguing that government suit against AT&T settled in 1956 was based on essential facilities doctrine); Robert Pitofsky et al., *The Essential Facilities Doctrine Under U.S. Antitrust Law*, 70 ANTITRUST L.J. 443, 444 (2002) (noting importance of essential facilities doctrine to control of monopolies arising out of intellectual property); James R. Ratner, *Should There Be an Essential Facility Doctrine?*, 21 U.C. DAVIS L. REV. 327, 367–68 (1988) (supporting reformulated essential facilities doctrine); John T. Soma et al., *The Essential Facilities Doctrine in the Deregulated Telecommunications Industry*, 13 BERKELEY TECH. L.J. 565, 580–613 (1998) (arguing that essential facilities doctrine represents viable alternative to existing government regulation). See generally David McGowan, *Regulating Competition in the Information Age: Computer Software as an Essential Facility under the Sherman Act*, 18 HASTINGS COMM. & ENT. L.J. 771 (1996).

²⁴⁸ See, e.g., *S. Pac. Commc’ns Co. v. AT&T Co.*, 740 F.2d 980, 999 (D.C. Cir. 1984) (affirming lower court decision finding no antitrust liability); *MCI Commc’ns Corp. v. AT&T Co.*, 708 F.2d 1081, 1174 (7th Cir. 1983) (affirming lower court decision finding antitrust liability while remanding for new trial on damages); *United States v. AT&T Co.*

with many scholars and courts.²⁴⁹ Another way to regulate open access is through lawmaking. This approach was taken with the enactment of the 1996 Telecommunications Act, which compelled incumbent telephone companies to connect with competing services on reasonable and nondiscriminatory terms.²⁵⁰

As with public utility regulation, policymakers can adjust open access regulation to the challenges of the UGD network economy.²⁵¹ In this vein, numerous commenters have called on policymakers to impose open access obligations on incumbent data platforms to stop UGD concentration and to spur what they view to be a competitive and pluralistic path toward UGD-driven innovation.²⁵² As Viktor

(modification of final judgment), 552 F. Supp. 131 (D.D.C. 1982), *aff'd mem. sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

²⁴⁹ See, e.g., *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 411 (2004) (endorsing many of the criticisms advanced in the commentary, despite the Court's finding that there was "no need either to recognize . . . or to repudiate" the doctrine); 3A PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶¶ 770–774, ¶ 787(c)(1) (2d ed. 2002) (criticizing the essential facilities doctrine); HERBERT HOVENKAMP, *FEDERAL ANTITRUST POLICY* § 7.7, at 309 (3d ed. 2005); Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 *ANTITRUST L.J.* 841, 841 (1990); Keith N. Hylton, *Economic Rents and Essential Facilities*, 1991 *BYU L. REV.* 1243, 1245 (1991); Abbott B. Lipsky, Jr. & J. Gregory Sidak, *Essential Facilities*, 51 *STAN. L. REV.* 1187, 1195 (1999); McGowan, *supra* note 247, at 781–806; David Reiffen & Andrew N. Kleit, *Terminal Railroad Revisited: Foreclosure of an Essential Facility or Simple Horizontal Monopoly?*, 33 *J.L. & ECON.* 419, 421–25 (1990); Gregory J. Werden, *The Law and Economics of the Essential Facility Doctrine*, 32 *St. LOUIS U. L.J.* 433, 480 (1987) (arguing that Supreme Court was "wise" not to recognize essential facilities doctrine and that lower courts should reject it); David J. Gerber, Note, *Rethinking the Monopolist's Duty to Deal: A Legal and Economic Critique of the Doctrine of "Essential Facilities"*, 74 *VA. L. REV.* 1069, 1071, 1113 (1988) (arguing for a narrow essential facilities doctrine).

²⁵⁰ Telecomm. Act of 1996, Pub. L. No. 104–104, 110 Stat. 56 (codified as amended in scattered sections of 47 U.S.C.); 47 U.S.C. § 251(c)(2)-(3) (2000). Spulber & Yoo, *supra* note 126, at 889–90.

²⁵¹ This applicability assumes that UGD serves as a barrier to competitive market entry. See, e.g., Rubinfeld & Gal *supra* note 68; Bourreau & De Streel, *supra* note 10, at 11 ("[D]ata may constitute an essential component for product innovation."); DIG. COMPETITION, *supra* note 59, at 74; Symons & Bass, *supra* note 224, at 25. Nevertheless, this assumption is contested. See, e.g., Anja Lambrecht & Catherine E. Tucker, *Can Big Data Protect A Firm From Competition?*, *COMPETITION POL. INT'L* (Jan. 17, 2017), <https://www.competitionpolicyinternational.com/can-big-data-protect-a-firm-from-competition/> [<https://perma.cc/RVK6-8L2F>].

²⁵² See generally Maxwell Meadows, *The Essential Facilities Doctrine in Information Economies: Illustrating Why the Antitrust Duty to Deal is Still Necessary in the New*

