

# A Topology of Multisided Digital Platforms

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## INTRODUCTION

Digital platforms dominate the marketplace. The largest platforms—Google, Apple, Facebook, Amazon, and Microsoft (collectively known as “GAFAM”<sup>1</sup>)—have an unparalleled financial position in the marketplace,<sup>2</sup> and collectively maintain at least a thirty-three percent market share in fifteen separate markets with user bases in the billions.<sup>3</sup> These corporations are also consistently ranked as the largest companies on Earth by market capitalization.<sup>4</sup>

The GAFAM companies transact and function as intermediaries with both buyers and sellers, which designates them as multisided businesses—more commonly known as platforms.<sup>5</sup> The conventional business model consists of transacting with only consumers or sellers, known as single-sided firms.<sup>6</sup> Although the veracity and legal significance of this difference between single-sided firms and multisided platforms are debatable,<sup>7</sup> this

<sup>1</sup> This is phrasing economist Thomas Philippon uses. THOMAS PHILIPPON, *THE GREAT REVERSAL* 159 (2019).

<sup>2</sup> As of November 2019, Alphabet has \$121.2 billion in cash. Apple has \$100.6 billion. Facebook has \$52 billion. Microsoft has \$136.6 billion. See Pippa Stevens, *Here Are the 10 Companies with the Most Cash on Hand*, CNBC (Nov. 7, 2019), <https://www.cnbc.com/2019/11/07/microsoft-apple-and-alphabet-are-sitting-on-more-than-100-billion-in-cash.html>.

<sup>3</sup> See *infra* Appendix A & B.

<sup>4</sup> *List of Public Corporations by Market Capitalization*, WIKIPEDIA, [https://en.wikipedia.org/wiki/List\\_of\\_public\\_corporations\\_by\\_market\\_capitalization#2019](https://en.wikipedia.org/wiki/List_of_public_corporations_by_market_capitalization#2019) [[https://web.archive.org/web/20200102032943/https://en.wikipedia.org/wiki/List\\_of\\_public\\_corporations\\_by\\_market\\_capitalization](https://web.archive.org/web/20200102032943/https://en.wikipedia.org/wiki/List_of_public_corporations_by_market_capitalization)] (last visited Jan. 28, 2020).

<sup>5</sup> Benjamin E. Hermalin & Michael L. Katz, *What's So Special About Two-Sided Markets?*, in *TOWARD A JUST SOCIETY: JOSEPH STIGLITZ AND TWENTY-FIRST CENTURY ECONOMICS* 111 (Martin Guzman ed., 2018) (defining a platform as “an enterprise [that] facilitates exchange between two or more parties”). This article will use multisided market, multisided businesses, digital multisided platforms, and platforms interchangeably.

<sup>6</sup> David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 YALE J. ON REG. 325, 336–39 (2003) (contrasting and detailing some of the differences between two-sided/multisided firms and single-sided firms).

<sup>7</sup> Brief of Open Markets Institute as Amicus Curiae in Support of Petitioners, at 7, *Ohio v. American Express Co.*, 138 S. Ct. 2274 (2018) (No. 16-1454) (stating, “there is no consensus on what constituted a ‘two-sided’ market, and the parameters of leading definitions can be read broadly. Drawing sharp lines on the basis of a vague and contested definition is a mistake, as it will confuse courts and enable legal arbitrage.”) (footnotes omitted), [https://www.supremecourt.gov/DocketPDF/16/16-1454/23961/20171214162630698\\_16-1454%20Open%20Markets%20Amicus%20Brief.pdf](https://www.supremecourt.gov/DocketPDF/16/16-1454/23961/20171214162630698_16-1454%20Open%20Markets%20Amicus%20Brief.pdf). For arguing that platforms are not different, see PHILIPPON, *supra* note 1, at 252 (stating, “What the data tells us here is that the assumption that tech firms are somehow thoroughly different from dominant companies of previous generations *doesn’t stand up*.”) (emphasis added); see also HAROLD FELD, *THE CASE FOR THE DIGITAL PLATFORM ACT: MARKET STRUCTURE AND REGULATION OF DIGITAL PLATFORMS* 4 (2019), [https://www.publicknowledge.org/assets/uploads/documents/Case\\_for\\_the\\_Digital\\_Platform\\_Act\\_Harold\\_Feld\\_2019.pdf](https://www.publicknowledge.org/assets/uploads/documents/Case_for_the_Digital_Platform_Act_Harold_Feld_2019.pdf) (stating “Drawing on the lessons of the last 100+ years of telecommunications and media law, we see that *digital platforms raise many of the same policy challenges* that the rise of the telephone and radio broadcasting created in their day.”) (emphasis added). For arguing that platforms are different, see also John M. Newman, *Antitrust in Digital Markets*, 72 VAND. L. REV. 1497, 1502 (2019) (stating, “This [a]rticle contends that *digital markets are different*, such that they deserve—indeed, demand—unique treatment under the antitrust laws”) (emphasis added).

article will accept the current schema that platforms operate under different conditions than their single-sided counterparts.<sup>8</sup> Nevertheless, being able to transact with both buyers and sellers has led to the domination of platform businesses, specifically the GAFAM companies. The dominance of these digital platform companies and the various anticompetitive behavior they have engaged in warrants scrutiny of their industry and business operations.

Scholars have attempted to use the current antitrust framework and construct new regulatory rules that aim to curb the market power of multisided platforms.<sup>9</sup> While many of these recommendations are laudable and necessary, particularly with the numerous antitrust investigations currently taking place against the GAFAM companies,<sup>10</sup> this author believes that without explaining both the goals and effects of the anticompetitive behavior of multisided corporations, the proverbial cart is being put before the horse. Stated differently, for purposes of this article, the debate is not *that* multisided platforms can engage in and operate under different business activities, or even the extent to which a corporation being multisided or having multisided operations is or should be legally important to the determination of antitrust liability.<sup>11</sup> Instead, this article details precisely *what* the goals and effects are of the conduct digital platforms engage in to

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<sup>8</sup> The currently held view is that multisided platforms are different. *American Express*, 138 S. Ct. at 2280 (stating, “[t]wo-sided platforms differ from traditional markets[.]”). Economists have determined that there are two types of multisided platforms: transactional and media. However, this article will not distinguish the anticompetitive conduct by type of platform. This author has not found literature determining that the anticompetitive conduct described in this article is exclusively limited by the type of platform. For purposes of completeness, “[T]ransaction[al] platforms [do] not provide either side [of the market] with anything of intrinsic value, but rather provides instrumental value by facilitating transactions between the two sides.” Erik Hovenkamp, *Platform Antitrust*, 44 J. CORP. L. 713, 724 (2019). The most common example is that of a credit card. The issuing credit card company acts as an intermediary between the purchaser of a good or service and entity providing it. Other examples include operating systems, offer-listing sites, and reservation services. Media (also called non-transactional) platforms involve the dissemination of some valuable content from one side to another. *See generally id.* A common example of this kind of platform is the online video service YouTube. YouTube acts as a host of videos provided by users who are also watched by other users. Thus, YouTube serves as an intermediary between content creators and content watchers.

<sup>9</sup> *See generally* Zephyr Teachout & Lina Kahn, *Market Structure and Political Law: A Taxonomy of Power*, 9 DUKE J. CONST. L. & PUB. POL’Y 37 (2014); MARSHALL STEINBAUM & MAURICE E. STUCKE, THE ROOSEVELT INST., THE EFFECTIVE COMPETITION STANDARD: A NEW STANDARD FOR ANTITRUST (2018), <https://rooseveltinstitute.org/wp-content/uploads/2018/09/The-Effective-Competition-Standard-FINAL.pdf> [<https://web.archive.org/web/20200102034357/https://rooseveltinstitute.org/wp-content/uploads/2018/09/The-Effective-Competition-Standard-FINAL.pdf>]; FELD, *supra* note 7, at 4 (stating, “This book provides a framework for the ongoing debate on the regulation of digital platforms.”).

<sup>10</sup> *See generally* Jack Nicas, et al., *16 Ways Facebook, Google, Apple and Amazon Are in Government Cross Hairs*, N.Y. TIMES (Sept. 9, 2019), <https://www.nytimes.com/interactive/2019/technology/tech-investigations.html> [<https://web.archive.org/web/20200104014950/https://www.nytimes.com/interactive/2019/technology/tech-investigations.html>].

<sup>11</sup> *But see*, Brief of Open Markets Institute as Amicus Curiae in Support of Petitions, *supra* note 7.

take advantage of their multisided environment to enhance and entrench their market power.

In what follows, because of their market power, user bases, and anticompetitive conduct, this article will use the GAFAM platforms as representative examples of the kind of anticompetitive actions that digital multisided platforms can engage in. This article organizes the actions of multisided platforms into a framework that categorizes their characteristics and conduct by the goals multisided businesses are trying to achieve.

This framework consists of three categories: Amassing Characteristics, Entrenching Conduct, and Exploitative Conduct. These categories provide the framework for this article. Part I describes Amassing Characteristics, which are business conditions used by multisided platforms to obtain a significant user base. Part II details Entrenching Conduct, which are business practices multisided platforms can implement to inhibit users from leaving the platform and maintain their user base. Part III details Exploitative Conduct, which are the efforts and the ability of a multisided platform to leverage their existing user base to suppress competition, enhance its market power, and extract value from its entrenched user base.

No article cannot detail all the anticompetitive conduct platforms engage in, and not every single conduct described in this article applies to the GAFAM platforms equally or are exclusive to multisided platforms. However, exploring how and why multisided platforms exploit these characteristics and engage in specific business practices will provide several benefits to antitrust scholarship. First, this framework can elucidate the weaknesses of the current antitrust framework, the consumer welfare standard, and its ability to properly regulate or extinguish the market power of multisided platforms. Currently, the antitrust laws of the United States are focused primarily on price and output instead of analyzing the inherent market structure, methods of competition, or the incentives for specific types of conduct in individual industries.<sup>12</sup> Such considerations are needed to properly regulate and understand the conduct of multisided firms, particularly as the prevalence of platform businesses increases.<sup>13</sup>

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<sup>12</sup> See KATE COLLYER, ET AL., OECD, MEASURING MARKET POWER IN MULTI-SIDED MARKETS 5 (2017), [https://one.oecd.org/document/DAF/COMP/WD\(2017\)35/FINAL/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2017)35/FINAL/en/pdf) [[https://web.archive.org/web/20200102040802/https://one.oecd.org/document/DAF/COMP/WD\(2017\)35/FINAL/en/pdf](https://web.archive.org/web/20200102040802/https://one.oecd.org/document/DAF/COMP/WD(2017)35/FINAL/en/pdf)] (stating, “As a first step, an assessment of market power should start from a solid understanding of the nature of competition in the market under consideration.”); see also *National Collegiate Athletic Ass’n v. Board of Regents Univ. of Okla.*, 468 U.S. 86, 107–08 (1984) (“Congress designed the Sherman Act as a ‘consumer welfare prescription.’ . . . Restrictions on price and output are the paradigmatic examples of restraints of trade that the Sherman Act was intended to prohibit.” (quoting *Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979))); Herbert Hovenkamp, *Progressive Antitrust*, 2018 U. ILL. L. REV. 71, 76 (“[T]he country is best served by a more-or-less neoclassical antitrust policy with consumer welfare, or output maximization, as its guiding principle.”).

<sup>13</sup> Richard Straub, *What Management Needs to Become in an Era of Ecosystems*, HARV. BUS. REV. (June 5, 2019), <https://web.archive.org/web/20200102040058/https://hbr.org/2019/06/what-management-needs-to-become-in-an-era-of-ecosystems> (stating, “by 2025 over 30% of global economic activity

Second, this framework can aid antitrust enforcers and scholars by focusing their attention on understanding how these practices cause market and consumer harm as well as incentivize anticompetitive conduct in the first place.

Lastly, this framework can aid antitrust enforcers and scholars to understand how the characteristics and conduct described in this article interact to facilitate market power, undermine competition, and, particularly when some of these practices are executed by platforms in unison, enable platforms to become resistant to future competition.<sup>14</sup> Such analysis can encourage agencies, governments, and private litigants to use the antitrust laws to curb the market power of multisided platforms and provide justification for regulatory changes.

### I. AMASSING CHARACTERISTICS

Amassing Characteristics are multisided business conditions used by platforms with the primary goal of obtaining a significant user base. Platforms exhibit Amassing Characteristics primarily through supply and demand conditions as well as network effects.

#### A. Supply and Demand Conditions

The supply of the physical product controlled and owned by a corporation bestowed upon traditional corporate titans such as John Rockefeller's Standard Oil and Andrew Carnegie's steel corporation immense market power and enabled them to dominate entire sectors of the economy.<sup>15</sup> Substantial control over a physical good as a source of market power has been noted by prominent scholars, even during the time just after the passage of the landmark Sherman Act in 1890.<sup>16</sup>

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could be mediated by digital platforms.”); Hal Singer, *Ohio v. American Express: Do Monopoly Platforms Deserve Special Treatment Under Antitrust?*, FORBES (Feb. 27, 2018), <https://www.forbes.com/sites/washingtonbytes/2018/02/27/do-monopoly-platforms-deserve-special-treatment-under-antitrust-review-of-ohio-v-american-express/> (stating two-sided platforms are increasingly common because of the internet).

<sup>14</sup> See generally 2 PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION* 207–08 (3d ed., 2007) (stating, “In a monopolization case, conduct must always be analyzed ‘as a whole.’ A monopolist bent on preserving its dominant position is likely to engage in repeated and varied exclusionary practices. Each one viewed in isolation might be viewed as de minimis or an error in judgment, but the pattern gives increased plausibility to the claim.”).

<sup>15</sup> THOMAS J. DILORENZO, *HOW CAPITALISM SAVED AMERICA: THE UNTOLD HISTORY OF OUR COUNTRY, FROM THE PILGRIMS TO THE PRESENT* 128 (2004); DONALD R. BRAND, *CORPORATISM AND THE RULE OF LAW: A STUDY OF THE NATIONAL RECOVERY ADMINISTRATION* 209 (1988).

<sup>16</sup> 15 U.S.C. §§ 1–7 (2018); see generally CHARLES R. VAN HISE, *CONCENTRATION AND CONTROL* 31–33 (1912), <https://archive.org/details/cu31924019225766>; DAVID S. EVANS & RICHARD L. SCHMALENSEE, *MATCHMAKERS: THE NEW ECONOMICS OF MULTISIDED PLATFORMS* 36 (2016) [hereinafter “Matchmakers”] (The authors allude to the supply/demand issue by stating “Traditional businesses sometimes have introductory prices so customers can try out a new product. But then they

Multisided internet platforms, on the other hand, can operate under demand-side conditions, where output is primarily limited by the number of consumers using the service.<sup>17</sup> For comparison, Google does not control the supply of any natural resources; instead, Google creates a digital service (such as Google Search) that consumers can access over the internet. Because of this difference, there is virtually no limit to the amount of “output” Google can create, so user demand is thereby only limited by the number of computer servers they own and the percentage of the population with access to the internet.<sup>18</sup> This situation explains why some of the GAFAM companies are seeking to provide internet access to every human on Earth, as they have an incentive to get new users to adopt their computer hardware, software, or other internet-based services.<sup>19</sup>

Operating under demand conditions also causes multisided platforms to function under a different financial cost structure. Dartmouth professor Vijay Govindarajan notes that “current financial accounting [methods] cannot capture the principle value creat[ed] [by] digital companies,”<sup>20</sup> because they are highly dependent on intangible assets, network effects,<sup>21</sup>

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increase the price so that it covers costs and generates a margin. These sorts of exceptions aside, it simply doesn’t make sense for a traditional business to sell anything for a unit price that doesn’t cover the cost of supplying an additional unit. [I]t turns out that this cardinal rule doesn’t apply to multisided platforms.”).

<sup>17</sup> See Marshall W. Van Alstyne, et al., *Pipelines, Platforms, and the New Rules of Strategy*, HARV. BUS. REV. (Apr. 2016), <https://hbr.org/2016/04/pipelines-platforms-and-the-new-rules-of-strategy> [<https://web.archive.org/web/20200102050843/https://hbr.org/2016/04/pipelines-platforms-and-the-new-rules-of-strategy>] (stating “In demand-side economies, however, external forces can be “accretive”—adding value to the platform business.”). This concept can also be called non-rivalrous since the services technology platforms provide are not diminished or interfered with, when another individual uses the service—even at the same time as someone else.

<sup>18</sup> See David S. Evans, *Multisided Platforms, Dynamic Competition and the Assessment of Market Power of Internet-Based Firms* 16, UNIV. CHI. LAW SCH., COASE-SANDOR INST. FOR LAW & ECON., Working Paper No. 753 (2016), <https://ssrn.com/abstract=274609> (stating “[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases.”).

<sup>19</sup> Nick Statt, *Facebook is Developing an Internet Satellite After Shutting Down Drone Project*, VERGE (July 21, 2018), <https://www.theverge.com/2018/7/21/17598418/facebook-athena-internet-satellite-project-fcc> [<https://web.archive.org/web/20200102050754/https://www.theverge.com/2018/7/21/17598418/facebook-athena-internet-satellite-project-fcc>]; see *Connect People Everywhere*, LOON, <https://loon.co> (last visited Apr. 4, 2020); Jon Porter, *Microsoft Wants to Connect Another 40 Million Global Internet Users*, VERGE (Oct. 8, 2019), <https://www.theverge.com/2019/10/8/20904270/microsoft-airband-international-internet-access-colombia-ghana-latin-america-sub-saharan-africa> [<https://web.archive.org/web/20200102051003/https://www.theverge.com/2019/10/8/20904270/microsoft-airband-international-internet-access-colombia-ghana-latin-america-sub-saharan-africa>].

<sup>20</sup> Vijay Govindarajan, et al., *Why Financial Statement Don’t Work for Digital Companies*, HARV. BUS. REV. (Feb. 26, 2018), <https://hbr.org/2018/02/why-financial-statements-dont-work-for-digital-companies> [<https://web.archive.org/web/20200102051103/https://hbr.org/2018/02/why-financial-statements-dont-work-for-digital-companies>].

<sup>21</sup> Network effects will be explained later in this piece. See discussion *infra* Section I.B.

and scarce human capital.<sup>22</sup> Two business costs detail the different financial conditions multisided platforms operate under: operational costs and consumer costs.

### 1. Operational Costs

Operational costs are the daily expenses associated with the maintenance and administration of a business.<sup>23</sup> The operational costs for multisided businesses often have high fixed costs<sup>24</sup> and zero marginal costs of production.<sup>25</sup> For example, when Google looks to add more servers to increase its storage capacity, processing powers, and output capacity for its services, it can already use its existing computational infrastructure (such as the code) to do so. Thus, no authentic labor in the traditional sense is needed to add significant scale to Google services.<sup>26</sup> The cost to Google to host any one of its digital services is essentially the same regardless of the total usage. For example, depending on the computational infrastructure, the cost to host one YouTube video or one million is the same.<sup>27</sup> In many instances, multisided digital platforms merely have to update software code to add additional features to their existing services without adding physical infrastructure.<sup>28</sup> Consider that when Apple set up the ability to distribute e-

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<sup>22</sup> Govindarajan, et al., *supra* note 20; see also Vijay Govindarajan, et al., *Why We Need to Update Financial Reporting for the Digital Era*, HARV. BUS. REV. (June 8, 2018), <https://hbr.org/2018/06/why-we-need-to-update-financial-reporting-for-the-digital-era> [<https://web.archive.org/web/20200102051205/https://hbr.org/2018/06/why-we-need-to-update-financial-reporting-for-the-digital-era>].

<sup>23</sup> Will Kenton & Chris B. Murphy, *Operating Cost Definition*, INVESTOPEDIA (May 19, 2019), <https://www.investopedia.com/terms/o/operating-cost.asp> [<https://web.archive.org/web/20200102051247/https://www.investopedia.com/terms/o/operating-cost.asp>].

<sup>24</sup> Will Kenton, *Fixed Cost*, INVESTOPEDIA (July 5, 2019), <https://www.investopedia.com/terms/f/fixedcost.asp> [<https://web.archive.org/web/20200102051340/https://www.investopedia.com/terms/f/fixedcost.asp>] (defining fixed costs as “an expense or cost that does not change with an increase or decrease in the number of goods or services produced or sold.”). A common example of a fixed cost is rent.

<sup>25</sup> Alicia Tuovilla, *Marginal Cost of Production*, INVESTOPEDIA (Sept. 20, 2019), <https://www.investopedia.com/terms/m/marginalcostofproduction.asp> [<https://web.archive.org/web/20200102051412/https://www.investopedia.com/terms/m/marginalcostofproduction.asp>] (defining marginal cost of production as the change in total cost that comes from making or producing one additional item). See also Evans, *supra* note 18, at 16 (stating, “the marginal cost of participants to software-based platforms running in the cloud is virtually zero.”).

<sup>26</sup> Evans, *supra* note 18, at 16. (stating, “[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases.”).

<sup>27</sup> JAMIE BARTLETT, *THE PEOPLE VS. TECH: HOW THE INTERNET IS KILLING DEMOCRACY (AND HOW WE SAVE IT)* loc. 280 (2018) (ebook) (stating the cost for YouTube to host one video or one million is roughly the same). In fact, the cost of digital storage has decreased by 99 percent since 1980. See, e.g., Andy Klein, *Hard Drive Cost Per Gigabyte*, BACKBLAZE (July 11, 2017), <https://www.backblaze.com/blog/hard-drive-cost-per-gigabyte/> [<https://web.archive.org/web/20200102051650/https://www.backblaze.com/blog/hard-drive-cost-per-gigabyte/>] (detailing the steep decline in the cost per gigabyte for their hard drive storage).

<sup>28</sup> Evans, *supra* note 18, at 16 (stating, “[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases.”).

books through its iOS platform, it took the corporation only a couple of months to develop the application and the distribution process.<sup>29</sup>

While there are costs associated with the improvement and maintenance of the existing platform services—such as improving Apple’s mobile operating system iOS—these costs are negligible after the original investment. For instance, unlike traditional single-sided companies that are constrained by the production and subsequently the transportation of a physical good to the target market, demand-sided internet platforms tend not to incur transportation costs associated with the distribution of their services.<sup>30</sup>

Contrast these advantages with the constraints with that of a strawberry farmer (i.e., a traditional single-sided operation). If a strawberry farmer wants to increase their production, they will most likely have to purchase more land,<sup>31</sup> and possibly more machines so that the harvest of the fruit can be done at least at the same rate. Each of these actions harbors significant financial investment, which subsequently detracts from the potential gained profits from the increased production. The same constraints generally do not apply to multisided platforms.<sup>32</sup>

## 2. Consumer Costs

Consumer costs are financial costs associated with the price, use, and maintenance of a product by the end-user.<sup>33</sup> The operational structure of multisided markets allows platforms to both dictate,<sup>34</sup> as well as differentiate the costs for each side of the market or, in some cases, for individual customers using the platform.<sup>35</sup>

Platforms typically have two sides—the money side that generates the platform’s revenue, and the subsidy side, where the costs of the service are

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<sup>29</sup> United States v. Apple, Inc. (*Apple Ebooks*), 791 F.3d 290, 301 (2d Cir. 2015).

<sup>30</sup> Consider Apple Maps, Apple’s popular navigation mobile application on the their iOS operating system providing navigation instructions. The most notable exception concerning the GAFAM companies with this point is Amazon as they deliver goods to customers.

<sup>31</sup> This author is purposefully disregarding the ability of farmers to plant more strawberries per acre of land as it is reasonable to assume farmers are already doing so or that farmers could plant more rounds of strawberries in a set time frame as this would eventually deplete the long-term utility of the soil.

<sup>32</sup> An example of a GAFAM platform where transportation constraints would apply is Amazon as the corporation would need to purchase more warehouses to store and vehicles to deliver the goods. Amazon currently delivers nearly half of its customer’s purchases. See Erica Pandey, *Amazon, the New King of Shipping*, AXIOS (June 27, 2019), <https://www.axios.com/amazon-shipping-chart-fedex-ups-usps-0dc6bab1-2169-42a8-9e56-0e85c590eb89.html>.

<sup>33</sup> *Customer Cost*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Customer\\_cost](https://en.wikipedia.org/wiki/Customer_cost) (last visited Aug. 17, 2018).

<sup>34</sup> See discussion *infra* Section III.B.3.

<sup>35</sup> The practice of providing individual prices to customers is known as “personalized pricing.” Ramsi A. Woodcock, *Personalized Pricing as Monopolization*, 51 CONN. L. REV. 311, 315 (2019) (stating, “Prices tailored to the individual maximum that a consumer is willing to pay.”).



subsidized by the money side.<sup>36</sup> For example, Google charges advertisers to show advertisements on its search engine results page (the money side) and charges consumers who use the search engine no direct monetary costs (the subsidy side).<sup>37</sup>

Different cost structures are advantageous for multisided companies because the users on each side of the market join the platform for distinct reasons and likely have different purchasing capabilities.<sup>38</sup> Some platforms have one side that is more valuable and thus incentivizes the platform owner to subsidize the cost to join the platform as much as possible, such as having a zero cost or negative cost.<sup>39</sup> In the case of Google's YouTube video hosting service, it is easier (and perhaps more critical for long-run success) for the company to attract advertisers to its platform if there are many video uploaders rather than encourage video uploaders to join because there are many advertisers.<sup>40</sup> Additionally, acquiring the data (such as the videos watched) from the user's actions on the platform provides the data inputs necessary to provide highly targeted advertising,<sup>41</sup> increasing the value proposition for potential customers to use YouTube as an advertising platform.<sup>42</sup>

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<sup>36</sup> See MATCHMAKERS, *supra* note 16, at 38 (stating many multisided platforms have a "subsidy" side, where the platform loses money for each participant that joins, and a "money" side, where the platform makes more than enough money to offset those losses.).

<sup>37</sup> As opposed to non-monetary costs such as harvesting a user's data. See discussion *infra* Section II.B.

<sup>38</sup> Hovenkamp, *supra* note 8, at 723 (stating "In many cases, the two sides [of a multisided market] comprise very different sets of actors with distinct motivations for using the platform.").

<sup>39</sup> See MATCHMAKERS, *supra* note 16, at 36 (stating, "Multisided platforms have to make sure there are enough participants on each side who could benefit from getting together with participants on the other side...[however] they can't do that do that by just getting more participants on each side. They have to make sure they are getting more participants on each side with whom participants on the other side want to interact.").

<sup>40</sup> Jeff Bezos understood the advantage of establishing and owning critical infrastructure that encouraged users to the platform, as third parties eventually become entirely dependent on to transact, and how traditional business metrics such as profits were meant to be important only after successfully capturing the market. See Letter from Jefferey P. Bezos, Founder & C.E.O., Amazon.com, Inc., to Amazon.com, Inc., S'holders (1997), [https://media.corporate-ir.net/media\\_files/irol/97/97664/reports/Shareholderletter97.pdf](https://media.corporate-ir.net/media_files/irol/97/97664/reports/Shareholderletter97.pdf) [[https://web.archive.org/web/20200102052208/http://media.corporate-ir.net/media\\_files/irol/97/97664/reports/Shareholderletter97.pdf](https://web.archive.org/web/20200102052208/http://media.corporate-ir.net/media_files/irol/97/97664/reports/Shareholderletter97.pdf)] (stating "We believe that a fundamental measure of our success will be the shareholder value we create over the long term. This value will be a direct result of our ability to *extend and solidify our current market leadership position*. . . [and] [w]e will continue to make investment decisions in light of long-term market leadership considerations rather than short-term profitability considerations or short-term Wall Street reactions.") (emphasis added).

<sup>41</sup> Robert Brady, *How Google Collects Data to Personalize Ads*, PRAC. ECOMMERCE (May 23, 2019), <https://www.practicalecommerce.com/how-google-collects-data-to-personalize-ads> (detailing the array of user information Google collects and integrates for its advertisements); see *infra* Section II.B.

<sup>42</sup> See Maurice E. Stucke & Ariel Ezrachi, *When Competition Fails to Optimize Quality: A Look at Search Engines*, 18 YALE J.L. & TECH. 70, 88–89 (2016).

### B. Network Effects

Multisided platforms connect distinct sets of users who would otherwise not be able to interact.<sup>43</sup> This condition fosters the creation of network effects. Network effects are a mechanism that creates additional value to the users of a platform via a positive feedback loop. A feedback loop occurs because users who join the platform can provide value to the users on the same side of the market and potentially to the users on the opposite side of the market. The addition of more users subsequently, although not inevitably or initially, leads to exponentially more users and thus exponentially more value to the users of the platform.<sup>44</sup> There are two types of network effects: direct and indirect.

Direct network effects exist when the value of a platform for one user is dependent on the membership and usage of the platform from other users on the same side of the platform.<sup>45</sup> Indirect network effects exist when the value derived from users on one side of the market depends on the actions and membership of the users on the other side.<sup>46</sup>

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<sup>43</sup> David S. Evans, *Two-Sided Market Definition*, in MARKET DEFINITION IN ANTITRUST: THEORY AND CASE STUDIES 4–5, 8 (Nov. 11, 2019), <https://ssrn.com/abstract=1396751> (Stating in such a market there are two sets of customers who, in effect, need each other. Each type of customer values the service more if the other type of customer also buys the service. Businesses service such markets by acting as “matchmakers.” To do so, they must match customers on both sides of the market to have a product or service to sell. Indeed, in such markets the product or service is consumed jointly by two customers and, in a sense, only exists at all if a “transaction” takes place between them. Also stating that value is only created when both sides transact.).

<sup>44</sup> MATCHMAKERS, *supra* note 16, at 72 (2016) (stating, “If there are enough of both [members on each side of the market] then those participants want to keep using the platform. Moreover, in that case, there are so many of them participating that others want to join too. That results in ignition and self-reinforcing growth.”); *Id.* at 63 (detailing that a platform gaining users does not inevitably lead to network effects on both sides of a platform by stating “The reluctance of one side to join a platform is not automatically a showstopper, of course.”). See also J. Clement, *Number of Monthly Active Facebook Users Worldwide as of 4th Quarter 2019*, STATISTA (Jan. 30, 2020), <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/> (detailing Facebook’s growth from 100 million users in 2008 to over 2 billion users in 2017); J. Clement, *Number of Amazon Prime Members in the United States as of June 2019*, STATISTA (Sept. 3, 2019), <https://www.statista.com/statistics/546894/number-of-amazon-prime-paying-members/> (detailing the number of Amazon Prime subscribers from 25 million in 2013 to 90 million in 2017); *Worldwide PC Market Grew 24 Percent in 1995*, TECH INSIDER (Jan. 29, 1996), <http://tech-insider.org/statistics/research/1996/0126.html> [<https://web.archive.org/save/https://tech-insider.org/statistics/research/1996/0126.html>] (detailing pc shipments in 1994 were nearly 48 million); Arne Holst, *Personal Computer (PC) Shipments Worldwide by Vendor from 2009 to 2019*, STATISTA (Jan. 16, 2020), <https://www.statista.com/statistics/264467/global-pc-shipments-since-1st-quarter-2009/> (detailing shipments for PC’s were 234 million in 2016). It also worth noting that technology goods and services such as computers, tablets, and smartphones are some of fastest adopted technologies ever. See Horace Dediu, *Seeing What’s Next*, ASYMCO (Nov. 18, 2013), <http://www.asymco.com/2013/11/18/seeing-whats-next-2/>. Network effects do not always lead to more users. An important consideration for network effects is that they can work in reverse. See Evans, *supra* note 18, at 7 n.12.

<sup>45</sup> MATCHMAKERS, *supra* note 16, at 29.

<sup>46</sup> *Id.* at 31.

Network effects create a complementary and dependent need between users on both sides of the platform because the users would not be able to interact otherwise.<sup>47</sup> Thus, the value of a multisided platform is highly dependent on its ability to acquire and maintain different types of users on each side of its platform.<sup>48</sup> For example, YouTube needs advertisers, content creators, and users to watch videos to create value.<sup>49</sup>

An often-used example to assist with distinguishing between the direct and indirect network effects is to detail the users of video game consoles. When a player buys a console game, the value of that game is enhanced through more consumers buying and playing the game. As more consumers buy a game and the console required to play it, other users are encouraged to buy the game because they know the number of players able to play the game with are increasing. This is a direct network effect.

As consumers continue purchasing the console, developers are motivated to create games for the system, knowing that more people have the console with which to play games. This is an indirect network effect. The development of new games by developers also provides value to gamers knowing that developers will create more games for the console. Thus, when gamers buy the console, they are not only providing value to other gamers (direct network effects), they are also creating value and an incentive for developers to develop games for the console (indirect network effects).

This example illustrates why network effects inherently incentivize users to join a platform; the members who join can subsequently create value for and derive value from the current members on both sides of the platform and from the future members. Thus, network effects are self-reinforcing as an influx of members on one side can encourage members on both sides to join the platform as well.<sup>50</sup>

To provide more context, some of the multisided relationships which the GAFAM companies manage are described below in Table 1.

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<sup>47</sup> Evans, *supra* note 43, at 4–5, 8 (stating in such a market there are two sets of customers who, in effect, need each other. Each type of customer values the service more if the other type of customer also buys the service. Businesses service such markets by acting as “matchmakers.” To do so, they must match customers on both sides of the market to have a product or service to sell. Indeed, in such markets the product or service is consumed jointly by two customers and, in a sense, only exists at all if a “transaction” takes place between them. Also stating that value is only created when both sided exchange).

<sup>48</sup> David S. Evans & Richard Schmalensee, *The Antitrust Analysis of Multi-sided Platform Businesses* 8 (Nat’l Bureau of Econ. Research, Working Paper No. 18783, 2013), available at <https://www.nber.org/papers/w18783> (value is created when two-sides exchange).

<sup>49</sup> David S. Evans, *The Economics of Attention Markets* 8–9, 25 (Dec. 3, 2019), available at <https://ssrn.com/abstract=3044858> (Most ad-supported media today benefit from these economies of scale).

<sup>50</sup> BARTLETT, *supra* note 27, at loc. 279.

*Table 1: Examples of Multisided Relationships from Selected GAFAM Markets*

	<b>Market (product or service)</b>	<b>Subsidy side</b>	<b>Money side</b>
<b>Google</b>	Internet Search/Advertising (Google Search)	Users	Websites, Other Content Providers, and Advertisers
<b>Apple</b>	Smart Phone (iPhone and iOS)	Users	Application Developers and Advertisers
<b>Facebook</b>	Social Networking (Facebook.com)	Users	Content Providers and Advertisers
<b>Amazon</b>	E-Commerce (Amazon.com)	Users	Third-party Good Providers
<b>Microsoft</b>	Desktop Operating System (Windows)	Users	Application Developers and PC Manufacturers

Network effects are so integral to the success of a platform that evidence also suggests that positive feedback loops increase the likelihood that the market “tips” in favor of a dominant provider.<sup>51</sup> When a market tips to a dominant provider, subsequent entrants can be inhibited or outright prevented from gaining a necessary, significant, and meaningful market presence and user base, obstructing them from becoming a viable long-term competitor.<sup>52</sup> For example, a Microsoft Windows user in 1995 may have originally bought into the operating system because of the breakthrough in

<sup>51</sup> Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479, 496–97 (1998) (stating, “[a] natural tendency toward de facto standardization, which means everyone using the same system. Because of the strong positive-feedback elements, systems markets are especially prone to ‘tipping,’ which is the tendency of one system to pull away from its rivals in popularity once it has gained an initial edge.”).

