

Pandora's box of online ills: We should turn to technology and market-driven solutions before imposing regulation or using competition law*

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I. Digital consolidation?

1. We are enjoying the benefits of the IT revolution over the last few decades—free online searches, free social media, free mapping services, free smartphone software, the rise of mini-multinationals (SMEs who suddenly have online access to world markets), and constant innovation. At the same time, we are told that the online environment is more and more dominated by a handful of IT giants.⁵² Digital consolidation—the growth of a few global IT businesses that compete with a multitude of local brick-and-mortar firms—is supposedly causing markets to separate out into distinct online islands, each dominated by one individual firm. In the same breath, it is said that antitrust authorities should break up these “monopolies” because they stifle competition and harm consumers.⁵³

2. We question this narrative. We do not think that it captures the reality of the competitive dynamics in the IT industry, in part because it equates consolidation (or the growth of large online firms) with lack of competition. It infers a causal relationship between industry structure, market power, competition, and profit, a paradigm that reigned within industrial organisation between the 1930s and the 1960s, but which has since been found wanting.⁶⁴

3. IT developments have resulted in cost reductions, an expansion in output, and an explosion of new services. Even with consolidation, the effect has been an acceleration rather than a reduction of competition: Online platforms started competing directly with offline suppliers, disrupting traditional business models and forcing lower prices. Online platforms offering particular services such as search (e.g., Google, Yahoo, Bing, social search, specialized search providers, apps, etc.) innovate constantly to attract fickle customers who use competing services on their devices (“multihome”) and can easily switch. Platforms offering differentiated services (e.g., Facebook, Amazon, Twitter) vie with each other for the same users’ “eyeballs” by providing free new products on one side of their platform (“attention rivalry”), to draw and charge advertisers and suppliers to the other

* The authors have worked with large and small clients in the IT sector, including Google, but this article is not on behalf of or paid for by any client. Comments and positions are personal to the authors, do not bind the firm or its clients, and are work in progress as we learn every day.

51 See F. Manjoo, Tech’s ‘Frightful 5’ Will Dominate Digital Life for Foreseeable Future, *The New York Times*, January 20, 2016 (available at https://www.nytimes.com/2016/01/21/technology/techs-frightful-5-will-dominate-digital-life-for-foreseeable-future.html?_r=0).

52 See J. Taplin, Is It Time to Break Up Google?, *The New York Times*, April 22, 2017 (available at https://www.nytimes.com/2017/04/22/opinion/sunday/is-it-time-to-break-up-google.html?_r=0); The World’s Most Valuable Resource Is No Longer Oil, But Data, *The Economist*, May 6, 2017 (available at <http://www.economist.com/news/leaders/21721656-data-economy-demands-new-approach-antitrust-rules-worlds-most-valuable-resource>); R. Waters, Tech Giants Need to Rein in Powers Before EU Does, *The Financial Times*, May 11, 2017 (available at <https://www.ft.com/content/567a1e90-3663-11e7-bce4-9023f8c0fd2e>).

53 See M. K. Ohlhausen, Does the U.S. Economy Lack Competition, And If So What To Do About It?, Federal Trade Commission, June 1, 2016 (available at https://www.ftc.gov/system/files/documents/public_statements/952273/160601doesuseconomylackcomp.pdf). Note also that the generalised integration of computer algorithms in modern business models creates risks of hardcore cartels through tacit collusion in virtually any market structure, even atomized markets, making the inference of a causal relationship between consolidation and lack of competition ill-suited to the modern economy. See Directorate for Financial and Enterprise Affairs Competition Committee, Algorithms and Collusion – Background Note by the Secretariat, OECD, June 21, 2017 (available at [https://one.oecd.org/document/DAF/COMP\(2017\)4/en/pdf](https://one.oecd.org/document/DAF/COMP(2017)4/en/pdf)).

side.⁶⁵ They compete also in a race to develop new technology such as artificial intelligence (“innovation competition”).⁶⁶ And the unprecedented financial rewards for relatively young tech start-ups create a rush to the market, with founders willing to take risks in the expectation that successful new products will either grow (e.g., Snapchat) or be bought out by private investors or larger tech companies (e.g., Instagram).⁶⁷

4. So, in this apparently competitive environment, are we really starting to see a few tech firms dominate the market? Some argue that this is an inevitable consequence of the network effects—whereby a product becomes more desirable as the number of people using the product increases—that appear to be prevalent in the online world. In theory, these network effects give first movers an advantage, particularly since the marginal costs of expanding a platform are relatively low, allowing established firms to grow quickly and capture a larger share of the market.⁶⁸