Economy, 25 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 795, 828 (2015) (“Consumers are more likely to see benefits when more competitors have access to the information necessary to compete in a market, or in Schumpeterian environments for the market.”); Thomas Kadri, *Digital Gatekeepers*, 99 TEX. L. REV. 951 (2020); Cory Doctorow, *Adversarial Interoperability: Reviving an Elegant Weapon from a More Civilized Age to Slay Today’s Monopolies*, ELECTRONIC FRONTIER FOUND. (June 7, 2019), <https://www.eff.org/deeplinks/2019/06/adversarialinteroperability-reviving-elegant-weapon-more-civilized-age-slay> [<https://perma.cc/8L88-CX5Q>]; Thomas E. Kadri, *Platforms as Blackacres*, 68 UCLA L. REV. 1184 (2022) (arguing that public websites should not be able to impose contractual restrictions on public access to their data); Michael Kades & Fiona Scott Morton, *Interoperability as a Competition Remedy for Digital Networks*, WASH. CTR. EQUITABLE GROWTH, <https://equitablegrowth.org/working-papers/interoperability-as-a-competition-remedy-for-digital-networks/> [<https://perma.cc/7H5S-XGGQ>]; Chinmayi Sharma, *Concentrated Digital Markets, Restrictive APIs, and the Fight for Internet Interoperability*, 50 U. MEMPHIS L. REV. 441 (2019); Bennett Cyphers & Cory Doctorow, *Privacy Without Monopoly: Data Protection and Interoperability*, ELECTRONIC FRONTIER FOUND. (2021), <https://www.eff.org/document/privacy-without-monopoly-data-protection-and-interoperability> [<https://perma.cc/8NFL-W7W5>]; Cory Doctorow, *Tech Monopolies and the Insufficient Necessity of Interoperability*, ONEZERO (July 5, 2021), <https://onezero.medium.com/tech-monopolies-and-the-insufficient-necessity-of-interoperability-aafba94f1eb3> [<https://perma.cc/D6RY-33DJ>]; *Panel 2: Remedies for Competition Problems in Data Markets, Hearing #6: Privacy, Big Data, and Competition, Hearings on Competition and Consumer Protection in the 21st Century*, FED. TRADE. COMM. 73–131 (Nov. 7, 2018), https://www.ftc.gov/system/files/documents/public_events/1418633/ftc_hearings_session_6_transcript_day_2_11-7-18_1.pdf [<https://perma.cc/3SAP-LTS7>] (discussing compulsory data access remedies); Crémer, *supra* note 80, at 88; Bourreau & De Streel, *supra* note 10, at 28; Stigler Report, *supra* note 94, at 117 (“[A]ccess to data forms a very important remedy in the toolkit of both the antitrust authority and the DA.”); Peter K. Yu, *Beyond Transparency and Accountability: Three Additional Features Algorithm Designers Should Build into Intelligent Platforms*, 13 NE. U. L. REV. 263, 290–95 (2020) (describing data interoperability as critical to sustaining competition); Narechania, *supra* note 124, at 1608. In the case of Google, see Argenton & Prüfer, *supra* note 69, at 105 (suggesting sharing search log data to foster competition in the search engine market). *See generally* Ioannis Lianos & Evgenia Motchenkova, *Market Dominance and Search Quality in the Search Engine Market*, 9 J. COMP. L. & ECON. 419, 419–55 (2013); Mayer-Schönberger & Ramge, *supra* note 124; Victoria Graham, *Google’s Data Hoarding May Inhibit Rival Access, Texas AG Says*, BLOOMBERG (Apr. 22, 2020); Fiona M. Scott Morton & David C. Dinielli, *Roadmap for a Digital Advertising Monopolization Case Against Google*, OMIDYAR NETWORK 18 (May 2020) <https://omidyar.com/wp-content/uploads/2020/09/Roadmap-for-a-Case-Against-Google.pdf> [<https://perma.cc/Y5SF-2Z3B>] (arguing that Google is unfairly disadvantaging its display search competitors “by withholding results and output from Google search campaigns that advertisers have designed and bought . . .”). In the case of Meta, see Fiona M. Scott Morton & David C. Dinielli, *Roadmap for an Antitrust Case Against Facebook*, OMIDYAR NETWORK 24–25 (June 2020) <https://www.omidyar.com/wp-content/uploads/2020/06/Roadmap-for-an-Antitrust-Case->

Mayer-Schönberger and Thomas Ramage explain, “[i]f a wide variety of firms had access to market data, a firm’s competitive advantage would rest on its ability to extract insights, encouraging companies to develop smarter algorithms and analytics.”²⁵³ Daniel Rubinfeld and Michal Gal also suggest that “[i]f the source of the barriers [to data sharing] is inherently structural, and sharing the data is socially beneficial, a regulatory solution may be appropriate, perhaps by requirements that the data be made widely available at a reasonable and nondiscriminatory cost.”²⁵⁴

The notion of data sharing as a competitive remedy is not unprecedented. Regulators and courts already employ data-sharing policies to address anticompetitive behavior in various areas.²⁵⁵ For example, in 2011, when Google bought ITA Software, an airline reservation company, the Justice Department forced Google to continue offering access to ITA’s travel UGD to third parties, including Google’s competitor Microsoft.²⁵⁶ Similarly, in its 2019 *hiQ Labs v. LinkedIn* decision, the Ninth Circuit forced LinkedIn to continue sharing UGD with its emerging competitor, hiQ.²⁵⁷ Open access policies are also pervasive across the Atlantic. In Germany,

Against-Facebook.pdf [https://perma.cc/S7JS-DDUQ]; Complaint, *FTC v. Facebook Inc.*, No. 1:20-cv03590 (D.D.C. filed Dec. 9, 2020).

²⁵³ Mayer-Schönberger & Ramage, *supra* note 124.

²⁵⁴ Rubinfeld & Gal, *supra* note 68, at 373.

²⁵⁵ Besen, *supra* note 243, at 75–76. *See, e.g.*, *United States v. Microsoft Corp.*, 253 F.3d 34, 46 (D.C. Cir. 2001) (requiring disclosures of APIs and other corporate data); *United States v. Int’l Bus. Machs. Corp.*, No. 72-344, 1956 U.S. Dist. LEXIS 3992, at *29–30 (S.D.N.Y. Jan. 25, 1956) (ordering IBM to disclose technical information to the rivals); *In the Matter of Intel Corp.*, 150 F.T.C. 420, 455–84 (2010) (requiring disclosure of roadmaps for future designs of chip interfaces). *See also* *United States v. Nat’l Ass’n of Realtors*, 2008 WL 5411637 (N.D. Ill. Nov. 18, 2008) (requiring equal access to home listings data for online and traditional realtors); Agreement Containing Consent Order at 1, *In re Nielsen Holdings*, C-4439, 2014 WL 869523 (Sept. 20, 2013) (mandating data access in a merger settlement); *PeopleBrowsr, Inc. v. Twitter, Inc.*, No. C-12-6120 EMC., 2013 WL 843032 (N.D. Cal. 2013); *hiQ Labs, Inc. v. LinkedIn Corp.*, 938 F.3d 985, 996–1004 (9th Cir. 2019) (issuing a preliminary injunction under a state tortious interference in contract claim and a claim under the federal Computer Fraud and Abuse Act). *But see* *Stackla, Inc. v. Facebook Inc.*, No. 19-CV-05849-PJH, 2019 WL 4738288, at *6 (N.D. Cal. Sept. 27, 2019) (denying an injunction for plaintiff access to Facebook user data, as such a remedy “would compel Facebook to permit a suspected abuser of its platform and its users’ privacy to continue to access its platform and users’ data . . .”).

²⁵⁶ Mayer-Schönberger & Ramage, *supra* note 124.

²⁵⁷ 938 F.3d 985, 996–1004.

for example, large insurance companies are obligated to share actuarial data with smaller insurers to enable the latter to calculate risks.²⁵⁸ Similarly, the General Data Protection Regulation (GDPR) contains designated data portability provisions to empower European users to force data platforms to share UGD with competitors.²⁵⁹ While the uncoordinated data sharing efforts of discrete users are unlikely to have the same pro-competitive effects as mandatory data sharing,²⁶⁰ the underlying aim of the GDPR is similar: facilitating a competitive market entry.²⁶¹ Finally, the recently proposed European Data Act²⁶² goes beyond the GDPR and

²⁵⁸ Mayer-Schönberger & Ramge, *supra* note 124.