<sup>52</sup> Max Schanzbach, *Network Effects and Antitrust Law: Predation, Affirmative Defenses, and the Case of U.S. v. Microsoft*, 2002 STAN. TECH. L. REV. 4, 5 (2002) (stating, “Network markets are also prone to tipping. Tipping occurs when one network has taken such a large portion of the market that competing [platforms] no longer have enough members to be viable. Even though an individual consumer may prefer a competing network’s technology, the benefits (due to network effects) from joining a dominant network may swamp these considerations. Thus, marketing techniques, or anti-competitive practices that gain large market share for a network, may ‘tip’ the market in favor of that network.”); Alan Devlin, *Analyzing Monopoly Power Ex Ante*, 5 N.Y.U. J. L. & BUS. 153, 182 (2009) (stating, “information markets display network effects that both cause a natural regression toward monopoly and tend to fortify a monopoly position once obtained”) (emphasis added). MATCHMAKERS, *supra* note 16, at 109 (stating, “[Multisided platforms] need the right participants”); *Id.* at 40 (stating “Multisided platforms have to secure critical mass in order to ignite.”); Maurice E. Stucke & Allen P. Grunes, *Dataopolies*, (March 3, 2017) at 10 n.25 (CONCURRENCES No. 2-2017 (2017) Univ. Tenn. Knoxville Legal Studies Research Paper Series No. 316), available at <https://ssrn.com/abstract=2927018> (stating, “A dominant data-driven company can use exclusionary tactics to prevent rivals from achieving the minimum efficient scale.”) (citing FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* 67 (Harvard Univ. Press, 2015)).

the graphical user interface that the product initially provided.<sup>53</sup> However, the initial success of Microsoft's Windows operating system concentrated enough users to cause software developers to write applications, which offers more value to Windows users, encouraging more consumers to purchase Windows, thereby creating a positive feedback loop.<sup>54</sup> In part because of network effects, Microsoft has subsequently retained a seventy percent market share in desktop operating systems in the United States since 1993.<sup>55</sup>

Network effects also cause the scale of a platform's operations to grow exponentially. The European Commission ("EC") and the United States Federal Trade Commission ("FTC") have acknowledged that achieving scale by acquiring users is an essential element to be an "effective competitor."<sup>56</sup> Then-CEO of Google, Eric Schmidt, said that "scale is key"<sup>57</sup> and called Google a "scale company."<sup>58</sup>

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<sup>53</sup> Matt Hickey, *Windows 95 Was the Most Important Operating System of All Time*, FORBES (Aug. 24, 2015), <https://www.forbes.com/sites/matthickey/2015/08/24/windows-95-was-the-most-important-operating-system-of-all-time> [http://web.archive.org/web/20200102175859/https://www.forbes.com/sites/matthickey/2015/08/24/windows-95-was-the-most-important-operating-system-of-all-time/%231077e4f5eb12] (detailing what made Windows 1995 so important and successful, in part because of its user friendly nature as opposed to the user interfaces of other operating systems at the time).

<sup>54</sup> E.g., The desktop share of computer games; see *Steam Hardware & Software Survey*, STEAM, <http://store.steampowered.com/hwsurvey> [https://web.archive.org/web/20170212045448/http://store.steampowered.com/hwsurvey] (last visited Feb. 19, 2020). The positive feedback cycle of network effects was acknowledged by the DC Circuit. *United States v. Microsoft Corp.*, 253 F.3d 34, 55 (D.C. Cir. 2001) (stating "This 'chicken-and-egg' situation ensures that applications will continue to be written for the already dominant Windows, which in turn ensures that consumers will continue to prefer it over other operating systems.").

<sup>55</sup> Michael J. Miller, *Windows 98 Put to the Test*, PCMag (Aug. 1, 1998), <https://www.pcmag.com/article2/0,2817,1159610,00.asp> [https://web.archive.org/web/20190915073725/https://www.pcmag.com/article2/0,2817,1159610,00.asp] (detailing the market share of computer desktop operating systems from 1993-2001); *Windows 95 Remains the Most Popular Operating System*, CNET (Jan. 2, 2002), <https://www.cnet.com/news/windows-95-remains-most-popular-operating-system/> [https://web.archive.org/web/20190915073730/https://www.cnet.com/news/windows-95-remains-most-popular-operating-system/] (data from 2002); Emil Protalinski, *Net Applications: Windows 10 Passes 50% Market Share, Windows 7 Falls to 30%*, VENTUREBEAT (Sept. 1, 2019), <https://venturebeat.com/2019/09/01/net-applications-windows-10-windows-7-market-share/> (data from 2019).

<sup>56</sup> Stucke & Ezrachi, *supra* note 42, at 83 n.61 (citing Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 153); see also *The FTC Report on Google's Business Practices*, WALL ST. J. (Mar. 24, 2015) [hereinafter FTC Report], <http://graphics.wsj.com/google-ftc-report/> (providing a link to an inadvertently disclosed FTC staff report that notes on page 76 that Internet search, search advertising, and search syndication are "markets that are characterized by substantial scale effects"). See *infra* Appendix A.

<sup>57</sup> *Fact-Checking Google: Scale is a Barrier to Entry in Search*, FAIR SEARCH (Nov. 11, 2011), <http://fairsearch.org/fact-checking-google-scale-is-a-barrier-to-entry-in-search/> [https://web.archive.org/web/20200102180333/http://fairsearch.org/fact-checking-google-scale-is-a-barrier-to-entry-in-search/] (quoting Eric Schmidt).

<sup>58</sup> Google, *Eric Schmidt at ANA Annual Conference*, YOUTUBE (Nov. 10, 2009), [https://www.youtube.com/watch?v=s8aZY\\_3297M](https://www.youtube.com/watch?v=s8aZY_3297M).

The exponential growth of a platform's user base and operational scale incentivizes anticompetitive conduct and causes platforms to be inherently problematic.<sup>59</sup> First, network effects create extensive market risks by exacerbating the consequences of decisions concerning the operations of a platform. Second, network effects create a winner-take-all environment.

### 1. Risk Generation

By providing exponential scale, network effects increase the risks a platform must consider, mitigate, manage, and remedy. These considerations become problematic when platforms with user bases as large as the GAFAM companies act as governing bodies of the markets which they oversee.<sup>60</sup> Network effects can thus increase the probability of significant market harm because the exponential growth of their user base increases the consequences of specific decisions or events that happen, likely beyond that the platform owners even contemplate.<sup>61</sup> Platform risks can be categorized as internal and external.

Internal risks are created by platform owners from the decisions made concerning the operation and maintenance of the platform. Antitrust scholars have already recognized that intentional modifications of the platform, such as changing the platform from an open<sup>62</sup> to a closed system<sup>63</sup> (or vice versa) or removing capabilities, can be viewed as anticompetitive.<sup>64</sup> In certain circumstances, even in the absence of anticompetitive intent, platform owners must consider how even seemingly innocuous changes to the operations of the platform affect the users on both sides of the platform. For example, Facebook changed the algorithm for its news feed of the posts shown to users to shift focus to friends and family over content publishers.<sup>65</sup>

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<sup>59</sup> Herbert Hovenkamp, *The Federal Trade Commission and The Sherman Act*, 62 FLA. L. REV. 871, 884 (2010) (stating "In a network market... spillovers into collateral markets are very common and some injury is inevitable.").

<sup>60</sup> See discussion *infra* Section III.B and Appendix A.

<sup>61</sup> BRUCE SCHNEIER, *CLICK HERE TO KILL EVERYBODY* 86 (2018) (stating, "[software and hardware] designers can't anticipate every configuration, condition, application, [and] use.").

<sup>62</sup> Thibault Schrepel, *Predatory Innovation: The Definite Need for Legal Recognition*, 21 SMU SCI. & TECH. L. REV. 19, 36–37 (2018) (stating that an open system is "any communication, interconnection, exchange protocol, or data format whose technical specifications are public and without restriction of access or implementation").

<sup>63</sup> *Id.* at 37 (stating that systems are closed when "they carry data for which specifications are not public and/or whose use is restricted by their owner(s)").

<sup>64</sup> *Id.* at 24–30; see also Dennis S. Karjala, *Copyright Protection of Operating Software, Copyright Misuse, and Antitrust*, 9 CORNELL J.L. & PUB. POL'Y 161, 162 (1999) (stating, "[In *Microsoft*] [t]he government seeks to prove that Microsoft levered its legal copyright monopoly in the Windows operating software to restrain trade in a variety of compatible products designed to run on the Windows platform.").

<sup>65</sup> Kurt Wagner, *Facebook is Making a Major Change to the News Feed That Will Show You More Content from Friends and Family and Less from Publishers*, VOX: RECODE (Jan. 11, 2018), <https://www.recode.net/2018/1/11/16881160/facebook-mark-zuckerberg-news-feed-algorithm-content-video-friends-family-media-publishers> [https://web.archive.org/web/20200102181608/https://www.

While Facebook's motives may have been altruistic,<sup>66</sup> as *ReCode* journalist Kurt Wagner stated, these changes are "bad news for publishers who rely on Facebook for [website] traffic, or a business who uses it as a form of organic marketing. Facebook is very clearly telling these businesses their content won't spread as far in News Feed, and many publishers spend lots of time and resources creating stuff intended to do just that."<sup>67</sup>

A similar backlash occurred in early 2018 when Google unilaterally changed its rules regarding when content creators on YouTube can obtain monetization privileges. These changes are expected to make it significantly harder for smaller content creators to earn money through YouTube.<sup>68</sup> In another instance, Google changed how its search algorithm valued specific websites, which caused traffic to some websites to drop between 40 to 90 percent.<sup>69</sup>

Internal risks can also derive from the employees of the platform. In one notable instance, an Amazon employee's mistake of taking more servers offline than originally intended caused almost 150,000 websites to go offline—affecting popular web applications such as Slack, SoundCloud, and the blogging platform Medium.<sup>70</sup> This single mistake by the Amazon employee caused government operations such as the United States Securities

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vox.com/2018/1/11/16881160/facebook-mark-zuckerberg-news-feed-algorithm-content-video-friends-family-media-publishers].

<sup>66</sup> Mark Zuckerberg, FACEBOOK (Jan. 11, 2018), <https://www.facebook.com/zuck/posts/10104413015393571?pnref=story> [https://web.archive.org/save/https://www.facebook.com/zuck/posts/10104413015393571?pnref=story] (Mark Zuckerberg detailing the changes are about helping people connect, stating "[Facebook was built to] help people stay connected and bring us closer together with the people that matter to us.").

<sup>67</sup> Wagner, *supra* note 65.

<sup>68</sup> Peter Kafka, *YouTube is Trying to Clean Itself Up by Making it Much Harder for Small Video Makers to Make Money*, VOX: RECODE (Jan. 16, 2018), <https://www.recode.net/2018/1/16/16898660/youtube-content-advertising-revenue-program-new-rules-google-preferred> [https://web.archive.org/web/20200102182107/https://www.vox.com/2018/1/16/16898660/youtube-content-advertising-revenue-program-new-rules-google-preferred].

<sup>69</sup> See Don Hazen, *Editorial: Google's Threat to Democracy Hits AlterNet Hard*, ALTERNET (Sept. 28, 2017), <https://www.alternet.org/2017/09/editorial-googles-threat-democracy-hits-alternet-hard/> (claiming a 40% decline); Barry Schwartz, *Google Fred Update Targets Ad Heavy, Low Value Content Sites*, SEARCH ENGINE ROUND TABLE (Mar. 13, 2017), <https://www.seroundtable.com/google-fred-update-ad-heavy-low-value-23538.html> [https://web.archive.org/web/20200102182230/https://www.seroundtable.com/google-fred-update-ad-heavy-low-value-23538.html]. In another notable incident, Google changed its PageRank algorithm and caused the site traffic of KinderStart.com to drop by 70 percent. See *Kinderstart.com LLC v. Google, Inc.*, No. C 06-2057 JF, 2007 WL 831806, at \*3 (N.D. Cal. Mar. 16, 2007).

<sup>70</sup> Mark Prigg, *Amazon 'Breaks the Internet': Massive Server Crash Takes Thousands of Websites and Apps from Slack to Soundcloud Offline*, DAILYMAIL (Feb. 28, 2017), <https://www.dailymail.co.uk/sciencetech/article-4268850/Amazons-cloud-service-partial-outage-affects-certain-websites.html> [https://web.archive.org/web/20200102182433/https://www.dailymail.co.uk/sciencetech/article-4268850/Amazons-cloud-service-partial-outage-affects-certain-websites.html].

and Exchange Commission as well as the Vermont Public Radio to experience disruptions.<sup>71</sup>

Seemingly innocuous decisions can also have significant unintended consequences. In 2014, Facebook permitted users of its platform to collect other user's data without their consent.<sup>72</sup> Infamously, the political consulting firm Cambridge Analytica exploited this policy by creating a survey application whereby users consenting to take the survey, because of Facebook's policy, also allowed Cambridge Analytica to harvest data from that user's friends without their explicit consent or knowledge. Through exploiting this loophole, Cambridge Analytica was able to potentially acquire the Facebook Group membership information, event histories, Liked pages, and interests of 87 million users.<sup>73</sup>

External risks can be just as problematic. The number of users and market share is a significant determinant of why hackers target specific platforms.<sup>74</sup> For example, computer and security experts have argued about the dangers of software monopolies. A 2003 report from the Computer & Communications Industry Association, co-written by renowned security expert Bruce Schneier, stated, in reference to Microsoft's monopoly on computer operating systems, "The presence of this single, dominant operating system in the hands of nearly all end users is inherently dangerous[.]"<sup>75</sup> Part of the inherent danger that is created from a single dominant firm derives from the size and breadth of a platform's operations. As a platform's operations expand, the opportunity for problems to occur derived from those operations also expands. Schneier stated in his book *Click Here to Kill Everybody* that complexity creates risks because it is not

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<sup>71</sup> *Id.*

<sup>72</sup> Kurt Wagner, *Here's How Facebook Allowed Cambridge Analytica to Get Data for 50 Million Users*, VOX: RECODE (Mar. 17, 2018), <https://www.vox.com/2018/3/17/17134072/facebook-cambridge-analytica-trump-explained-user-data> [<https://web.archive.org/web/20200102182808/https://www.vox.com/2018/3/17/17134072/facebook-cambridge-analytica-trump-explained-user-data>].

<sup>73</sup> Avery Hartmans, *It's Impossible to Know Exactly What Data Cambridge Analytica Scraped from Facebook — but Here's the Kind of Information Apps Could Access in 2014*, BUS. INSIDER (Mar. 22, 2018), <https://www.businessinsider.com/what-data-did-cambridge-analytica-have-access-to-from-facebook-2018-3> [<https://web.archive.org/web/20200102182944/https://www.businessinsider.com/what-data-did-cambridge-analytica-have-access-to-from-facebook-2018-3>].

<sup>74</sup> *PC or Mac: Which is More Resistant to Cyber Threats?*, NORTON, <https://us.norton.com/internetsecurity-emerging-threats-pc-or-mac-which-is-more-resistant-to-cyber-threats.html> [<https://web.archive.org/web/20200102183051/https://us.norton.com/internetsecurity-emerging-threats-pc-or-mac-which-is-more-resistant-to-cyber-threats.html>] (stating that Windows being "more popular" than Linux and Mac computers resulted in "an influx of attacks targeted at PC users and the Windows operating system.").

<sup>75</sup> DAN GEER, ET AL., CYBERINSECURITY: THE COST OF MONOPOLY 3–4 (2003), available at <https://www.flyingpenguin.com/wp-content/uploads/2016/02/cyberinsecurity.pdf> [<https://web.archive.org/web/20200102183711/https://www.flyingpenguin.com/wp-content/uploads/2016/02/cyberinsecurity.pdf>].



possible to “anticipate every configuration, condition, application, [and] use.”<sup>76</sup>

The collection and maintenance of massive repositories of user data and intangible goods,<sup>77</sup> along with the fact that the GAFAM platforms dominate entire industries,<sup>78</sup> it is evident why many companies—as well as countries<sup>79</sup>—clamor at the opportunity to obtain access to users’ information with or without their permission.<sup>80</sup>

Large-scale breaches involving billions of people have already occurred and are likely to continue happening, given the number of users on the GAFAM platforms.<sup>81</sup> Consider if Amazon Web Services (“AWS”), which is the largest cloud computing platform,<sup>82</sup> were to experience a data breach.

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<sup>76</sup> SCHNEIER, *supra* note 61.

<sup>77</sup> See discussion *infra* Section II.A.

<sup>78</sup> See *infra* Appendix B.

<sup>79</sup> Indictment at 6, United States v. Internet Research Agency LLC, No. 1:18-cr-00032-DLF, 2018 WL 914777 (D. D.C. Feb. 16, 2018), (detailing the indictment of the Internet Research Agency, a Russian Organization that engaged in information warfare against the United States “[by] focus[ing] on the U.S. population and conduct[ing] operations on social media platforms such as YouTube, Facebook, Instagram, and Twitter”).

<sup>80</sup> E.g., Shelby Holliday & Rob Barry, *Russian Influence Campaign Extracted Americans’ Personal Data*, WALL ST. J. (Mar. 7, 2018), <https://www.wsj.com/articles/russian-influence-campaign-extracted-americans-personal-data-1520418600?mod=e2tw> [<https://web.archive.org/web/20200102190003/https://www.wsj.com/articles/russian-influence-campaign-extracted-americans-personal-data-1520418600?mod=e2tw>] (detailing how Russian hackers utilized fake social media accounts to create petitions and directly reach out to individuals incentivizing them under false pretenses to provide information about themselves, their customers, and their business).

<sup>81</sup> Jessica Guynn, *Facebook Hack Update: Nearly 30 Million Users’ Data Stolen. How to Find Out If You’re One of Them*, USA TODAY (Oct. 12, 2018), <https://www.usatoday.com/story/tech/2018/10/12/facebook-hack-update-30-million-users-personal-information-stolen/1614394002/> [<https://web.archive.org/web/20200102190251/https://www.usatoday.com/story/tech/2018/10/12/facebook-hack-update-30-million-users-personal-information-stolen/1614394002/>] (detailing a Facebook hack of 30 million accounts); Zack Whittaker, *Apple iCloud Hack Threat Gets Worse: Here’s What We’ve Learned*, ZDNET (Mar. 28, 2017), <https://www.zdnet.com/article/icloud-accounts-breach-gets-bigger-here-is-what-we-know/> [<https://web.archive.org/web/20200102190400/https://www.zdnet.com/article/icloud-accounts-breach-gets-bigger-here-is-what-we-know/>] (detailing Apple’s iCloud hack of 70,000 accounts, though hackers may have access to 250 million accounts); Kofi Nyantakyi, *Microsoft Security Flaw Left Microsoft Accounts Open to be Hacked*, JBKLTUSE (Dec. 12, 2018), <https://www.jbklutse.com/microsoft-security-flaw-left-microsoft-accounts-open-to-be-hacked/> (detailing that a small security flaw could have provided access to millions of Microsoft accounts) [<https://web.archive.org/web/20200102190457/https://www.jbklutse.com/microsoft-security-flaw-left-microsoft-accounts-open-to-be-hacked/>]; Josh Constine, *Google+ to Shut Down After Coverup of Data-exposing Bug*, TECHCRUNCH (Oct. 8, 2018), <https://techcrunch.com/2018/10/08/google-plus-hack/> (detailing almost 500,000 Google plus users’ information was hacked).

<sup>82</sup> *Cloud Revenues Continue to Grow by 50% as Top Four Providers Tighten Grip on Market*, SYNERGY RES. GROUP (July 27, 2018), <https://www.srgresearch.com/articles/cloud-revenues-continue-grow-50-top-four-providers-tighten-grip-market> (stating AWS has a 34 percent share of the cloud infrastructure market, which includes platform services and hosted private cloud, the leader); *Gartner Says Worldwide IaaS Public Cloud Services Market Grew 29.5 Percent in 2017*, GARTNER (Aug. 1, 2018), <https://www.gartner.com/newsroom/id/3884500> (stating Amazon’s market share in Infrastructure as a Service is 52%) [<http://web.archive.org/web/20181225035530/https://www.gartner.com/newsroom/id/3884500>]; Infrastructure as a Service (“IaaS”) is a standardized, highly automated offering, where

Major clients using AWS include Netflix, Unilever, General Electric, Kellogg, Pinterest, and Johnson & Johnson.<sup>83</sup> A successful system-wide hack of AWS, due to the negligence or oversight of a single corporation, would wreak havoc on global markets and may prevent businesses from conducting their operations.<sup>84</sup> Similar to the Cambridge Analytica incident, a single policy by Facebook provided the company with mounds of data that they used for exploitative and manipulative purposes.<sup>85</sup> Hackers can utilize the data acquired from large-scale breaches for many other nefarious purposes, such as identity theft.<sup>86</sup>

Even users of platforms engage in nefarious behavior for their own gain, which must be managed, monitored, and mitigated by platform owners. In 2015, David Tompkins became the first individual charged with violating Section 1 of the Sherman Act for conduct concerning an internet commerce site.<sup>87</sup> Tompkins and his co-conspirators sought to fix the price of posters on Amazon.<sup>88</sup>

Professional scammers also engage in various tactics to exploit and manipulate a platform's algorithm. For example, on Amazon's platform, scammers write fake reviews or purchase a competitor's product only to return it so that the product's return rate increases. This practice lowers a product's search ranking and rating, which can adversely affect sales and the account status of the product owner.<sup>89</sup>

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computer resources, complemented by storage and networking capabilities are owned and hosted by a service provider and offered to customers on-demand. Customers are able to self-provision this infrastructure, using a Web-based graphical user interface that serves as an IT operations management console for the overall environment. API access to the infrastructure may also be offered as an option. *Infrastructure as a Service (IaaS)*, GARTNER, <https://www.gartner.com/it-glossary/infrastructure-as-a-service-iaas/> [<https://web.archive.org/web/20200104022959/https://www.gartner.com/en/information-technology/glossary/infrastructure-as-a-service-iaas>].

<sup>83</sup> Benjamin Wootton, *Who's Using Amazon Web Services?*, CONTINO (Jan. 26, 2017), [<https://web.archive.org/web/20200104023041/https://www.contino.io/insights/whos-using-aws>].

<sup>84</sup> A single typo from Amazon's S3 webhosting service took sites such as Quora, Trello, and IFTTT down for more than four hours. See Casey Newton, *How a Typo Took Down S3, The Backbone of the Internet*, VERGE (Mar. 2, 2017), <https://www.theverge.com/2017/3/2/14792442/amazon-s3-outage-cause-typo-internet-server> [<https://web.archive.org/web/20200104023201/https://www.theverge.com/2017/3/2/14792442/amazon-s3-outage-cause-typo-internet-server>].

<sup>85</sup> See discussion *supra* Section II.B.1. See generally ELIZABETH BODINE-BARON, ET AL., COUNTERING RUSSIAN SOCIAL MEDIA INFLUENCE (2018).

<sup>86</sup> See SCHNEIER, *supra* note 61, at 78. (stating, "[Identity theft] has many variants, all based on stolen credentials and impersonation.").

<sup>87</sup> 15 U.S.C. §§ 1–38 (2018); Jonathan Stempel, *U.S. Announces First Antitrust E-commerce Prosecution*, REUTERS (Apr. 6, 2015), <https://www.reuters.com/article/us-usa-antitrust-ecommerce-plea-idUSKBN0MX1GZ20150406> [<https://web.archive.org/web/20200104023514/https://www.reuters.com/article/us-usa-antitrust-ecommerce-plea-idUSKBN0MX1GZ20150406>].

<sup>88</sup> Plea Agreement, *United States v. Topkins*, No. CR 15-00201-WHO (N.D. Cal. Apr. 30, 2015).

<sup>89</sup> *How Scammers in China Manipulate Amazon*, WALL ST. J.: VIDEO (Dec. 17, 2018), <https://www.wsj.com/video/how-scammers-in-china-manipulate-amazon/62CF7FF0-E948-41F6-959F-6B772358D26C.html>.

Other platforms have also dealt with the onslaught of fake reviews from fake accounts, which can devastate sellers who depend on the platform and distort a platform's algorithm that is used to categorize, rank, and sort information that is displayed to users.<sup>90</sup> Distorting a platform's algorithm can have significant consequences for users. For example, Russian hackers, supported by the Russian government, distorted the algorithms of several platforms to spread disinformation to consumers during the 2016 United States presidential election.<sup>91</sup> A RAND Corporation report stated that "Social media platforms, such as Facebook and Twitter, play a key amplification role through their policies, algorithms, and advertising—a role that can be manipulated, subverted, or taken advantage of by Russian actors trying to spread disinformation."<sup>92</sup>

It appears almost operationally impossible to manage all the potential risks that platforms encounter or create via their existence and user bases. Mark Zuckerberg has gone as far as to admit that at Facebook's scale and size, the company will "always make mistakes."<sup>93</sup> Such circumstances reveal the inherent problems of platforms that become so dominant.

## 2. Winner-Take-All

The presence of market tipping derived from network effects creates a zero-sum winner-take-all environment. For example, consider if a consumer is currently using Microsoft Windows and the operating system has the ability to collect the user's data to increase its ability to predict system operations or user commands.<sup>94</sup> By using Windows, the consumer is then inherently not using Apple's macOS, which means Apple does not have the opportunity to obtain the data Microsoft is collecting and implement the same predictive capabilities. Essentially, the winner-take-all characteristic of network effects can impose substantial barriers to future market entrants primarily because the new entrant must substantially overcome the value and competitive advantage—typically derived from features of the product or

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<sup>90</sup> Joy Hawkins, *Yelp vs Google: How They Deal With Fake Reviews*, SEARCH ENGINE LAND (Nov. 1, 2018), <https://searchengineland.com/yelp-vs-google-how-do-they-deal-with-fake-reviews-307332> [https://web.archive.org/web/20200104023605/https://searchengineland.com/yelp-vs-google-how-do-they-deal-with-fake-reviews-307332].

<sup>91</sup> BODINE-BARON, *supra* note 85, at ix (stating, "President Putin 'ordered' the influence campaign in the United States.") (citing OFFICE OF THE DIR. OF NAT'L INTELLIGENCE, ICA 2017-01D: ASSESSING RUSSIAN ACTIVITIES AND INTENTIONS IN RECENT US ELECTIONS (2017)).

<sup>92</sup> *Id.* at 10 (detailing countering Russian influence).

<sup>93</sup> Mark Zuckerberg, *Mark Zuckerberg: The Internet Needs New Rules. Let's Start in These Four Areas*, WASH. POST (Mar. 30, 2019), [https://www.washingtonpost.com/opinions/mark-zuckerberg-the-internet-needs-new-rules-lets-start-in-these-four-areas/2019/03/29/9e6f0504-521a-11e9-a3f7-78b7525a8d5f\\_story.html](https://www.washingtonpost.com/opinions/mark-zuckerberg-the-internet-needs-new-rules-lets-start-in-these-four-areas/2019/03/29/9e6f0504-521a-11e9-a3f7-78b7525a8d5f_story.html).

<sup>94</sup> Liam Tung, *Microsoft Wants AI to Predict if Your Windows PCs Will Get Malware*, ZDNET (Dec. 14, 2018), <https://www.zdnet.com/article/microsoft-wants-ai-to-predict-if-your-windows-pcs-will-get-malware/> [https://web.archive.org/web/20200104023818/https://www.zdnet.com/article/microsoft-wants-ai-to-predict-if-your-windows-pcs-will-get-malware/].

service and the established user base—offered by the existing platform. The presence of zero-sum conditions, created by network effects, thus incentivizes platforms to engage in anticompetitive conduct because the platform's market position would be exceptionally difficult to displace once a dominant position is obtained.

Moreover, since the number of users is an essential asset of a platform's market power, platforms may even permit or outright ignore blatantly unlawful user conduct to obtain a substantial user base. Consider consumers that are illegally uploading music to YouTube. Google permitting or passively ignoring illegally uploaded content means that consumers are still using YouTube. At the same time, since there are now more videos on YouTube, other users are encouraged to watch videos on the platform. This situation provides increased opportunities to show digital advertisements to the users that are watching the videos, thereby facilitating Google's business and further establishing YouTube as the market leader.<sup>95</sup> As such, it should not be considered a coincidence that Google prolonged its copyright litigation with the music industry for as long as possible.<sup>96</sup> While Google was engaged in litigation, YouTube was establishing itself as the clear market leader.<sup>97</sup> Now YouTube is indispensable to the music industry.<sup>98</sup>

Amazon is in a comparable situation with the presence of counterfeit goods on its platform.<sup>99</sup> The sellers of counterfeit goods on Amazon, and buyers on the other side, are still selling and purchasing products on Amazon, which provides Amazon with monetary fees.<sup>100</sup> Amazon is thus at

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<sup>95</sup> See *infra* Appendix A.

<sup>96</sup> *Viacom Int'l Inc. v. YouTube, Inc.*, 718 F. Supp. 2d 514 (S.D.N.Y. 2010).

<sup>97</sup> Felix Richter, *The World's Largest Music Streaming Service?*, STATISTA (Sept. 15, 2016), <https://www.statista.com/chart/5866/online-music-listening-platforms/> (detailing that YouTube has 8x the number of listeners than the second market leader Spotify).

<sup>98</sup> Jonathan Stempel, *Google, Viacom Settle Landmark YouTube Lawsuit*, REUTERS (Mar. 18, 2014), <https://www.reuters.com/article/us-google-viacom-lawsuit/google-viacom-settle-landmark-youtube-lawsuit-idUSBREA2H11220140318> [<https://web.archive.org/web/20200104024031/https://www.reuters.com/article/us-google-viacom-lawsuit/google-viacom-settle-landmark-youtube-lawsuit-idUSBREA2H11220140318>] (describing the litigation between the music industry and Google lasting seven years); John McDuling, *YouTube is Making Itself Increasingly Indispensable to the Music Industry*, QUARTZ (Oct. 15, 2014), <https://qz.com/281013/youtube-is-making-itself-increasingly-indispensable-to-the-music-industry/> [<https://web.archive.org/web/20200104024113/https://qz.com/281013/youtube-is-making-itself-increasingly-indispensable-to-the-music-industry/>]; see also J. Clement, *Most Popular YouTube Videos Based on Total Global Views as of December 2019*, STATISTA (Dec. 3, 2019), <https://www.statista.com/statistics/249396/top-youtube-videos-views/> (showing 9 out of the top 10 most watched videos of all time are music videos).

<sup>99</sup> Alana Semuels, *Amazon May Have a Counterfeit Problem*, ATLANTIC (Apr. 20, 2018), <https://www.theatlantic.com/technology/archive/2018/04/amazon-may-have-a-counterfeit-problem/558482/>; Wade Shepard, *Fuse Chicken vs. Amazon Is The David vs. Goliath Lawsuit to Watch in 2018*, FORBES (Jan. 14, 2018), <https://www.forbes.com/sites/wadeshepard/2018/01/14/fuse-chicken-vs-amazon-is-the-david-vs-goliath-lawsuit-to-watch-in-2018/#3fd2c5685115> (detailing instances of companies trying to cope with counterfeit goods on Amazon's platform).

<sup>100</sup> Jay Greene, *How Amazon's Quest for More, Cheaper Products Has Resulted in a Flea Market of Fakes*, WASH. POST (Nov. 14, 2019), <https://www.washingtonpost.com/technology/2019/11/14/how->

least partially disincentivized or reluctant to punish counterfeiters on its platform, at least before becoming the internet commerce giant they are today.<sup>101</sup>

A former Google executive acknowledged the power of network effects and its direct relationship to the success of the company by stating, “So more users more information, more information more users, more advertisers more users, more users more advertisers, it’s a beautiful thing, lather, rinse, repeat[.]”<sup>102</sup>

## II. ENTRENCHING CONDUCT

Entrenching Conduct encompasses business practices multisided platforms can implement or abuse to increase switching costs and maintain their user base by preventing, frustrating, and deterring users from switching or abandoning the platform. Multisided platforms engage in this conduct through user lock-in, as well as through data collection and utilization.

### A. User Lock-In

Multisided companies can significantly affect the switching costs<sup>103</sup> for users through the design and features of the platform. In some cases, the monetary and nonmonetary costs can be so significant, users are essentially “locked-in,” inhibiting switching altogether—even if the competitor’s product is similar, cheaper, or provides more utility.<sup>104</sup> There are two categories of user lock-in: Inherent Platform Characteristics and Purposeful Design.

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amazons-quest-more-cheaper-products-has-resulted-flea-market-fakes/?arc404=true (stating, “The Seattle-based e-commerce giant keeps a roughly 15 percent cut of the sales of third-party sellers regardless of whether the product is counterfeit.”).

<sup>101</sup> See David Pierson, *Extra Inventory. More Sales. Lower Prices. How Counterfeits Benefit Amazon*, L.A. TIMES (Sept. 28, 2018), <https://www.latimes.com/business/technology/la-fi-tn-amazon-counterfeits-20180928-story.html> [<https://web.archive.org/web/20200104024401/https://www.latimes.com/business/technology/la-fi-tn-amazon-counterfeits-20180928-story.html>] (stating “The spread of cheaper knockoffs can also put pressure on authentic sellers and brands to lower their prices, helping Amazon win more customers.”); see *infra* Appendix A.

<sup>102</sup> *Fact-Checking Google*, *supra* note 57.

<sup>103</sup> Aaron S. Edlin & Robert G. Harris, *The Role of Switching Costs in Antitrust Analysis: A Comparison of Microsoft and Google*, 15 YALE J.L. & TECH. 169, 176 (2003) (stating, “[s]witching costs are those costs that are incurred when switching from one supplier of a particular good or service to another supplier, including money costs and the value of users’ time.”) (citing Joseph Farrell & Paul Klemperer, *Coordination and Lock-in: Competition with Switching Costs and Network Effects*, in 3 HANDBOOK OF INDUS. ORG. 1967, 1971 (M. Armstrong & R. Porter eds., 2007)).

<sup>104</sup> “Locked-in” is the term used by the Supreme Court in *East Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451, 476–77 (1992).