5. Although network effects are present in some of these platforms, their impact is often overblown. They are not present in all cases—for example, it is irrelevant for a user of a search engine how many others use it. And, for the algorithm, the learning effects of having many users carrying out searches (which some argue are indirect network effects but are really scale effects) are subject to diminishing returns. Moreover, specialized search engines like Amazon have been able to learn faster and grow organically by concentrating on one, smaller, sector before moving on to tackle a neighbouring one. The UK’s Department for Business, Energy, and Industrial Strategy in fact concluded that “*network effects, which might otherwise act as a barrier to entry, encourage dynamic competition.*”⁶⁹ It found that, in most markets studied, there was frequent entry by new platforms (e.g., Spotify in the music sector, TripAdvisor and Airbnb in the hospitality sector, etc.), and that entry was not any less likely in more concentrated digital markets. Even if concentration increases over time within each sector, competition from other sectors often intensifies (e.g., search engines became more concentrated but then faced

competition from specialized search, social networks, and now apps).

6. These findings reflect commercial reality. Social networks are often said to be prime beneficiaries of strong network effects. Yet, they also provide some of the best examples of new entrants (like Facebook) displacing an incumbent (MySpace). Even today, Facebook must continuously innovate to stay abreast of a range of rivals, such as LinkedIn and Snapchat.⁷⁰ Nor are data a real barrier to entry. Although firms compete in collecting and analysing usage data or user data, these data are non-rivalrous, i.e., non-exhaustive and capable of being obtained and used by more than one provider, thereby enabling smaller and new providers to gain market share too.⁷¹

7. Examples abound. In mobile platforms, the three largest products (Apple, Android, and Microsoft) now compete with a range of new operating systems.⁷² In online search, the UK’s Competition and Markets Authority (“CMA”) found that consumers use different types of searches, including general searches, specialized searches, social searches, sites like Wikipedia, and apps to look for products and services online.

8. In sum, increased consolidation does not necessarily mean decreased competition—to the contrary, even. Olympic 100m finalists, for example, are not under any less competitive pressure because there are only eight of them. The hallmark of market dominance is a firm that can sit back and enjoy the quiet life, insulated from competitive forces. The global IT industry is marked by the exact opposite—new entry, disruption, intense pressure to innovate, unprecedented consumer benefits, and an evolving host of new challenges and opportunities.⁷³

II. Pandora’s box of online ills

9. Aside from its effects on competitive dynamics, digital consolidation (and the Internet more generally) raises a host of other concerns that, some argue, should be tackled by competition law or other regulatory measures. We concentrate on three examples: (i) the low quality

54 See D. Evans, Attention Rivalry Among Online Platforms, *University of Chicago Institute for Law & Economics*, Olin Research Paper No. 627, April 12, 2013 (available at <https://ssrn.com/abstract=2195340>).

55 This drives, for instance, the fierce competition between Alibaba, Amazon, Apple, Baidu, Facebook, Google, IBM, Microsoft, Uber and more than 1,650 SMEs to create viable AI systems.

56 J. Bort, Instagram’s Kevin Systrom: People Keep Asking If My \$1 Billion Was Too Small, *Business Insider*, July 19, 2014 (available at <http://www.businessinsider.com/did-systrom-sell-instagram-too-soon-2014-7?IR=T>).

57 D. Marin, Restoring Competition in the Digital Economy, Bruegel, May 17, 2017. Marin complains that online firms have “*excessive power to raise prices without losing many customers*,” which is odd in light of the fact that many online services are free, and “*platforms with a large market share would lose most of their users if they introduced even a modest user fee.*” Dynamic Competition in Online Platforms, Department for Business, Energy and Industrial Strategy, March 2017 (available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/602816/Digital_Platforms_report_new_BEIS.pdf). Marin also worries that “*firms that are already established can keep growing with far fewer workers than they would have needed in the past*,” which is an equally odd complaint since this lowers rather than raising barriers to entry.

58 D. Marin, Dynamic Competition in Online Platforms, *supra*.

59 Competing social media platforms include Twitter (2006), Pinterest (2010), WhatsApp (2010), Instagram (2010), Google Plus (2011), Snapchat (2011) and Line (2011).

60 Online Search Behaviour, Competition and Markets Authority, April 2017.

61 Competing mobile platforms include webOS (2009), Bada (2010), Aliyun (2011), Flyme (2012), Baidu (2012), Firefox (2013), CyanogenMod (2013), Sailfish (2013), Nokia X (2014), Fire (2014), PrivatOS (2014), Tizen (2015) and Ubuntu (2015).