²⁵⁹ Regulation (EU) 2016/679, of the European Parliament and the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), 2016 O.J. (L 119), Article 20. *See also* Gabriel Nicholas & Michael Weinberg, *Data Portability and Platform Competition: Is User Data Exported from Facebook Actually Useful to Competitors?* ENGELBERG CENT. INNOVATION L. & POL'Y 1, 3 (2019) (detailing the limitations of the right to data portability under the GDPR).

²⁶⁰ Although they can port their own *individual* UGD logs (and easily switch to a competitor), users as a group are locked into a “collective action” problem, meaning they are unlikely to coordinate the transfer of their entire collective UGD datasets and successfully to switch to a competitor as a *group*. Because UGD is only valuable in the aggregate, access to individual UGD logs will not provide competitors with a competitive footing that is equivalent to the data platform incumbents. *See* Stucke & Grunes, *supra* note 40, at 291–92 (explaining user lock-in); Miller, *supra* note 40, at 329; Hoofnagle & Whittington, *supra* note 107, at 642; DIG. COMPETITION, *supra* note 59, at 36.

²⁶¹ Mayer-Schönberger & Ramge, *supra* note 124; Barbara Engels, *Data Portability Among Online Platforms*, INTERNET POL'Y REV. 5 (2016), <https://policyreview.info/articles/analysis/data-portability-among-online-platforms> [<https://perma.cc/55SN-LUZN>].

²⁶² Proposal for a Regulation of The European Parliament and of the Council on Harmonised Rules on Fair Access to and Use of Data (Data Act) COM (2022) 68 final (Feb. 23, 2020).

compels data platforms to grant some UGD access to users,²⁶³ competing businesses,²⁶⁴ and governments.²⁶⁵

Unfortunately, open access policies are no panacea. First, involuntary UGD access is detrimental to data platforms' incentives to invest in the collection, refinement, and extraction of value from UGD.²⁶⁶ After all, the ability to capture value by internalizing UGD network externalities is the fuel that drives the data platforms' incentives to innovate and subsidize their existing goods and services.²⁶⁷ While, at some point, the harms discussed in the previous section may outweigh the benefits generated by the data platforms' exclusive access to UGD-empowered innovation, it is challenging for policymakers to pinpoint the exact moment when could happen.²⁶⁸

Even in the case of traditional telecommunications networks, where the incentives that network monopolists require to invest in

²⁶³ *Id.* at Ch. II-III (empowering users to access the data generated by the products or related services they own, rent or lease and to share this data with competing business, and setting out general access conditions such as providing access on a fair and non-discriminatory basis). In addition, Chapter II also requires manufacturers and designers to design their products in a way that makes the data easily accessible by default, and they will have to be transparent on what data will be accessible and how to access them. *Id.*

²⁶⁴ *Id.* at Ch. II (imposing an obligation on data holders to make data available to third parties, such as providers of aftermarket services, upon the request of the user); *id.* at Ch. IV (addressing unfairness of contractual terms in data sharing contracts between businesses, offers recommended contractual terms, and forbid certain terms).

²⁶⁵ *Id.* at Ch. V (obligating business to grant mandatory access to their data to public sector bodies and Union institutions in situations where there is an exceptional public need for the data requested). More generally, the EU also contemplates nuanced and industry-specific data-sharing policies. *See* EU Data Strategy, *supra* note 180.

²⁶⁶ Crémer, *supra* note 80, at 105 (“[C]ompetition law must take the incentive effects into account before imposing a duty to deal, or more specifically a duty to grant access to data.”)

²⁶⁷ *Id.* at 88 (“De facto control over data allows data controllers to exclude others from data access and to appropriate gains from data collection, and thereby provides incentives to invest in data collection and storage.”).

²⁶⁸ *Cf.* Timothy F. Bresnahan, *New Modes of Competition: Implications for the Future Structure of the Computer Industry*, in *COMPETITION, INNOVATION AND THE MICROSOFT MONOPOLY: ANTITRUST IN THE DIGITAL MARKETPLACE* 155–208 (Kluwer Academic 1999) (“Network effects mean that the socially cost-minimizing industry structure is often quite concentrated. But they also mean that there are opportunities for individual firms to seize control of bottlenecks and extract monopoly profits. Neither the left nor the right can claim the network effects theory.”); McIntosh, *supra* note 94, at 209 (“Collected data could be given a limited term, and once expired, the controller of the data would be compelled to make the data available for public consumption.”).

the network's construction and growth are more concrete and far clearer to perceive, policymakers feel highly uncertain about the "right" timing for regulating access. For example, when the Federal Communication Commission first went to unbundle AT&T's telecommunications network, Joseph Farrell, the agency's Chief Economist, put his faith in the legislative mandate, not in economic analysis:

Just as we would not want to reduce the life of a patent from seventeen years to seventeen minutes, since that would reduce innovative effort, so also it would be unwise policy to make all developers of network externalities share them in all circumstances. I don't know of any worked out general policy for this problem. But, in the 1996 Telecom Act, I believe, Congress asserted that sharing is the right thing in this industry at this time. Our job, as I see it, in the interconnection proceeding, is to implement that decision, to level the playing field upwards, and to remove the economic entry barriers that the incumbent's installed base otherwise creates.²⁶⁹

Balancing innovation incentives with access is among the most complex and unsolved policy challenges in intellectual property and antitrust laws, especially in the presence of network effects.²⁷⁰ In the recent *Google v. Oracle* decision, the Supreme Court effectively forced Oracle to open its "network" of established Java application developers to the emerging Android ecosystem, thereby allegedly diminishing the incentives of future innovators to invest in the creation of such successful networks to begin with.²⁷¹

²⁶⁹ Farrell, *supra* note 242, at 210.

²⁷⁰ See generally Peter S. Menell, *Economic Analysis of Network Effects and Intellectual Property*, 34 BERKELEY TECH. L. J. 219 (2019); Robert D. Cooter & Uri Y. Hacothen, *Progress in the Useful Arts: Foundations of Patent Law in Growth Economics*, 22 YALE J. L. & TECH. 191 (2020).