### 1. Inherent Platform Characteristics

Consumers can be locked into a platform by merely choosing to use one platform over another. As a user decides to learn how to use a specific platform, they are investing their time, and in some instances, their money, to learn how to use the platform. Learning how to use a platform thus creates path dependencies<sup>105</sup> for users on both sides of a platform as users become dependent or invested in the features or design elements, despite the existence of a more feature-filled platform. Additionally, users become deterred from switching because they will incur substantial “cognitive costs” by having to learn a new set of skills to use the competing platform.<sup>106</sup>

In some cases, consumers can technically use multiple platforms within the same industry (termed multi-homing), such as using both Android and iOS if a user has two cell phones.<sup>107</sup> However, path dependencies can inhibit multi-homing. For example, since most computer functions are accessible through a web browser, the design and capabilities of the operating system should not have a significant effect on which operating system a user chooses, but it does. Merely ask any lifelong Windows user to go to work on a Mac for a day, and the effect will be evident. This situation can similarly be applied to the lack of willingness or inability of Android users to switch to iOS or vice-versa,<sup>108</sup> even though there are free applications designed to ease the process.<sup>109</sup> Consumers (as well as computer manufacturers) continue to purchase and use Microsoft Windows even though there are a plethora of free Linux-based operating systems that can accomplish almost all of the same tasks or become interoperable with Windows.<sup>110</sup> Consumers

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<sup>105</sup> Caroline Banton, *Path Dependency*, INVESTOPEDIA (June 25, 2019), <https://www.investopedia.com/terms/p/path-dependency.asp> [<https://web.archive.org/web/20200104024525/https://www.investopedia.com/terms/p/path-dependency.asp>] (defining path dependency as an idea that tries to explain, “the continued use of a product or practice based on historical preference or use.” This holds true even if “newer, more efficient products or practices are available” due to the previous commitment made.).

<sup>106</sup> Devlin, *supra* note 52, at 183 (stating, “entrenching the monopolist’s technology [through path dependencies] is the switching cost associated with having to learn a new standard.”); Newman, *supra* note 7, at 1507 (terming cognitive costs).

<sup>107</sup> See also MATCHMAKERS, *supra* note 16, at 181 (defining multihoming as “[w]hen platform participants use two or more similar platforms or could easily do so. For example, many consumers carry several different payment cards and select one of them to pay when they go to the store.”).

<sup>108</sup> See Mikey Campbell, *Apple Narrows iOS Loyalty Rate Gap with Android in Q3, Retention Rates at All-Time High*, APPLE INSIDER (Oct. 11, 2018), <https://appleinsider.com/articles/18/10/11/apple-narrows-ios-loyalty-rate-gap-with-android-in-q3-retention-rates-at-all-time-high> [<https://web.archive.org/web/20200104025029/https://appleinsider.com/articles/18/10/11/apple-narrows-ios-loyalty-rate-gap-with-android-in-q3-retention-rates-at-all-time-high>] (user retention rates for both Android and iOS are almost as high as 90 percent).

<sup>109</sup> See, e.g., *Move to iOS*, GOOGLE PLAY, [https://play.google.com/store/apps/details?id=com.apple.movetoiOS&hl=en\\_US](https://play.google.com/store/apps/details?id=com.apple.movetoiOS&hl=en_US) (last visited Feb. 6, 2020).

<sup>110</sup> Technically, Chrome OS is a derivative of Linux. See *Kernel Design*, CHROMIUM PROJECTS, <https://www.chromium.org/chromium-os/chromiumos-design-docs/chromium-os-kernel> (last visited Feb. 6, 2020) (stating Google’s Chromium OS uses the Linux Kernel); *List of Linux Distributions*,

continue to use Windows because they are already familiar with the operating system and do not want or cannot invest the time needed to learn another operating system despite the potential cost savings.<sup>111</sup> Researchers define this behavior of a consumer's continued use of pre-existing service as "consumer inertia."<sup>112</sup>

Users, via their interaction with each other on the same side of the market, also create path dependencies. For example, multisided platforms connect user groups, which provide the platform value.<sup>113</sup> Thus, switching to another competing platform becomes problematic for users because they often need members on both sides of the alternative platform first.<sup>114</sup> In essence, because of the need and dependence between users on both sides of the platform, there is a coordination problem<sup>115</sup> between users.

Coordination problems exist between user groups because users do not know if or when users, either on their side or the other side of the market, will switch to an alternative platform, or which competitive platform they will be switching to.<sup>116</sup> Coordination problems between users thus can create a significant incentive for users on both sides of the platform to not switch

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WIKIPEDIA, [https://en.wikipedia.org/wiki/List\\_of\\_Linux\\_distributions](https://en.wikipedia.org/wiki/List_of_Linux_distributions) (last visited Feb. 8, 2020) (a complete list of the available Linux distributions, most of which are free); *Ubuntu Certified Hardware*, UBUNTU, <https://certification.ubuntu.com/make/Dell?query=&category=Desktop&category=Laptop&level=Enabled&release=Core+18&release=Core+16&release=18.04+LTS&release=16.04+LTS&release=14.04+LTS> (last visited Feb. 6, 2020) (listing Dell computers with the Linux-based operating system Ubuntu). Applications that enable users to run Windows applications on Linux operating systems include: *Home*, PLAYONLINUX, <https://www.playonlinux.com/en/> (last visited Feb. 5, 2020); *What is Wine?*, WINEHQ, <https://www.winehq.org/> (last visited Feb. 6, 2020).

<sup>111</sup> Major technology blogs recognize that current familiarity with Windows is one of the primary reasons why users will not switch to Linux. See Kris Littlejohn, *10 Reasons Why Linux Isn't Triumphant Over Windows*, TECHREPUBLIC (Mar. 2, 2009), <https://www.techrepublic.com/blog/10-things/10-reasons-why-linux-isnt-triumphing-over-windows/>. As explained, for purposes of completeness, users are also deterred from switching because of the presence of significantly more third-party software offerings that exist on Windows, which also deters consumers from switching away from Windows and is a form of indirect network effects.

<sup>112</sup> See *When Customers Don't Care: Lessons From 'Consumer Inertia' and Gas Prices*, FORBES (June 20, 2019), <https://www.forbes.com/sites/hbsworkingknowledge/2019/06/20/when-customers-dont-care-lessons-from-consumer-inertia-and-gas-prices/#6ced5c7540bf> (stating, "[c]onsumer inertia is the tendency of some customers to buy or continue buying a product, even when superior options exist."); Alexander MacKay & Marc Remer, *Consumer Inertia and Market Power* 1 (Harvard Bus. Sch., Working Paper No. 19-111, 2019), [https://www.hbs.edu/faculty/Publication%20Files/19-111\\_8caa9ccc-73c8-4916-ac7d-3bcc453e36f6.pdf](https://www.hbs.edu/faculty/Publication%20Files/19-111_8caa9ccc-73c8-4916-ac7d-3bcc453e36f6.pdf) (stating, "[c]onsumer state dependence, or inertia, may arise from habit formation, brand loyalty, switching costs, or search.").

<sup>113</sup> Schanzenbach, *supra* note 52.

<sup>114</sup> MATCHMAKERS, *supra* note 16, at 35 ("[platforms] have to make sure they are getting more participants on each side with whom participants on the other side want to interact.").

<sup>115</sup> Evans, *supra* note 6, at 363 (defining the "coordination problem" as consumer reluctance to switch "unless they expect that some consumers on the other side(s) will also switch").

<sup>116</sup> *Id.*

to an alternative platform and therefore continue using the current platform, even if the alternative platform is cheaper or offers more functionality.<sup>117</sup>

Coordination problems exist with nearly all the GAFAM services. Consider the previous example of a computer manufacturer continually pre-installing Windows instead of an alternative operating system on its computers or phone manufacturers choosing not to switch away from Google's Android operating system. Coordination problems thus strengthen the market position of the established dominant platform.

The inability or unwillingness of users to switch to another platform creates additional competitive concerns. First, while some markets are easier than others, users are often unable to know whether the experience of the new platform will be completely analogous. For example, contemplate an iOS user considering switching to an Android phone. Since most people only own one cell phone and considering that most consumers are not experts on any operating system,<sup>118</sup> it is not practical for a person to know everything they use their current device for and test whether the Android operating system can provide entirely the same functionality as iOS.<sup>119</sup>

Second, the feasibility for consumers to switch to an alternative platform also implies that consumers can articulate and know all the features they use when switching to the competitor's platform. Choosing to switch to an alternative platform would force a new platform user to invest a potentially unknowable amount of time to acclimate to the changes.<sup>120</sup>

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<sup>117</sup> Devlin, *supra* note 52, at 183 ("The major consequence is a potentially significant 'first mover advantage' in network markets that ultimately gives rise to the concern of 'path dependence.'"); *see also* COLLYER, *supra* note 12, at 7 (stating "a multi-sided market with network externalities may be prone to tipping and authorities may wish to intervene earlier.").

<sup>118</sup> Banton, *supra* note 105; *see also* Jay McGregor, *Apple's iOS 9 Is Too Complicated, But So Is Android*, FORBES (July 6, 2015), <https://www.forbes.com/sites/jaymcgregor/2015/07/16/apple-lost-its-simplicity-with-ios-9-but-so-has-google/#71bde89b66fe> (denoting that every mobile operating system started off with "simplistic beginnings" and describing "feature-overload" with mobile operating systems, given the influx of numerous features manufactures are adding to smartphones. Such additional features presumably deepen learning curves for users.).

<sup>119</sup> THE BROADBAND COMMISSION, THE STATE OF BROADBAND 2012: ACHIEVING DIGITAL INCLUSION FOR ALL 16 (2012), available at <https://www.broadbandcommission.org/Documents/publications/bb-annualreport2012.pdf> (noting 92% of people have only one mobile device). Note this author knows of no other recent data concerning this statistic. This is in part because mobile devices can support multiple SIM cards, decreasing the need to purchase multiple devices.

<sup>120</sup> Computer literacy could also have an effect in a user's ability to switch to an alternative platform. OECD, SKILLS MATTER: FURTHER RESULTS FROM THE SURVEY OF ADULT SKILLS 55 (2016), [https://www.oecd-ilibrary.org/education/skills-matter\\_9789264258051-en](https://www.oecd-ilibrary.org/education/skills-matter_9789264258051-en) [<https://web.archive.org/web/20200104045907/https://www.oecd-ilibrary.org/docserver/9789264258051-5-en.pdf?expires=1578114829&id=id&accname=guest&checksum=A2E26FAC73D4FFB3486BEC2381D4CD56>] (showing the United States is just above average for computer literacy for OECD countries); More relevant is the general public's lack of understanding how technology services work and track users more generally. *See* Julia Alexander, *Most Facebook Users Don't Know That it Records a List of Their Interests, New Study Finds*, VERGE (Jan 16, 2019), <https://www.theverge.com/2019/1/16/18185312/facebook-interest-ad-targeting-pew-study-privacy-control>; *see also* MARK MURO, ET AL., DIGITALIZATION AND THE AMERICAN WORKFORCE 33–34 (Brookings Institution ed., 2017), available at



Technical and practical limitations can also exist for users on both sides of a platform. For example, programmers writing software for Apple iOS operating system are limited by the number of programming languages they know to create applications, and consumers are limited by how many cell phones and computers they own to access these applications.<sup>121</sup>

The limitations for users on both sides of the platform are part of the infrastructure multisided companies utilize to inhibit competition and increase switching costs. Standardization between platforms could decrease switching costs and subsequently lessen the ability of platforms to lock-in their users. Thus, with the prospect of entrenching and maintaining their users, multisided companies are incentivized to design their platforms to deepen the learning curves.<sup>122</sup>

For example, Microsoft attempted to implement tactics designed to deepen the learning curves of software developers to preserve its operating system monopoly when the corporation sought to implement its own Windows-specific Java Virtual Machine. Java and its companion virtual machine were a software application environment that would allow software developers who utilize the platform to create cross-platform applications.<sup>123</sup> Microsoft recognized the threat that middleware posed to its operating system monopoly.<sup>124</sup> Middleware is software that “relies on the interfaces provided by the underlying operating system while simultaneously exposing its own [application program interfaces (“APIs”)]<sup>125</sup> to developers.”<sup>126</sup> The threat of middleware derives from the possibility that software developers could be attracted to create applications that rely in part on or entirely on the

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[https://www.brookings.edu/wp-content/uploads/2017/11/mpp\\_2017nov15\\_digitalization\\_full\\_report.pdf](https://www.brookings.edu/wp-content/uploads/2017/11/mpp_2017nov15_digitalization_full_report.pdf) (stating the majority of Americans are level 1 or below level one in the Program for the International Assessment of Adult Competencies (PIAAC) survey which shows that the level of proficiency by the measure of “problem-solving in [a] technology-rich environment”). For detail on what the levels mean, see Program for the International Assessment for Adult Competencies, *PIAAC Proficiency Levels for Problem Solving in Technology-Rich Environments*, NAT’L CENT. FOR EDUC. STAT., <https://nces.ed.gov/surveys/piaac/pstreproficiencylevel.asp> (last visited Feb. 15, 2020); Aaron Smith, *Many Facebook Users Don’t Understand How the Site’s News Feed Works*, PEW RES. (Sept. 5, 2018), <http://www.pewresearch.org/fact-tank/2018/09/05/many-facebook-users-dont-understand-how-the-sites-news-feed-works/> (stating, “[w]hen asked whether they understand why certain posts but not others are included in their news feed, around half of U.S. adults who use Facebook (53%) say they do not—with 20% saying they do not understand the feed at all well. Older users are especially likely to say they do not understand the workings of the news feed: Just 38% of Facebook users ages 50 and older say they have a good understanding of why certain posts are included in it, compared with 59% of users ages 18 to 29.”).

<sup>121</sup> See generally Howard Shelanski & J. Gregory Sidak, *Antitrust Divestiture in Network Industries*, 68 UNIV. CHI. L. REV. 1, 9 (2001) (stating, “Path dependency and lock-in can, of course, occur for reasons other than network externalities (for example, the costs of learning to use a competing product.”)).

<sup>122</sup> McGregor, *supra* note 118.

<sup>123</sup> *Microsoft Corp.*, 253 F.3d at 74.

<sup>124</sup> *Id.* at 53.

<sup>125</sup> Also known as APIs. *Id.* (defining application program interfaces as “routines or protocols that perform certain widely-used functions.”).

<sup>126</sup> *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 17 (D.D.C. 1999).

middleware.<sup>127</sup> Thus, the software developed for the middleware could potentially be transferred to any alternative operating system that can run the middleware, potentially destroying or substantially weakening Microsoft's monopoly.<sup>128</sup> In response, Microsoft created its own Java software development tools that deceived Java developers into unknowingly producing applications that would only run on Windows.<sup>129</sup> Microsoft's deception violated Section 2 of the Sherman Act as its actions amounted to exclusionary conduct.<sup>130</sup>

Third, platforms can entrench users through mere market dominance. The European Commission, in its 2009 investigation into Microsoft tying<sup>131</sup> Internet Explorer to its Windows operating system, was concerned that Microsoft's dominant position would distort innovation by entrenching intellectual talent<sup>132</sup>:

[T]he ubiquity of Internet Explorer creates artificial incentives for content providers and software developers to design websites or software primarily for Internet Explorer which ultimately risks undermining competition and innovation in the provision of services to consumers.

## 2. Purposeful Design

Platform owners can lock-in users by purposefully designing their services to encourage users to provide the platform their intangible goods. The investment of a user's intangible goods such as their digital documents, photos, and videos onto the platform increases the likelihood a user will not undo their investment and switch away from the platform. This practice also creates a non-monetary cost for the user because, by switching to an alternative platform, the user would both have to learn how to use a new platform and transfer their existing intangibles and work product to the new platform. The investment of a user's time and the inability to know how

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<sup>127</sup> Julie Ann Hyland, *Demystifying the Applicability & Essential Elements of United States v. Microsoft*, 39 TEX. J. BUS. L. 127, 140 (2003).

<sup>128</sup> *Id.*

<sup>129</sup> *Microsoft Corp.*, 253 F.3d at 76.

<sup>130</sup> *Id.* at 77.

<sup>131</sup> Defined as the condition where a buyer in addition to purchasing one product or service, must also purchase another product or services that the buyer would not have bought otherwise but-for the tying condition. *See Northern Pac. Ry. Co. v. United States*, 356 U.S. 1, 5 (1958) (stating, "a tying arrangement may be defined as an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product. . . .").

<sup>132</sup> European Commission Memorandum MEMO/09/15, Antitrust: Commission Confirms Sending a Statement of Objections to Microsoft on the Tying of Internet Explorer to Windows (Jan. 17, 2009), available at [https://ec.europa.eu/commission/presscorner/detail/en/MEMO\\_09\\_15](https://ec.europa.eu/commission/presscorner/detail/en/MEMO_09_15).

much time is required to switch to the alternative platform can significantly deter the user from switching.<sup>133</sup>

Consider a blogger that uses Amazon's affiliate program to receive a commission from Amazon on the products that they recommend on their website. Switching to a new platform becomes difficult for the user since they would have to invest their time to learn a new platform and possibly redo all their previously invested work by transferring or converting their data to the newly selected platform, which is often time-consuming or, with other platforms, not possible.<sup>134</sup>

The GAFAM companies have implemented this restrictive tactic into many aspects of their business operations. Billions of people upload their digital photographs to Facebook and Instagram, upload their documents to Google Drive and Microsoft OneDrive, and upload their videos to YouTube.<sup>135</sup> While alternative platform services exist,<sup>136</sup> the time to transfer the user's intangibles or their data more generally,<sup>137</sup> the inability to know or the lack of analogous features, and the time already invested in and learning how to use the current platform all present barriers to switching.

In an attempt to mitigate the harm caused by inhibiting users from switching to alternative platforms via locking in user data, the European Union's General Data and Privacy Regulation ("GDPR") explicitly grants users data portability and ownership rights.<sup>138</sup> The United States has no such requirement for internet platforms.

Multisided companies can also purposefully design their platform to cause users to perform unintended actions. The deception, in many cases, causes users not to know how they have been adversely affected. These adverse designs are more commonly known as dark patterns.<sup>139</sup> For example, the GDPR required Facebook to notify users of particular changes in its data collection and required users to accept these terms. However, Facebook's notification setting defaulted to full data access by Facebook. As shown in the image below, the button designed to progress to the next screen to choose

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<sup>133</sup> Edlin & Harris, *supra* note 103, at 176 n.17 (stating, "[i]n many cases, the value of users' time is the most important component of switching costs; for example, in installing a different PC operating system or converting from Microsoft Office to an online productivity suite.").

<sup>134</sup> This concept is known as data portability.

<sup>135</sup> See *infra* Appendix B.

<sup>136</sup> For example, Vimeo is a competitor of YouTube and Snapchat is a competitor of Instagram.

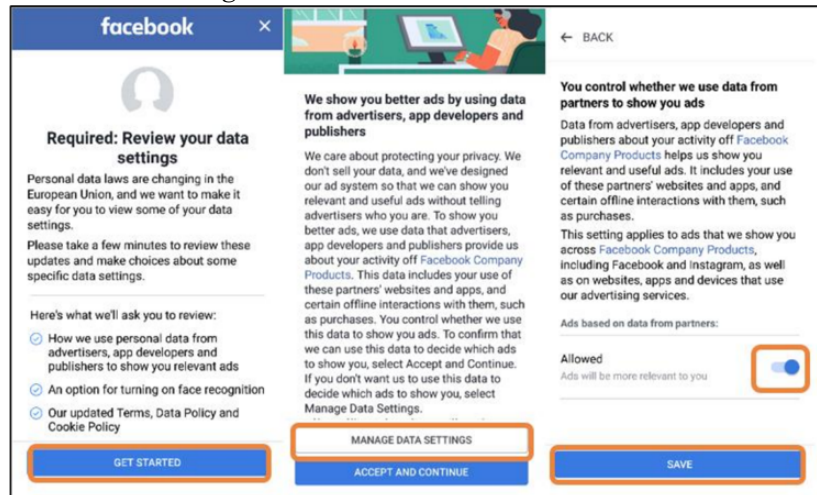
<sup>137</sup> Aaron Perzanowski & Jason Schultz, *Digital Exhaustion*, 58 UCLA L. REV. 889, 900 n.50 (2011) ("Switching costs would be reduced further if consumers were assured data portability between platforms.").

<sup>138</sup> Council Regulation 2017/679, art. 20, 2016 O.J. (L 119) 1, 45 (EU), <https://gdpr-info.eu/art-20-gdpr/> (stating, "[Users] shall have the right to receive [their] personal data . . . and have the right to transmit those data to another [platform.]").

<sup>139</sup> FORBRUKER RADET, DECEIVED BY DESIGN 7 (June 27, 2018), available at <https://fil.forbrukerradet.no/wp-content/uploads/2018/06/2018-06-27-deceived-by-design-final.pdf> (defining Dark Patterns as "features of interface design crafted to trick users into doing things that they might not want to do, but which benefit the business in question.").

the next option is also the same as accepting the terms Facebook wants (i.e., full data sharing) while the options to limit the amount of sharing to Facebook are the same as the background color. This deceptive design can subliminally cause users to overlook the fact that there was an option to modify the settings.<sup>140</sup>

*Image 1: Facebook Mobile Data Terms<sup>141</sup>*



Along similar lines, default options present many competitive issues as they cause users to engage in unintended actions. Nobel prize-winning behavioral economist Richard Thaler states that, “default options . . . can have huge effects on outcomes” and are “ubiquitous and powerful.”<sup>142</sup> Default options cause users to experience what is called “status quo bias,” where users primarily use the default option even though alternatives are available.<sup>143</sup>

The GAFAM platforms recognize the effect of status quo bias on users. Besides containing an implicit or explicit recommendation of a course of action,<sup>144</sup> default actions can cause consumers to unknowingly engage in acts that can expand or entrench market power by providing data to a preselected company. Google paid Apple \$1 billion in 2014, \$3 billion in 2017, \$9 billion in 2018, and \$12 billion in 2019 to remain Safari’s default search engine for iOS on the iPhone and the iPad, and on Apple’s macOS

<sup>140</sup> See generally RICHARD THALER & CASS SUSTEIN, NUDGE (2008).

<sup>141</sup> RADET, *supra* note 139, at 14.

<sup>142</sup> THALER & SUNSTEIN, *supra* note 140, at 8, 83.

<sup>143</sup> European Commission Press Release IP/18/4581, Antitrust: Commission Fines Google €4.34 Billion for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google’s Search Engine (July 18, 2018), [http://europa.eu/rapid/press-release\\_IP-18-4581\\_en.htm](http://europa.eu/rapid/press-release_IP-18-4581_en.htm). (Status quo bias is also known as the Default effect.)

<sup>144</sup> THALER & SUNSTEIN, *supra* note 140, at 83.

computer operating system.<sup>145</sup> In 2011, Google also paid Mozilla \$1 billion to be the default search engine on Firefox.<sup>146</sup> Furthermore, although in 2014, Mozilla switched to Yahoo as its default provider, in 2017, Mozilla switched back to Google, which allowed Mozilla to increase its annual revenue by eight percent to over \$562 million.<sup>147</sup> In 2015, when Windows 10 was released, Microsoft's "Express Settings" defaulted to automatically sending data to Microsoft, such as "speech, typing, and inking input," "browsing data," and other telemetric<sup>148</sup> data.<sup>149</sup>

Platform owners also purposefully design their services not to be interoperable with rival platforms. Interoperability allows users to leave a platform and assists with rival platforms succeeding in the market by allowing them to exchange and utilize user data from another platform.<sup>150</sup> Unsurprisingly, the GAFAM platforms have routinely inhibited interoperability to entrench their users. Many of these changes to inhibit interoperability only require a moderate change in the software code.<sup>151</sup>

Recognizing the potential threat that Vine, a video sharing platform, posed to Facebook, Mark Zuckerberg personally approved the decision to block Vine's access to specific Facebook APIs.<sup>152</sup> In response to a new technology that could allow third-party digital songs to be played on Apple's

<sup>145</sup> Mikey Campbell, *Google Paid Apple \$1B to be Default iOS Search Bar Provider in 2014*, APPLEINSIDER (Jan. 21, 2016), <http://appleinsider.com/articles/16/01/21/google-paid-apple-1b-in-2014-to-serve-default-ios-search-bar> [https://web.archive.org/web/20200104062135/https://appleinsider.com/articles/16/01/21/google-paid-apple-1b-in-2014-to-serve-default-ios-search-bar]; Lisa Marie Segarra, *Google to Pay Apple \$12 Billion to Remain Safari's Default Search Engine in 2019: Report*, FORTUNE (Sept. 29, 2018), <https://fortune.com/2018/09/29/google-apple-safari-search-engine/>.

<sup>146</sup> Preston Gralla, *How Much Does Google Fear Microsoft's Bing? Almost \$1 Billion Worth, As Counted by the Firefox Deal*, COMPUTERWORLD (Dec. 22, 2011), <https://www.computerworld.com/article/2471834/how-much-does-google-fear-microsoft-s-bing--almost--1-billion-worth--as-counted-by-the-fi.html>.

<sup>147</sup> Stephen Shankland, *Google-Firefox Search Deal Gives Mozilla More Money to Push Privacy*, CNET (Nov. 27, 2018), <https://www.cnet.com/news/google-firefox-search-deal-gives-mozilla-more-money-to-push-privacy/>.

<sup>148</sup> Telemetric data includes "basic system diagnostics information, logs of how frequently you use features and applications, system files. . . ." Wallace Chu, *Should You Disable Windows 10 Telemetry?*, NEW EGG BUSINESS: SMART BUYER (Oct. 9, 2018), <https://www.neweggbusiness.com/smartbuyer/windows/should-you-disable-windows-10-telemetry/>.

<sup>149</sup> Sebastian Anthony, *Windows 10 Doesn't Offer Much Privacy by Default: Here's How To Fix It*, ARS TECHNICA (Aug. 4, 2015), <https://arstechnica.com/information-technology/2015/08/windows-10-doesnt-offer-much-privacy-by-default-heres-how-to-fix-it/>.

<sup>150</sup> Suzanne Van Arsdale & Cody Venzke, *Predatory Innovation in Software Markets*, 29 HARV. J.L. & TECH. 243, 262 (2015) ("Most software interacts with other software, relying on interoperability: the ability to (1) exchange information and (2) use the exchanged information.").

<sup>151</sup> Evans, *supra* note 18, at 16 ("[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases.").

<sup>152</sup> See Adi Robertson, *Mark Zuckerberg Personally Approved Cutting Off Vine's Friend-Finding Feature*, VERGE (Dec. 5, 2018), <https://www.theverge.com/2018/12/5/18127202/mark-zuckerberg-facebook-vine-friends-api-block-parliament-documents>.

iPod when Apple had roughly 80 percent market share in digital music,<sup>153</sup> Apple updated its software to prevent interoperability.<sup>154</sup> In response to the “highly interoperable” Java platform,<sup>155</sup> Microsoft explicitly designed its own non-interoperable version to lock-in Java developers by luring them into using Microsoft’s custom developer tools.<sup>156</sup> To prevent Microsoft from engaging in anticompetitive conduct in the aftermath of the 2001 antitrust case,<sup>157</sup> Microsoft was subsequently required to provide APIs and documentation to various technologically dependent parties so that they could build interoperable software with Windows.<sup>158</sup>

Multisided businesses also design their platforms to create a loss aversion amongst users. A report by Consumer Intelligence Research Partners found that Amazon Prime members spend almost twice the amount on Amazon as non-Prime members.<sup>159</sup> Increased spending from Prime Members could result from the fact that a Prime membership does not penalize users for their lack of use; instead, by making annual Amazon membership payments, users are incentivized to make their online purchases on Amazon instead of another platform or physical retail store.

If users do not purchase goods from Amazon, they are technically not maximizing the value from their subscription. Thus, a Prime membership incentivizes the purchase of internet goods on Amazon’s platform but also incentivizes consumers to forgo purchases from other platforms – suppressing potential competition. Recognizing the value of subscriptions, the GAFAM platforms have adopted them into many of their services.<sup>160</sup>

Since platforms are simultaneously designed to easily allow users to join the service and inhibit them from leaving,<sup>161</sup> platform owners are encouraged to enter a market as expeditiously as possible, creating a first-mover advantage. Often the first entrant into a multisided market can take advantage of network effects and determine how users, through the design

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<sup>153</sup> Press Release, *Apple, iTunes Sells 1.5 Million Songs During Past Week; Five Times Napster's First Week Downloads* (Nov. 6, 2003), available at <https://www.apple.com/newsroom/2003/11/06iTunes-Sells-1-5-Million-Songs-During-Past-Week-Five-Times-Napster-s-First-Week-Downloads/> (last visited Feb. 1, 2020).

<sup>154</sup> Micah Singleton & Josh Lowensohn, *Apple's DRM Lawsuit: 10 years in the Making*, VERGE (Dec. 4, 2014), <https://www.theverge.com/2014/12/4/7333609/apples-drm-lawsuit-10-years-in-the-making>.

<sup>155</sup> Peter S. Menell, *Economic Analysis of Network Effects and Intellectual Property*, 34 BERKELEY TECH. L.J. 219, 232 (2019).

<sup>156</sup> *Microsoft Corp.*, 253 F.3d at 75.

<sup>157</sup> *Id.*

<sup>158</sup> Modified Final Judgment at 4, *U.S. v. Microsoft Corp.*, No. 98-1232 (D.D.C. Sept. 7, 2006).

<sup>159</sup> Press Release, Consumer Intelligence Research Partners, LLC, *Amazon Prime Hits 90 Million US Members* (Oct. 18, 2017), <https://files.constantcontact.com/150f9af2201/d8e982eb-fcc7-41b4-bd58-eba64185962d.pdf> (stating Amazon Prime shoppers continue to spend on average about \$1,300 per year, compared to about \$700 per year for non-member customers).

<sup>160</sup> Some examples for each of the GAFAM companies include Microsoft: Office 365 and Xbox Live; Apple: Apple Music; Google: YouTube music; Amazon: Amazon Prime.

<sup>161</sup> See discussion *supra* Section II.A.

of the platform, will engage with the new market or service, potentially entrenching the first-mover as the dominant player even if a more appealing competitor enters the market.<sup>162</sup>

A regularly used example to detail the effect of the first-mover advantage was the inability of the Dvorak keyboard to displace the QWERTY keyboard layout.<sup>163</sup> Although research shows that the Dvorak keyboard can improve typing speed upwards of five percent,<sup>164</sup> such a marginal improvement, especially when considering a new keyboard layout has to be learned and memorized, is not enough to displace the first-mover advantage that the QWERTY keyboard obtained.

Platform owners, through design, can also manipulate the emotions of their users to entrench them onto the platform. In combination with network effects, the features on a platform can create a social cost for users. Matthew Yglesias of Vox.com has described that not using the GAFAM platforms can inconvenience people since they will have to use alternative means to communicate with other users.<sup>165</sup> This situation creates a Hobbesian choice; use the platform or be socially isolated.

One recent study showed that Americans look at their phones on average 52 times a day – with 18 to 24-year-olds looking 86 times a day.<sup>166</sup> It is essential to understand that the platform owners create these addictive qualities and are incentivized to implement them to maximize user engagement, retention, and data collection. The action of pulling down a screen to refresh a user's feed is emblematic of a slot machine.<sup>167</sup> The presence of an infinite scroll – the feature of continuously loading content on a single page as the user continues to scroll down the page instead of spreading it across a series of pages – siphons users into a bottomless void unaware of how much time has passed as is similar to a casino without any windows or clocks to obtain a sense of time.<sup>168</sup> The infamous first president

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<sup>162</sup> Devlin, *supra* note 52, at 183 (“The major consequence is a potentially significant ‘first mover advantage’ in network markets that ultimately gives rise to the concern of ‘path dependence.’”); *see also* COLLYER, *supra* note 12, at 7 (“a multi-sided market with network externalities may be prone to tipping and authorities may wish to intervene earlier.”); Shelanski & Sidak, *supra* note 121, at 8 (“[An] early lead can have a decisive effect on the market’s structure[.]”).

<sup>163</sup> *See* Devlin, *supra* note 52, at 183–84 (“The central example offered by proponents of this view is the QWERTY keyboard, which continues to command the market notwithstanding the historical presence of a (supposedly) superior alternative in the form of one Dvorak keyboard”).

<sup>164</sup> Donald A. Norman & Diane Fisher, *Why Alphabetic Keyboards Are Not Easy to Use: Keyboard Layout Doesn’t Much Matter*, HUM. FACTORS: J. HUM. FACTORS AND ERGONOMICS SOC’Y (1982).

<sup>165</sup> Vox, *Why You Keep Using Facebook, Even if You Hate It*, YOUTUBE (Apr. 10, 2018), available at <https://youtu.be/2rnNHt84iRE?t=1m11s>.

<sup>166</sup> DELOITTE, 2018 GLOBAL MOBILE CONSUMER SURVEY: US EDITION 3 (2018).

<sup>167</sup> Nir Eyal, *Infinite Scroll: The Web’s Slot Machine*, PSYCHOLOGY TODAY (Aug. 29, 2012), <https://www.psychologytoday.com/us/blog/automatic-you/201208/infinite-scroll-the-webs-slot-machine>.

<sup>168</sup> CHAUNCEY NEYMAN, A SURVEY OF ADDICTIVE SOFTWARE DESIGN 3 (California Polytechnic State University, 2017) (defining infinite scrolling as “the idea of loading content on a single page instead of spreading it across a series of pages.”); Lazaros Gonidis & Dinkar Sharma, *Internet and Facebook*

of Facebook and co-founder of the illegal music-sharing service Napster, Sean Parker, stated that Facebook was designed to be addictive with the goal of answering "[h]ow do we consume as much of your time and conscious attention as possible[?]"<sup>169</sup>

Even the presence of privacy options for the user to filter what they see while using the platform creates an illusion of control,<sup>170</sup> explicitly implemented to increase user engagement and continuous use of the platform.<sup>171</sup>

The presence of these effects establishes that the often-cited phrase "competition is one click away" for internet platforms, as asserted by Google and echoed by Judge Robert Bork, the architect of our current antitrust paradigm, the consumer welfare standard,<sup>172</sup> does not accurately portray the reality users experience.<sup>173</sup>

### B. Data Collection and Utilization

Platforms can simultaneously exploit path dependencies and network effects to improve the provided service by collecting as much data as possible from users. Data collection and utilization compounds the ability of platforms to lock-in users. In fact, access to data is the "basis of competition" for platforms.<sup>174</sup>

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*Related Images Affect the Perception of Time*, 47 J. OF APPLIED SOC. PSYCHOL. 224 (2017) (finding evidence that Internet and Facebook related stimuli can distort time perception due to attention and arousal related mechanisms).

<sup>169</sup> Garrett Sloane, *Sean Parker Says Facebook Was Designed to be Addictive*, AD AGE (Nov. 9, 2017), <https://adage.com/article/digital/sean-parker-worries-facebook-rotting-children-s-brains/311238>.