62 Reports of the decline of entrepreneurship as a result of consolidation (J. Dearie, *Wherethe Jobs Are: Entrepreneurship and the Soul of the American Economy* (Wiley, 2013)) appear to be premature. Othersourcesuggestthatentrepreneurshipactuallyhasbeenontherisince 2011. According to the Global Entrepreneurship Monitor (GEM), which surveys individual and national experts rather than government data, the rate of nascent entrepreneurship has risen since 2010 from 4.8 to 9.7%. See L. Buchanan, American Entrepreneurship is Actually Vanishing. Here’s Why, *Inc.*, May 2015 (available at <https://www.inc.com/magazine/201505/leigh-buchanan/the-vanishing-startups-in-decline.html>).

of public discourse, and the emergence of “fake news”; (ii) concerns about loss of privacy; and (iii) exploitation by discriminatory pricing.⁷⁴ These are serious concerns but, on closer inspection, the link between these issues and digital consolidation may not be very strong. More important, and technology is beginning to provide market-based solutions, reducing the need for top-down regulation.

10. One of the main difficulties with regulating emergent technologies, including the Internet, is the “Collingridge Dilemma”: if we regulate technology when it is nascent, we nip it in the bud. On the other hand, if we wait until technology has become more established, regulation or control may be too difficult to implement.⁷⁵ Market-based and technological solutions may temper or even resolve that problem.

1. Fake News

11. The Internet may be the latest outlet for fake news, but we should be wary of falling into the trap of thinking that fake news is a recent phenomenon. Nor is it caused by digital consolidation, given that fake news emanates from mainstream news conglomerates, as well as from individuals on digital platforms.

12. The phrase “fake news” may seem recent, but the concept is as old as news itself. In 2016, the term was popularised by the alt-right movement in the US to describe news reports that, ironically, were not “fake” in terms of being untrue, but were merely unfavourable to their preferred candidate in the electoral race.⁷⁶ The practice of spreading fake news, however, goes back a long way. Darnton notes that Procopius, the Byzantine historian of the sixth century AD, collected dubious stories, Anecdota, “which he kept secret until his death, in order to smear the reputation of the Emperor Justinian after lionizing the emperor in his official histories.”⁷⁷ And in 1939, a headline in the *Daily Mail* read: “M.P. Brings Charge of ‘Fake’ News.”⁷⁸

13. Fake news is not created by digital platforms. For many years, the UK tabloid press has specialized in publication of articles that are inflammatory, misleading, and designed to influence the political process with scant regard for truth. On 30 April 2016, for example, the *Daily Star*’s headline screamed “Brexit... or die and be raped.”⁷⁹ Likewise, the medium should not be confused with the source: politicians are often tempted to make misleading statements and unrealistic promises that, even when accurately reported by the media, can be more damaging than online fake news, as the Brexit process showed.⁸⁰ Fake news in tabloids is arguably more objectionable given that its publication is a conscious choice by editors. Internet and online companies, by contrast, generally provide uncensored platforms for free speech, which individuals can use to post their stories.

14. It remains an open question to what extent fake news has actually made a difference in electoral decisions. A recent paper questions the impact of fake news on social media in the 2016 US presidential election, noting that their impact on the results may have been overstated.⁸¹ Ofcom reports that most consumers do rely on more than one news provider, with an average of 3.5 sources used in the UK.⁸² That said, other studies suggest that hyperpartisan pages and news items may reach a greater audience than neutral ones, so the picture remains confusing, and likely will continue to change as Internet users’ habits shift.⁸³

15. The question arises: what to do to fight fake news? Use competition law to break up news conglomerates or platforms? That would not cure the problem in the absence of any proven connection between consolidation and the creation or spreading of fake news. Require platforms to censor news stories that lack objectively verifiable factual basis? Apart from exceptional categories such as hate speech and abuse of children, that could violate fundamental rights.⁸⁴ Do we really

63 For some of these criticisms, see Dr L. Lovdahl Gormsen, Digital Consolidation, Citizen and Community, paper presented in Oxford on May 22, 2017. [These are in this same publication – see above]

64 D. Collingridge, *The Social Control of Technology* (New York: St. Martin’s Press; London: Pinter, 1980). Note, though, that where consequences are dramatic, it is argued regulation should proceed even before the effects of innovation are known. Elon Musk, for instance, says we need to regulate AI before it becomes a danger to humanity. Elon Musk: regulate AI to combat ‘existential threat’ before it’s too late, *The Guardian*, 17 July 2017, (available at <https://www.theguardian.com/technology/2017/jul/17/elon-musk-regulation-ai-combat-existential-threat-tesla-spacex-ceo>); Elon Musk Says Artificial Intelligence Is the ‘Greatest Risk We Face as a Civilization’, *Fortune*, July 15, 2017, (available at <http://fortune.com/2017/07/15/elon-musk-artificial-intelligence-2/>).