²⁷¹ *Google LLC v. Oracle Am., Inc.*, 141 S. Ct. 1183, 1190. This case involved indirect rather than direct effects, similar to *U.S. v. Microsoft*. See *supra* note 13. Nevertheless, the dynamics are similar. For analysis see Peter S. Menell, *Google v. Oracle and the Grateful (API) Dead: What a Long Strange Trip Its Been*, S.F. DAILY J. (2021); Peter S. Menell, *Rise of the API Copyright Dead?: An Updated Epitaph for Copyright Protection of*

Second, alongside the tension with innovation incentives, open access of UGD networks also creates an unavoidable tension with protecting users' privacy.²⁷² The more entities that can access the data platforms' UGD databases, the less private this data (and the inferences extracted) become.²⁷³ For this reason, it is hardly surprising that data platforms became accustomed to flagging the concern for user privacy as their justification for refusing to share UGD with their competitors. In this vein, LinkedIn argued that allowing hiQ to scrape UGD from its site violated its users' privacy,²⁷⁴ and Facebook invoked the privacy argument to justify cutting the access of academic researchers to its users' targeted advertising data.²⁷⁵

Data platforms sometimes go even further by employing pro-privacy policies, burdening third-party access to UGD. This was exemplified in July 2015 when the World-Wide-Web Consortium, an organization that represents data platforms such as Google and

Network and Functional Features of Computer Software, 31 HARV. J. L. & TECH. 305, 318 (2018) (explaining the network effects argument); Annette Hurst, *Op-Ed: Oracle Attorney Says Google's Court Victory Might Kill the GPL*, ARS TECHNICA (May 27, 2016), <http://arstechnica.com/tech-policy/2016/05/op-ed-oracle-attorney-says-googles-court-victory-might-kill-the-gpl/> [<https://perma.cc/78X8-TLV3>] (discussing the incentive issue); Florian Mueller, *Google's 'Fair Use' Defense Against Oracle Is an Insult to Human Intelligence: Android's Use of Java APIs Violates Copyright*, FOSS PATENTS (May 22, 2016), <http://www.fosspatents.com/2016/05/googles-fair-use-defense-against-oracle.html> [<https://perma.cc/6QGT-B6QP>].

²⁷² See, e.g., Erika M. Douglas, *The New Antitrust/Data Privacy Law Interface*, 130 YALE L.J. FORUM (Jan. 18, 2021), <https://www.yalelawjournal.org/forum/the-new-antitrustdata-privacy-law-interface> [<https://perma.cc/C3L5-V43Y>]; Besen, *supra* note 243, at 77–80; Michal Gal, *Do Our Privacy Laws Strengthen the Already Strong?*, NETWORK L. REV. (Mar. 9, 2021), <https://www.networklawreview.org/gal-privacy-competition/> [<https://perma.cc/VB29-524E>]; Noah Joshua Phillips, *Should We Block This Merger? Some Thoughts on Converging Antitrust and Privacy* (speech given Jan. 30, 2020 at Stanford Law School) (noting that Google's effort to block third-party cookies is good for privacy but bad for competition); Peter Swire & Yianni Lagos, *Why the Right to Data Portability Likely Reduces Consumer Welfare: Antitrust and Privacy Critique*, 72 MD. L. REV. 335, 341 (2013).

²⁷³ Mark A. Lemley, *The Contradictions of Platform Regulation*, 1 J. FREE SPEECH L. 303, 329–30 (2021) (recognizing this tradeoff); Gal & Rubinfeld, *supra* note 188, at 756.

²⁷⁴ *hiQ Labs, Inc. v. LinkedIn Corp.*, 938 F.3d 985, 994–95 (9th Cir. 2019) (discussing user privacy interests protected by the “Do Not Broadcast” setting on LinkedIn).

²⁷⁵ Mike Clark, *Research Cannot Be the Justification for Compromising People's Privacy*, META (Aug. 3, 2021), <https://about.fb.com/news/2021/08/research-cannot-be-the-justification-for-compromising-peoples-privacy/> [<https://perma.cc/UZ4L-BFDQ>].

Meta, proposed to employ the *Do not track* privacy standard.²⁷⁶ This pro-privacy standard would block third party companies attempting to gather UGD, but would not prevent first-party companies, namely the incumbent data platforms, from retaining their access to UGD.²⁷⁷ Apple also introduced a host of pro-privacy features recently which made it far more difficult for third-party entities to access UGD gathered by iPhones without burdening Apple's own access (for example, location data).²⁷⁸

Recent technological developments attempt, with partial success, to blunt the stark tradeoff between UGD access and users' privacy.²⁷⁹ Differential privacy technologies pioneered by Apple enable companies to provide UGD access to third parties while at the same time preserving users' privacy.²⁸⁰ Differential privacy techniques preserve users' privacy by injecting random noise into the inquired datasets, preventing any particular users' re-identification.²⁸¹ Nevertheless, because differential privacy techniques must also limit the number of inferences drawn from each database and the relative accuracy of these inferences, these techniques also inevitably reduce the potential value of UGD.²⁸²

Federated learning, another pro-privacy technology pioneered by Google, also attempts to blunt the tradeoff between access and

²⁷⁶ STUCKE & GRUNES, *supra* note 40, at 46–47.

²⁷⁷ *Id.*

²⁷⁸ Sarah Perez, *Developers Accuse Apple of Anti-Competitive Behavior with Its Privacy Changes In iOS 13*, TECHCRUNCH (Aug. 19, 2019), <https://techcrunch.com/2019/08/19/developers-accuse-apple-of-anti-competitive-behavior-with-its-privacy-changes-in-ios-13/> [<https://perma.cc/5ZUP-7BL9>]; Douglas, *supra* note 272, at 666. Apple has since opened up its 'Find My' ecosystem to third party vendors. See William Gallagher, *Apple Debuts Find My Network For Third-Party Accessories*, APPLEINSIDER (Apr. 7, 2021), <https://appleinsider.com/articles/21/04/07/apple-announces-find-my-network-for-third-party-accessories> [<https://perma.cc/B5XB-2QQY>].

²⁷⁹ Andrea Scripa Els, *Artificial Intelligence as a Digital Privacy Protector*, 31 HARV. J. L. & TECH. 218, 219–27 (2017).

²⁸⁰ *Id.*

²⁸¹ Matthew Green, *What Is Differential Privacy?*, FEW THOUGHTS CRYPTOGRAPHIC ENG'G (June 15, 2016), <https://blog.cryptographyengineering.com/2016/06/15/what-is-differential-privacy/#:~:text=Differential%20Privacy> [<https://perma.cc/8VXF-KFX3>].