<sup>170</sup> "Illusion of control is the tendency for human beings to believe they can control or at least influence outcomes that they demonstrably have no influence over." *The Illusion of Control*, SCIENCE DAILY, [https://www.sciencedaily.com/terms/illusion\\_of\\_control.htm](https://www.sciencedaily.com/terms/illusion_of_control.htm) (last visited Jan. 26, 2020).

<sup>171</sup> KRISTEN VACCARO, ET AL., *THE ILLUSION OF CONTROL: PLACEBO EFFECTS OF CONTROL SETTINGS 1* (Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, Paper No. 16, 2018), available at [http://social.cs.uiuc.edu/papers/vaccaro-CHI18\\_control.pdf](http://social.cs.uiuc.edu/papers/vaccaro-CHI18_control.pdf).

<sup>172</sup> Bork notoriously stated that the "only legitimate goal of antitrust is the maximization of consumer welfare." ROBERT BORK, *THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF* 7 (1978); see also Carl T. Bogus, *The New Road to Serfdom: The Curse of Bigness and the Failure of Antitrust*, 49 U. MICH. J.L. REFORM 1, 16 n.74 (2015) (stating that it is difficult to overstate the importance of The Antitrust Paradox).

<sup>173</sup> *Facts About Google and Competition*, GOOGLE <https://web.archive.org/web/20140221191531/http://www.google.com/competition/qa.html#gsection3> (last visited Jan. 30, 2020); see also Robert H. Bork, *Antitrust and Google*, CHI. TRIB. (Apr. 6, 2012), <https://www.chicagotribune.com/opinion/ct-xpm-2012-04-06-ct-perspec-0405-bork-20120406-story.html> (stating when using search engines like Google consumers "can switch to an alternative search engine with a click.>").

<sup>174</sup> Maurice E. Stucke & Allen P. Grunes, *No Mistake About It: The Important Role of Antitrust in the Era of Big Data*, ANTITRUST SOURCE 1 (Apr. 28, 2015), <https://ssrn.com/abstract=2600051> (citing James Maniyika, et al., *Big Data: The Next Frontier for Innovation, Competition, and Productivity*, MCKINSEY GLOBAL INST. (May 2011), [http://www.mckinsey.com/insights/business\\_technology/big\\_data\\_the\\_next\\_frontier\\_for\\_innovation](http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation)); Randy Bean, *How Companies Say They're Using Big Data*, HARV. BUS. REV. (Apr. 28, 2017), <https://hbr.org/2017/04/how-companies-say-theyre-using-big-data> (detailing the ways companies are using their data including increasing the speed of the corporation's current business efforts).



One of the signature aspects of user data and the reason for acquiring as much user data as possible, even from seemingly innocuous sources,<sup>175</sup> is that correlations about platform users can be made by algorithms from the collected data.<sup>176</sup> With sufficient data, platform algorithms can make such accurate predictions about a user's interests that *The Atlantic* staff writer Franklin Foer states, "data provides an x-ray of the soul."<sup>177</sup>

For example, a report released by the Barilla Center for Food and Nutrition stated: "culture codifies the rules of a prudent diet with a complex series of taboos, rituals, recipes, rules and traditions."<sup>178</sup> Grocery purchase data, therefore, can provide an essential understanding of one's culture. Thus, it is not far-fetched for a platform to be able to infer someone's ethnicity once they have obtained a user's grocery shopping data.

Furthermore, access to user data can also benefit services that only relate to each other tangentially. For example, consider that Facebook can extract location data from uploaded user photos.<sup>179</sup> From that location data, Facebook could recommend more precise event search results or make posts visible to users that are relevant to their location.

Google,<sup>180</sup> Apple,<sup>181</sup> Facebook,<sup>182</sup> Amazon,<sup>183</sup> and Microsoft,<sup>184</sup> collect data across almost all their services. In some cases, because of their near

<sup>175</sup> Consider Google's acquisition of Fitbit for health data, or their acquisition of AGAT for restaurant data to compete against Yelp; Microsoft's acquisition of LinkedIn to compete with Google and Facebook.

<sup>176</sup> BRUCE SCHNEIER, *DATA AND GOLIATH: THE HIDDEN BATTLES TO COLLECT YOUR DATA AND CONTROL YOUR WORLD* 34 (2015) (detailing how grocery purchases can imply ethnicity); BARTLETT, *supra* note 27, at loc. 51 (stating that, "Facebook...can take your music preferences or your book preferences and extract from this seemingly innocent information very accurate predictions about your religiosity, leadership potential, political views, personality and so on.").

<sup>177</sup> FRANKLIN FOER, *WORLD WITHOUT MIND: THE EXISTENTIAL THREAT OF BIG TECH* 201 (2017).

<sup>178</sup> BARILLA CTR. FOR FOOD & NUTRITION, *THE CULTURAL DIMENSION OF FOOD* 8 (2009), available at [https://web.archive.org/web/20190103174559/https://www.unscn.org/web/archives\\_resources/files/the\\_cultural\\_dimension\\_of\\_food.pdf](https://web.archive.org/web/20190103174559/https://www.unscn.org/web/archives_resources/files/the_cultural_dimension_of_food.pdf).

<sup>179</sup> Typically, through the metadata embedded in the phone when it is taken by the user. Metadata is the "information describing the history, tracking, or management of an electronic document," such as pictures. Mike Breen, *Nothing to Hide: Why Metadata Should Be Presumed Relevant*, 56 U. KAN. L. REV. 439, 439 (2008).

<sup>180</sup> *Making it Easier to Understand What Data We Collect and Why*, GOOGLE, <https://privacy.google.com/your-data.html> (last visited Feb. 1, 2020) (listing the data Google collects).

<sup>181</sup> *Privacy Policy*, APPLE, <https://www.apple.com/legal/privacy/en-ww/> (last visited Feb. 1, 2020) (Apple's Privacy Policy listing the data collected from users).

<sup>182</sup> Aaron Brown, *This is Exactly what Facebook Knows About YOU, and it's Terrifying*, EXPRESS (Aug. 25, 2016) <https://www.express.co.uk/life-style/science-technology/703728/Facebook-Targeted-Advertising-Ads-Track-Online> (listing 98 data points Facebook collects).

<sup>183</sup> Jennifer Wills, *7 Ways Amazon Uses Big Data to Stalk You*, INVESTOPEDIA (Updated Oct. 20, 2018), <https://www.investopedia.com/articles/insights/090716/7-ways-amazon-uses-big-data-stalk-you-amzn.asp> (detailing some of the data Amazon collects); Tom Simonite, *Alexa Gives Amazon a Powerful Data Advantage*, MIT TECH. REV. (Jan. 18, 2017), <https://www.technologyreview.com/s/603380/alexa-gives-amazon-a-powerful-data-advantage/> (detailing what type of data Amazon will be able to collect with its voice assistant Alexa).

<sup>184</sup> *Windows 10, Version 1703 Diagnostic Data*, MICROSOFT (Apr. 5, 2017), <http://web.archive.org/web/20170722175209/https://docs.microsoft.com/en-us/windows/configuration/windows-diagnostic-data> (detailing the information Microsoft collects from

omnipresence and unavoidability over internet and computer services, the GAFAM companies are capable of collecting data even when consumers are not directly using any of their services.<sup>185</sup> For example, when a user visits a website where a third-party has integrated Facebook's Like button or other Facebook API, the site shares information with Facebook such as the user's IP address, operating system, web browser, and web history through access to the user's cookies stored in her web browser.<sup>186</sup> Since over 8.4 million sites have integrated at least some of Facebook's API into their webpages, it is practically impossible to avoid providing data to Facebook.<sup>187</sup> In 2016, it was revealed that Facebook could analyze and collect at least 52,000 personal attributes of its users based on their web activity.<sup>188</sup>

Google also engages in ruthless data collection. A 2018 report by Digital Content Next, a trade association for online publishers, detailed the pervasiveness of Google's data collection. The report bluntly concluded that<sup>189</sup>:

While using an iOS device, if a user decides to forgo the use of any Google product (i.e. no Android, no Chrome, no Google applications), and visits only non-Google webpages, the number of times data is communicated to Google servers still remains surprisingly high.

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its services).

<sup>185</sup> *Cookies & Other Storage Technologies*, FACEBOOK, <https://www.facebook.com/policies/cookies/> (last visited Feb. 1, 2020); Many other websites engage in these sorts of practices as well. See Ryan Dube, *5 Private Things Websites Learn About You Without Your Knowledge*, MAKE USE OF (May 11, 2018) <https://www.makeuseof.com/tag/what-websites-learn-about-you/> (detailing how websites passively collect user information such as a user's location, system information, and demographics); Allen St. John, *How Facebook Tracks You, Even When You're Not on Facebook*, CONSUMER REP. (Apr. 11, 2018), <https://www.consumerreports.org/privacy/how-facebook-tracks-you-even-when-youre-not-on-facebook/>; Yinzhi Cao, et al., *(Cross-)Browser Fingerprinting via OS and Hardware Level Features*, INTERNET SOC'Y (2017), available at [http://yinzhicao.org/TrackingFree/crossbrowsertracking\\_NDSS17.pdf](http://yinzhicao.org/TrackingFree/crossbrowsertracking_NDSS17.pdf) (detailing how users can be tracked even across multiple web browsers).

<sup>186</sup> David Baser, *Hard Questions: What Data Does Facebook Collect When I'm Not Using Facebook, and Why?*, FACEBOOK (Apr. 16, 2018), <https://about.fb.com/news/2018/04/data-off-facebook/> [<https://web.archive.org/web/20200104063824/https://about.fb.com/news/2018/04/data-off-facebook/>].

<sup>187</sup> *Facebook, Social Media Privacy, and the Use and Abuse of Data: Hearing Before the S. Comm. on Commerce, Sci., & Transp.*, 115 Cong. 158 (2018) (post hearing questions from Chairman John Thune), <https://www.commerce.senate.gov/services/files/9D8E069D-2670-4530-BCDC-D3A63A8831C4> [<https://web.archive.org/web/20200103163233/https://www.commerce.senate.gov/services/files/9D8E069D-2670-4530-BCDC-D3A63A8831C4>].

<sup>188</sup> Julia Angwin, et al., *Facebook Doesn't Tell Users Everything it Really Knows About Them*, PROPUBLICA (Dec. 27, 2016), <https://www.propublica.org/article/facebook-doesnt-tell-users-everything-it-really-knows-about-them>.

<sup>189</sup> Douglas C. Schmidt, *Google Data Collection*, DIGITAL CONTENT NEXT, at 4, (Aug. 15, 2018), available at <https://digitalcontentnext.org/wp-content/uploads/2018/08/DCN-Google-Data-Collection-Paper.pdf> [<https://web.archive.org/web/20200103161138/https://digitalcontentnext.org/wp-content/uploads/2018/08/DCN-Google-Data-Collection-Paper.pdf>].

The value of data is not the only consideration concerning data collection; how frequently the data is collected is important as well. The data collected by GAFAM companies is so continuous and passive, users understandably do not recognize that over time they are providing data to GAFAM or, in some cases, even when users do not want to be tracked by the platform.<sup>190</sup> The frequency of Google's data collection allows them to accurately predict what method of transportation is being used (including whether the user is walking or running).<sup>191</sup> The frequency (and presumably also the breadth) of data collection is so significant that former Google CEO Eric Schmidt stated, "[Google] know[s] where you are. [W]here you've been. [And] can more or less know what you're thinking about."<sup>192</sup>

Antitrust scholars have noted that the value of data is short-lived.<sup>193</sup> However, data can be combined with other sources and collected more frequently to drastically improve its utility and the operations of the platform. In the case of Google Search, the service provides more relevant search results and advertisements to users through maintaining a user's search history.<sup>194</sup>

However, collected and stored data also allows platforms to individually tailor customer preferences for the goods and services they provide, which incentivizes consumers to use the platform repeatedly.<sup>195</sup> Technology journalist Molly Wood stated that "[a]s [users] build up a history of clicks and queries, Google will start delivering search results tailored to what it

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<sup>190</sup> Ryan Nakashima, *Google Tracks Your Movements, Like It or Not*, AP (Aug. 13, 2018), <https://www.apnews.com/828aefab64d4411bac257a07c1af0ecb/AP-Exclusive:-Google-tracks-your-movements,-like-it-or-not>; Kashmir Hill, *Turning Off Facebook Location Tracking Doesn't Stop It From Tracking Your Location*, GIZMODO (Dec. 18, 2018, 12:20 PM), <https://gizmodo.com/turning-off-facebook-location-tracking-doesnt-stop-it-f-1831149148>; Mark Bergen & Jennifer Surane, *Google and Mastercard Cut a Secret Ad Deal to Track Retail Sales*, BLOOMBERG (Aug. 31, 2018), <https://www.bloomberg.com/news/articles/2018-08-30/google-and-mastercard-cut-a-secret-ad-deal-to-track-retail-sales>.

<sup>191</sup> Schmidt, *supra* note 189, at 12–13.

<sup>192</sup> Nick Saint, *Google CEO: "We Know Where You Are. We Know Where You've Been. We Can More or Less Know What You're Thinking About."*, BUSINESS INSIDER (Oct. 4, 2010), <https://www.businessinsider.com/eric-schmidt-we-know-where-you-are-we-know-where-youve-been-we-can-more-or-less-know-what-youre-thinking-about-2010-10>.

<sup>193</sup> D. Daniel Sokol & Roisin Comerford, *Antitrust and Regulating Big Data*, 23 GEO. MASON L. REV. 1129, 1138 (2016), <https://ssrn.com/abstract=2834611>.

<sup>194</sup> Robert Brady, *How Google Collects Data to Personalize Ads*, PRACTICAL ECOMMERCE (May 23, 2019), <https://www.practicalecommerce.com/how-google-collects-data-to-personalize-ads> (detailing the array of user information Google collects and integrates for its advertisements).

<sup>195</sup> Molly Wood, *Sweeping Away a Search History*, N.Y. TIMES (Apr. 2, 2014), <https://www.nytimes.com/2014/04/03/technology/personaltech/sweeping-away-a-search-history.html>. This author acknowledges that there is also evidence that users themselves also seek to create their own echo chambers. *See, e.g.,* Michela Del Vicario et al., *The Spreading of Misinformation Online*, 113 PROC. NAT'L ACAD. SCI. U.S. 554 (2016), <https://www.pnas.org/content/early/2016/01/02/1517441113>; Christopher A. Bail, et al., *Exposure to Opposing Views on Social Media Can Increase Polarization*, 115 PROC. NAT'L ACAD. SCI. U.S. 9216 (2018), <https://www.pnas.org/content/115/37/9216.full>; Eytan Bakshy, et al., *Exposure to Ideologically Diverse News and Opinion on Facebook*, SCIENCE MAG. (2015), available at [https://web.archive.org/web/20170723200930/http://cn.cnstudiodev.com/uploads/docume nt\\_attachment/attachment/681/science\\_facebook\\_filter\\_bubble\\_may2015.pdf](https://web.archive.org/web/20170723200930/http://cn.cnstudiodev.com/uploads/docume nt_attachment/attachment/681/science_facebook_filter_bubble_may2015.pdf) (Facebook's own study).

thinks you want to see. Consequently, your results start to reinforce your worldview or even start to be less accurate, as you see only sites like those you have clicked on before.”<sup>196</sup>

The GAFAM companies tout that the data they collect allows them to understand customer behavior and improve their products, services, advertising, and to improve the relevancy of results they provide (known as trial-and-error learning).<sup>197</sup> Google personalizes its search results on its search engine or when recommending videos on YouTube.<sup>198</sup> Apple makes recommendations for applications in its App Store and music for its Apple Music service.<sup>199</sup> Facebook’s algorithm recommends posts to show and suggests posts users might send to their connections on the platform.<sup>200</sup> Facebook uses its signature Like button to “promote ‘Related Posts’ in the news feeds of the user’s friends,” providing users knowledge that what they are viewing was affirmatively<sup>201</sup> recommended by others.<sup>202</sup> Amazon recommends new products for users to purchase under the “Frequently Bought Together” tagline and has integrated product recommendations “into nearly every part of the purchasing process from product discovery to checkout.”<sup>203</sup> Platforms typically present these personalized recommendations to the users in the form of advertising, which encourages users to either click on the advertisement or at least consider its content.

Personalization does not only apply to media recommendations; it can even extend to the prices for goods and services. One author states, “as the amount of information on consumers increases... [f]irms will come to know so much about their customers that they will be able to predict with little

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<sup>196</sup> Wood, *supra* note 195.

<sup>197</sup> Stucke & Ezrachi, *supra* note 42, at 82–83.

<sup>198</sup> *Manage Your Recommendations and Search Results*, YOUTUBE <https://support.google.com/youtube/answer/6342839?hl=en> (last visited Feb. 21, 2020).

<sup>199</sup> *iTunes Store & Privacy*, APPLE (Dec. 27, 2019) <https://support.apple.com/en-us/HT208477> (detailing Apple’s App Store personalization), *Personalize Apple Music*, APPLE, available at <https://web.archive.org/web/20190505212530/https://support.apple.com/en-us/HT204842> (detailing Apple’s personalization with their Apple Music service).

<sup>200</sup> *People You May Know*, FACEBOOK, <https://www.facebook.com/help/www/336320879782850> (last visited Feb. 21, 2020) (detailing Facebook’s friends recommendation); Ken Yeung, *Facebook Rolls Out Recommendation Feature That Lets Your Friends Tell You What to Do*, VENTUREBEAT (Oct. 19, 2016), <https://venturebeat.com/2016/10/19/facebook-rolls-out-recommendation-feature-that-lets-your-friends-tell-you-what-to-do/> (detailing Facebook post recommendations); Wagner, *supra* note 65 (Facebook post recommendations); JP Mangalindan, *Amazon’s Recommendation Secret*, FORTUNE (July 30, 2012), <http://fortune.com/2012/07/30/amazons-recommendation-secret/>.

<sup>201</sup> Facebook uses many different variables to determine which content is ultimately displayed to the user.

<sup>202</sup> Anthony Wing Kosner, *Facebook Is Recycling Your Likes to Promote Stories You’ve Never Seen to All Your Friends*, FORBES (Jan. 21, 2013), <https://www.forbes.com/sites/anthonykosner/2013/01/21/facebook-is-recycling-your-likes-to-promote-stories-youve-never-seen-to-all-your-friends/#541947d917aa>.

<sup>203</sup> *Improve your Recommendations*, AMAZON, <https://www.amazon.com/gp/help/customer/display.html?ie=UTF8&nodeId=13316081> (last visited Feb. 21, 2020).

error the maximum price that each [customer] is will[ing] to pay for any given product at any given moment.<sup>204</sup>

The GAFAM companies have been able to utilize the data they collect with unparalleled success – generating billions of dollars in revenue.<sup>205</sup> Surveys have shown that these recommendations are effective for driving additional use of the platform. Pew Research found that “some 81% of YouTube users say they at least occasionally watch the videos that Google’s recommendation algorithm suggests, including 15% who say they do this regularly[.]”<sup>206</sup> A YouTube executive stated that 70 percent of the time people spend watching videos on the site are from recommended videos.<sup>207</sup> For Amazon, 35 percent of all consumer purchases are made from recommendations.<sup>208</sup>

Since enhancing predictive capabilities and recommendations allows platform owners to create incentives for consumers to use the service repeatedly, the inverse is also true. The practice also disincentivizes consumers to use other platforms, which can be detrimental to the competitive process. Not using an alternative platform is detrimental to the competitive process because the consumer would have to use the alternative platform a sufficient number of times or for a sufficient length of time for the platform owner to obtain an adequate amount of data from the user and from other users to have a chance of providing an equivalent user experience as the dominant platform. The feature of tailored user preferences essentially becomes unavailable to the newer and possibly better or cheaper platform

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<sup>204</sup> Ramsi A. Woodcock, *Big Data, Price Discrimination, and Antitrust*, 68 HASTINGS L.J. 1371, 1374–75 (2017).

<sup>205</sup> Google makes \$26 billion from digital advertising. Hamza Shaban, *Google Parent Alphabet Reports Soaring Ad Revenue, Despite YouTube Backlash*, WASH. POST (Feb. 1, 2018), <https://www.washingtonpost.com/news/the-switch/wp/2018/02/01/google-parent-alphabet-reports-soaring-ad-revenue-despite-youtube-backlash/> (Q4 2017 data). Apple makes \$500 million from advertising. Lauren Feiner, *Apple’s App Store Ads Could be a \$2 Billion Business by 2020, Bernstein Analyst Predicts*, CNBC (Oct. 22, 2018) (<https://www.cnbc.com/2018/10/22/apple-app-store-ads-to-be-2-billion-business-by-2020.html>). Facebook makes \$12 billion from digital advertising. Emil Protalinski, *Over 90% of Facebook’s Advertising Revenue Now Comes From Mobile*, VENTUREBEAT (Apr. 25, 2018), <https://venturebeat.com/2018/04/25/over-90-of-facebooks-advertising-revenue-now-comes-from-mobile/> (Q1 2018 data). Amazon makes \$2 billion from advertising. Ginny Marvin, *Analysts Say Amazon’s Advertising Business Will Surpass AWS by 2021*, MARKETING LAND (Aug. 14, 2018), (<https://marketingland.com/analysts-say-amazons-advertising-business-will-surpass-aws-by-2021-245983>). Microsoft makes \$7 billion from search advertising. Shanghong Liu, *Microsoft Corporation’s Advertising Revenue in Fiscal Years 2016-2019*, STATISTA (last visited Jan. 6, 2019), <https://www-statista-com.ezproxy.lib.uconn.edu/statistics/725388/microsoft-corporation-ad-revenue/>.

<sup>206</sup> Aaron Smith, et al., *Many Turn to YouTube for Children’s Content, News, How-To Lessons*, PEW RESEARCH CENTER (Nov. 7, 2018), <http://www.pewinternet.org/2018/11/07/many-turn-to-youtube-for-childrens-content-news-how-to-lessons/>.

<sup>207</sup> Joan E. Solsman, *YouTube’s AI is the Puppet Master Over Most of What You Watch*, CNET (Jan. 10, 2018), <https://www.cnet.com/news/youtube-ces-2018-neal-mohan/>.

<sup>208</sup> Ian MacKenzie et al., *How Retailers Can Keep Up with Consumers*, MCKINSEY & COMPANY (Oct. 2013), <https://www.mckinsey.com/industries/retail/our-insights/how-retailers-can-keep-up-with-consumers>.

created by competitors.<sup>209</sup> In essence, the ownership, collection, and utilization of the data is the barrier to entry for many prospective platform companies looking to pose a competitive threat against the dominant GAFAM platforms. Google's Chief Scientist acknowledged the importance of the acquisition and breadth of data by stating: "[Google does not] have better algorithms than everyone else; [Google] just [has] more data."<sup>210</sup>

Recently journalists have analogized the importance of data to oil. That comparison is insufficient.<sup>211</sup> Franklin Foer explains in his book, *World Without a Mind*, "Oil is a finite resource; data is infinitely renewable. It continuously allows the new monopolists to conduct experiments to master the anticipation of trends, to better understand customers, to build superior algorithms."<sup>212</sup> Access to data is perhaps the most essential input to compete in multisided markets.<sup>213</sup>

### III. EXPLOITATIVE CONDUCT

Exploitative Conduct is the efforts and the ability of a multisided platform to leverage their existing user base and platform functionality to suppress competition within and across markets as well as maintain and enhance their market power. Exploitative Conduct exists through Leveraging and Gatekeeper/Police Power.

#### A. Leveraging

Locking-in users, along with the benefits from harvesting user data and reaping the benefits from network effects, creates an incentive for platforms to expand into as many markets as possible and build off their success in one market to another. This process is called leveraging.<sup>214</sup> While monopoly

<sup>209</sup> See generally Sarah Green Carmichael, *Understanding Digital Strategy*, HARV. BUS. REV. (Aug. 28, 2018), <https://hbr.org/ideacast/2018/08/understanding-digital-strategy.html> (acknowledging network effects the fact that even if a "better or cheaper" service is created, network effects can inhibit the ability to topple a company that has already dominated the market or as Gupta terms it the "big keeps getting bigger.").

<sup>210</sup> TECH STRATEGY, "We Don't Have Better Algorithms than Anyone Else. We Just Have More Data.," ECPM BLOG (Mar. 21, 2010), <https://ecpmblog.wordpress.com/2010/03/21/we-dont-have-better-algorithms-than-anyone-else-we-just-have-more-data/>.

<sup>211</sup> *The World's Most Valuable Resource is No Longer Oil, but Data*, ECONOMIST (May 6, 2017), <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>.

<sup>212</sup> FOER, *supra* note 177, at 187.

<sup>213</sup> See Ania Thiemann & Pedro Gonzaga, Organisation for Economic Co-operation and Development [OECD], *Big Data: Bringing Competition Policy to the Digital Era*, at 21, DAF/COMP(2016)14 (Oct. 27, 2016), available at [https://one.oecd.org/document/DAF/COMP\(2016\)14/en/pdf](https://one.oecd.org/document/DAF/COMP(2016)14/en/pdf) (stating, "Some practitioners are currently discussing whether data may be considered an essential input in some markets, without which companies cannot compete. It is clear that in some cases data and, more specifically, the knowledge extracted from the data are a source of a significant competitive advantage.").

<sup>214</sup> See *Times-Picayune Publ'g. Co., v. United States*, 345 U.S. 594, 611 (1953) (stating, "monopolistic leveraging" occurs when "a seller exploits his dominant position in one market to expand

power in the primary market can be present, leveraging also indicates the ability and level of difficulty for a company to enter and become successful in a tangential market<sup>215</sup> either organically (e.g., through investment and internal development) or inorganically (e.g., through acquisition).<sup>216</sup>

The GAFAM companies have utilized their dominant market positions to leverage their operations into countless markets.<sup>217</sup> Technology journalists have noticed the significant overlap there is between the GAFAM companies and appear as though they are a singular company pursuing the same goals.<sup>218</sup> Digital platforms can easily leverage themselves into adjacent markets. The economist David Evans has stated that “[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases.”<sup>219</sup>

Leveraging into various, seemingly irrelevant, markets provides multiple benefits for dominant platforms. First, and perhaps most intuitively, leveraging into multiple markets can increase the streams of revenue and data available to the platform. This practice can allow a platform to withstand lengthy and significant financial losses in the newly entered market.<sup>220</sup> Financial losses are sustained by profits generated in other markets where the GAFAM companies are members long enough to displace or supplant existing competition in the new market to become the

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his empire into the next”). The ability to leverage is different, although related to, tying. With tying, market power in the first market must be present.; 2 Federal Antitrust Law § 15.25 (2018) (citing *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2 (1984)). Antitrust practitioners have recognized that regulated monopolies seek to extend their dominance to unregulated industries. Baxter’s Law, which states: “[R]egulated monopolies have the incentive and opportunity to monopolize related markets in which their monopolized service is an input. . .”; Paul L. Joskow & Roger G. Noll, *The Bell Doctrine: Applications in Telecommunications, Electricity, and Other Network Industries*, 51 STAN. L. REV. 1249, 1249–50 (1999).

<sup>215</sup> Which includes vertical markets or conglomerate markets. See *Smith-Victor Corp. v. Sylvania Elec. Prods., Inc.*, 242 F. Supp. 315, 317 (N.D. Ill. 1965) (“Vertical combinations . . . join complementary facilities by integrating different stages in the production or distribution process.”); see also *United States v. Gen. Dynamics Corp.*, 258 F. Supp. 36, 56 (S.D.N.Y. 1966) (defining conglomerate mergers as “firms [that] are neither competitors nor potential or actual customers or suppliers of each other”).

<sup>216</sup> Daniel L. Rubinfeld, *Antitrust Enforcement in Dynamic Network Industries*, 43 ANTITRUST BULL. 859, 877 (1998) (stating, “leveraging occurs when a firm uses its advantage from operating in one market to gain an advantage in selling into one or more other, generally related markets”).

<sup>217</sup> See *infra* Appendix A; see also Lina M. Khan, *Amazon’s Antitrust Paradox*, 126 YALE L.J. 710 (2017) (detailing many of the markets and services Amazon is in and provides); *About, FACEBOOK*, <https://newsroom.fb.com/products/> (last visited Mar. 12, 2020) (detailing the products Facebook offers); *List of Microsoft Software*, WIKIPEDIA, [https://en.wikipedia.org/wiki/List\\_of\\_Microsoft\\_software](https://en.wikipedia.org/wiki/List_of_Microsoft_software) (last visited Jan. 26, 2020); *Timeline of Apple Inc. Products*, WIKIPEDIA, [https://en.wikipedia.org/wiki/Timeline\\_of\\_Apple\\_Inc.\\_products](https://en.wikipedia.org/wiki/Timeline_of_Apple_Inc._products) (last visited Jan. 26, 2020).

<sup>218</sup> Lauren Goode & Dieter Bohn, *2015 Was the Year Big Tech Companies All Started to Look the Same*, VERGE (Dec. 28, 2015), <https://www.theverge.com/2015/12/28/10645500/2015-tech-year-review-conversation> (detailing how many of the GAFAM companies are all releasing the same products and services such as laptops and tablets).

<sup>219</sup> Evans, *supra* note 18, at 16 (stating, “[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases.”).

<sup>220</sup> Khan, *supra* note 217, at 747.

dominant provider.<sup>221</sup> Google actively employs this strategy with precision. Acknowledging this point, investor Roger McNamee stated, “Google created or acquired completing products in maps, photos, videos, and productivity[.]”<sup>222</sup> Amazon has even recently entered the tire,<sup>223</sup> microwave,<sup>224</sup> mattress,<sup>225</sup> and food industries.<sup>226</sup> Facebook has also recently entered the furniture market.<sup>227</sup> And now, all of the GAFAM companies are fiercely trying to enter the health care market<sup>228</sup> and banking/financial services sector<sup>229</sup> due to the types of data and potential revenue they will acquire, particularly when they integrate new products and services into their ecosystem.<sup>230</sup>

<sup>221</sup> In some cases, this practice is funded by investors. *See Id.* at 786–88 (stating “While investors have unambiguously endorsed and funded online platforms’ quest to bleed money in their race to draw users, antitrust doctrine fails to acknowledge this strategy.”).

<sup>222</sup> ROGER MCNAMEE, ZUCKED: WAKING UP TO THE FACEBOOK CATASTROPHE 39 (2019).

<sup>223</sup> Tracy Rucinski, *Sears Shares Soar on Amazon Tie-Up; CEO Says Still Not Over ‘Hump’*, REUTERS (May 9, 2018), <https://ca.reuters.com/article/technologyNews/idCAKBN1IA2XZ-OCATC>.

<sup>224</sup> Laura Stevens, *Amazon’s New Microwave: ‘Alexa, Please Defrost My Chicken’; New Offerings Include Alexa-Enabled Chip that Manufacturers Can Install to Control Basic Appliances*, WALL ST. J. (Sept. 20, 2018), <https://www.wsj.com/articles/amazons-new-microwave-alexa-please-defrost-my-chicken-1537469765>.

<sup>225</sup> Ry Crist, *Look out, Leesa: Amazon Gets Into the Bed-in-a-Box Business*, CNET (Oct. 4, 2018), <https://www.cnet.com/news/look-out-leesa-amazon-gets-into-the-bed-in-a-box-business/>.

<sup>226</sup> Nick Wingfield & Michael K. de la Merced, *Amazon to Buy Whole Foods for \$13.4 Billion*, N.Y. TIMES (June 16, 2017), <https://www.nytimes.com/2017/06/16/business/dealbook/amazon-whole-foods.html>.

<sup>227</sup> Sam Shead, *Facebook Snaps Up AI Shopping Startup GrokStyle*, FORBES (Feb. 8, 2019), <https://www.forbes.com/sites/samshead/2019/02/08/facebook-snaps-up-ai-startup-grokstyle/#46a8fbc01c7b>.

<sup>228</sup> *Where Big Tech Is Placing Bets in Healthcare*, CBINSIGHTS (Sept. 13, 2018), <https://www.cbinsights.com/research/top-tech-companies-healthcare-investments-acquisitions/> (detailing GAFAM investments in healthcare); Julie Spitzer, *Big Tech’s Big Goals for Healthcare*, BECKER’S HOSPITAL REV. (June 20, 2018), <https://www.beckershospitalreview.com/healthcare-information-technology/big-tech-s-big-goals-for-healthcare.html> (detailing which part of the health care industry Microsoft, Apple, Amazon, and Google can disrupt and succeed in); Press release, Fitbit, Inc., *Fitbit to Be Acquired by Google* (Nov. 1, 2019), <https://investor.fitbit.com/press/press-releases/press-release-details/2019/Fitbit-to-Be-Acquired-by-Google/>; Rob Copeland, *Google’s ‘Project Nightingale’ Gathers Personal Health Data on Millions of Americans*, WALL ST. J. (Nov. 11, 2019), <https://www.wsj.com/articles/google-s-secret-project-nightingale-gathers-personal-health-data-on-millions-of-americans-11573496790> (detailing Google’s partnership with Ascension, one of U.S.’s largest health-care systems, to obtain data related to “lab results, doctor diagnoses and hospitalization records, among other categories, and amounts to a complete health history, including patient names and dates of birth.”)

<sup>229</sup> Emily Flitter & Jack Nicas, *Goldman Sachs and Apple Plan to Offer a New Credit Card*, N.Y. TIMES (May 10, 2018), <https://www.nytimes.com/2018/05/10/business/apple-goldman-sachs-credit-card.html> (Apple Card); Andrew Morse, *Here’s What You Need to Know About Facebook’s Controversial Libra Cryptocurrency*, CNET (Oct. 24, 2019), <https://www.cnet.com/news/heres-what-you-need-to-know-about-facebooks-controversial-libra-cryptocurrency/> (Facebook Libra); Peter Rudegeair & Liz Hoffman, *Next in Google’s Quest for Consumer Dominance: Banking*, WALL ST. J. (Nov. 13, 2019), <https://www.wsj.com/articles/next-in-googles-quest-for-consumer-dominancebanking-11573644601> (Google debit cards).

<sup>230</sup> A bizarre example is Amazon integrating their Alexa voice-assistant service with their own AmazonBasics branded microwave. Dieter Bohn, *Amazon’s Alexa-enabled Microwave Hands-On: It*



Multiple data streams can facilitate consumer lock-in effects, market tipping, positive feedback loops, increased accuracy of services, and path dependencies.<sup>231</sup> Multisided platforms can succeed in the tangential markets because most markets the company enters substantially utilizes or at least heavily rely on the same type of resource, such as data servers and user data, which allows companies to integrate all of their established services easily.<sup>232</sup> Thus, when combined with the platform's established services, tangential services can strengthen and entrench the market position of the platform's other services. Consider the integration between Amazon Prime and Twitch. Antitrust scholar Harold Feld has stated that Amazon integrating these two services "does not simply make [Twitch] a better competitor against YouTube in the distinct video streaming market. [The integration of the services] enhances Amazon's overall value and the overall value of its Prime membership, enhancing its dominance in the online shopping market. Similarly, the value of Prime in the online shopping market enhances the value of Amazon's Prime streaming service."<sup>233</sup> Leveraging, thus, similar to network effects, is self-reinforcing.