65 J. Carson, What Is Fake News? Its Origins and How It Grew in 2016, *The Telegraph*, March 16, 2017 (available at <http://www.telegraph.co.uk/technology/0/fake-news-origins-grew-2016>).

66 R. Darnton, The True History of Fake News, *The New York Review of Books*, February 13, 2017 (available at <http://www.nybooks.com/daily/2017/02/13/the-true-history-of-fake-news/>).

67 Government Communications Service, Celebrating 100 Years of Government Communications, *Medium*, March 2, 2017 (available at <https://medium.com/@History100/celebrating-100-years-of-government-communications-f860181cb5cc#.qe2dcndxu>).

68 See Brexit and the Newspapers – Where was IPSO?, *Hacked Off*, July 5, 2016 (available at <http://hackinginquiry.org/latest-news/brexit-and-the-newspapers-where-was-ipso-2/>); see also W. Dalgreen, British Press ‘Most Right-Wing’ in Europe, *YouGov UK*, February 7, 2016 (available at <https://yougov.co.uk/news/2016/02/07/british-press-most-right-wing-europe>).

69 See S. Barnett, Brexit and the Tragic Downfall of the British Media, *Foreign Policy*, July 8, 2016 (available at <http://foreignpolicy.com/2016/07/08/the-tragic-downfall-of-british-media-tabloids-brexite/>).

70 H. Allcott and M. Gentzkow, Social Media and Fake News in the 2016 Election, *Journal of Economic Perspectives*, Vol. 31 No. 2, Spring 2017, pp. 211–236 (available at https://www.aeaweb.org/full_issue.php?doi=10.1257/jep.31.2#page=213) (“if one fake news article were about as persuasive as one TV campaign ad, the fake news in our database would have changed vote shares by an amount on the order of hundredths of a percentage point. This is much smaller than Trump’s margin of victory in the pivotal states on which the outcome depended”).

71 News Consumption in the UK, OFCOM, March 24, 2015 (available at <https://www.ofcom.org.uk/research-and-data/tv-radio-and-on-demand/tv-research/news-consumption-2015/>).

72 C. Silverman et al., Hyperpartisan Facebook Pages Are Publishing False and Misleading Information at an Alarming Rate, *Buzzfeed*, October 20, 2016 (available at https://www.buzzfeed.com/craigsilverman/partisan-fb-pages-analysis?utm_term=.jwV38wZl3).

73 In the US this is the result of the First Amendment to the Constitution. The European Convention on Human Rights similarly protects the Freedom of Speech under Article 10.

want the likes of Steve Bannon to censor what we read?⁸⁵ Fortunately, there are a number of public and private initiatives designed to improve the veracity of materials posted on the Internet. One example is Full Fact, a crowd-funded independent fact-checking charity.⁸⁶ Digital platforms such as Facebook and Google work with these fact checkers, and are beginning to adjust the process and rules for posting news to improve the quality of content (and Twitter should ban bots, if it wants to continue to attract users).⁸⁷ Firms are even working to develop AI-based tools, although human intervention still appears indispensable.⁸⁸ The Digital News Initiative, a collaboration between Google and European news publishers, is supporting high-quality journalism through technology and innovation.⁸⁹ Recent events in the United States show the indispensability of a free press.

16. These market-based solutions should be encouraged and, combined with enforcement of media plurality rules,⁹⁰ properly enforced media ethics,⁹¹ and the teaching of Internet literacy in schools,⁹² are a better approach than use of competition law, which cannot resolve the problem of fake news, or the imposition of platform liability⁹³ or government censorship, both of which would kill off the Internet's very promise of media diversity.⁹⁴

2. Loss of Privacy

17. Various commentators have accused online companies of invasions of privacy through the collection of large amounts of data on users.⁹⁵ It is true that many platforms offer services that are free, funded by the sale of ad space (although this does not necessarily involve the taking and sale of personal data). It has been suggested that competition law be used to remedy privacy concerns, based on the idea that competition law is about “*more than just economics*,”⁹⁶ and in the hope that compliance with privacy rules would improve with the convenient threat of high fines under competition law.