²⁸² Els, *supra* note 279, at 220.

privacy and accomplishes this goal with limited success.²⁸³ Federated learning techniques preserve users' privacy by conducting UGD-driven analysis not on the data platforms' centralized servers, but only on the users' end devices.²⁸⁴ In this way, raw UGD never leaves the users' devices, thereby protecting privacy.²⁸⁵ However, federated learning's greatest quality is also its greatest limitation. By preventing its reuse and re-analysis for multiple purposes, the federated learning approach reduces the potential diversification value of UGD.²⁸⁶

Because there is no clean solution to the access/privacy tradeoff, some policy compromise is needed. Policymakers have no consensus about how this compromise must be made. Jack Balkin's "information fiduciaries" proposal is one that favors privacy concerns over open access.²⁸⁷ As Balkin explains, "[t]he duties of care and confidentiality require information fiduciaries to keep data secure and not to disclose it to third parties unless those third parties are equally trustworthy and agree to the same duties of care, confidentiality, and loyalty as the fiduciary."²⁸⁸ Other analysts, such as Mark Lemley, reach the opposite conclusion and call on policymakers to "favor[] interoperability at the expense of

²⁸³ See Brendan McMahan & Daniel Ramage, *Federated Learning: Collaborative Machine Learning Without Centralized Training Data*, GOOGLE AI BLOG (Apr. 6, 2017), <https://research.googleblog.com/2017/04/federated-learning-collaborative.html> [<https://perma.cc/P2LX-JG6T>]; see also James Vincent, *Google Is Testing a New Way of Training Its AI Algorithms Directly on Your Phone*, VERGE (Apr. 10, 2017), <http://www.theverge.com/2017/4/10/15241492/google-ai-user-data-federated-learning> [<https://perma.cc/Q67D-CZUD>].

²⁸⁴ *Id.*

²⁸⁵ *Id.*

²⁸⁶ Els, *supra* note 279, at 223.

²⁸⁷ In recent years, several scholars have highlighted ways in which privacy and trust are intertwined online. See generally ARI EZRA WALDMAN, *PRIVACY AS TRUST: INFORMATION PRIVACY FOR AN INFORMATION AGE* (Cambridge 2018); Neil Richards & Woodrow Hartzog, *Taking Trust Seriously in Privacy Law*, 19 STAN. TECH. L. REV. 431 (2016).

²⁸⁸ See, e.g., Balkin, *The First Amendment in the Second Gilded Age*, *supra* note 207, at 1008; Theodore Rostow, *What Happens When an Acquaintance Buys Your Data?: A New Privacy Harm in the Age of Data Brokers*, 34 YALE J. REG. 667, 700 (2017) (noting that, under Balkin's framework, "[t]he responsibilities of information fiduciaries could be expanded to limit what data companies can sell to brokers.").

privacy.”²⁸⁹ Erika Douglas sits between these edges. She claims that open access and privacy should be given equal weight in the policy analysis.²⁹⁰

Finally, open access regulation brings tremendous technical difficulties concerning execution and enforcement.²⁹¹ Even in the simpler case of traditional telecommunication networks, open access obligations lead to considerable complications. Unresolved issues include the locations where network interconnection should be taken, the quality of interconnection that should be provided, and the prices that should be charged for interconnection.²⁹² Open access regulations of UGD networks are likely to be at least as complex. Which UGD should data platforms be obliged to share? How frequently? At what level of abstraction and aggregation? Through what technical standards should data sharing be facilitated? What prices, if any, should the data platforms charge for access? Policymakers must address these and other questions whenever they devise UGD open access policies.²⁹³

Considering these complexities and concerns, policymakers should approach open access with caution.²⁹⁴ While soft open access policies should be promoted with zeal, hard policies should be kept as a last resort.²⁹⁵ An example of a soft pro-access policy is UGD portability, as in the GDPR.²⁹⁶ Portability partially empowers

²⁸⁹ Lemley, *supra* note 273, at 333. *See also* Khan & Pozen, *supra* note 210, at 538; Douglas, *supra* note 272, at 679 (describing the pro-access perspective).

²⁹⁰ Douglas, *supra* note 272, at 680. *See also* Besen, *supra* note 243, at 86.

²⁹¹ Besen, *supra* note 243, at 79. *See generally* IAN OPPERMANN ET AL., DATA SHARING FRAMEWORKS: TECHNICAL WHITE PAPER (2017).

²⁹² Besen, *supra* note 243, at 79; Hank Intven & McCarthy Tétrault, TELECOMMUNICATIONS REGULATION HANDBOOK, MODULE 3: INTERCONNECTION 4 (WORLD BANK 2000) (examining “Key Interconnection Issues”).

²⁹³ Besen, *supra* note 243, at 79; Prüfer & Schottmüller, *supra* note 10, at 994 (exploring interconnection issues). *Cf.* Mayer-Schönberger & Ramge, *supra* note 124 (suggesting imposing data-sharing obligations on companies above market share of ten percent).

²⁹⁴ Crémer, *supra* note 80, at 76 (endorsing a cautionary approach).

²⁹⁵ *See* Engels, *supra* note 261. *But see* Bourreau & De Streel, *supra* note 10, at 28 (“[Because] the benefits of compulsory access are higher for general-purpose technologies than for other products because of the pervasiveness, the inherent potential for technical improvements and the innovational complementarities of the former . . . the conditions to impose data sharing under competition law may in many instances be lower for data than for other products.”).

²⁹⁶ *See supra* note 259 and accompanying text.

network access by removing some of the technical difficulties associated with UGD transfer. Still, because it does not resolve the lock-in attributed to the users' incoordination problem, it is unlikely that UGD portability would affect tipped UGD markets.²⁹⁷

Milder pro-access efforts such as UGD standardization should also be pursued but with closer consideration. These initiatives may foster competition and mobility but may entrench existing technical standards and undermine user privacy.²⁹⁸ Lastly, the "hardest" pro-access policies, such as compulsory license or compelled access mandates, should only be applied to particular controversies,²⁹⁹ specific markets,³⁰⁰ or exceptional circumstances.³⁰¹ The proposed European Data Act reflects this careful approach.³⁰² While the Act zealously promotes soft pro-access mechanisms, such as the standardization of data sharing practices and removal of barriers to data portability,³⁰³ the Act also employs hard pro-access policies, such as compelled access only in exceptional cases of public emergency.³⁰⁴

²⁹⁷ See Besen, *supra* note 243, at 87 (discussing the benefits of UGD portability); DIG. COMPETITION, *supra* note 59, at 9. The right to UGD portability may be executed in many different ways that may vary in the degree of user effort they require (for example, execution by users vs. execution by businesses as the users' request). See *id.* at 65 (calling the latter type "data mobility"); Crémer, *supra* note 80, at 83–85 (distinguishing among different levels of UGD portability). Moreover, UGD portability mechanism can and should be employed not only to facilitate competitive entry but also for auditing purposes. See *supra* Section II.I.A.

²⁹⁸ See generally Gal & Rubinfeld, *supra* note 188; DIG. COMPETITION, *supra* note 59, at 5–6.

²⁹⁹ See, e.g., Meadows, *supra* note 252 (suggesting "open access" implementation by way of the essential facilities doctrine).