Integrating multiple data sources can substantially add to a platform's market dominance.<sup>234</sup> The primary business operation by the GAFAM platforms is to integrate their vast repositories of user data from their multiple products and services into what are called "Super Profiles."<sup>235</sup> These super profiles can help hone the predictive capabilities of the technology platforms. In an extreme example, Google's capabilities are so accurate the companies claim they achieve 99 percent accuracy of user website visits.<sup>236</sup>

Leveraging was once considered a violation of the Sherman Act. Speaking in broad terms, the Supreme Court in *United States v. Griffith* stated that the Sherman Act would be a "feeble instrument" if "monopoly

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*Cooks but Does Not Speak*, VERGE (Sept. 20, 2018), <https://www.theverge.com/2018/9/20/17883710/amazon-microwave-hands-on-alexa-smart-features-photos-dash-button>.

<sup>231</sup> See generally Schanzenbach, *supra* note 52.

<sup>232</sup> Evans, *supra* note 18, at 16 (stating, "[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases."); see *supra* Section I.A.

<sup>233</sup> FELD, *supra* note 7, at 93.

<sup>234</sup> MCMANEE, *supra* note 222, at 68 (stating McNamee's 7th law: data sets become geometrically more valuable when you combine them).

<sup>235</sup> Natalia Drozdiak & Jack Nicas, *Google Privacy Policy Change Faces New Scrutiny in EU*, WALL ST. J. (Updated Jan. 24, 2017), <https://www.wsj.com/articles/oracle-expresses-concern-to-eu-over-google-privacy-policy-1485263548>.

<sup>236</sup> GOOGLE: ADWORDS, BRIDGING THE CUSTOMER JOURNEY ACROSS THE PHYSICAL AND DIGITAL WORLDS 4, available at <https://static.googleusercontent.com/media/www.google.com/en/us/adwords/start/marketing-goals/pdf/white-paper-bridging-the-customer-journey.pdf> [<https://web.archive.org/web/20191026192917/https://static.googleusercontent.com/media/www.google.com/en/us/adwords/start/marketing-goals/pdf/white-paper-bridging-the-customer-journey.pdf>]

power [could be] used to beget monopoly.”<sup>237</sup> The Supreme Court in *Griffith* went even further by stating, “monopoly power, however lawfully acquired, to foreclose competition, to gain a competitive advantage, or to destroy a competitor, is unlawful.”<sup>238</sup> Subsequent litigation eventually toned down the viability of leveraging claims.<sup>239</sup>

Despite the Supreme Court’s retrenchment, competition authorities have started to recognize the dangers of dominant internet platforms leveraging into tangential markets by combining multiple sources of data. In 2011, the FTC required Facebook to obtain user consent before making any changes to its data usage practices.<sup>240</sup> Germany’s competition agency, the *Bundeskartellamt*, acted similarly by requiring Facebook to obtain user consent before combining user data across Facebook’s services such as WhatsApp and Instagram.<sup>241</sup> In 2017, the EC found that Google “leveraged its market dominance in general internet search into a separate market, comparison shopping.” The commission subsequently fined Google 2.4 billion euros.<sup>242</sup>

Second, leveraging into multiple markets inhibits the need to adopt unfavorable market practices in the primary market that, without obtaining a sufficient user base, can be detrimental to a platform’s long-run success. Often with the eventual need to turn a profit,<sup>243</sup> adopting unfavorable market practices too early can cause network effects to work in reverse, causing users on both sides of a platform to exponentially leave.<sup>244</sup> A notable instance of the consequences of adopting unfavorable market strategies concerned the competitive dynamics between Facebook and MySpace. In the nascent social media industry,<sup>245</sup> the social network site MySpace signed

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<sup>237</sup> *United States v. Griffith*, 334 U.S. 100, 108 (1948).

<sup>238</sup> *Id.* at 107.

<sup>239</sup> *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 458 (1993) (stating leveraging claims “might chill competition, rather than foster it”). *See also* Hovenkamp, *supra* note 59 (stating “it seems quite clear that § 2 of the Sherman Act does not contemplate a monopoly leveraging claim.”).

<sup>240</sup> *See* Press Release, FTC, Facebook Settles FTC Charges That It Deceived Consumers by Failing to Keep Privacy Promises (Nov. 29, 2011), <https://www.ftc.gov/news-events/press-releases/2011/11/facebook-settles-ftc-charges-it-deceived-consumers-failing-keep>.

<sup>241</sup> *Bundeskartellamt Prohibits Facebook from Combining User Data from Different Sources*, BUNDESKARTELLAMT (July 2, 2019), [https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07\\_02\\_2019\\_Facebook.html?nn=3591568](https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html?nn=3591568).

<sup>242</sup> European Commission Memoranda MEMO/17/1785, Antitrust: Commission Fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service – Factsheet (June 27, 2017), [https://ec.europa.eu/commission/presscorner/detail/en/MEMO\\_17\\_1785](https://ec.europa.eu/commission/presscorner/detail/en/MEMO_17_1785).

<sup>243</sup> Few companies have the luxury to forgoing profits for as long as some of the GAFAM companies. *See* Khan, *supra* note 217, at 748 (detailing Amazon’s financials).

<sup>244</sup> *See* Evans, *supra* note 18, at 7 n.12, (This type of feedback loop can also work in reverse); MATCHMAKERS, *supra* note 16, at 35 (stating direct and indirect network effects can be negative as well as positive, and this can have significant implications for how platforms operate).

<sup>245</sup> *See generally* ANDREW PERRIN, SOCIAL MEDIA USAGE: 2005-2015, PEW RES. CTR. (Oct. 8, 2015), <https://www.pewresearch.org/internet/2015/10/08/social-networking-usage-2005-2015/>.

a \$900 million advertising deal with Google.<sup>246</sup> The deal subsequently caused Myspace to scatter its pages with advertisements that created “cluttered and annoying pages,” whereas Facebook “opted for a cleaner, Google-like interface that resonated with a broader audience.”<sup>247</sup> MySpace thought that its dominant position was solidified.<sup>248</sup> However, the social media industry, likely due to its low adoption rate of approximately 20 percent in 2007,<sup>249</sup> had not tipped to a dominant player. Among other reasons, users flocked from MySpace and Facebook would subsequently become the dominant social network it is today.<sup>250</sup>

Third, significant financial support from a dominant position in at least one market can also prevent a platform from adopting unfavorable strategies in the tangential market, thus improving the chances of success in the tangential market. For example, Instagram, as a full subsidiary of Facebook, does not have to produce any profit or revenue because Facebook has already entrenched itself as one of the dominant sources of internet advertising.<sup>251</sup> Snapchat, a rival video and image social media platform, does not have nearly the same multi-market user reach and consequently had to adopt “annoying” advertisements,<sup>252</sup> which some cite as the primary reason Snapchat lost users in the second quarter of 2018.<sup>253</sup>

Fourth, leveraging into a tangential market facilitates a platform’s ability to suppress nascent competitive threats.<sup>254</sup> Depending on the type of market, digital platforms can easily leverage into new markets by acquisition as the acquired service can simply be integrated into their existing services. The

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<sup>246</sup> Aline van Duyn & Richard Waters, *Google in \$900M Ad Deal with MySpace*, FIN. TIMES (Aug. 8, 2006), <https://www.ft.com/content/17e8e67e-2660-11db-afa1-0000779e2340>.

<sup>247</sup> Kevin Kelleher, *How Facebook Learned from MySpace’s Mistakes*, FORTUNE (Nov. 19, 2010), <https://fortune.com/2010/11/19/how-facebook-learned-from-myspaces-mistakes/>. Personal computers of that era, due to the state of processing power, also were able to render Facebook pages faster than MySpace, making the Facebook site more useable. See MCNAMEE, *supra* note 222, at 147 (stating, “By 2004, every PC had processing power to spare. Wired networks could handle video. Facebook’s design outperformed MySpace in almost every dimension, providing a relative advantage, but the company did not face the fundamental challenges that had prevailed even a decade earlier. Engineers had enough processing power, storage, and network bandwidth to change the world, at least on PCs.”).

<sup>248</sup> Pete Cashmore, *MySpace vs Facebook: MySpace Declares Victory*, MASHABLE (July 12, 2007), <https://mashable.com/2007/07/12/myspace-versus-facebook/>.

<sup>249</sup> PERRIN, *supra* note 245.

<sup>250</sup> See *infra* Appendix A.

<sup>251</sup> See *infra* Appendix A. See also Brady, *supra* note 41 (detailing the array of user information Google collects and integrates for its advertisements).

<sup>252</sup> Sean Keach, *Snapchat is Testing an Annoying New Feature that You CAN’T Ignore*, SUN, (Apr. 26, 2018), <https://www.thesun.co.uk/tech/6146652/snapchat-new-feature-ads-unskippable-cant-switch-off/>.

<sup>253</sup> Kurt Wagner & Rani Molla, *Why Snapchat is Shrinking*, VOX: RECODE (Aug. 7, 2018), <https://www.recode.net/2018/8/7/17661756/snap-earnings-snapchat-q2-instagram-user-growth>.

<sup>254</sup> The concept of a nascent competitive threat is related to the idea of a maverick firm. See generally Jonathan B. Baker & Fiona Scott Morton, *Mavericks, Mergers, and Exclusion: Proving Coordinated Competitive Effects Under the Antitrust Laws*, 77 N.Y.U. L. REV. 135 (2002). See *supra* Section I.

GAFAM platforms have taken advantage of lackluster antitrust enforcement, despite the intentions of Congress, and have been on an acquisition frenzy for decades.<sup>255</sup> From 1987 to 2018, the GAFAM companies have collectively completed over 700 acquisitions.<sup>256</sup> The total value of all the acquisitions made by the GAFAM companies is not known. However, when the known values are calculated, GAFAM acquisitions since 2000 have totaled almost \$160 billion.<sup>257</sup> Historically, many of the GAFAM acquisitions have either been purchased to leverage themselves into the market, integrated fully into an existing service, set up alongside their current services, or shut down entirely.<sup>258</sup> Examples of the GAFAM companies executing these behaviors are shown in Table 2.

*Table 2: Examples of Suppressed Nascent Competitive Threats by GAFAM Companies*

	Acquired to Leverage	Acquired to Integrate Alongside an Existing Service	Shut Down
Google	Android <sup>259</sup>	Waze <sup>260</sup>	Hire <sup>261</sup>

<sup>255</sup> Ronan P. Harty, et al., *Merger Enforcement Across Political Administrations in the United States*, CONCURRENCES: COMPETITION L.J., at 1 (May 2012), available at <https://www.davispolk.com/files/files/Publication/21298b64-1a24-4984-910f-c659c9763357/Preview/PublicationAttachment/4076b8de-b7bc-41c8-8288-c6c2ef35d94a/Concurrences.Harty.Shelanski.Solomon.pdf> (detailing antitrust enforcement across a variety of metrics is similar across political administrations since President Ronald Reagan); see also Kenneth G. Dau-Schmidt et al., *Department of Justice Antitrust Enforcement, 1955-1997: An Empirical Study* 83 (Maurer Sch. of L, Faculty Paper No. 215, 2000) (noting the dramatic decline in antitrust enforcement after 1973). For information relating to the intent of Congress in regards to merger policy see *Brown Shoe Co. v. United States*, 370 U.S. 294, 344 (1962); see also *FTC v. Procter & Gamble Co.*, 386 U.S. 568, 580 (1967) (stating “Congress was aware that some mergers which lessen competition may also result in economies but it struck the balance in favor of protecting competition.”). Mergers were once considered presumptively illegal above certain market shares. See also *United States v. Philadelphia Nat. Bank*, 374 U.S. 321, 363 (1963) (stating “a merger which produces a firm controlling an undue percentage share of the relevant market, and results in a significant increase in the concentration of firms in that market is so inherently likely to lessen competition substantially that it must be enjoined in the absence of evidence clearly showing that the merger is not likely to have such anticompetitive effects.”).

<sup>256</sup> DIANA L. MOSS, AM. ANTITRUST INST., *THE RECORD OF WEAK U.S. MERGER ENFORCEMENT IN BIG TECH 1*, 5 (2019), <https://ssrn.com/abstract=3417978>; see also *infra* Appendix C.

<sup>257</sup> See *infra* Appendix C.

<sup>258</sup> In some cases, shutting down the service would be the primary goal of the acquisition.

<sup>259</sup> Stefanie Olsen, *Google Buys Android*, CNET (Oct. 8, 2007), <https://www.cnet.com/news/google-buys-android/>.

<sup>260</sup> Peter Cohan, *Four Reasons Google Bought Waze*, FORBES (June 11, 2013), <https://www.forbes.com/sites/petercohan/2013/06/11/four-reasons-for-google-to-buy-waze/#3c5df6e9726f>.

<sup>261</sup> Jay Peters, *Google Hire is the Next Google Tool to be Shut Down*, VERGE (Aug. 28, 2019), <https://www.theverge.com/2019/8/28/20837004/google-hire-next-tool-shut-down-service-jobs-hiring-recruiting-inbox-allo>.

<b>Apple</b>	Siri <sup>262</sup>	Cue <sup>263</sup>	Topsy <sup>264</sup>
<b>Facebook</b>	Onavo <sup>265</sup>	WhatsApp <sup>266</sup>	tbh <sup>267</sup>
<b>Amazon</b>	Whole Foods <sup>268</sup>	Zappos <sup>269</sup>	Quidsi <sup>270</sup>
<b>Microsoft</b>	LinkedIn <sup>271</sup>	PowerPoint <sup>272</sup>	AdECN <sup>273</sup>

Considering the adverse effects of dominant firms purchasing nascent competitive threats in other industries to suppress competition and innovation, it is more probable than not that such extensive acquisitions have also decreased competition and innovation in the technology sector.<sup>274</sup>

<sup>262</sup> Jenna Wortham, *Apple Buys a Start-Up for its Voice Technology*, N.Y. TIMES (Apr. 29, 2010), <https://www.nytimes.com/2010/04/29/technology/29apple.html>.

<sup>263</sup> Alexia Tsotsis, *Apple Buys Cue for Over \$40M to Compete with Google Now*, TECHCRUNCH (Oct. 3, 2013), <https://techcrunch.com/2013/10/03/cue-acquired-for-over-40m-likely-by-apple-to-compete-with-google-now/?guccounter=1>.

<sup>264</sup> Aaron Hayes-Roth, *A Former Topsy Employee has an Interesting Theory on Why Apple Shut Down this \$200 Million Acquisition*, BUS. INSIDER (Dec. 24, 2015), <https://www.businessinsider.com/apple-shuts-down-topsy-the-200-million-mystery-laid-to-rest-2015-12>.

<sup>265</sup> Kate O'Flaherty, *Facebook Shuts Its Onavo Snooping App – But it Will Continue to Abuse User Privacy*, FORBES (Feb. 22, 2019), <https://www.forbes.com/sites/kateoflahertyuk/2019/02/22/facebook-has-shut-its-onavo-snooping-app-but-its-still-committed-to-invading-your-privacy/#2b2bbe5512db> (before shutting it down, Onavo was Facebook's attempt to enter the VPN market).

<sup>266</sup> Adrian Covert, *Facebook Buys WhatsApp for \$19 Billion*, CNN (Feb. 19, 2014), <https://money.cnn.com/2014/02/19/technology/social/facebook-whatsapp/>.

<sup>267</sup> Jacob Kastrenakes, *Facebook is Shutting Down a Teen App it Bought Eight Months Ago*, VERGE (July 2, 2018), <https://www.theverge.com/2018/7/2/17528896/facebook-tbh-moves-hello-shut-down-low-usage>.

<sup>268</sup> Amazon purchased Whole Foods for \$13.7 billion and although there is some integration with its Prime service, Whole Foods is a separate entity. See Paul R. La Monica & Chris Isidore, *Amazon is Buying Whole Foods for \$13.7 Billion*, CNN (June 16, 2017), <https://money.cnn.com/2017/06/16/investing/amazon-buying-whole-foods/index.html>.

<sup>269</sup> Amazon bought Zappos for \$850 million as an additional internet outlet to sell shoes and to neutralize them as a competitive threat. See Ben Parr, *Here's Why Amazon Bought Zappos*, MASHABLE (July 22, 2009), <https://mashable.com/2009/07/22/amazon-bought-zappos/>; see generally Khan, *supra* note 217.

<sup>270</sup> Lauren Thomas, *Amazon is Shutting Down Quidsi, After the Diapers.com Parent Failed to Make Money*, CNBC (Mar. 29, 2017), <https://www.cnbc.com/2017/03/29/amazon-shuts-down-quidsi.html>.

<sup>271</sup> LinkedIn was purchased by Microsoft for \$26.2 billion and, as of 2019, is its own standalone service. See Steven Tweedie, *Microsoft Buys LinkedIn for \$26.2 Billion*, BUS. INSIDER (June 13, 2016), <https://www.businessinsider.com/microsoft-buys-linkedin-2016-6>.

<sup>272</sup> Microsoft purchased PowerPoint and integrated it into their Office suite. *Vision of the Future*, AGE (May 11, 2004), <https://www.theage.com.au/technology/vision-of-the-future-20040511-gdiwc2.html>.

<sup>273</sup> Microsoft shut down the service in 2011. See generally Mary Jo Foley, *Microsoft Shuts Down its Ads-Exchange Acquisition*, ZDNET (Feb. 1, 2011) <https://www.zdnet.com/article/microsoft-shuts-down-its-ad-exchange-acquisition/>.

<sup>274</sup> See generally Colleen Cunningham, et al., *Killer Acquisitions*, [http://faculty.som.yale.edu/songma/files/cem\\_killeracquisitions.pdf](http://faculty.som.yale.edu/songma/files/cem_killeracquisitions.pdf) (detailing a study of 35,000 pharmaceutical drug projects, in at least 6% of the acquisitions were motivated solely by the desire to preempt future competition by destroying the promising project.); Yianis Sarafidis, *Unilateral Effects Under Non-Price Competition*, in 1 ANTITRUST ECONOMICS FOR LAWYERS § 2.04 (2019), <https://advance.lexis.com/api/permalink/764f71b0-5229-4b21-be26-d2365189c848/?context=1000516> (detailing how the anticompetitive effects of mergers can include decreased R&D investments due to the

Fifth, along similar lines as acquiring potential competitive threats, platform owners with integrated services can use leveraging to incentivize users to adopt their other services, further entrenching their dominant position. Apple exemplifies this strategy by offering products that exist at all ends of the communications spectrum – smartphones (iPhone), tablets (iPad), computers (MacBook), Messaging (iMessage). Since all Apple's products and services are integrated, purchasing an iPhone incentivizes a consumer to adopt Apple's other services. Apple's behavior is a prime example of how leveraging, in combination with product tying, produces anticompetitive effects.<sup>275</sup>

One of the harms of leveraging and tying products and services together is that a monopolist can extend its monopoly position from one market into another.<sup>276</sup> The European Commission recognized the problem of tying users (in this instance with a default software option<sup>277</sup>) with its 2009 investigation into Microsoft for tying its web browser, Internet Explorer, to its Windows operating system. The commission eventually forced Microsoft to provide users a choice as to which browser they would like upon the installation of Windows.<sup>278</sup> The commission justified its actions by stating<sup>279</sup>:

[T]he tying of Internet Explorer with Windows, which makes Internet Explorer available on 90% of the world's PCs, distorts competition on the merits between competing web browsers insofar as it provides Internet Explorer with an artificial distribution advantage which other web browsers are unable to match. The Commission is concerned that through the tying, Microsoft shields Internet Explorer from head to head competition with other browsers which is detrimental to the pace of product innovation and to the quality of products which consumers ultimately obtain[.]

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decreasing competition derived from the merger); *Where Big Tech Is Placing Bets In Healthcare*, CBINSIGHTS (Sep. 13, 2018), <https://www.cbinsights.com/research/top-tech-companies-healthcare-investments-acquisitions/> (detailing GAFAM investments in healthcare); Spitzer, *supra* note 228 (detailing which part of the health care industry Microsoft, Apple, Amazon, and Google can disrupt and succeed in).

<sup>275</sup> European Commission Press Release, *supra* note 143.

<sup>276</sup> See generally Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33 RAND J. ECON. 194 (2002), <https://www.jstor.org/stable/3087430?seq=1>.

<sup>277</sup> See *supra* notes 143–149 for the effects of defaults.

<sup>278</sup> *BrowserChoice.eu*, WIKIPEDIA, <https://en.wikipedia.org/wiki/BrowserChoice.eu> (last visited Jan. 30, 2020).

<sup>279</sup> European Commission Press Release Memo/09/15, Antitrust: Commission Confirms Sending a Statement of Objections to Microsoft on the Tying of Internet Explorer to Windows (Jan. 17, 20019), [http://europa.eu/rapid/press-release\\_MEMO-09-15\\_en.htm](http://europa.eu/rapid/press-release_MEMO-09-15_en.htm).

A more recent example of anticompetitive tying and the problems of defaults used to extend dominance from one market to another is Google's Android Application Distribution Agreements ("ADA"), which required phone manufacturers to include Google's full application suite—including Google Play Store, the Google Search app and the Google Chrome browser—on the device.<sup>280</sup> The European Commission eventually fined Google almost five billion Euros for this practice as Google inhibited competition "on the merits" by "prevent[ing] other mobile browsers from competing effectively with the pre-installed Google Chrome browser," and "obstruct[ing] the development of Android forks, which could have provided a platform also for other app developers to thrive."<sup>281</sup> Similarly, in November 2019, the Dutch competition authority, the Netherlands Authority for Consumers, commenced an investigation into Apple and Google over the potential "antitrust problems" that exist with the "unfair conditions" arising from "having an interest in offering many different apps from app providers in their app stores" often with "no realistic alternatives[.]"<sup>282</sup>

Sixth, expanding into multiple markets also provides the opportunity for platforms to increase their presence and ability to attract and obtain the attention of users to their services. Although output is practically unlimited for platform services,<sup>283</sup> user attention is finite, which is perhaps the only limiting factor for platforms.<sup>284</sup>

The Australian Competition and Consumer Commission, in its landmark Digital Platform Inquiry Report, stated that "[u]ser attention is at least as important as user data in monetizing services."<sup>285</sup> Professor Tim Wu describes user attention as the "currency" these platforms are competing for and describes many of the technology platforms as "attention brokers."<sup>286</sup> User attention, by definition, demonstrates that the platform is capturing the usage of the platform and thus extracting (or is at least in a position to extract) user data, which depending on the market,<sup>287</sup> can subsequently prevent a rival platform from also obtaining user attention.<sup>288</sup>

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<sup>280</sup> Edlin & Harris, *supra* note 103, at 203.

<sup>281</sup> See European Commission Press Release, *supra* note 143.

<sup>282</sup> *ACM Launches Investigation into Abuse of Dominance by Apple in its App Store*, AUTHORITY FOR CONSUMERS & MKTS (Nov. 4, 2019), <https://www.acm.nl/en/publications/acm-launches-investigation-abuse-dominance-apple-its-app-store>.

<sup>283</sup> See *supra* Section I.A.

<sup>284</sup> Particularly given the fact the services typically do not cost anything for at least one side. See *supra* Section I.A.2.

<sup>285</sup> AUSTRALIAN COMPETITION & CONSUMER COMM'N, DIGITAL PLATFORMS INQUIRY 43 (2019), <https://www.accc.gov.au/publications/digital-platforms-inquiry-final-report>.

<sup>286</sup> TIM WU, THE ATTENTION MERCHANTS: THE EPIC SCRAMBLE TO GET INSIDE OUR HEADS 76 (2016).

<sup>287</sup> Considering factors such as the ability of users to multi-home and the cost to participate in the market.

<sup>288</sup> See Tim Wu, *Blind Spot: The Attention Economy and the Law*, 82 ANTITRUST L.J. 771, 771–72 (2019) (describing time (i.e. attention) as currency that the technology companies are competing for and

Seventh, leveraging into tangential markets can suppress competition through inhibiting or outright preventing a potential competitor from “leapfrog[ging]” or circumventing the entrenched platform.<sup>289</sup> Steve Jobs acknowledged how Apple had to abandon the strategy of trying to beat Microsoft in the desktop operating system market by stating, “for Apple to win, Microsoft has to lose. And it was clear that you didn’t have to play that game because Apple wasn’t going to beat Microsoft.”<sup>290</sup> While Microsoft was constrained and distracted in the aftermath of its antitrust suit in 2001,<sup>291</sup> competition in the nascent smartphone industry was able to thrive and Apple took advantage by circumventing Microsoft’s dominance in desktop operating systems with the development of the iPhone and its mobile application environment iOS.<sup>292</sup> While restraining Microsoft proved great for innovation,<sup>293</sup> the lesson became that platform companies must leverage their existing dominance and extend their presence into as many markets as possible to prevent being leapfrogged by competitors.<sup>294</sup> Nevertheless, restraining a dominant company’s actions to facilitate growth in other markets has been an important goal and outcome of antitrust enforcement.<sup>295</sup>

Beyond these direct harms, leveraging can also be performed without any direct action from the dominant platform and beyond where a platform is a direct or indirect competitor. Platform companies can create various applications that allow their services to integrate into other third-party

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the fundamental limitation there is as to exactly how much time people can give to any service), <https://ssrn.com/abstract=2941094>.

<sup>289</sup> See generally William H. Page & Seldon J. Childers, *Antitrust, Innovation, and Product Design in Platform Markets: Microsoft and Intel*, 78 ANTITRUST L.J. 363, 369 (2012), <http://scholarship.law.ufl.edu/facultypub/629>; see generally Shelanski & Sidak, *supra* note 121, at 9, (detailing how leapfrogging encourages platforms to gear competitive strategies towards capturing an early lead and engage in anticompetitive conduct).

<sup>290</sup> Interview by Kara Swisher & Walt Mossberg with Bill Gates, Chairman, Microsoft, and Steve Jobs, CEO, Apple, in Carlsbad, Cal., ALL THINGS D (May 30, 2007), <http://allthingsd.com/?p=5134>. The practice of circumventing an entrenched monopolist or oligopolistic market by entering a new market is more commonly known as “leapfrogging.” See generally Page & Childers, *supra* note 289.

<sup>291</sup> MCNAMEE, *supra* note 222, at 181 (“Without the Microsoft case, it is hard to imagine Google succeeding as it did.”); Jordan Novet, *Bill Gates Says People Would Be Using Windows Mobile if Not for the Microsoft Antitrust Case*, CNBC (Nov. 6, 2019), <https://www.cnbc.com/2019/11/06/bill-gates-people-would-use-windows-mobile-if-not-for-antitrust-case.html> (Bill Gates saying the antitrust case distracted Microsoft); See generally Final Judgment, *United States v. Microsoft Corp.*, Civil Action No. 98-1232 (CKK) (D.D.C. 2002), <https://www.justice.gov/atr/case-document/final-judgment-133>.

<sup>292</sup> See *infra* Appendix B.

<sup>293</sup> See generally MCNAMEE, *supra* note 222, at 181 (stating, “Without the Microsoft [antitrust] case, it is hard to imagine Google succeeding as it did.”).

<sup>294</sup> See Goode & Bohn, *supra* note 218 (detailing how many of the technology companies, including Google and Apple, all looking the same and are pursuing the same goals). See *infra* Appendix A & B.

<sup>295</sup> See Jonathan B. Baker, *Exclusion As A Core Competition Concern*, 78 ANTITRUST L.J. 527, 560 (2013) (detailing how the dominant newspaper company Lorain Journal impeded the entry of a rival radio company, which if “the newspaper succeeded [in its anticompetitive conduct], and other newspapers followed suit, it is easy to imagine that few radio stations in regions with a dominant newspaper would have succeeded unless they were owned by the newspaper, slowing the growth of the radio industry.”).



platforms. For example, both Google and Facebook have applications that enable third-party websites to create user accounts by taking advantage of a user's preexisting Google or Facebook account to join the new service.

These applications, known as federated login services, allow users to obtain the benefit of only having one account username and password to access many other sites and services. However, new multisided platforms have an incentive to integrate these connecting services because they take advantage of a dominant platform's preexisting user base and allow potential new users to seamlessly join their new service, thus allowing the new platform to acquire as many new users as possible and quickly obtain a large user base.

Companies also integrate these services because they obtain a complementary benefit from the integration of the third-party service. The new platform gains access to existing user data from the dominant platform they are connecting to, which consequently grants the new platform access to other user data they would not have access to otherwise.<sup>296</sup> For example, using Facebook's federated login allows third-party platforms to obtain more than 30 different data points for a user account.<sup>297</sup> In 2010, when third-party sites integrated Facebook's federated login tool and Facebook's other APIs such as its Like button, some sites had their web traffic increase upwards of 200 percent.<sup>298</sup> Thus, the new platforms are incentivized to integrate the GAFAM connecting services onto their own platform as they obtain access to user data and traffic beyond what would typically be generated on their platform alone.

By integrating their platform into other downstream and adjacent industry platforms, dominant platform owners hope to bond their services into the operations of other companies, which subsequently become dependent on their applications.<sup>299</sup>

When dominant corporations integrate and bond their platform into other third-party services, their market position is reinforced due to the acquisition of additional user data. Importantly, because the GAFAM companies have unparalleled user bases<sup>300</sup> and have monopolized critical

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<sup>296</sup> Steven Englehardt, et al., *No Boundaries for Facebook Data: Third-Party Trackers Abuse Facebook Login*, FREEDOM TO TINKER (Apr. 18, 2018), <https://freedom-to-tinker.com/2018/04/18/no-boundaries-for-facebook-data-third-party-trackers-abuse-facebook-login/> (detailing vulnerabilities with using Facebook's federated login service).

<sup>297</sup> *Permissions Reference – Facebook Login*, FACEBOOK, <https://developers.facebook.com/docs/facebook-login/permissions> (last visited Jan. 31, 2020).

<sup>298</sup> *360i Report: How the Social Landscape Will Change Search*, 360i (Oct. 27, 2010), <http://blog.360i.com/social-marketing/360i-report-social-landscape-will-change-search> (detailing the increased web traffic of sites such as Gawker (a 200% traffic increase), TypePad (a 200% traffic increase), and Sporting news (a 500% traffic increase)).

<sup>299</sup> Oscar Raymundo, *Facebook Will Let You Play Songs from Spotify and Apple Music Inside Messenger*, MACWORLD (Apr. 19, 2017), <https://www.macworld.com/article/3190840/social-media/facebook-will-let-you-play-songs-from-spotify-and-apple-music-inside-messenger.html>.

<sup>300</sup> See *infra* Appendix A.

avenues for user data,<sup>301</sup> a new internet data-dependent platform faces a strong incentive to adopt and integrate some of the GAFAM platform services to be successful. But integrating these services only adds to the market power, data collection capability, and bargaining leverage the GAFAM platforms have over smaller dependents.<sup>302</sup>

Eighth, when a dominant platform competes in as many distinct, but interrelated, markets (e.g., email, video services, and operating systems) as the GAFAM platforms through leveraging, new entrants often must attempt to compete on as many of those levels as possible to be a viable long-term competitor or otherwise risk potential failure. This concept is known as a two-stage entry.<sup>303</sup> In essence, leveraging, beyond increasing market power, can also increase barriers to entry for potential and nascent competitors.<sup>304</sup>

For comparison, leveraging is comparatively difficult for traditional single-sided entities to execute. Consider Facebook's Marketplace service, which offers product auctions to its users – similar to eBay.<sup>305</sup> While Facebook is technically entering a new market, the corporation is doing nothing more than adding additional code to its current infrastructure, and there is little investment needed.<sup>306</sup> Differentiate this from a strawberry producer looking to get into the orange production business. Although there are undoubtedly some efficiencies that strawberries producers could translate to success in the orange market, there is no question that considerably more investment would be needed to enter this market, since strawberries, for the most part, must be picked by hand and oranges need expensive harvesting machines to be collected efficiently and at a similar or lesser expense.<sup>307</sup>

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<sup>301</sup> See *infra* Appendix B.

<sup>302</sup> Cyrus Farivar, *App Developers Sue Facebook Alleging an 'Anticompetitive Scheme'*, NBC NEWS (Jan. 16, 2020), <https://www.nbcnews.com/tech/tech-news/app-developers-sue-facebook-over-alleged-anticompetitive-scheme-n1117551> (the lead attorney in the law suit stated "Facebook deliberately leveraged its developer platform, an infrastructure of spyware and surveillance, and its economic power to crush or acquire anyone that competed with them.").

<sup>303</sup> ADIL ABDELA ET AL., VERTICAL INTEGRATION AND THE MARKET POWER CRISIS 4 (Roosevelt Inst., Issue Brief, Apr. 2019), available at <http://rooseveltinstitute.org/wp-content/uploads/2019/04/RI-Vertical-Integration-and-Market-Power-Crisis-Issue-brief-201904.pdf>.

<sup>304</sup> See generally *id.*

<sup>305</sup> See Cara McGoogan, *Facebook's New eBay Rival Already Has Drugs, Guns and Animals for Sale*, TELEGRAPH (Oct. 4, 2016), <https://www.telegraph.co.uk/technology/2016/10/04/facebooks-new-ebay-rival-marketplace-already-has-drugs-guns-and/> (detailing Facebook's Marketplace feature, an eBay rival).

<sup>306</sup> See *supra* Section I.A.

<sup>307</sup> Dan Charles *Robots Are Trying to Pick Strawberries. So Far, They're Not Very Good At It*, NPR (Mar. 20, 2018), <https://www.npr.org/sections/thesalt/2018/03/20/592857197/robots-are-trying-to-pick-strawberries-so-far-theyre-not-very-good-at-it> (detailing the inability of robots to harvest strawberries).

### *B. Gatekeeper / Police Power*

The GAFAM companies are also in a unique position as their platforms provide the essential means to develop new products and services such as using a computer (presumably with Apple's macOS or Microsoft's Windows as the operating system), selling a product (via Amazon's Marketplace), and advertising their product (via Facebook and Google). In essence, the GAFAM services are practically unavoidable.<sup>308</sup> An entrepreneur pitching their business and stating that the business will refuse to sell on Amazon or market itself on Google and Facebook's platforms, and refuse to use any design software on Microsoft Windows or Apple's macOS, would reasonably face skepticism from potential investors.

The unavoidability of these platforms, in conjunction with the presence of the aforementioned characteristics and anticompetitive conduct, enables platform owners, and the GAFAM companies more specifically, to control both the rules of the market and subsequently, the conditions by which competition operates. Respectively, these abilities are termed gatekeeper and police power, whereby multisided platforms can remove or inhibit users from joining their platform, determine the rules of the platform, monitor user conduct on the platform, and engage in discriminatory conduct.

#### *1. Removal, Regulation, and Rulemaking*

As vital, necessary, and unavoidable intermediaries, the GAFAM platforms serve as gatekeepers to both the market and customers and are therefore able to determine the winners and losers that exist within their markets. Such a dominant position causes several competitive concerns.

First, the size of the user bases of the GAFAM platforms makes the option of avoiding any of their services effectively impossible.

The unavoidability of the GAFAM platforms provides them a significant amount of bargaining leverage over their dependents. In many cases, being removed or inhibited from using the GAFAM platforms can have devastating effects. For example, in 2016, Apple prevented an iOS update for Spotify's application because the update included an alternative payment system outside of Apple's service through which Spotify would

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<sup>308</sup> K. Sabeel Rahman, *The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept*, 39 CARDOZO L. REV. 1621, 1669–75 (2018) (denoting Google and Facebook as informational infrastructure and Amazon as retail infrastructure); Heather Kelly, *Google's Data Collection is Hard to Escape, Study Claims*, CNN BUS. (Aug. 21, 2018), <https://money.cnn.com/2018/08/21/technology/google-data-collection/index.html> ("It's nearly impossible to do anything digitally without Google collecting data on you."); DOUGLAS C. SCHMIDT, *GOOGLE DATA COLLECTION 4* (Digital Content Next, Aug. 2018), available at <https://digitalcontentnext.org/wp-content/uploads/2018/08/DCN-Google-Data-Collection-Paper.pdf> (stating "While using an iOS device, if a user decides to forgo the use of any Google product (i.e., no Android, no Chrome, and no Google applications), and visits only non-Google webpages, the number of times data is communicated to Google servers still remains surprisingly high.").

receive a 30 percent portion.<sup>309</sup> At the time, Apple's iPhone had a 43 percent market share for smartphones in the United States.<sup>310</sup> However, Apple recognized Spotify as a significant threat to its Apple Music service since Spotify is the largest music subscription service.<sup>311</sup> Disrupting Spotify, however briefly, can interfere with network effects and, however unlikely, cause them to go in reverse.<sup>312</sup> Especially troubling is that because Spotify's success is dependent on access to Apple's service via an upstream market (i.e., a smartphone operating system), in which Apple maintains a dominant market share, and that Apple also competes in the same market as Spotify, Apple has an incentive to use its dominance to disrupt a major competitor.<sup>313</sup>

Google's conduct also shows the repercussions, capability, and willingness of a dominant corporation foreclosing its platform to potential rivals when it threatened Yelp, Trip Advisor, and CitySearch with the removal of their content from Google's search results if the companies requested their content be removed from Google's competing product Google Places/Hotpot.<sup>314</sup> Delaying and foreclosing the success of a competitor in multisided markets can be detrimental as the ability to create network effects and obtain a sufficient user base significantly determines the success of a multisided platform.<sup>315</sup>

Another example of gatekeeper and police power involves the removal of users. Consider the removal of conspiracy theorist Alex Jones from various digital platforms.<sup>316</sup> After his removal from YouTube, *The New York*

<sup>309</sup> Peter Kafka, *Spotify Says Apple Won't Approve a New Version of its App Because it Doesn't Want Competition for Apple Music*, VOX (June 30, 2016), <https://www.vox.com/2016/6/30/12067578/spotify-apple-store-rejection> (stating, "Apple charges a monthly fee of up to 30 percent for those that do use its billing system — and it doesn't want app makers to use the apps to promote alternate subscription options outside the apps. (And, of course, app makers like Spotify can't distribute their apps onto iPhones outside of Apple's store.)").

<sup>310</sup> *Subscriber Share Held by Smartphone Operating Systems in the United States from 2012 to 2019*, STATISTA <https://www-statista-com.ezproxy.lib.uconn.edu/statistics/266572/market-share-held-by-smartphone-platforms-in-the-united-states/> (last visited January 16, 2020).

<sup>311</sup> Mark Mulligan, *Mid-Year 2018 Streaming Market Shares*, MIDIA (Sept. 13, 2018), <https://www.midiaresearch.com/blog/mid-year-2018-streaming-market-shares/>.

<sup>312</sup> See Evans, *supra* note 18, at 7 n.12 (This type of feedback loop can also work in reverse).

<sup>313</sup> See *infra* Appendix A.

<sup>314</sup> *FTC Report*, *supra* note 56, at 28, 36 (stating, "Google's dedicated ads do not compete with other ads through Google's AdWords auction for placement.").

<sup>315</sup> MATCHMAKERS, *supra* note 16 at 109 (stating, "[multisided platforms] need the right participants"); *Id.* at 40 (stating, "Multisided platforms *have to* secure critical mass in order to ignite.") (emphasis added); Stucke & Grunes, *supra* note 52, at 10 (stating, "A dominant data-driven company can use exclusionary tactics to prevent rivals from achieving the minimum efficient scale") (citing FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* 67 (Cambridge MA: Harvard University Press, 2015)).

<sup>316</sup> Jack Nicas, *Alex Jones Said Bans Would Strengthen Him. He Was Wrong*, N.Y. TIMES (Sept. 4, 2018), <https://www.nytimes.com/2018/09/04/technology/alex-jones-infowars-bans-traffic.html> (reporting that in the three weeks before the August 6<sup>th</sup> bans, Infowars had a daily average of nearly 1.4 million visits to its website and views of videos posted by its main YouTube and Facebook pages, according to a New York Times analysis of data from the web data firms Tubular Labs and SimilarWeb. In the three weeks afterward, its audience fell by roughly half, to about 715,000 site visits and video views).

*Times* discovered that the average views of Infowars videos declined by 50 percent.<sup>317</sup> Platforms can remove users,<sup>318</sup> but it is worth considering:

- What is the process of removing a user from the platform?
- What is the appeals process for the decision made by the platform owner?<sup>319</sup>
- Who ensures the platform's rules are applied fairly, consistently, and non-arbitrarily?<sup>320</sup>
- How are rules for the platform determined and enacted?<sup>321</sup>
- How much notice were users given to adjust their practices before being removed from the platform?
- Who decides what actions are violations of the platform's rules and what actions are not?<sup>322</sup>
- Who determines which violators to punish and which to ignore?
- Who determines what punishment is to be administered and for how long?
- What is the process for appointing the members to the entity that determines violations?

Immediately noticeable from these inquiries is that the platform owners act as the legislatures, judges, and juries of their own web-based jurisdiction. During his congressional testimony in the wake of the Cambridge Analytica

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<sup>317</sup> *Id.*

<sup>318</sup> Elizabeth Williamson, *Truth in a Post-Truth Era: Sandy Hook Families Sue Alex Jones, Conspiracy Theorist*, N.Y. TIMES (May 23, 2018), <https://www.nytimes.com/2018/05/23/us/politics/alex-jones-trump-sandy-hook.html?module=inline> (detailing the lawsuit in Connecticut against Alex Jones over his statements that the Sandy Hook Elementary School Shooting was a hoax).

<sup>319</sup> Some examples of YouTube demonetization include: Julia Alexander, *The Yellow \$: A Comprehensive History of Demonetization and YouTube's War with Creators*, POLYGON (May 10, 2018), <https://www.polygon.com/2018/5/10/17268102/youtube-demonetization-pewdiepie-logan-paul-casey-neistat-philip-defranco> (detailing a history of YouTube demonetization); Lucas Shaw, *YouTube Advertising Crackdown Puts Some Creators Out of Work*, BLOOMBERG (Dec. 8, 2017), <https://www.bloomberg.com/news/articles/2017-12-08/youtube-advertising-crackdown-puts-some-creators-out-of-work> (stating, "De-monetization is supposed to assure those advertisers it's safe to come back, but the process has also swept up all sorts of video that never should have been targeted.").

<sup>320</sup> For example, Damian Collins, *Summary of Key Issues from the Six4Three Files*, available at <https://www.parliament.uk/documents/commons-committees/culture-media-and-sport/Note-by-Chair-and-selected-documents-ordered-from-Six4Three.pdf> (page 15, Facebook unilaterally revoked Twitter's access to Facebook's APIs for their Vine service).

<sup>321</sup> Jacob Kastrenakes, *Facebook Will Reduce Reach of 'Sensationalist and Provocative' Content*, VERGE (Nov. 15, 2018), <https://www.theverge.com/2018/11/15/18097402/facebook-borderline-sensationalist-provocative-content-algorithm-changes> (consider what "sensationalist" or "provocative" content means).

<sup>322</sup> Adi Robertson, *Facebook Removed a lot of Spam, Violence, and Fake Accounts this Year*, VERGE (Nov. 15, 2018), <https://www.theverge.com/2018/11/15/18097086/facebook-transparency-report-fall-summer-2018-community-standards-hate-speech> (what exactly is hate speech, spam, and bullying according to Facebook).

scandal, Mark Zuckerberg acknowledged this point by stating, “In a lot of ways Facebook is more like a government than a traditional company.”<sup>323</sup> Thus, it should not be surprising that GAFAM companies are already creating their own supreme court-like entities to regulate the content on their platforms.<sup>324</sup>

Multisided platforms can determine the scope and influence of their police power with the creation of their own rules of conduct, which are unilaterally interpreted and enforced by the platform owner. Users may think they can view the published rules provided by the platform owners to understand what content is acceptable. Unfortunately, these “Community Guidelines,” “Policies,” and “Community Standards” are at best vague and brief, and at worst arbitrary, incomprehensible, purposefully unreadable, and left exclusively to the platform’s own interpretation and discretion for enforcement.<sup>325</sup> In 2019, the French Competition Authority determined that Google’s advertising rules were so “opaque and difficult to understand” they

<sup>323</sup> Henry Farrell et al., *Mark Zuckerberg Runs a Nation-State, and He’s the King*, VOX (Apr. 10, 2018), <https://www.vox.com/the-big-idea/2018/4/9/17214752/zuckerberg-facebook-power-regulation-data-privacy-control-political-theory-data-breach-king>.

<sup>324</sup> Casey Newton, *Facebook Will Create an Independent Oversight Group to Review Content Moderation Appeals*, VERGE (Nov. 15, 2018), <https://www.theverge.com/2018/11/15/18097219/facebook-independent-oversight-supreme-court-content-moderation> (detailing Facebook’s oversight and appeals); *Appeal Community Guidelines Actions*, GOOGLE, <https://support.google.com/youtube/answer/185111?hl=en> (last visited Jan. 29, 2020) (Google’s appeals with YouTube); *Appeal an Account Deactivation or Listing Removal*, AMAZON, <https://sellercentral.amazon.com/gp/help/external/G200370560> (last visited Feb. 17, 2020) (detailing amazon’s appeals); <https://developer.apple.com/contact/index.html> (detailing apple’s appeals process for a rejected application).

<sup>325</sup> *Policies and Safety*, YOUTUBE, <https://www.youtube.com/yt/about/policies/#community-guidelines> (last visited Jan. 29, 2020) (YouTube’s community guidelines); *Community Standards*, FACEBOOK, <https://www.facebook.com/communitystandards/introduction> (last visited Jan. 29, 2020) (Facebook’s community standards); *App Store Review Guidelines*, APPLE, <https://developer.apple.com/app-store/review/guidelines/> (last visited Jan. 30, 2020) (Apple’s app store review guidelines); *Understand and Apply the Google Play Policies to Create a Trusted App*, ANDROID DEVELOPERS, <https://developer.android.com/distribute/best-practices/develop/understand-play-policies> (last visited Jan. 29, 2020) (Android developer guidelines); *Community Guidelines*, AMAZON, <https://www.amazon.com/gp/help/customer/display.html?nodeId=201929730> (last visited Jan. 29, 2020) (Amazon’s community guidelines). Dottie Lux, *Facebook’s Hate Speech Policies Censor Marginalized Users*, WIRED (Aug. 14, 2017, 7:00 AM), <https://www.wired.com/story/facebooks-hate-speech-policies-censor-marginalized-users/>; Natasha Singer, *Didn’t Read Those Terms of Service? Here’s What You Agreed to Give Up*, N.Y. TIMES: BITS (Apr. 28, 2014), <https://bits.blogs.nytimes.com/2014/04/28/didnt-read-those-terms-of-service-heres-what-you-agreed-to-give-up> (detailing that the terms of service from various internet platforms are thousands of words long). See Aaron Smith, *Half of Online Americans Don’t Know What a Privacy Policy Is*, PEW RES. CTR: FACT TANK (Dec. 4, 2014), <http://www.pewresearch.org/fact-tank/2014/12/04/half-of-americans-dont-know-what-a-privacy-policy-is/> (citing Joseph Turow stating, “Many people don’t actually read privacy policies.”); Mark Zuckerberg also acknowledged this point. See Mark Zuckerberg, Chief Exec., Facebook, Senate Hearing (Apr. 10, 2018), in WASH. POST, APR 2018, [https://www.washingtonpost.com/news/the-switch/wp/2018/04/10/transcript-of-mark-zuckerbergs-senate-hearing/?utm\\_term=.5242d1559b57](https://www.washingtonpost.com/news/the-switch/wp/2018/04/10/transcript-of-mark-zuckerbergs-senate-hearing/?utm_term=.5242d1559b57) (Mark Zuckerberg stating, “This gets into an issue that we and others in the tech industry have found challenging which is that long privacy policies are very confusing.” He continued, “[O]ne of the things we’ve struggled with over time is to make things as simple as possible so people can understand it. We don’t expect that most people will want to go through and read a full legal document.”).

do not “seem to follow coherent principles...[where] some sites have been suspended by Google while others with similar content, have been maintained.”<sup>326</sup> Due to the construction of Google’s rules and its dominant position,<sup>327</sup> the French Competition Authority fined Google 150 million euros.<sup>328</sup>

Denying access to these platforms could be considered a form of private censorship and speech arbitration to “the most powerful mechanisms available to a private citizen to make his or her voice heard.”<sup>329</sup> Given the stakes and the costs of removal, it is unsurprising that third-parties already engage in lobbying-like conduct to shape the appeal procedure of platforms.<sup>330</sup>

It is troubling to consider that platforms as large as the GAFAM companies can determine the method by which content that has significant public health concerns, such as anti-vaccination videos, is regulated.<sup>331</sup> Similar considerations apply to how Facebook or Google decides to regulate the visibility of anti-vaccine posts or videos peddling conspiracy theories,<sup>332</sup> or Amazon choosing whether to remove faulty and counterfeit products that can harm children.<sup>333</sup> While these efforts are worthwhile, there is no telling what other content regulation is taking place.

Platform owners can also punish nonconformers to their desired method of conducting business, thus arbitrating the rules of the market they control. This ability has allowed the GAFAM platforms to impose their beliefs on how commerce and communication should be conducted by third-parties

<sup>326</sup> *The Autorité de la Concurrence Hands Down €150M Fine for Abuse of a Dominant Position*, AUTORITÉ DE LA CONCURRENCE (Dec. 20, 2019), <https://www.autoritedelaconcurrence.fr/fr/communiqués-de-presse/autorite-sanctionne-google-hauteur-de-150-meu-pour-abus-de-position> (translated from French).

<sup>327</sup> *Id.* (stating, “Given [Google’s] dominant position (more than 90% of searches carried out in France and probably more than 80% on the online advertising market linked to searches), reinforced by the existence of very high barriers to entry, Google is required to define the operating rules of its advertising platform in an objective, transparent and non-discriminatory manner.”).

<sup>328</sup> *Id.*

<sup>329</sup> *Packingham v. North Carolina*, 137 S. Ct. 1730, 1737 (2017).

<sup>330</sup> *An Open Letter to Mark Zuckerberg: The World’s Freedom of Expression is in Your Hands*, SANTA CLARA PRINCIPLES, <https://santaclaraprinciples.org/open-letter/> (last visited Feb. 17, 2020) (detailing over 80 organizations that have signed a petition for pace to “provide a mechanism for all of its users to appeal content restrictions, and, in every case, to have the appealed decision re-reviewed by a human moderator.”).

<sup>331</sup> See Rachel Becker, *Influential Democrat Asks Amazon to Explain Why it Promotes Vaccine Misinformation*, VERGE (Mar. 1, 2019), <https://www.theverge.com/2019/3/1/18246461/amazon-anti-vaccination-vaxx-books-films-vaccines-media-schiff-letter>.

<sup>332</sup> Karen Zraick, *Mark Zuckerberg Seeks to Clarify Remarks About Holocaust Deniers After Outcry*, N.Y. TIMES (July 18, 2018), <https://www.nytimes.com/2018/07/18/technology/mark-zuckerberg-facebook-holocaust-denial.html>; Casey Newton, *YouTube Says it Will Recommend Fewer Videos About Conspiracy Theories*, VERGE (Jan. 25, 2019), <https://www.theverge.com/2019/1/25/18197301/youtube-algorithm-conspiracy-theories-misinformation>.

<sup>333</sup> Jeff Bercovici, *Beware: Dangerous Counterfeit Toys for Your Baby Are Being Sold on Amazon*, INC., <https://www.inc.com/jeff-bercovici/amazon-dangerous-kids-products.html> (last visited Feb. 4, 2020).

and which policies should be implemented.<sup>334</sup> Newspaper websites that decide not to provide access to their content for free could have their search results demoted, effectively ruining their chances that users will discover their content.<sup>335</sup> For example, after *The Wall Street Journal* removed the ability to view the first article for free by clicking on a Google search results page, because of Google's new algorithm, traffic to *The Wall Street Journal* from Google dropped 44 percent.<sup>336</sup> A site dropping to the second page of results on Google search can decrease its traffic upwards of 95 percent.<sup>337</sup> Moving from the first listing on the search results list to the second also has consequences. A report released by Chitika, a former advertising company, stated, "[a] website with the first position in the search results contributed to 33 percent of the traffic, compared to 18 percent for the second position."<sup>338</sup>

Being demoted on Amazon's search results page has similar effects. According to Amazon's own data, "70 percent of Amazon customers never click past the first page of search results."<sup>339</sup> A product moving to even just the second result can also be devastating as "35 percent of Amazon shoppers click on the first product featured on a search page."<sup>340</sup> Although it reversed their decision,<sup>341</sup> despite multiple antitrust investigations,<sup>342</sup> in 2019, Amazon used its market dominance to impose a rule that sought to prohibit sellers from using FedEx as a shipping option for goods purchased through its Prime service.<sup>343</sup> In essence, with the slight modification of their algorithms, platforms can choose the winners and losers in the market. Such

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<sup>334</sup> FOER, *supra* note 177, at 90; Sean Gallagher, *Amazon Blocks Domain Fronting, Threatens to Shut Down Signal's Account*, ARS TECHNICA (May 2, 2018), <https://arstechnica.com/information-technology/2018/05/amazon-blocks-domain-fronting-threatens-to-shut-down-signals-account/>; see also Julia Alexander, *YouTube Now Runs Pop-ups on Videos that Warn Users of EU Copyright Proposal*, VERGE (Nov. 20, 2018), <https://www.theverge.com/2018/11/20/18104535/youtuube-pop-up-article-13-copyright-european-union-eu-warning>.

<sup>335</sup> FOER, *supra* note 177 at 90.

<sup>336</sup> Danny Sullivan, *Wall Street Journal's Google Traffic Drops 44% After Pulling out of First Click Free*, SEARCH ENGINE LAND (June 5, 2017), <https://searchengineland.com/wsj-google-traffic-down-276387>.

<sup>337</sup> CHITIKA INSIGHTS, THE VALUE OF GOOGLE RESULT POSITIONING 5 (JUNE 7, 2013), available at <http://info.chitika.com/uploads/4/9/2/1/49215843/chitikainsights-valueofgoogleresultspositioning.pdf>.

<sup>338</sup> *Id.*

<sup>339</sup> Loren Baker, *Amazon's Search Engine Ranking Algorithm: What Marketers Need to Know*, SEARCH ENGINE J. (Aug. 14, 2018), <https://www.searchenginejournal.com/amazon-search-engine-ranking-algorithm-explained/265173/>.

<sup>340</sup> *Id.*

<sup>341</sup> Kate Cox, *Amazon Lifts Ban on FedEx for Third-party Marketplace Sellers*, ARS TECHNICA (Jan. 15, 2020), <https://arstechnica.com/tech-policy/2020/01/amazon-lifts-ban-on-fedex-for-third-party-marketplace-sellers/>.

<sup>342</sup> *16 Ways Facebook, Google, Apple and Amazon Are in Government Cross Hairs*, N.Y. TIMES (Sept. 9, 2019), <https://www.nytimes.com/interactive/2019/technology/tech-investigations.html>.

<sup>343</sup> Paul Ziobro, *Amazon Blocks Sellers from Using FedEx Ground for Prime Shipments*, WALL ST. J. (Dec. 16, 2019), <https://www.wsj.com/articles/amazon-blocks-sellers-from-using-fedex-ground-for-prime-shipments-11576525190>.



a possibility has undoubtedly chilled certain forms of conduct on these platforms by third-party dependents.

The size and power of the GAFAM companies is particularly worrisome as they can exploit their established user bases to facilitate their political goals. Such behavior has already occurred where Google, through its ownership of YouTube, released advertisements “warning” users of the European Union’s proposed copyright directive, which would both provide content creators the right to ask for paid licenses when their news stories are shared by online platforms and would also hold online platforms liable for content uploaded by users that infringes on the user’s copyright.<sup>344</sup> In part because of Google’s lobbying efforts, the copyright bill eventually stalled in the European Union parliament.<sup>345</sup>

These actions indicate that it is not implausible to assume that the GAFAM companies will leverage their platforms to further their other political goals as well. When 45 percent and 18 percent of Americans use Facebook and YouTube respectively to obtain their news, a simple algorithm change could dramatically alter a significant portion of the public’s perception of any given issue.<sup>346</sup> Former ACLU president Nadine Strossen has said, “whoever exercises censorship power does it in a way to perpetuate their own power and to disproportionately silence the voice of their critics.”<sup>347</sup> There is no reason to believe that the GAFAM companies would not engage in this behavior, never mind the inability to detect it.<sup>348</sup> Larry Page and Sergey Brin, the co-founders of Google, were keenly aware of the ability of dominant digital platforms to change the public’s perception of issues and determine the success or failure of dependents. In a now-famous 1998 paper, Page and Brin stated, “a search engine could add a small factor to search results from ‘friendly’ companies and subtract a factor from results

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<sup>344</sup> Alexander, *supra* note 334.

<sup>345</sup> Foo Yun Chee, *In Win for Tech Giants, EU Copyright Reforms Stalled*, REUTERS (Jan. 21, 2019), <https://www.reuters.com/article/us-eu-copyright/in-win-for-tech-giants-eu-copyright-reforms-stalled-idUSKCN1PF1AL>.

<sup>346</sup> Elisa Shearer & Jeffrey Gottfried, *News Use Across Social Media Platforms 2017*, PEW RES. CTR (Sept. 7, 2017), <http://www.journalism.org/2017/09/07/news-use-across-social-media-platforms-2017/>; A.M. Cameron et al., *Social Media and Organ Donor Registration: The Facebook Effect*, 13 AM. J. TRANSPLANTATION 2059, 2059 (2013) (“On the first day of the Facebook organ donor initiative, there were 13,054 new online registrations, representing a 21.1-fold increase over the baseline average of 616 registrations.”).

<sup>347</sup> Big Think, *Why Free Speech is Sacred—Even When It’s Dangerous* | Nadine Strossen, YOUTUBE (Nov. 10, 2018), available at <https://www.youtube.com/watch?v=5y2rNlsvDf8>.

<sup>348</sup> Jonathan Zittrain, *Facebook Could Decide an Election Without Anyone Ever Finding Out*, NEW REPUBLIC (June 1, 2014), <https://newrepublic.com/article/117878/information-fiduciary-solution-facebook-digital-gerrymandering>; SERGEY BRIN & LAWRENCE PAGE, THE ANATOMY OF A LARGE-SCALE HYPERTEXTUAL WEB SEARCH ENGINE, STAN. U. App. A (1998), <http://ilpubs.stanford.edu:8090/361/1/1998-8.pdf>. (stating “[A] search engine could add a small factor to search results from ‘friendly’ companies and subtract a factor from results from competitors. This type of bias is very difficult to detect but could still have a significant effect on the market.”).

from competitors. This type of bias is very difficult to detect but could still have a significant effect on the market.”<sup>349</sup>

The power of GAFAM companies to influence public knowledge and perception has caused some countries to consider employing similar techniques to monitor and control the populace. The People’s Republic of China has currently developed a social credit system utilizing many available sources of data. China’s “social credit system” is now being implemented to determine access to financial loans or whether a citizen is allowed to ride public transportation.<sup>350</sup> Meanwhile, banks in the United States are already scanning social media information to determine a borrower’s creditworthiness.<sup>351</sup>

The unity between big business and government concerning surveillance is not new. It is perhaps inevitable. As security expert Bruce Schneier has stated, “Corporate surveillance and government surveillance aren’t separate. They’re intertwined; the two support each other. It’s a public-private surveillance partnership that spans the world. This isn’t a formal agreement; it’s more an alliance of interests.”<sup>352</sup> Although some of the GAFAM companies are committed to aiding the government in launching cyber-attacks,<sup>353</sup> some of the GAFAM companies are already selling facial recognition software and artificial intelligence services to private parties, the military,<sup>354</sup> and the Chinese government.<sup>355</sup> Mark

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<sup>349</sup> BRIN & PAGE, *supra* note 348, at App. A.

<sup>350</sup> VICE News, *China’s “Social Credit System” Has Caused More Than Just Public Shaming* (HBO), YOUTUBE (Dec. 12, 2018), available at [https://www.youtube.com/watch?v=Dkw15LkZ\\_Kw](https://www.youtube.com/watch?v=Dkw15LkZ_Kw) (Detailing China’s social credit system where “a high score could bring you lower interest loans and discounted rent and utility bills, but if your score is low, you can be subjected to public shaming or even banned from certain kinds of travel”).

<sup>351</sup> Stephanie Armour, *Borrowers Hit Social-Media Hurdles*, WALL. ST. J. (Jan. 8, 2014), <https://www.wsj.com/articles/borrowers-hit-social-media-hurdles-1389224469>.

<sup>352</sup> SCHNEIER, *supra* note 176, at 78.

<sup>353</sup> *About the Cybersecurity Tech Accord*, CYBERSECURITY TECH ACCORD, <https://cybertechaccord.org/about/> (last visited Feb. 9, 2020).

<sup>354</sup> Will Knight, *Google Won’t Renew Its Military AI Contract*, MIT TECH. REV. (June 1, 2018), <https://www.technologyreview.com/the-download/611287/google-wont-renew-its-military-ai-contract/> (discussing Google providing AI imaging software to the Department of Defense); Monica Nickelsburg, *Is Amazon Selling Facial Recognition Software to ICE? Exec Fields Tough Questions at NY Hearing*, GEEKWIRE (Dec. 12, 2018), <https://www.geekwire.com/2018/amazon-selling-facial-recognition-software-ice-exec-fields-tough-questions-ny-hearing/> (detailing Amazon’s potentially selling facial recognition software to ICE); Jake Kanter, *Microsoft: It Would Be Cruel to Stop Government Agencies Using Facial Recognition Software*, PULSE (Feb. 3, 2019), <https://www.pulse.com.gh/bi/tech/microsoft-it-would-be-cruel-to-stop-government-agencies-using-facial-recognition/96y0msj> (quoting a Microsoft executive who said stopping government agencies from using facial recognition software would be “cruel in its humanitarian effect”).

<sup>355</sup> Ryan Gallagher, *How U.S. Tech Giants are Helping to Build China’s Surveillance State*, INTERCEPT (July 11, 2019), <https://theintercept.com/2019/07/11/china-surveillance-google-ibm-sempian/> (detailing how the OpenPower Foundation a nonprofit led by Google and IBM executives is collaborating with Sempian, a Chinese company that provides surveillance and censorship technologies to the Chinese government).

Zuckerberg practically marketed Facebook as a means to influence foreign policy by stating that any attempt to break up Facebook strengthens Chinese companies.<sup>356</sup> Amazon, through utilizing its video surveillance consumer product Ring, partnered with 400 police forces to supply them with video recordings in what Amazon calls the “new neighborhood watch.”<sup>357</sup> Federal law enforcement forced Google to provide the identity of Google users within 100 feet of a bank that was robbed during a thirty-minute time period a month after the original crime.<sup>358</sup>

The infamous whistleblower Edward Snowden revealed how the United States government has experimented with infiltrating and obtaining access to copious amounts of data from the GAFAM companies<sup>359</sup> and the lack of any new consumer privacy protections presents no reason to assume that such practices will not happen again.<sup>360</sup> Antitrust scholars have noted that when markets are consolidated, governments gain power since there are a reduced number of entities to regulate and control.<sup>361</sup> Antitrust enforcement can thereby serve as an essential means to prevent large corporations from working with the government to curtail fundamental civil liberties, or at least inhibit their degradation.

Platforms also have the ability to affect the behavior of its users and influence their decisions. For example, Facebook can change certain aspects of its platform to increase voter turnout<sup>362</sup> and organ donations.<sup>363</sup>

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<sup>356</sup> Nick Statt, *Read Mark Zuckerberg's Notes from Today's Facebook Privacy Senate Hearing*, VERGE (Apr. 10, 2018), <https://www.theverge.com/2018/4/10/17222546/facebook-mark-zuckerberg-senate-hearing-notes-cambridge-analytica-privacy>.

<sup>357</sup> Drew Harwell, *Doorbell-Camera Firm Ring Has Partnered with 400 Police Forces, Extending Surveillance Reach*, WASH. POST (Aug. 28, 2019), <https://www.washingtonpost.com/technology/2019/08/28/doorbell-camera-firm-ring-has-partnered-with-police-forces-extending-surveillance-reach/>.

<sup>358</sup> Application for a Search Warrant, No. 18-M-191 (DEJ) (D. Wis. Feb. 7, 2019) [https://www.scribd.com/document/423567347/Google-reverse-location-search-warrant?campaign=SkimbitLtd&ad\\_group=66960X1514734X28201b7fe5eb3d596639f512761eaac1&keyword=660149026&source=hp\\_affiliate&medium=affiliate](https://www.scribd.com/document/423567347/Google-reverse-location-search-warrant?campaign=SkimbitLtd&ad_group=66960X1514734X28201b7fe5eb3d596639f512761eaac1&keyword=660149026&source=hp_affiliate&medium=affiliate).

<sup>359</sup> Barton Gellman & Laura Poitras, *U.S., British Intelligence Mining Data From Nine U.S. Internet Companies in Broad Secret Program*, WASH. POST (June 7, 2013), [https://www.washingtonpost.com/investigations/us-intelligence-mining-data-from-nine-us-internet-companies-in-broad-secret-program/2013/06/06/3a0c0da8-cebf-11e2-8845-d970ccb04497\\_story.html](https://www.washingtonpost.com/investigations/us-intelligence-mining-data-from-nine-us-internet-companies-in-broad-secret-program/2013/06/06/3a0c0da8-cebf-11e2-8845-d970ccb04497_story.html) (detailing data collected from Microsoft, Apple, Facebook, Google, and other internet companies by the US Government).

<sup>360</sup> See generally STEPHEN P. MULLIGAN ET AL., CONG. RESEARCH SERV., RL45631, DATA PROTECTION LAW: AN OVERVIEW (2019).

<sup>361</sup> JONATHAN TEPPER, THE MYTH OF CAPITALISM: MONOPOLIES AND THE DEATH OF COMPETITION 149 (2018) (stating “The Nazis wanted almost all industries to become cartels. In 1936 they passed a cartel law to force industries to form cartels where none existed. The consolidation of cartels under the Nazis was part of the general policy of reducing the number of private business entities with which the government must deal.”).

<sup>362</sup> Robert M. Bond et al., *A 61-Million-Person Experiment in Social Influence and Political Mobilization*, 489 NATURE 295 (2012); Zoe Corbyn, *Facebook Experiment Boosts US Voter Turnout*, NATURE (Sept. 12, 2012), <https://www.nature.com/news/facebook-experiment-boosts-us-voter-turnout-1.11401> (detailing that the Facebook “I voted” button increased turn out by an additional 340,000 voters).

<sup>363</sup> A.M. Cameron et al., *supra* note 346, at 2059 (“On the first day of the Facebook organ donor

Considering that corporations are structured to be self-preserving,<sup>364</sup> imagine for a moment if a presidential candidate vowed to break up the GAFAM companies.<sup>365</sup> As a direct threat to their existence and essential revenue stream,<sup>366</sup> it is not implausible that the GAFAM companies would utilize their platforms to endorse a specific candidate for president and send a mass message to all of their users encouraging them to vote for that candidate or suppress the visibility of the threatening candidate's message or even an entire political party.<sup>367</sup>

The GAFAM companies' utilization of their platforms to facilitate their corporate interests would almost certainly be held to be within the purview of their First Amendment speech rights and, even if it is not, any potential litigation of the conduct would last well beyond the conclusion of an election.<sup>368</sup> Google, for example, could accomplish this by suggesting

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initiative, there were 13,054 new online registrations, representing a 21.1-fold increase over the baseline average of 616 registrations.”).

<sup>364</sup> Milton Friedman, *The Social Responsibility of Business is to Increase Its Profits*, N.Y. TIMES (Sept. 13, 1970) at SM17, available at <http://umich.edu/~thecore/doc/Friedman.pdf>; *Dodge v. Ford Motor Co.*, 170 N.W. 668, 684 (Mich. 1919) (holding that “[a] business corporation is organized and carried on primarily for the profit of the stockholders”); *eBay Domestic Holdings, Inc. v. Newmark*, 16 A.3d 1, 34 (Del. Ch. 2010) (holding that corporate directors are bound by “fiduciary duties and standards” which include “acting to promote the value of the corporation for the benefit of its stockholders”).

<sup>365</sup> Jeff Stein, *Warren’s 2020 Agenda: Break Up Monopolies, Give Workers Control Over Corporations, Fight Drug Companies*, WASH. POST (Dec. 31, 2018), [https://www.washingtonpost.com/business/2018/12/31/warrens-agenda-break-up-monopolies-give-workers-control-over-corporations-fight-big-pharma/?utm\\_term=.02acfb211703](https://www.washingtonpost.com/business/2018/12/31/warrens-agenda-break-up-monopolies-give-workers-control-over-corporations-fight-big-pharma/?utm_term=.02acfb211703); *America’s Monopoly Problem*, NEW AMERICA (June 29, 2016), <https://www.newamerica.org/open-markets/events/americas-monopoly-problem> (last visited Jan. 30, 2020).

<sup>366</sup> Alexandra Bruell, *Political Ad Spending Will Approach \$10 Billion in 2020, New Forecast Predicts*, WALL ST. J. (June 4, 2019), <https://www.wsj.com/articles/political-ad-spending-will-approach-10-billion-in-2020-new-forecast-predicts-11559642400> (“Spending on political advertisements is projected to hit a new high in 2020, surging \$3.6 billion above the most recent presidential campaign year.”).