³⁰⁰ Cf. Crémer, *supra* note 80, at 109 ("Very likely, mandated data access will therefore, in the end, be a sector-specific regime, subject to some sort of regulation and regulatory oversight."). See, e.g., Argenton & Prüfer, note 69; Lianos & Motchenkova, *supra* note 252; Graham, *supra* note 252; Scott Morton & Dinielli, *supra* note 252; Mayer-Schönberger & Ramge, *supra* note 124 (exploring UGD open access obligations in the search market).

³⁰¹ See generally Shkabatur, *supra* note 131 (exploring reasons to facilitate open access for the public good).

³⁰² See Proposal for a Regulation of The European Parliament and of the Council on Harmonised Rules on Fair Access to and Use of Data (Data Act), at § V, COM (2022) 68 final (Feb. 23, 2022).

³⁰³ *Id.*

³⁰⁴ *Id.*

C. Monopolization and Merger

UGD network effects lead to peculiar market competition dynamics, which create significant challenges for conventional monopolization and merger analyses.³⁰⁵ Traditional network industries usually have clear market boundaries and poor incentives to cross those boundaries.³⁰⁶ In this environment, the competition authorities could far more confidently label questionable market integrations as allegedly unlawful.³⁰⁷ For instance, in *U.S. v. AT&T*, the authorities claimed that AT&T's integration into the telephone manufacturing market was anti-competitive because the main plausible reason for such integration was to bypass government regulation.³⁰⁸ Similarly, in *U.S. v. Microsoft*, the authorities could coherently argue that Microsoft anticompetitively extended its operating system monopoly into the complementary browser and middleware markets to stop these markets from maturing into a competitive, disruptive threat.³⁰⁹ In both cases, neither AT&T nor Microsoft could sensibly bring a claim that by venturing into different markets, they stand to realize "network efficiencies."³¹⁰ If anything, Microsoft should allegedly be thrilled with the growing enthusiasm surrounding Netscape Navigator because the success of

³⁰⁵ In this subsection, unlawful or anticompetitive integration refers to both unilateral exclusionary conduct (monopolization) and controversial mergers and acquisitions as one. In the United States, the competition authorities may combat unlawful integration through several legislative sources, including Section 7 of the Clayton Act, 15 U.S.C. § 18; Section 2 of the Sherman Act, 15 U.S.C. § 2; and for the FTC, Section 5 of the FTCA, 15 U.S.C. § 45.

³⁰⁶ See *supra* notes 56–58 and accompanying text.

³⁰⁷ But see *supra* note 57 and accompanying text.

³⁰⁸ See *supra* note 57 and accompanying text.

³⁰⁹ See Farrell & Weiser, *supra* note 57, at 110–11; Bresnahan, *supra* note 268, at 67.

³¹⁰ But such market expansion may nevertheless have other pro-competitive justifications. See *supra* note 57 and accompanying text. In the Microsoft case, there was a sensible argument that by integrating into complementary markets, Microsoft could preserve their "indirect" network effects by removing the incentive of developers to create applications that run for multiple platforms. See Howard A. Shelanski & J. Gregory Sidak, *Antitrust Divestiture in Network Industries*, 68 CHI.-KENT L. REV. 1, 84 (2001). But see Declaration of Carl Shapiro, *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, Civ. No. 98-1232 (D.D.C. 1999).

a complementary browser could increase demand for Microsoft Windows.³¹¹

Monopoly market boundaries are different for data platform integrations.³¹² Consider Google Search integration into vertical or specialized searches, Facebook’s integration into Facebook’s apps, and Amazon’s Alexa integration into Alexa’s Skills.³¹³ Although Lina Khan has vigorously argued to the contrary,³¹⁴ UGD network effects provide good reasons for market integration in all these cases.³¹⁵ UGD network effects also provide good reasons to justify market integration into markets that are neither vertical nor horizontal in the traditional antitrust sense, such as in the case of the Google/Nest merger.³¹⁶

As explained in the previous section, by utilizing UGD gathered from different domains to optimize, personalize, and diversify their services, data platforms can generate user value that independent providers simply cannot provide.³¹⁷ By integrating into the vertical “Shopping” search engine, Google can provide shopping recommendations based on users’ past orders, browsing and search

³¹¹ Richard J. Gilbert & Michael L. Katz, *An Economist’s Guide to U.S. v. Microsoft*, 15 J. ECON. PERSPECTIVE 25, 34 (2001); James B. Speta, *Handicapping the Race for the Last Mile?: A Critique of Open Access Rules for Broadband Platforms*, 17 YALE J. REG. 39, 84 (2000).

³¹² See Hacoen, *supra* note 1 (manuscript at 19–25) (explaining that UGD network effects markets do not have clear boundaries and that such markets are susceptible to concentration); see also STUCKE & GRUNES, *supra* note 40, at 40 (noting that UGD-driven mergers and acquisitions are on the rise); James Manyika et al., *Big Data: The Next Frontier for Innovation, Competition, and Productivity*, MCKINSEY GLOBAL INST. 113 (June 2011).

³¹³ All these cases are explored in detail in Khan, *supra* note 24, at 985–1005 (explaining how Alphabet integrated Google Search; Facebook apps integrated Facebook; and Alexa Skills integrated Alexa).

³¹⁴ *Id.* See also DIG. COMPETITION, *supra* note 59, at 61.

³¹⁵ See *supra* Section II.i.

³¹⁶ See Graef, *supra* note 62, at 493.

³¹⁷ But this is not always a procompetitive argument. See Khan, *supra* note 24, at 996–97 (“Alexa maintains access to this data even when the information is collected through third-party skills, and Amazon can use the information to . . . enrich other parts of its business . . . [and] give Amazon a huge advantage in continuing to develop its machine learning.”); see also DIG. COMPETITION, *supra* note 59, at 96 (recognizing that UGD “increas[e] incumbency advantages” but framing it only as an anticompetitive harm).

history, and users' live location.³¹⁸ Google Shopping can also handle users' shopping transactions by accessing any payment cards saved on users' Google accounts, and further simplify the shopping experience by integrating it with Google's Assistant.³¹⁹ Finally, Google Shopping can leverage Google's vast UGD experimentation experience to optimize its listing and interfaces to better fit its users' aesthetic preferences.³²⁰

Such UGD network efficiencies do not mean that data platforms cannot act anticompetitively by favoring their own products over competitors', simply to exclude the latter from the market.³²¹ Nor will the existence of such efficiencies necessarily outweigh the social harms explored above.³²² Nevertheless, UGD-driven efficiencies do imply that there is no *a priori* reason to separate platforms and commerce, as Khan suggested.³²³ It also means that the *ex-post* divestiture remedy, which was highly suitable in traditional network industries and appropriate in *U.S. v. AT&T* and

³¹⁸ Greg Sterling, *Google Brings Personalized Shopping, Local Inventory and Checkout to U.S.*, SEARCH ENGINE LAND (May 14, 2019), <https://searchengineland.com/google-bringing-new-shopping-experience-with-personalization-local-and-better-checkout-to-u-s-next-316976> [<https://perma.cc/PBE4-VSPM>] (“Consumers will see shopping recommendations based on their shopping histories, search histories and lists. No two Shopping home screens will look alike.”)