<sup>367</sup> A BETTER DEAL: CRACKING DOWN ON CORPORATE MONOPOLIES, available at <https://web.archive.org/web/20190107030425/https://www.democrats.senate.gov/imo/media/doc/2017/07/A-Better-Deal-on-Competition-and-Costs-1.pdf>.

<sup>368</sup> ADAM WINKLER, *WE THE CORPORATIONS* 364–76 (2018) (detailing *Citizens United v. Fed. Election Comm’n*, 558 U.S. 310 (2010), and the granting of corporations full first amendment free speech rights). Many cases have held that both the displaying and the method of displaying content is within the purview of a corporations First Amendment rights. *See e.g.*, *Zhang v. Baidu.com*, 10 F. Supp. 3d 433, 435 (S.D.N.Y. 2014) (search engines’ editorial decisions as to the ranking of search results are fully protected First Amendment expression); *Langdon v. Google, Inc.*, 474 F. Supp. 2d 622, 629–32 (D. Del. 2007) (plaintiffs demand that Google’s search results and ad placement be more favorable to it contravenes Google’s First Amendment Rights. Also finding that Google is a private entity that is “not subject to constitutional free speech guarantees” and asserting that the United States Supreme Court “has routinely rejected the assumption that people who want to express their views in a private facility, such as a shopping center, have a constitutional right to do so”); *Search King, Inc. v. Google Tech., Inc.*, No. CIV-02-1457-M, 2003 WL 21464586, at \*4 (W. D. Okla. May 27, 2003) (Google’s opinions about the ranking of search results are constitutionally protected speech); *Order Granting Motion to Dismiss, Prager Univ. v. Google, LLC*, No. 17-CV-06064-LHK, 2018 WL 1471939, at \*8 (N.D. Cal. Mar. 26, 2018) (stating, “[Google is a private entity] who created their own video-sharing social media website and [can] make decisions about whether and how to regulate content that has been uploaded on that

different results with its search engine.<sup>369</sup> All that would be needed is a simple change to its algorithm. The same problem would also apply to Facebook.

Scholars have already investigated how GAFAM companies could affect political elections and have shown how viewpoints of users changed with just one search.<sup>370</sup> Consider if any of the GAFAM companies decided to block images, posts, shares, and websites of a candidate they oppose. Professor Jonathan Zittrain of Harvard Law School has stated, “Facebook could decide an election without anyone ever finding out.”<sup>371</sup>

This author recognizes how this may sound alarmist. Still, given what is already happening in China and the actions GAFAM companies have already committed, Mayer Rothschild’s famous quote is probably best amended to “Permit one to control the information of a nation, and one should not care who makes its laws.”<sup>372</sup>

## 2. Monitoring, Copying, and Competitor Deterrence

It is common, perhaps expected, for companies to monitor competitor behavior. However, the extensive data collection operations by the GAFAM companies should cause one to consider the possibility that the GAFAM companies may monitor any and perhaps all competitive threats utilizing their platforms.<sup>373</sup> Since the GAFAM companies control the means to develop, market, sell, and harvest data, monitoring potential competitors becomes nothing more than adding computer code.<sup>374</sup> For example,

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website.”); *Kinderstart.com, LLC v. Google, Inc.*, No. C 06-2057 JF (RS), 2007 WL 831811 (N.D. Cal. Mar. 16, 2007).

<sup>369</sup> This has been termed the ‘Search Suggestion Effect.’ ROBERT EPSTEIN, ET AL., AM. INS. FOR BEHAVIORAL RESEARCH & TECH., *THE SEARCH SUGGESTION EFFECT (SSE) 2* (2018); see also Robert Epstein, *The New Mind Control*, AEON (Feb. 18, 2016), <https://aeon.co/essays/how-the-internet-flips-elections-and-alters-our-thoughts> (equating Google’s decisions about what webpages to show and their ranking as “mind control”).

<sup>370</sup> EPSTEIN, ET AL., *supra* note 369; Robert Epstein & Ronald E. Robertson, *The Search Engine Manipulation Effect (SEME) and Its Possible Impact on the Outcomes of Elections*, 112 PROCEEDINGS NAT’L ACAD. SCI. U.S. AM. E4512, E4512 (2015), available at <http://www.pnas.org/content/pnas/112/33/E4512.full.pdf> (concluding “biased search rankings can shift the voting preferences of undecided voters by 20% or more”).

<sup>371</sup> Zittrain, *supra* note 348.

<sup>372</sup> ROBERT L. OWEN, NATIONAL ECONOMY AND THE BANKING SYSTEM OF THE U.S., S. DOC. NO. 23, at 90 (1st Sess. 1939), <https://archive.org/stream/NationalEconomyAndTheBankingSystemOfTheUnitedStates/NationalEconomyAndTheBankingSystem#page/n103/mode/2up/search/permit> (citing Mayer Rothschild’s famous quote: “Permit me to issue and control the money of a nation, and I care not who makes its laws.”).

<sup>373</sup> 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://search-proquest-com.ezproxy.law.uconn.edu/docview/1927220007/C7F89DFEF7FA4DE1PQ/1?accountid=41947>] (detailing such as Facebook actively search for competitor features to copy by hosting paid group trials of their products and services).

<sup>374</sup> Evans, *supra* note 18, at 16 (“[Online platforms] can add new features, and introduce new products and services, by modifying or adding software code and related databases.”).

Microsoft could run processes in Windows that scans a user's computer to provide the corporation information about whether the user is going to install a competitor's web browser. Microsoft could then either prevent the installation of the web browser or, as it tried to implement, warn the user not to install the competitor's browser.<sup>375</sup> It seems more than plausible that the GAFAM companies are already using their platforms to monitor competitive threats to either copy a feature, immediately start developing their own competitor product and leverage it into that market with their superior market position, or immediately offer a buyout.

The most overt example of this behavior was Facebook utilizing its Onavo VPN service to track the number of WhatsApp messages being transmitted through its service.<sup>376</sup> Facebook recognized that WhatsApp had almost an equivalent amount of sent messages through its platform as Facebook Mobile and its web service combined.<sup>377</sup> Recognizing the need to act, Facebook then neutralized the threat with a \$19 billion acquisition of WhatsApp.<sup>378</sup> BuzzFeed reporters Charlie Warzel and Ryan Mac, who broke the story by obtaining confidential internal Facebook documents, stated that "In identifying mobile usage trends, Onavo became a crucial tool for Facebook to survey its competition."<sup>379</sup>

Multisided companies also use their vast platforms as a form of private surveillance infrastructure to copy and thus neutralize competitive threats. Copying competitor services is well-practiced in the technology industry as it provides the opportunity for the platform to leverage its way into a new market without incurring a significant amount of investment, research, or risk-taking as the first entrant.<sup>380</sup> Additionally, a platform is incentivized to

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<sup>375</sup> Tom Warren, *Microsoft Backs Off from Windows 10 'Warning' About Chrome and Firefox*, VERGE (Sept. 17, 2018), <https://www.theverge.com/2018/9/17/17868946/microsoft-windows-10-warning-prompt-chrome-firefox-test> (detailing Microsoft's attempt to warn Windows 10 users about installing alternative browsers including Chrome and Firefox). Microsoft engaged in similar behavior in the 1990s when Windows 3.1 displayed a false incompatibility error. See Kenneth C. Baseman et al., *Microsoft Plays Hardball: The Use of Exclusionary Pricing and Technical Incompatibility to Maintain Monopoly Power in Markets for Operating System Software*, ANTITRUST BULL., May 1995, at 12–13, 18, available at <https://web.archive.org/web/20191029153805/https://eml.berkeley.edu/~woroch/hardball.pdf>.

<sup>376</sup> Charlie Warzel & Ryan Mac, *These Confidential Charts Show Why Facebook Bought WhatsApp*, BUZZFEED (Dec. 5, 2018), [www.buzzfeednews.com/article/charliewarzel/why-facebook-bought-whatsapp](http://www.buzzfeednews.com/article/charliewarzel/why-facebook-bought-whatsapp).

<sup>377</sup> *Id.*

<sup>378</sup> Covert, *supra* note 266.

<sup>379</sup> Warzel & Mac, *supra* note 376.

<sup>380</sup> One such example of copying is Google's recent copying of Apple's gesture navigation for their Android smartphone operating system. See Romain Dillet, *Android Blatantly Copies the iPhone X Navigation Gestures*, TECHCRUNCH (May 8, 2018), <https://techcrunch.com/2018/05/08/android-blatantly-copies-the-iphone-x-navigation-gestures/>. During their 2018 WWDC conference, Apple essentially copied the way Google's Android operating system handles smartphone notifications. See Shannon Liao, *iOS 12 Will Now Let You Group Notifications, Just Like on Android*, VERGE (June 4, 2018), <https://www.theverge.com/2018/6/4/17414604/apple-ios-12-iphone-vs-android-notifications-wwdc-2018>; Buster Hein, *6 Ways Microsoft Copied Apple With Windows 10 (Plus Some Truly New Ideas)*, CULT MAC (Jan. 21, 2015), <https://www.cultofmac.com/309588/6-ways-microsoft-copied-apple->

copy a competitor's service because copying prevents that competitor from leapfrogging its dominant position.<sup>381</sup> Due to its harmful anticompetitive effects, in a narrow instance, copying is acknowledged as an antitrust violation.<sup>382</sup>

Unfortunately, many members of the technology industry reject copying as an anticompetitive concern stating that "[t]his is the way the tech industry works"<sup>383</sup> and is "fair game."<sup>384</sup> Facebook executives have agreed as well that copying is a customary practice.<sup>385</sup> It is, therefore, unsurprising that one of the major battles at the onset of the technology revolution was predicated on Microsoft allegedly copying Apple's graphical user interface.<sup>386</sup> Even major news organizations express sarcasm and indifference to the notion that technology companies copy each other's features and actively encourage and endorse the practice.<sup>387</sup>

While copying can create some innovation and is beneficial in certain circumstances, the ability of a dominant platform to copy competitor features (along with the presence of network effects, path dependencies, and the other conduct detailed in this article) presents several competitive

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window-10-plus-truly-new-ideas/ (detailing several ways Microsoft copied features of MacOS for their Windows 10 operating system).

<sup>381</sup> See *supra* Section III.A.

<sup>382</sup> Antitrust scholars have noted the tension between antitrust law and copyright law. See Robert H. Lande & Sturgis M. Sobin, *Reverse Engineering of Computer Software and U.S. Antitrust Law*, 9 HARV. J.L. & TECH. 237, 242 (1996) ("Over the years, U.S. jurisprudence and legislation have reconciled some of the inherent tensions between antitrust and intellectual property laws by recognizing that efforts to enforce intellectual property rights beyond their proper scope may give rise to antitrust liability."). See also Karjala, *supra* note 64, at 161 ("In the abstract, intellectual property and antitrust coexist in a state of superficial tension. The latter abhors monopolies, or at least the abuse of monopoly power, while the former actually creates monopolies through force of law."). The copying of software has been considered an attempt to illegally extend an otherwise legal monopoly through the copyright system. See *id.* at 162 ("[In the Microsoft case,] [t]he government seeks to prove that Microsoft levered its legal copyright monopoly in the Windows operating software to restrain trade in a variety of compatible products designed to run on the Windows platform.").

<sup>383</sup> Josh Constine, *Instagram on Copying Snapchat: "This is the Way the Tech Industry Works"*, TECHCRUNCH (May 16, 2017), <https://techcrunch.com/2017/05/16/to-clone-or-not-to-clone/>. In other cases, it is used sarcastically to refer to privacy practices, nevertheless such comments are indicative that CEO's understand copying is a core feature of the technology industry. See Casey Newton, *Evan Spiegel on Facebook: "We Would Really Appreciate it if They Copied Our Data Protection Practices,"* VERGE (May 29, 2018), <https://www.theverge.com/platform/amp/2018/5/29/17407530/evan-spiegel-interview-code-conference-2018>. Even very popular technology blogs encourage the practice. See Justin Pot, *5 MacOS Features That Microsoft Should Ruthlessly Steal*, HOW-TO GEEK (Aug. 9, 2018), <https://www.howtogeek.com/?p=361688>.

<sup>384</sup> Elizabeth Dwoskin, *Facebook's Willingness to Copy Rivals' Apps Seen as Hurting Innovation*, WASH. POST (Aug. 10, 2017), [https://www.washingtonpost.com/business/economy/facebooks-willingness-to-copy-rivals-apps-seen-as-hurting-innovation/2017/08/10/ea7188ea-7df6-11e7-a669-b400c5c7e1cc\\_story.html](https://www.washingtonpost.com/business/economy/facebooks-willingness-to-copy-rivals-apps-seen-as-hurting-innovation/2017/08/10/ea7188ea-7df6-11e7-a669-b400c5c7e1cc_story.html) ("Many in Silicon Valley say copying is fair game . . .").

<sup>385</sup> Morris & Seetharaman, *supra* note 373.

<sup>386</sup> *Apple Comput., Inc. v. Microsoft Corp.*, 35 F.3d 1435 (9th Cir. 1994).

<sup>387</sup> Paresh Dave & David Pierson, *There's One Part of Snapchat That Facebook Can't Copy: CEO Evan Spiegel*, L.A. TIMES (Mar. 1, 2017), <http://www.latimes.com/business/technology/la-fi-tn-evan-spiegel-20170228-htmstory.html>; Dan Seifert, *Every Phone Should Copy the iPhone X's Gestures*, VERGE (Jan. 31, 2018), <https://www.theverge.com/2018/1/31/16953502/iphone-x-gestures-copy-android-oneplus-editorial>.

concerns.<sup>388</sup> First, many multisided markets do not compete on price on at least one side of their platform.<sup>389</sup> These services mostly compete on functionality; thus, the very act of copying can supplant the competitive process and entrench a dominant incumbent. It is hard to imagine a company starting with even a modest idea and not worrying that one of the GAFAM companies will utilize their vast financial and intellectual resources to copy its features.<sup>390</sup> One of the most well-known examples of this practice is the ever-evolving competitive dynamics of Instagram (owned by Facebook) and Snapchat. Routinely, Instagram has copied features from Snapchat, which include stories,<sup>391</sup> filters,<sup>392</sup> and its screenshot warning.<sup>393</sup>

Second, copying deters entrepreneurs and stifles innovation.<sup>394</sup> Several prominent journalists and scholars have voiced this concern of start-ups being mimicked into oblivion.<sup>395</sup> *Washington Post* journalist Elizabeth Dwoskin has stated that “interviews with two dozen top investors and entrepreneurs suggest it is having a profound impact on innovation in Silicon Valley, by creating a strong disincentive for investors and start-ups to put money and effort into creating products Facebook might copy.”<sup>396</sup> An article in *The Wall Street Journal* stated that: “The deep pockets of giants such as Facebook, Alphabet Inc.'s Google, Apple Inc. and Amazon.com Inc. make it increasingly difficult for startups to compete and stay independent.”<sup>397</sup> *The Guardian* reported that “[p]eople are not getting funded because Amazon

<sup>388</sup> See AUGUST PRETA, PLATFORM COMPETITION IN ONLINE DIGITAL MARKETS 5 (2018), <https://ssrn.com/abstract=3272839> (stating “Switching costs may act as an entry deterrent. In network markets, direct network effects can be considered as a cause of switching costs.”).

<sup>389</sup> See MATCHMAKERS, *supra* note 16, at 33 (stating many multisided platforms have a “subsidy” side, where the platform loses money for each participant that joins, and a “money” side, where the platform makes more than enough money to offset those losses.); see also *supra* Section I.A.

<sup>390</sup> See *infra* Appendix A & B.

<sup>391</sup> Madison Malone Kircher, *The ‘Story’ Format Is Here to Stay, on Snapchat or Off of It*, N.Y. MAG. (Aug. 2, 2017), <http://nymag.com/selectall/2017/08/instagram-stories-copied-snapchat-one-year-ago.html>.

<sup>392</sup> Marty Swant, *Instagram Copies Snapchat Again, This Time with Filters for Your Face*, ADWEEK (May 16, 2017), <http://www.adweek.com/digital/instagram-copies-snapchat-again-this-time-with-filters-for-your-face/>.

<sup>393</sup> Joe Pinkstone, *Instagram Copies Snapchat Yet Again with a New Feature That Alerts Users When You Screenshot Their Stories*, DAILY MAIL (Jan. 19, 2018), <http://www.dailymail.co.uk/sciencetech/article-5287919/Instagram-copies-Snapchat-feature-screenshot-alerts.html>.

<sup>394</sup> See Gordon M. Phillips & Alexei Zhdanov, *R&D and the Incentives from Merger and Acquisition Activity* (Nat’l Bureau of Econ. Research, Working Paper No. 18346, 2012), available at <http://www.nber.org/papers/w18346> (data suggests that the prospect of acquisition induces smaller firms to innovate more in hope of selling out, but larger firms to innovate less because they would prefer to obtain new technology by merger rather than internal development).

<sup>395</sup> See Scott Galloway, *Silicon Valley’s Tax-Avoiding, Job-Killing, Soul-Sucking Machine*, ESQUIRE (Feb. 8, 2018), <https://www.esquire.com/news-politics/a15895746/bust-big-tech-silicon-valley/> (Scott Galloway stating “IPOs and the number of VC-funded firms have been in steady decline over the past few years.”); Kurt Wagner, *Facebook is Full of Could-Be CEOs — But No One Ever Leaves*, VOX (May 22, 2018), <https://www.recode.net/platform/amp/2018/5/22/17340694/facebook-hiring-executive-management-team-mark-zuckerberg>.

<sup>396</sup> Dwoskin, *supra* note 384.

<sup>397</sup> Morris & Seetharaman, *supra* note 373.



might one day compete with them.”<sup>398</sup> In fact, the industries that potential investors will not provide essential start-up capital are now called “kill-zones.”<sup>399</sup>

Researchers found that after an acquisition announcement by either Facebook or Google, “VC investments in start-ups in the same space as the company acquired by Google and Facebook drop by 46% and the number of deals by 42% in the three years following an acquisition.”<sup>400</sup> Evidence has also shown that angel investment deals are declining.<sup>401</sup>

Third, even if entrepreneurs are not entirely deterred from starting a company, the present reality changes the incentives of business development. Instead of growing a successful company, entrepreneurs now face intense incentives to endure the consequences of predatory practices by GAFAM companies, manage the business turmoil due to the GAFAM companies copying and leveraging, sell to the highest GAFAM bidder and avoid these issues altogether.<sup>402</sup> The practical (and most likely investor preferred) choice is evident.

The GAFAM companies have incorporated predatory practices as a part of their regular business strategy to purchase or destroy nascent rivals. For instance, Amazon engaged in relentless predatory pricing practices, which

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<sup>398</sup> Olivia Solon, *As Tech Companies Get Richer, Is It 'Game Over' for Startups?*, GUARDIAN (Oct. 20, 2017), <https://www.theguardian.com/technology/2017/oct/20/tech-startups-facebook-amazon-google-apple>.

<sup>399</sup> *American Tech Giants Are Making Life Tough for Startups*, ECONOMIST (June 2, 2018), <https://www.economist.com/business/2018/06/02/american-tech-giants-are-making-life-tough-for-startups>.

<sup>400</sup> SAI KRISHNA KAMEPALLI, ET AL., KILL ZONE 4 (2019), available at [https://faculty.chicago.boothe.edu/raghuram.rajani/research/papers/Kill%20zone\\_nov.pdf](https://faculty.chicago.boothe.edu/raghuram.rajani/research/papers/Kill%20zone_nov.pdf); NAT'L VENTURE CAPITAL ASS'N, VENTURE MONITOR: 2Q 2018 8 (2018), available at [https://files.pitchbook.com/website/files/pdf/2Q\\_2018\\_PitchBook\\_NVCA\\_Venture\\_Monitor.pdf](https://files.pitchbook.com/website/files/pdf/2Q_2018_PitchBook_NVCA_Venture_Monitor.pdf) [hereinafter NAT'L VENTURE CAPITAL ASS'N]; see Phillips & Zhdanov, *supra* note 394 (detailing the decline of seed activity).

<sup>401</sup> NAT'L VENTURE CAPITAL ASS'N, *supra* note 400.

<sup>402</sup> See George Anderson, *Chico's Decides to Join Amazon, Since It Can't Beat It*, RETAIL WIRE (May 1, 2018), <https://www.retailwire.com/discussion/chicos-decides-to-join-amazon-since-it-cant-beat-it/>; see also Phillips & Zhdanov, *supra* note 394 (data suggests that the prospect of acquisition induces smaller firms to innovate more in hope of selling out, but larger firms to innovate less because they would prefer to obtain new technology by merger rather than internal development); FOER, *supra* note 177, at 30 (stating “It’s pretty clear that most of his colleagues in Silicon Valley agree that monopoly is the natural, desirable order of things. That’s why start-up companies no longer dream of displacing Google or Facebook, but launch themselves with the ultimate aspiration of getting bought by the giants.”); Khan, *supra* note 217, at 772–73 (stating “Amazon’s history with Quidsi has sent a clear message to potential competitors—namely that, unless upstarts have deep pockets that allow them to bleed money in a head-to-head fight with Amazon, it may not be worth entering the market.”); Scott Kirsner, *Exit Strategy for Sputtering Startups: Get Acqui-hired*, BOS. GLOBE (Jan. 26, 2014), <https://www.bostonglobe.com/business/2014/01/26/exit-strategy-for-sputtering-startups-get-acqui-hired/Z79UGFFhp1644bsvOCKx1K/story.html> (stating “In most industries, if you start a company that doesn’t fly, you lay people off, file for bankruptcy, auction the desks and equipment, and look for another job. But in the tech sector, you get acqui-hired. People who understand how to build mobile apps, online services, and Web-based software are in such short supply that even if a startup fizzles, it still has a chance of getting scooped up for its talent.”).

eventually resulted in the acquisition of Diapers.com and Zappos.<sup>403</sup> In the case of Zappos, after refusing to be purchased by Amazon, Amazon then sold shoes so far below cost that it eventually incurred \$150 million in losses before Zappos voted to sell itself to Amazon.<sup>404</sup> A similar situation arose when Snapchat rejected Facebook's \$3 billion offer.<sup>405</sup> Soon after, Facebook relentlessly copied Snapchat's features and leveraged its vast user base into Snapchat's market – in conjunction with lacking differentiated market operations,<sup>406</sup> Snapchat has been struggling ever since.<sup>407</sup>

While new companies could also try to copy current GAFAM services for themselves, given the reasons above – network effects, financial and intellectual capital, large user bases of the GAFAM platforms – copying does not work nearly as successfully, for smaller companies.

Fourth, the ability to copy a competitor's product features both dissuades investment for small-deal ventures<sup>408</sup> and forms a dependence on angel and seed capital to startup. Many platforms today need substantial amounts of seed capital to survive lengthy periods without any profits,<sup>409</sup> particularly to take advantage of network effects and to enter the market quickly to establish a position, while also using their financial resources to stave off copying and price cuts from dominant competitors.<sup>410</sup>

Indicative of their willingness to copy potential competitors and monitor potential competitive threats, is that the GAFAM companies also either have or are developing venture capital divisions.<sup>411</sup> While current evidence

<sup>403</sup> Olivia LaVecchia & Stacy Mitchell, *Amazon's Stranglehold: How the Company's Tightening Grip Is Stifling Competition, Eroding Jobs, and Threatening Communities*, INST. FOR LOC. SELF-RELIANCE, 12 (Nov. 2016), [https://ilsr.org/wp-content/uploads/2016/11/ILSR\\_AmazonReport\\_final.pdf](https://ilsr.org/wp-content/uploads/2016/11/ILSR_AmazonReport_final.pdf)

<sup>404</sup> *Id.* at 16.

<sup>405</sup> See Seth Fiegerman, *Snapchat CEO Reveals Why He Rejected Facebook's \$3 Billion Offer*, MASHABLE (Jan. 6, 2014), <https://mashable.com/2014/01/06/snapchat-facebook-acquisition-2/#XLFYbTMesiql>.

<sup>406</sup> See *supra* Section III.A.

<sup>407</sup> Mariel Soto Reyes, *Facebook is Developing a New Standalone Snapchat-like Messaging App Called 'Threads'*, BUS. INSIDER (Aug. 28, 2019), <https://www.businessinsider.com/facebook-launching-snapchat-like-app-threads-2019-8>.

<sup>408</sup> See NAT'L VENTURE CAPITAL ASS'N, *supra* note 400 (note that while the number of deals is declining, deal size is not).

<sup>409</sup> Evans, *supra* note 6, at 363 (stating "entrants [in multisided markets] may require large sums of capital").

<sup>410</sup> NAT'L VENTURE CAPITAL ASS'N, *supra* note 400; see Ian King & Eric Newcomer, *Uber Spent \$10.7 Billion in Nine Years. Does It Have Enough to Show for It?*, BLOOMBERG (Mar. 6, 2018), <https://www.bloomberg.com/news/articles/2018-03-06/uber-spent-10-7-billion-in-nine-years-does-it-have-enough-to-show-for-it>.

<sup>411</sup> *GV Backs Founders Who Transform Industries and Create New Ones*, GV, <https://www.gv.com/portfolio/> (detailing google providing funding for 354 companies - including Uber, Jet.com, and 23andMe) (last visited Feb. 29, 2020); *Focused on Tomorrow*, CAPITALG, <https://capitalg.com/companies/> (Google's other venture capital company - investing in companies such as Snapchat) (last visited Feb. 29, 2020); *Visionary Innovators Shaping The Future*, M12, <https://m12.vc/companies/> (detailing Microsoft investing in 64 companies) (last visited Feb. 29, 2020); Courtney Rubin, *Facebook, Amazon Team Up for Venture Fund*, INC. (Oct. 22, 2010), <https://www.inc.com/news/articles/2010/10/facebook-amazon-team-up-for-venture-fund.html> (detailing in 2010 Facebook Teamed up with

indicates that the presence of GAFAM venture capital does not have an adverse effect on venture capital investment,<sup>412</sup> the venture capital divisions of GAFAM companies should provide them ample access to the latest developing companies to acquire themselves or replicate the developed technology of which they provided capital. Amazon committed such an offense when its venture capital arm provided \$5.6 million to Nucleus, a tablet computer designed to be an intercom system and video chat tool, and then subsequently copied the idea with the release of its Echo Show a year later.<sup>413</sup>

Journalists have noted that the prevalence of copying competitor products is partially responsible for the 50 percent decline in businesses less than a year old from 15 to 8 percent of total businesses.<sup>414</sup>

### 3. Discriminatory Conduct

By setting the rules of the markets they control, platforms can unilaterally modify those rules to benefit themselves or selected parties by providing discriminatory and preferential advantages.

Courts have viewed the idea of discriminatory treatment by platform owners as an antitrust concern.<sup>415</sup> However, the GAFAM companies have

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Amazon to create a 250 million dollar investment fund); *The Alexa Fund*, AMAZON, <https://developer.amazon.com/alexa-fund> (Amazon's 200 million venture capital fund) (last visited Feb. 29, 2020); Caitlin Huston, *Why Apple Doesn't Have a Venture-Capital Arm*, MARKETWATCH (June 18, 2016), <https://www.marketwatch.com/story/why-apple-doesnt-have-a-venture-capital-arm-2016-06-15> (detailing Apple currently doesn't have a venture capital arm as that would potentially hurt its image as being one of the most innovative companies); Eric Eldon, *Facebook Has No Plans To Continue fbFund*, ADWEEK (July 30, 2010), <https://www.adweek.com/digital/facebook-has-no-plans-to-continue-fbfund/> (detailing Facebook's original venture capital firm fbFund disbanded in 2010).

<sup>412</sup> MARSH & MCLENNAN CO., OLIVER WYMAN, ASSESSING THE IMPACT OF BIG TECH ON VENTURE INVESTMENT 26 (July 11, 2018), available at <https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2018/july/assessing-impact.pdf>.

<sup>413</sup> Jason Del Rey, *Amazon Invested Millions in the Startup Nucleus—Then Cloned Its Product for the New Echo*, VOX (May 10, 2017), <https://www.recode.net/2017/5/10/15602814/amazon-invested-startup-nucleus-cloned-alexa-echo-show-voice-control-touchscreen-video>.

<sup>414</sup> Solon, *supra* note 398; IAN HATHAWAY & ROBERT LITAN, BROOKINGS INST., THE OTHER AGING OF AMERICA: THE INCREASING DOMINANCE OF OLDER FIRMS 1, (July 2014), available at [https://www.brookings.edu/wp-content/uploads/2016/06/other\\_aging\\_america\\_dominance\\_older\\_firms\\_hathaway\\_litan.pdf](https://www.brookings.edu/wp-content/uploads/2016/06/other_aging_america_dominance_older_firms_hathaway_litan.pdf) (detailing the aging of America's companies and finding "The share of firms aged 16 years or more was 23 percent in 1992, but leaped to 34 percent by 2011—an increase of 50 percent in two decades. The share of private-sector workers employed in these mature firms increased from 60 percent to 72 percent during the same period. Perhaps most startling, we find that employment and firm shares declined for every other firm age group during this period.").

<sup>415</sup> See generally *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131, 184 (D.D.C. 1982) (the relevant section stating in full):

During the last thirty years, there has been an unrelenting trend toward concentration in the ownership and control of the media. Diversity has disappeared in many areas; newspapers have gone out of business; others have merged; and much of the flow of news and editorial opinion appears more and more to be *controlled and shaped* by the three television networks and a handful of news magazines and metropolitan newspapers. This concentration presents obvious dangers even today. Unless care is taken, both the concentration and the attendant

given themselves exemptions on several occasions without any actionable antitrust scrutiny in the United States. Notably, the FTC declined to investigate Google for the preferential treatment of its search platform.<sup>416</sup>

Preferential treatment can exist in several forms. Platforms can give themselves preferential treatment for the fees they charge to other dependents of the platform. For example, when Amazon enters a market, it can forgo the platform fee it charges to retailers, which effectively serves as a tax on retailers and a tax exemption for itself.<sup>417</sup>

Microsoft also acted similarly when it decided to enter into the personal computer market with the release of its Surface tablets in 2012. Presumably, Microsoft exempted itself from the Windows licensing fee required for all personal computer distributors.<sup>418</sup> Undoubtedly, this exemption gave Microsoft some advantage in becoming a top-five personal computer distributor.<sup>419</sup> By installing Windows, third-party retailers, such as Dell Computer, are essentially paying the platform owner (i.e., Microsoft) to compete against itself.

Control over the conduct that takes place on the platform, as well as restricting and policing the conduct that occurs on the platform, results in multisided corporations obtaining pricing controls over platform dependents beyond the direct revenue for the service (e.g., listing of products on Amazon.com or installing Windows on a computer). The GAFAM platforms are adept at charging fees for the area of their platform where they already maintain a dominant position. In the case of Amazon, sellers incur fees for various services and features to sell on the platform ranging from product-specific fees, referral fees, selling fees, high volume license fees, closing fees, and per item fees.<sup>420</sup> Google charges fees for advertisements to

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dangers will be significantly increased by the new technologies. Indeed, it is not at all inconceivable that electronic publishing, with its speed and convenience will eventually overshadow the more traditional news media, and that a single electronic publisher would acquire substantial control over the provision of news in large parts of the United States.

<sup>416</sup> In the report, discriminatory conduct is termed “search bias.” See FED. TRADE COMM’N, FTC FILE NO. 111-0163, *GOOGLE’S SEARCH PRACTICES 1* (Jan. 3, 2013), available at [https://www.ftc.gov/sites/default/files/documents/public\\_statements/statement-commission-regarding-googles-search-practices/130103brillgooglesearchstmt.pdf](https://www.ftc.gov/sites/default/files/documents/public_statements/statement-commission-regarding-googles-search-practices/130103brillgooglesearchstmt.pdf). However, in 2015, half of an internal FTC report mistakenly revealed that the commission was concerned with Google’s search practices. See *FTC Report*, *supra* note 56, at 40.

<sup>417</sup> *Start Selling Online*, AMAZON SERVICES, <https://services.amazon.com/selling/pricing.html> (last visited Feb. 2, 2020).

<sup>418</sup> Jonathan Hassell, *5 Pros and Cons of Microsoft Surface Tablet*, CIO (June 20, 2012), available at <http://web.archive.org/web/20170615233239/https://www.cio.com/article/2394852/tablets/5-pros-and-cons-of-microsoft-surface-tablet.html> (detailing Microsoft does not have to pay itself the Windows licensing fee)

<sup>419</sup> Tom Warren, *Microsoft is Now a Top Five PC Maker in the US Thanks to Surface*, VERGE (Oct. 10, 2018), <https://www.theverge.com/2018/10/10/17961938/microsoft-surface-top-pc-maker-gartner-2018>.

<sup>420</sup> *Selling on Amazon Fee Schedule*, AMAZON SELLER CENTRAL, <https://sellercentral.amazon.com/gp/help/external/200336920> (last visited Feb. 1, 2020).

be displayed in a user's search results. Apple charges a 30 percent fee for purchases and subscriptions on its App Store platform.<sup>421</sup> Facebook charges for impressions (i.e., views) of advertised posts.

The fees charged, given the market position of the GAFAM companies in combination with the unavoidability of these platforms, essentially amounts to a tax over the entire areas of commerce they control. This tax can impose a barrier to competition and success on the platform – particularly if the GAFAM platform owners also exist in the market they are imposing the tax on, which they can exempt themselves from. Such a situation presents itself in the case of Spotify when in a 2019 European Commission antitrust complaint claimed that “Apple requires that Spotify and other digital services pay a 30 percent tax on purchases made through Apple's payment system, including upgrading from our Free to our Premium service. If we pay this tax, it would force us to artificially inflate the price of our Premium membership well above the price of Apple Music.”<sup>422</sup> Worse, forgoing Apple's payment system would force Spotify to accept terms that limit its ability to communicate with its customers through its application.<sup>423</sup>

It is easy to dismiss the ability of a platform to charge for its services as a cost of doing business,<sup>424</sup> but this taxing ability also serves as a means for a multisided business to control the success of competitors to thrive on its platform. Taking the words of Chief Justice Marshall, “An unlimited power to tax involves... a power to destroy; because there is a limit beyond which no institution... can bear taxation.”<sup>425</sup>

Discriminatory treatment can also exist in non-pricing terms, particularly when it comes to displays of information. First, platforms can promote their products and services that exist in tangential markets through their primary market, where they have market dominance. The GAFAM platforms already prioritize their services on their platforms. For example, Amazon uses its data and platform to sell their own products, which are conveniently placed at the top of the search results; this enables Amazon to maintain over 90 percent product market share in at least five markets on its platform.<sup>426</sup> A 2016 investigation by *The Capitol Forum* revealed that

<sup>421</sup> Rob Pegoraro, *Apple's Taking 30 Percent of App Store Subscriptions is an Unkind Cut*, WASH. POST (Feb. 20, 2011), <http://www.washingtonpost.com/wp-dyn/content/article/2011/02/18/AR2011021807943.html>.

<sup>422</sup> Daniel Ek, *Consumers and Innovators Win on a Level Playing Field*, SPOTIFY (Mar. 13, 2019), <https://newsroom.spotify.com/2019-03-13/consumers-and-innovators-win-on-a-level-playing-field/>.

<sup>423</sup> *The Case*, SPOTIFY: TIME TO PLAY FAIR, <https://www.timetoplayfair.com/the-case/> (last visited Feb. 1, 2020).

<sup>424</sup> In their response to Spotify's claims, Apple seems to imply this by stating “Spotify wouldn't be the business they are today without the App Store ecosystem.” *Apple Statement: Addressing Spotify's Claims*, APPLE (Mar. 14, 2019), <https://www.apple.com/newsroom/2019/03/addressing-spotifys-claims/>.

<sup>425</sup> *McCulloch v. Maryland*, 17 U.S. 316, 327 (1819).

<sup>426</sup> Amy Gesenhues, *Amazon Owns More Than 90% Market Share Across 5 Different Product Categories [Report]*, Marketing Land (May 31, 2018), <https://marketingland.com/amazon-owns-more-than-90-market-share-across-5-different-product-categories-report-241135>.

Amazon “prioritizes its own clothing brands on the promotional carousel labeled ‘Customers Who Bought This Item Also Bought.’”<sup>427</sup>

Google engages in similar conduct when it modifies its ranking algorithm to promote its own products on its search engine page over the products and services of competitors.<sup>428</sup> Google also exhibited this type of preferential treatment when it entered the phone market with the releases of its Pixel phone and when the corporation created its own dedicated advertisements displayed on its search results page for its products.<sup>429</sup>

Apple also utilizes the control over its platform for its sole benefit. An investigation by *The New York Times* found that for over 700 search words such as “books, music, news, magazines” and others, Apple’s applications ranked first in the search listing on its App Store.<sup>430</sup>

The power to discriminate enables platforms the ability to suppress speech, conduct, and competition. Consider that Facebook could, with a simple change of its algorithm, reduce the impact of any harsh coverage from *The New York Times*.<sup>431</sup> It would be in Facebook’s interest to suppress posts from *The New York Times* that provide a detailed guide on how to delete Facebook from one’s life completely.<sup>432</sup> As mentioned previously, such discriminatory conduct would be difficult, if not impossible, to detect.<sup>433</sup>

In combination with the setting of these rules, platforms can also demand preferential treatment from third parties. The market share of the

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<sup>427</sup> *Amazon Risks Antitrust Enforcement by a Trump Administration*, CAPITOL FORUM 1 (Dec. 13, 2016), available at <https://thecapitolforum.com/wp-content/uploads/2016/07/Amazon-2016.12.13.pdf>.

<sup>428</sup> Ariel Zilber, *Google Buys Ad Space Above Search Results to Promote its Own Products – Giving it an Advantage Over its Online Competitors*, DAILY MAIL (Jan. 19, 2017), <https://www.dailymail.co.uk/news/article-4138260/Google-promotes-products-search-engine.html>; *FTC Report*, *supra* note 56, at 28 (stating “Google’s dedicated ads do not compete with other ads through Google’s AdWords auction for placement.”).

<sup>429</sup> Given the recent EU decision Google will now charge smartphone manufacturers that want to use Google’s apps a licensing fee, one that Google will presumably be exempt from. *See Hiroshi Lockheimer, Complying with The EC’s Android Decision*, GOOGLE IN EUR. (Oct. 16, 2018), <https://www.blog.google/around-the-globe/google-europe/complying-ecs-android-decision/>; *see also FTC Report*, *supra* note 56, at 28.

<sup>430</sup> Jack Nicas & Keith Collins, *How Apple’s Apps Topped Rivals in the App Store It Controls*, N.Y. TIMES (Sept. 9, 2019), <https://www.nytimes.com/interactive/2019/09/09/technology/apple-app-store-competition.html>.

<sup>431</sup> Rani Molla, *Facebook Thinks The New York Times’ Coverage of it Has Gotten More Critical. It Has.*, VOX (Jan. 21, 2019), <https://www.recode.net/2019/1/21/18183633/facebook-new-york-times-coverage-negative> (detailing that the New York Times has become much more critical of Facebook since 2012).

<sup>432</sup> Brian X. Chen, *How to Delete Facebook and Instagram From Your Life Forever*, N.Y. TIMES, (Oct. 10, 2018), <https://www.nytimes.com/2018/10/10/technology/personaltech/how-to-delete-facebook-instagram-account.html>.

<sup>433</sup> Sergey Brin & Lawrence Page, *The Anatomy of a Large-Scale Hypertextual Web Search Engine*, available at <http://ilpubs.stanford.edu:8090/361/1/1998-8.pdf> (see *infra* Appendix A); Jonathan Zittrain, *Facebook Could Decide an Election Without Anyone Ever Finding Out*, NEW REPUBLIC (June 1, 2014), <https://newrepublic.com/article/117878/information-fiduciary-solution-facebook-digital-gerrymandering>.

GAFAM companies understandably forces users dependent on the platform to accept the terms provided to them because the alternative of not being on the GAFAM platforms at all is a non-starter.<sup>434</sup> As the essential conduits of productivity, commerce, and communication, companies become dependent on the GAFAM platforms and thus become beholden to their terms, even if the terms are detrimental to other market opportunities. As stated previously, dominant platforms, therefore, have substantial bargaining leverage over third-party dependents. For example, product and service purchasing platforms, such as Amazon and Apple, can impose Most-Favored-Nation (“MFN”) clauses as a requirement for distributing and selling their products through their platforms.<sup>435</sup> Professor Jonathan Baker defines MFN clauses to be a requirement that “providers refrain from offering their products or services at lower prices on other platforms.”<sup>436</sup> Such a strict requirement weakens price competition between services.<sup>437</sup> MFNs also hurt the provider of the product because they prohibit price negotiations with other sellers<sup>438</sup>:

[S]uppose an entrant wishes to gain customers by charging a lower price (perhaps because it has no established brand name or installed base). It can profitably sell at a low price by undertaking selective contracting with suppliers willing to offer a discount in exchange for more volume or other favorable terms. If those suppliers also supply the incumbent, however, an MFN imposed by the incumbent would require the supplier to charge the same price to the entrant. This parity undermines the entrant’s business model by preventing it from making an attractive offer to customers.

In 2010, Apple engaged in one of the most overt demands for preferential treatment. In *United States v. Apple*,<sup>439</sup> Apple capitalized on the “desperate” market position of the “Big Six” book publishers after their deal with Amazon.<sup>440</sup> When Amazon entered the ebook market in 2007, the company chose to implement a wholesale business model where the book publishers would recommend a digital price for Amazon to be able to purchase the books and then Amazon would control the price on its own

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<sup>434</sup> Heather Kelly, *Google’s Data Collection is Hard to Escape, Study Claims*, CNN MONEY (Aug. 21, 2018), <https://money.cnn.com/2018/08/21/technology/google-data-collection/index.html> (“It’s nearly impossible to do anything digitally without Google collecting data on you.”).

<sup>435</sup> Most recently with Apple and its e-book price-fixing incident. *Apple Ebooks*, 791 F.3d 290.

<sup>436</sup> Jonathan B. Baker & Fiona Scott Morton, *Antitrust Enforcement Against Platform MFNs*, 127 YALE L.J. 2176, 2178 (2018).

<sup>437</sup> *Id.*

<sup>438</sup> *Id.* at 2180.

<sup>439</sup> *Apple Ebooks*, 791 F.3d at 290.

<sup>440</sup> *Id.* at 302–03.

site.<sup>441</sup> Amazon purposefully priced the ebooks it purchased from the book publishers below market price to \$9.99.<sup>442</sup> By 2010, Amazon obtained a 90 percent market share in the selling of ebooks.<sup>443</sup> The book publishers soon became worried that the price point Amazon set would eventually devalue the cost of books, hurting its long-term bottom line.<sup>444</sup> The book publishers also worried that Amazon was both setting itself up as a book publisher, cutting the Big Six out of the ebook business entirely, and would obtain a dominant bargaining position to be able to ask for more price concessions.<sup>445</sup> Recognizing an opportunity, Apple, with the allure of being a new entrant into the ebook industry, which would free the book publishers from the potential tyranny of Amazon, and possessing significant technological infrastructure to adequately tackle Amazon, coordinated a pricing agreement with the major book publishers. The agreement required the major book publishers to force Amazon to change its pricing model to Apple's—termed an agency model,<sup>446</sup> which ensured Apple's entry into the ebooks market would be profitable and required the book publisher to sign a MFN.<sup>447</sup> Apple's conduct caused the prices of ebooks to rise and violated the Sherman Act.<sup>448</sup>

Foreign antitrust agencies have already taken more extensive action and have sought to prevent preferential conduct from dominant platforms. In 2019, India's Department of Industrial Policy and Promotion released new regulations prohibiting online retailers, such as Amazon, from selling products through vendors in which they hold an equity stake.<sup>449</sup> In July 2019, the European Commission initiated an investigation into Amazon to determine whether the company is utilizing the data it collects from its dominant position in e-commerce to discriminate in favor of its own products.<sup>450</sup> Most notably, in the European Commission's 2017 investigation into Google, the commission found that Google's preferential treatment to

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<sup>441</sup> *Id.* at 299.

<sup>442</sup> *Id.*

<sup>443</sup> *Id.* at 299–300.

<sup>444</sup> *Id.*

<sup>445</sup> *Apple Ebooks*, 791 F.3d at 299–300.

<sup>446</sup> The Agency model was that Apple would charge a 30 percent commission for the price of the eBook sold on its platform. The primary benefit of this pricing structure, versus the wholesale model chosen by Amazon, was that under the agency model book publishers obtained the power to set the price of the books.

<sup>447</sup> *Apple Ebooks*, 791 F.3d at 303.

<sup>448</sup> *Id.* at 310, 339.

<sup>449</sup> Harsh Chauhan, *Will This Regulation Derail Amazon in India?*, MOTLEY FOOL (Feb. 20, 2019), <https://www.fool.com/investing/2019/02/20/will-this-regulation-derail-amazon-in-india.aspx>.

<sup>450</sup> European Commission Press Release IP/19/4291, Antitrust: Commission Opens Investigation Into Possible Anti-Competitive Conduct of Amazon (July 17, 2019), [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_19\\_4291](https://ec.europa.eu/commission/presscorner/detail/en/IP_19_4291).



its own comparison-shopping service resulted in the web traffic of rivals across Europe to decline between 80 to 92 percent.<sup>451</sup>

## CONCLUSION

All the GAFAM companies routinely engage in the anticompetitive conduct detailed in this article. Microsoft codified its implementation of these strategies as “embrace, extend, extinguish.”<sup>452</sup> Amazon called its implementation of these practices the Gazelle Project.<sup>453</sup> Facebook’s internal motto was “Move Fast and Break Things.”<sup>454</sup> It is also likely that future digital platforms will also engage in the conduct described in this article, which are not as significantly present in single-sided markets.

With consumer lock-in, path dependencies, market tipping, limitations of user multi-homing, and the other characteristics and conduct detailed in this article, dominant platforms are more likely to retain their users, regardless of the competitive environment. These circumstances also weaken the ability of consumers to embrace the classic idiom of “voting with their feet” to switch to another competing service and deter the entrance of potential competitors.

Evidence from a recent FTC report on Google details that these market conditions incentivize predatory behavior in the effort to obtain data and lock-in consumers, and thus prevent rivals from acquiring and accessing those customers and the data they provide.<sup>455</sup> In fact, the OECD has stated that many of these competitive conditions should encourage earlier antitrust intervention.<sup>456</sup>

Importantly, these characteristics and anticompetitive conduct do not only pose a threat individually. Instead, it is best to view these differences as being analogous to a spider web – the more of them that are implemented, the more well-equipped the web (i.e., the platform) is to capture as many users, information, and markets as possible. Taken collectively, these practices allow platforms, particularly those with a monopoly position, to

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<sup>451</sup> European Commission *supra* note 242 (“Google abused its market dominance as a search engine to promote its own comparison shopping service in search results, whilst demoting those of rivals.... The Commission found evidence of sudden drops of traffic to certain rival websites of 85% in the United Kingdom, up to 92% in Germany and 80% in France.”).

<sup>452</sup> *U.S. v. Microsoft: Proposed Findings of Fact*, U.S. DEP’T JUST., <https://www.justice.gov/atr/us-v-microsoft-proposed-findings-fact> (last updated Aug. 14, 2015).

<sup>453</sup> See generally BRAD STONE, *THE EVERYTHING STORE: JEFF BEZOS AND THE AGE OF AMAZON* 243–44 (2013).

<sup>454</sup> Facebook, Inc., Registration Statement (Form S-1) at 70 (Feb. 1, 2012).

<sup>455</sup> See also FTC Report, *supra* note 56, at 40 (detailing how Google’s ability to scrape data from other sites “diminish[es] the incentives of companies like Yelp, TripAdvisor, CitySearch, and Amazon to invest in, and to develop, new and innovative content, as the companies cannot fully capture the benefits of their innovations”).

<sup>456</sup> See generally COLLYER, ET AL., *supra* note 12, at 7 (stating “a multi-sided market with network externalities may be prone to tipping and authorities may wish to intervene earlier”).

withstand and supplant any competitive threat to their market position.<sup>457</sup> The GAFAM platforms merely embody the market harm that can take place when a platform has achieved a dominant position through exploiting the characteristics and engaging in the conduct detailed in this article.

In some cases, these characteristics and the effects of the anticompetitive conduct are so profound that even the GAFAM companies fail to displace each other – despite engaging in as many of the anticompetitive tactics detailed in this article and utilizing their entire arsenal of financial resources. For example, Google tried three times to replace Facebook as a social network by creating Orkut,<sup>458</sup> Google Buzz,<sup>459</sup> and multiple iterations and re-releases of Google Plus.<sup>460</sup> Despite its efforts, Google failed. Moreover, all of Google's attempts came before Facebook became the goliath of advertising that it is today.<sup>461</sup> Google's failure is certainly not a result of consumers disliking its services,<sup>462</sup> and cannot plausibly be because Google lacks financial or intellectual capital.<sup>463</sup> The same can be seen in Microsoft's failure, even with the purchase of Nokia,<sup>464</sup> to create a viable phone operating system to displace Apple's iOS and Google's Android.<sup>465</sup> Or the failure of Microsoft's search engine Bing to weaken Google's market position in search despite partnering with Yahoo,<sup>466</sup> Apple,<sup>467</sup> Amazon,<sup>468</sup> and even going as far as to reward users for using the service as an attempt to steer users to Bing.<sup>469</sup> Microsoft has also given up on trying to develop its

<sup>457</sup> AREEDA & HOVENKAMP, *supra* note 14, at 208 (stating, "In a monopolization case conduct must always be analyzed 'as a whole.' A monopolist bent on preserving its dominant position is likely to engage in repeated and varied exclusionary practices. Each one viewed in isolation might be viewed as de minimis or an error in judgment, but the pattern gives increasing plausibility to the claim.").

<sup>458</sup> ORKUT, <http://www.orkut.com/index.html> (last visited Feb. 1, 2020).

<sup>459</sup> Google Buzz, WIKIPEDIA, [https://en.wikipedia.org/wiki/Google\\_Buzz](https://en.wikipedia.org/wiki/Google_Buzz) (last visited Feb. 1, 2020).

<sup>460</sup> Google+ Is No Longer Available for Consumer (Personal) and Brand Accounts, GOOGLE PLUS, <https://plus.google.com/discover> (last visited Feb. 1, 2020).

<sup>461</sup> Reuters, *Why Google and Facebook Prove the Digital Ad Market Is a Duopoly*, FORTUNE (July 28, 2017), <https://fortune.com/2017/07/28/google-facebook-digital-advertising/>.

<sup>462</sup> *World's Most Admired Companies*, FORTUNE, <http://fortune.com/worlds-most-admired-companies/list/> (last visited Feb. 1, 2020) (as of 02/01/2020 Google/Alphabet is the 7<sup>th</sup> most admired company).

<sup>463</sup> See cites in footnote 2.

<sup>464</sup> Tom Warren, *Microsoft Wasted at Least \$8 Billion on its Failed Nokia Experiment*, VERGE (May 25, 2016), <https://www.theverge.com/2016/5/25/11766540/microsoft-nokia-acquisition-costs>.

<sup>465</sup> Tom Warren, *Microsoft Finally Admits Windows Phone is Dead*, VERGE (Oct. 9, 2017), <https://web.archive.org/web/20171009170654/https://www.theverge.com/2017/10/9/16446280/microsoft-finally-admits-windows-phone-is-dead>; *Mobile Operating System Market Share Worldwide: Jan 2009–July 2018*, STATCOUNTER, <http://gs.statcounter.com/os-market-share/mobile/worldwide/#monthly-200901-201807> (denoting phone operating system share since 2009) (last visited Feb. 1, 2020).

<sup>466</sup> *Microsoft & Yahoo Search Deal*, SEARCH ENGINE LAND, <https://searchengineland.com/library/features/microsoft-yahoo-merger> (last visited Feb. 1, 2020).

<sup>467</sup> Danny Sullivan, *Apple Drops Google For Bing As "Spotlight" Search Provider In iOS 8 & Mac OS X "Yosemite"*, SEARCH ENGINE LAND (June 2, 2014), <https://searchengineland.com/spotlight-drops-google-bing-193038>.

<sup>468</sup> Tom Warren, *Microsoft and Amazon Partner to Integrate Alexa and Cortana Digital Assistants*, VERGE (Aug. 30, 2017), <https://www.theverge.com/2017/8/30/16224876/microsoft-amazon-cortana-alexa-partnership>.

<sup>469</sup> *Get On Board With Microsoft Rewards*, MICROSOFT, <https://rewards.microsoft.com/> (last visited

own competitor to Google's Chrome web browser and will instead adopt the same architecture Google offers.<sup>470</sup> The same can be said for Apple with its failure to displace Windows as the overwhelmingly dominant computer operating system, despite their iPhone sales and their persistent product allure.<sup>471</sup> These failures are just some examples of the nearly insurmountable challenge to displace an entrenched platform company taking advantage of the characteristics and anticompetitive conduct detailed in this article, regardless of its intellectual resources or financial position.<sup>472</sup>

Describing and analyzing these characteristics and conduct of digital platforms provides the foundation for additional regulatory scholarship. However, it is important to recognize that the dynamics of the market itself incentivize these anticompetitive behaviors. Increased antitrust enforcement and regulation can inhibit or prevent them.

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Feb. 23, 2020); *see also* Hovenkamp, *supra* note 8, at 727 (stating "'Steering' involves an effort to induce users to start using one platform instead of another. First, a platform may attempt to steer users to single-home on its own service, or at least to give them a preference to use it over the alternatives whenever possible. This usually involves the platform offering an inducement to one side, leading these users to prioritize its own service.").

<sup>470</sup> Tom Warren, *Microsoft is Building its Own Chrome Browser to Replace Edge*, VERGE (Dec. 4, 2018), <https://www.theverge.com/2018/12/4/18125238/microsoft-chrome-browser-windows-10-edge-chromium>.

<sup>471</sup> *Mobile Operating System Market Share Worldwide: Jan 2009—July 2018*, *supra* note 465 (PC market share data from 2009 to Present).

<sup>472</sup> *See supra* Section II.

## APPENDIX

## A. Selected Market Share Overview of the GAFAM Companies

U.S. Market <sup>473</sup>	Google	Apple	Facebook	Amazon	Microsoft	Total
Phone Operating Systems <sup>474</sup>	52%	47%	0%	0%	1%	99%
eBooks <sup>475</sup>	0%	20%	0%	70%	0%	90%
e-Readers <sup>476</sup>	0%	0%	0%	84%	0%	84%
Social Media <sup>477</sup>	1%	0%	51%	0%	1%	53%
Internet Search <sup>478</sup>	62%	0%	0%	0%	25%	87%
Digital Advertising <sup>479</sup>	39%	0%	20%	2%	4%	65%
e-Commerce <sup>480</sup>	0%	6%	0%	54%	0%	60%
Internet Video <sup>481</sup>	29%	0%	11%	8%	7%	54%

<sup>473</sup> All numbers have been rounded to the nearest percent—as such, in some cases the total may be more or less than one hundred percent.

<sup>474</sup> Arne Holst, *U.S. Smartphone Subscriber Share by Operating Platform 2012—2019, by Month*, STATISTA (Nov. 20, 2019), <https://www.statista.com/statistics/266572/market-share-held-by-smartphone-platforms-in-the-united-states/>.

<sup>475</sup> *February 2017 Big, Bad, Wide & International Report*, AUTHOR EARNINGS, <https://web.archive.org/web/20180128051445/http://authorearnings.com/report/february-2017/> (last visited Feb. 1, 2020) (Based on Sales as of February 2017). Some would say that this is misleading since the eBook market is not the total market for books. However, eBooks represent 26% of the total book market, which is more than double what it was in 2013. Thus, this market will be most analogous to many other non-digital markets succumb to their digital counterparts. See *E-book Market Share Worldwide 2013 and 2018*, STATISTA (May 15, 2017), <https://www.statista.com/statistics/234106/e-book-market-share-worldwide/>. See also Andrew Perrin, *Book Reading 2016*, PEW RES. CTR. (Sept. 1, 2016), <http://www.pewinternet.org/2016/09/01/book-reading-2016/> (detailing trends in eBook reading).

<sup>476</sup> Andria Cheng, *Why Walmart Is Pushing Into E-Books, A Business On The Decline*, FORBES (Aug. 22, 2018), <https://www.forbes.com/sites/andriacheng/2018/08/22/walmart-introduces-ebooks-in-its-latest-loud-display-of-intense-fight-against-amazon/#3a061ae27b28>.

<sup>477</sup> J. Clement, *U.S. Market Share of Leading Social Media Websites 2019*, STATISTA (Jan. 10, 2020), <https://www.statista.com/statistics/265773/market-share-of-the-most-popular-social-media-websites-in-the-us/>.

<sup>478</sup> J. Clement, *Market Share of Search Engines in the United States 2008—2019*, STATISTA (Jan. 7, 2020), <https://www.statista.com/statistics/267161/market-share-of-search-engines-in-the-united-states/>.

<sup>479</sup> A. Guttman, *Digital Ad Revenue Share in the U.S. 2016—2020, by Company*, STATISTA (Mar. 20, 2018), <https://www.statista.com/statistics/242549/digital-ad-market-share-of-major-ad-selling-companies-in-the-us-by-revenue/> (market share as of 2017).

<sup>480</sup> J. Clement, *U.S. e-Retailers: e-Commerce Sales 2017*, STATISTA (July 3, 2019), <https://www.statista.com/statistics/293089/leading-e-retailers-ranked-by-annual-web-e-commerce-sales/>.

<sup>481</sup> COMSCORE, *Most Popular Online Video Properties in the United States as of November 2019*, STATISTA, <https://www-statista-com.ezproxy.lib.uconn.edu/statistics/265924/us-video-properties-ranked-by-unique-video-viewers/> (last Visited Apr. 4, 2020).

Mobile Video and Music <sup>482</sup>	34%	8%	0%	7%	0%	49%
Video Game Streaming <sup>483</sup>	21%	0%	3%	73%	3%	100%
Digital Storage <sup>484</sup>	4%	0%	0%	47%	10%	61%
Social Media Digital photos <sup>485</sup>	0%	0%	50%	0%	0%	50%
Desktop Operating Systems <sup>486</sup>	3%	19%	0%	0%	76%	98%
Web Browsers <sup>487</sup>	51%	33%	0%	0%	7%	91%
Email Clients <sup>488</sup>	29%	46%	0%	0%	10%	85%
Music Subscription Services <sup>489</sup>	5%	18%	0%	13%	0%	36%
Navigation Applications <sup>490</sup>	80%	10%	0%	0%	0%	90%

<sup>482</sup> J. Clement, *Most Popular Mobile Music and Video Apps in the United States as of September 2019*, STATISTA, <https://www.statista.com/statistics/294586/smartphone-video-app-reach-us/> (last visited Mar. 1, 2020).

<sup>483</sup> Thomas Wilde, *Microsoft's Mixer Grows Audience, but Amazon's Twitch Continues to Dominate Streaming Market*, GEEKWIRE (Dec. 26, 2019), <https://www.geekwire.com/2019/microsofts-mixer-grows-audience-amazons-twitch-continues-dominate-streaming-market/>.

<sup>484</sup> Cristina Vargas, *Cloud Market Share 2019: AWS vs Azure vs Google – Who's Winning?*, MCAFEE (Oct. 25, 2019), <https://www.skyhighnetworks.com/cloud-security-blog/microsoft-azure-closes-iaas-adoption-gap-with-amazon-aws/> (data based on revenue); *see also* Tom Krazit, *State of the Cloud: Amazon Web Services is Bigger than its Other Four Major Competitors, Combined*, GEEKWIRE (Aug. 3, 2018), <https://www.geekwire.com/2018/state-cloud-amazon-web-services-bigger-four-major-competitors-combined/>.

<sup>485</sup> *Most Popular Photo Sharing Sites as of November 2013, Sorted by Share of Daily Uploads*, STATISTA (Nov. 19, 2013), <https://www.statista.com/statistics/282007/photo-sites-daily-uploads-distribution/>.

<sup>486</sup> *Desktop Operating System Market Share United States of America (Detailing US Numbers): Dec 2018–Dec 2019*, STATCOUNTER, <http://gs.statcounter.com/os-market-share/desktop/united-states-of-america> (last visited Jan. 30, 2020).

<sup>487</sup> Shanhong Liu, *Market Share Held by Leading Internet Browsers in the United States from January 2015 to October 2019*, STATISTA (Nov. 18, 2019), <https://www.statista.com/statistics/545520/market-share-of-internet-browsers-usa/>.

<sup>488</sup> *Email Client Market Share*, LITMUS, [http://emailclientmarketshare.com/?utm\\_campaign=stats&utm\\_source=litmusblog&utm\\_medium=blog](http://emailclientmarketshare.com/?utm_campaign=stats&utm_source=litmusblog&utm_medium=blog) (last visited Jan. 1, 2020) (data as of November 2017).

<sup>489</sup> Mark Mulligan, *Music Subscriber Market Shares H1 2019*, MIDIA RES. (Dec. 5, 2019), <https://www.midiaresearch.com/blog/music-subscriber-market-shares-h1-2019/>.

<sup>490</sup> J. Clement, *Most Popular Mapping Apps in the United States as of April 2018*, STATISTA (Nov. 20, 2019), <https://www.statista.com/statistics/865413/most-popular-us-mapping-apps-ranked-by-audience/>.

<b>Total Number of Markets &gt;33%<sup>491</sup></b>	7	2	2	4	1	15
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*B. Number of Users for GAFAM Companies by Service*

<b>Company</b>	<b>Product (# of users)</b>
Google	Android (2 billion) <sup>492</sup> Google Maps (1 Billion) <sup>493</sup> YouTube (1 Billion) <sup>494</sup> Google Chrome (1 Billion) <sup>495</sup> Gmail (1.5 Billion) <sup>496</sup> Google Search (1 Billion) <sup>497</sup> Google Play (1 Billion) <sup>498</sup> Google Assistant (~1 Billion) <sup>499</sup> Google Drive (800 Million) <sup>500</sup> Google Phones (500 Million) <sup>501</sup> Google Photos (1 Billion) <sup>502</sup>
Apple	Apple Devices (1 Billion) <sup>503</sup>
Facebook	Facebook (2.2 Billion) <sup>504</sup>

<sup>491</sup> Greater than 33% market share is legally significant; *see* United States v. Aluminum Co. of Am., 148 F.2d 416, 424 (2d Cir. 1945) (stating “[Ninety percent market share] is enough to constitute a monopoly; it is doubtful whether sixty or sixty-four percent would be enough; and certainly thirty-three per cent is not.”).

<sup>492</sup> Ben Popper, *Google Announces Over 2 Billion Monthly Active Devices on Android*, VERGE (May 17, 2017), <https://www.theverge.com/2017/5/17/15654454/android-reaches-2-billion-monthly-active-users>.

<sup>493</sup> *Id.*

<sup>494</sup> *Id.*

<sup>495</sup> *Id.*

<sup>496</sup> Taylor Kerns, *Gmail Now Has More Than 1.5 Billion Active Users*, ANDROID POLICE (Oct. 26, 2018), <https://www.androidpolice.com/2018/10/26/gmail-now-1-5-billion-active-users/>.

<sup>497</sup> Popper, *supra* note 500.

<sup>498</sup> *Id.*

<sup>499</sup> Dieter Bohn, *Google Assistant Will Soon be on a Billion Devices, and Feature Phones are Next*, VERGE (Jan. 7, 2019), <https://www.theverge.com/2019/1/7/18169939/google-assistant-billion-devices-feature-phones-ces-2019>.

<sup>500</sup> Popper, *supra* note 500.

<sup>501</sup> *Id.*

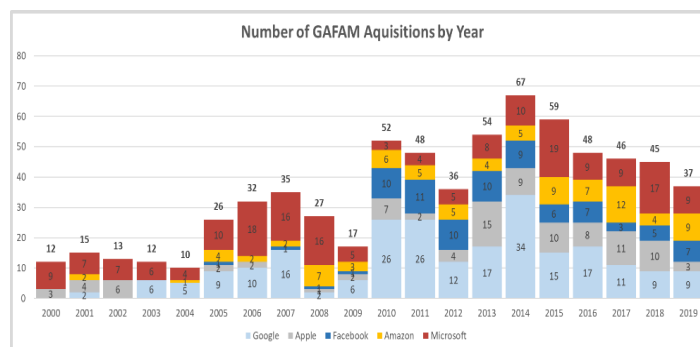
<sup>502</sup> Jon Porter, *Google Photos Passes The 1 Billion Users Mark*, VERGE (July 24, 2019), <https://www.theverge.com/2019/7/24/20708328/google-photos-users-gallery-go-1-billion>.

<sup>503</sup> Nick Statt, *1 Billion Apple Devices Are In Active Use Around The World*, VERGE (Jan. 26, 2016), <https://www.theverge.com/2016/1/26/10835748/apple-devices-active-1-billion-iphone-ipad-ios>; Jim Edwards, *Apple Will No Longer Report iPhone Numbers After Growth Went To 0%, and Analysts Are Now Worried iPhone Sales May Decline*, BUS. INSIDER (Nov. 2, 2018), <https://www.businessinsider.com/apple-will-no-longer-report-iphone-sales-unit-numbers-2018-11>.

<sup>504</sup> FACEBOOK, *Number of Monthly Active Facebook Users Worldwide as of 3rd Quarter 2018 (in millions)*, STATISTA, <https://www-statista-com.ezproxy.lib.uconn.edu/statistics/264810/number-of-monthly-active-facebook-users-worldwide/> (last visited Jan. 7, 2019).

	Instagram (1 Billion) <sup>505</sup> WhatsApp (1.5 Billion) <sup>506</sup>
Amazon	Prime Accounts (101 Million) <sup>507</sup> Alexa Devices (100 Million) <sup>508</sup>
Microsoft	Windows (800 Million) <sup>509</sup> Office 365 Accounts (155 Million) <sup>510</sup> Outlook.com Users (400 Million) <sup>511</sup> Skype (300 Million) <sup>512</sup> Office (1.2 Billion) <sup>513</sup>

### C. GAFAM Acquisition Data:



<sup>505</sup> INSTAGRAM & TECHCRUNCH, *Number of Monthly Active Instagram Users from January 2013 to June 2018 (in millions)*, STATISTA, <https://www-statista-com.ezproxy.lib.uconn.edu/statistics/253577/number-of-monthly-active-instagram-users/> (last visited Jan. 7, 2019).

<sup>506</sup> J. Clement, *Number of Monthly Active WhatsApp Users Worldwide from April 2013 to December 2017*, STATISTA, <https://www-statista-com.ezproxy.lib.uconn.edu/statistics/260819/number-of-monthly-active-whatsapp-users/> (last visited Feb. 29, 2020).

<sup>507</sup> Don Reisinger, *Amazon Prime Has More Than 100 Million U.S. Subscribers*, FORTUNE (Jan. 17, 2019), <https://fortune.com/2019/01/17/amazon-prime-subscribers/>.

<sup>508</sup> Dieter Bohn, *Amazon Says 100 Million Alexa Devices Have Been Sold – What’s Next?*, VERGE (Jan. 4, 2019), <https://www.theverge.com/2019/1/4/18168565/amazon-alexa-devices-how-many-sold-number-100-million-dave-limp>.

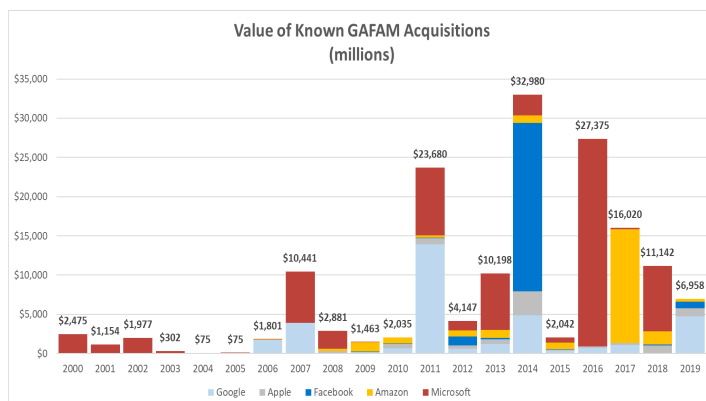
<sup>509</sup> Peter Bright, *Windows 10 Passes 800 Million Devices*, ARSTECHNICA (Mar. 7, 2019), <https://arstechnica.com/gadgets/2019/03/windows-10-passes-800-million-devices/>.

<sup>510</sup> Emil Protalinski, *Microsoft Teams is Now Used By 500,000 Organizations, Promises 8 New Features*, VENTUREBEAT (Mar. 19, 2019), <https://venturebeat.com/2019/03/19/microsoft-teams-is-now-used-by-500000-organizations/>.

<sup>511</sup> Tom Warren, *Microsoft’s Outlook.com Dark Mode is Now Live*, VERGE (July 25, 2018), <https://www.theverge.com/2018/7/25/17611358/microsoft-outlook-com-dark-mode-theme-available>.

<sup>512</sup> Sarah Perez, *Skype Publicly Launches Screen Sharing on iOS and Android*, TECHCRUNCH (June 5, 2019), <https://techcrunch.com/2019/06/05/skype-publicly-launches-screen-sharing-on-ios-and-android/>.

<sup>513</sup> *Microsoft by the Numbers*, MICROSOFT, <https://web.archive.org/web/20170928081417/https://news.microsoft.com/bythenumbers/planet-office>.



The full spreadsheet database is on file with the author.