³¹⁹ *Id.*

³²⁰ Hacothen, *supra* note 1 (manuscript at 9–15) (discussing UGD-driven experimentation).

³²¹ For example, the fact that it is efficient for Google Search to integrate into the vertical “Shopping” search engine does not necessarily mean that prioritizing Google Shopping in Google's general search engine is also efficient. For a view supporting Google's self-prioritization see, C. Scott Hemphill, *Disruptive Incumbents: Platform Competition in an Age of Machine Learning*, 119 COLUM. L. REV. 1973, 1998 (2019). For the opposite view, see Charles Duhigg, *The Case Against Google*, N.Y. TIMES (Feb. 20, 2018), <https://www.nytimes.com/2018/02/20/magazine/the-case-against-google.html> [<https://perma.cc/HQJ5-SWR8>]. Interestingly, the competition authorities in the United States and in the EU have investigated the “Google Shopping” controversy and also reached opposite outcomes. Compare Memorandum to the F.T.C., Bureau of Competition 130 n.136 (Aug. 8, 2012), <https://www.benedelman.org/pdf/ftc-google-8aug2012.pdf> [<https://perma.cc/28QV-HXX8>], with Case AT.39740, Google Search–Shopping, ¶¶ 11–14 (June 27, 2017), [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018XC0112\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018XC0112(01)&from=EN). See also Khan, *supra* note 24, at 998–99.

³²² See *supra* Section II.ii.

³²³ Khan, *supra* note 24, at 1065–90.

potentially even in *U.S. v. Microsoft*,³²⁴ is becoming increasingly controversial in UGD-driven markets.³²⁵

Despite its growing complication—and to the extent that none of the alternative approaches discussed so far are yet to be vigorously implemented—monopolization and merger analysis is becoming increasingly important in the UGD-driven economy.³²⁶ As Carl Shapiro explains:

[T]oday's large incumbent firms are the survivors who have managed to successfully obtain and exploit newly available economies of scale . . . in markets where this state of affairs prevails, namely oligopolies protected by barriers to entry, antitrust has a critical role to play to control mergers and acquisitions involving large incumbent firms, and to prevent these firms from engaging in exclusionary conduct.³²⁷

Shapiro and others have detailed how best to adjust antitrust policies to the new digital marketplace, and reviewing their work exceeds the scope of this Article.³²⁸ However, two key lessons are worth emphasizing. One, because both the promises and the concerns with UGD-driven integrations deal with the implications of these integrations for future innovation, rather than to present market competition, the perspective of the competition authorities should also attempt to be forward-looking.³²⁹ In this vein, the authorities could investigate whether and to what extent a contested

³²⁴ See Brennan, *supra* note 56, at 790 (arguing in favor of divestiture in the AT&T case); Shapiro, *supra* note 14, at 740 (arguing in favor of divestiture in the Microsoft case); Farrell, *supra* note 242, at 207 (describing the logic of divestiture). *But see* Shelanski & Sidak, *supra* note 310 (arguing that divestiture in network industries may be problematic in cases where market integration is nevertheless efficient).

³²⁵ See Graef, *supra* note 62 and accompanying text.

³²⁶ C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 U. PA. L. REV. 1879, 1881 (2020) (favoring proactive enforcement); Shapiro, *supra* note 14, at 741.

³²⁷ Shapiro, *supra* note 14, at 733–34.

³²⁸ See, e.g., *id.*; Hemphill & Wu, *supra* note 326, at 1890; Hemphill, *supra* note 321; STUCKE & GRUNES, *supra* note 40; Bourreau & De Streel, *supra* note 10.

³²⁹ Cf. Shapiro, *supra* note 14, at 739 (“One promising way to tighten up on merger enforcement would be to apply tougher standards to mergers that may lessen competition in the future, even if they do not lessen competition right away.”); Hemphill & Wu, *supra* note 326, at 1906.

market integration attempt by data platforms would serve to embrace rather than shelve nascent innovations.³³⁰

This recommendation is easily made only on paper. Competition authorities are not well suited to predict future technological development, especially not in the context of UGD-driven integrations, where the same conduct—namely merger of otherwise siloed UGD datasets—is both innovation-enhancing and exclusionary.³³¹ That said, competition authorities may nevertheless take some steps that could aid them in making the right call.

First, when investigating exclusionary conduct or a contestable merger, competition authorities could inquire directly into the business plans of the incumbent data platforms, even if such inquiry is somewhat unusual.³³² When replying to these inquiries, incumbent data platforms should be able to provide plausible specific explanations for how the expected market integration is likely to enhance consumer welfare.³³³ For instance, data platforms might try to show that integrating the specific datasets from different market domains will facilitate concrete service amplifications or UGD-driven synergies that could not have been achieved otherwise.³³⁴

³³⁰ Bourreau & De Stree, *supra* note 10, at 30.

³³¹ Compare Carl Shapiro, *Competition and Innovation: Did Arrow Hit the Bull's Eye?*, in THE RATE AND DIRECTION OF INVENTIVE ACTIVITY REVISITED 361, 365 (2011), <https://www.nber.org/books-and-chapters/rate-and-direction-inventive-activity-revisited/competition-and-innovation-did-arrow-hit-bulls-eye> [<https://perma.cc/NUC3-4K5P>] (“The quest for synergies is especially important in industries where value is created by systems that incorporate multiple components, as in the information and communications technology sector.”), with Damien Geradin & Monika Kuschewsky, *Competition Law and Personal Data: Preliminary Thoughts on a Complex Issue 2* (Feb. 12, 2013), <https://ssrn.com/abstract=2216088> (“The acquisition of large volumes of data . . . raise barriers to entry and thus deprive users from the benefits of competition.”). See also DIG. COMPETITION, *supra* note 59, at 100 (suggesting the use of “a ‘balance of harms’ approach which takes into account the scale as well as the likelihood of harm in merger cases involving potential competition and harm to innovation.”).

³³² Bourreau & De Stree, *supra* note 10, at 30.

³³³ See *id.*; Crémer, *supra* note 80, at 123.

³³⁴ U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines § 10 (2010) (requiring efficiency claims to “be merger-specific”); Hemphill & Wu, *supra* note 326, at 1903 (emphasizing this “merger-specific” requirement).

Second, competition authorities can condition the authorization of suspected conduct on the data platforms' devotion in adhering to their outlined commitments and require them to provide compelling justifications for deviating from them.³³⁵ Competition authorities could impose additional limitations before authorizing contestable integrations, such as obligations to continue (or stat) sharing UGD with competitors.³³⁶ Competition authorities already impose such conditions.³³⁷

Third, competition authorities could delay their enforcement actions to gain more insight into the actual market effects of controversial UGD-driven integrations.³³⁸ While post-conduct evaluation may lead to hindsight bias and disturb market dynamics—especially if it results in divestiture³³⁹—waiting may prove worthwhile.³⁴⁰ Post-conduct evidence is likely to help competition authorities better appraise the realization of UGD-driven efficiencies and the countervailing anticompetitive harms.³⁴¹ Post-conduct evidence may be particularly revealing where foreign authorities took immediate enforcement action against the same contested conduct.³⁴² In such cases, competition authorities will have a reliable counterfactual that could aid them in evaluating the suspected conduct's real-world effects.³⁴³

³³⁵ Bourreau & De Stree, *supra* note 10, at 30. *See also* ALEXANDRE DE STREEL & PIERRE LAROCHE, DISRUPTIVE INNOVATION AND COMPETITION POLICY ENFORCEMENT 7 (2015), [https://one.oecd.org/document/DAF/COMP/GF\(2015\)7/en/pdf](https://one.oecd.org/document/DAF/COMP/GF(2015)7/en/pdf) [<https://perma.cc/JZB8-MEJK>].

³³⁶ *See supra* note 252 and accompanying text.

³³⁷ *Id.*

³³⁸ Hemphill & Wu, *supra* note 326, at 1882, 1905–09.

³³⁹ *See* Scott A. Sher, *Closed but Not Forgotten: Government Review of Consummated Mergers Under Section 7 of the Clayton Act*, 45 SANTA CLARA L. REV. 41, 81–82 (2004) (discussing practical difficulties of divestiture).

³⁴⁰ Hemphill & Wu, *supra* note 326, at 1905–09.

³⁴¹ *Id.* at 1907. *See also* Joseph F. Brodley, *The Economic Goals of Antitrust: Efficiency, Consumer Welfare, and Technological Progress*, 62 N.Y.U. L. REV. 1020, 1048–49 (1987); Brian A. Facey, *The Future of Looking Back: The Efficient Modeling of Subsequent Review*, 44 ANTITRUST BULL. 519, 524–25 (1999).

³⁴² *Cf.* Shapiro, *supra* note 14, at 743 (suggesting the experience with EU competition policy “provide[s] a type of ‘natural experiment.’”).

³⁴³ The difference between enforcement in the “Google Shopping” case in the United States and EU can possibly provide such experimentations. *See supra* note 321 and accompanying text.

Understanding how UGD network effects impact market dynamics brings another key lesson in the traditional monopolization and merger analysis. Because the harms described in the previous section are most likely to emerge once inter-market tipping occurs, competition authorities may try to promote sustainable competition among the incumbent data platforms to prevent tipping. In this vein, Scott Hampill has suggested that although small shopping comparison websites may be eliminated when Google chooses to incorporate Google Shopping into its Universal Search, “this loss might be tolerable in order to promote the more important opportunity for Google to serve as a serious shopping competitor to Amazon.”³⁴⁴

In theory, sustainable market competition among leading incumbents is desirable as it prevents inter-market tipping and has even proved feasible in traditional network markets.³⁴⁵ Following the expiration of the original telephone patents, which isolated Bell’s monopoly from the competition, the independent telephone companies cleverly interconnected to form a network similar in size to that of the Bell System.³⁴⁶ This competition between the two rival networks was good for consumers for as long as it lasted.³⁴⁷

Nevertheless, inter-market competition among incumbent data platforms is unlikely to be as promising as in traditional network industries. UGD networks, unlike their traditional counterparts, are virtual, not physical, and UGD (information) is the ultimate non-rivalrous resource.³⁴⁸ For these reasons there is a looming fear that the incumbent data platforms will only appear to be competing when

³⁴⁴ Hemphill, *supra* note 321, at 1999.

³⁴⁵ Besen, *supra* note 243, at 71–74.

³⁴⁶ For a detailed review of this history, see Robert Bornholz & David S. Evans, *The Early History of Competition in the Telephone Industry*, in *BREAKING UP BELL: ESSAYS ON INDUSTRIAL ORGANIZATION AND REGULATION* 7, 13 (1983); Richard Gabel, *The Early Competitive Era in Telephone Communications, 1893–1920*, 34 *LAW & CONTEMP. PROBS.* 340, 344 (1969) (reporting 3.0 million independent lines in 1907, compared with 3.1 million Bell lines); Spulber & Yoo, *supra* note 247, at 1892–96.

³⁴⁷ See Spulber & Yoo, *supra* note 247, at 1892–96.

³⁴⁸ See generally Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* 609 (1962) (exploring the non-rivalrous nature of information goods).

in fact, they will be coordinating in secret.³⁴⁹ The social harms of a coordinated UGD cartel are as bad as those of a monopoly.

CONCLUSION

UGD network effects are an exciting and novel economic force. They upset conventional market competition dynamics and lead to the formation of dominant data platforms with market power over many different and seemingly unrelated markets. This Article explains that UGD network effects are a blessing and a curse. They empower dominant data platforms to generate tremendous welfare-enhancing efficiencies, yet also provide a lucrative opportunity for data platforms to impose welfare-reducing anticompetitive harms. After exploring their economic opportunities and social threats, this article explores the implications of UGD network effects on competition policy and practice.

By drawing on traditional network effects theory, this Article proposes and critically examines a host of remedial approaches for policymakers to consider. These remedies include modernized public utility-style regulation, open access policies, and adjusted standards for anti-monopolization and merger scrutiny. While the dramatic impact of UGD network effects on market dynamics creates unorthodox challenges for competition law and policy, regulators should not throw out the baby with the bathwater by breaking UGD-driven monopolies.³⁵⁰ Instead, policymakers should look to traditional network industries for reference and explore with novel forms of UGD governance mechanisms.³⁵¹ Policymakers' underlining objective should be to incentivize the realization of UGD-driven efficiencies while disincentivizing UGD-driven harms.

³⁴⁹ See Ezrachi & Stucke, *supra* note 100, at 35–71.

³⁵⁰ See generally *supra* notes 22–25, and accompanying text.

³⁵¹ See *supra* Section III.i.