18. The writing is already on the wall: in March 2016 the German competition law regulator, the Bundeskartellamt, opened an investigation into whether Facebook abuses dominance in a market for social networks if its terms of service on the use of user data violate German privacy law.⁹⁷ A competition law case might be considered if dominance is used to impose unfair privacy terms, and the use of these terms in turn reinforces the alleged dominance, but we should be careful of assuming that the only, or best, way of addressing pure privacy concerns is through competition law. Competition law and personal data law⁹⁸ pursue different (if complementary) goals, and if competition authorities venture on the slippery slope of pursuing extraneous policy objectives, where will they stop? Other policy goals will follow, and predictability and legal certainty will suffer. The European Court has found that “*issues relating to the sensitivity of personal data are not, as such, a matter for competition law, they may be resolved on the basis of the relevant provisions*”

74 Steve Bannon Wants to Regulate Facebook and Google as Utilities (Fortune), July 29, 2017, <http://fortune.com/2017/07/29/bannon-facebook-google-monopoly/>

75 See Full Fact website (available at <https://fullfact.org/about/>); see also Poynter website (available at <http://www.poynter.org/fact-checkers-code-of-principles>).

76 See J. Kosslyn and C. Yu, Fact Check Now Available in Google Search and News Around the World, *Google Keyword Blog*, April 7, 2017 (available at <https://blog.google/products/search/fact-check-now-available-google-search-and-news-around-world>). See also A. Jenkins, Facebook Has Introduced a Fact-Checking Alert to Fight ‘Disputed Content’, *Fortune*, March 22, 2017 (available at <http://fortune.com/2017/03/22/facebook-fact-checking-tool>).

77 Kent Walker, Four ways Google will help to tackle extremism, *Financial Times*, June 18, 2017, (available at <https://www.ft.com/content/ac7ef18c-52bb-11e7-af2-db19572361bb>). T. Simonite, Humans Can’t Expect AI to Just Fight Fake News for Them, *Wired*, June 15, 2017 (available at <https://www.wired.com/story/fake-news-challenge-artificial-intelligence>).

78 Google Submission to the Culture Media and Sport Select Committee on “Fake News”.

79 S. Barnett, M. Moore and D. Tambini, Media Plurality, the Fox-Sky Bid, and the Case for Referral to Ofcom, *LSE Media Policy Brief 18*, March 2017 (available at <http://blogs.lse.ac.uk/mediapolicyproject/files/2013/09/LSE-MPP-Policy-Brief-18-Media-Plurality.pdf>).

80 See Leveson Inquiry – Report into the Culture, Practices and Ethics of the Press, Department of Culture, Media & Sport, November 29, 2012; see also The Failure of IPSO, *Hacked Off*, September 2015 (available at <https://hackinginquiry.org/wp-content/uploads/2015/09/FailureOfIPSO.pdf>). European Commission and IT Companies Announce Code of Conduct on Illegal Online Hate Speech, Commission Press Release IP/16/1937, May 31, 2016 (available at http://europa.eu/rapid/press-release_IP-16-1937_en.htm).

81 Parliamentary Questions, European Parliament, February 7, 2017 (available at <http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2016-008632&language=EN>).

82 Germany Warns Social Media Firms Over Illegal Content, *BBC*, March 14, 2017 (available at <http://www.bbc.co.uk/news/technology-39269535>).

83 S.A. Munson, D.X. Zhou and P. Resnick, Sidelines: An Algorithm for Increasing Diversity in News and Opinion Aggregators, Third International AAAI Conference on Weblogs and Social Media, March 2009.

84 B. Schneier, How We Sold Our Souls – and More – to the Internet Giants, *The Guardian*, May 17, 2017 (available at <https://www.theguardian.com/technology/2015/may/17/sold-our-souls-and-more-to-internet-giants-privacy-surveillance-bruce-schneier>); J. Marshall, With Washington’s Blessing, Telecom Giants Can Mine Your Web History, *The Wall Street Journal*, March 30, 2017 (available at <https://www.wsj.com/articles/with-washingtons-blessing-telecom-giants-can-mine-your-web-history-149086980m>). See also C. Porter, Little Privacy in the Age of Big Data, *The Guardian*, June 20, 2014 (available at <https://www.theguardian.com/technology/2014/jun/20/little-privacy-in-the-age-of-big-data>); J. Weathington, Big Data Privacy Is a Bigger Issue than You Think, *TechRepublic*, February 17, 2017 (available at <http://www.techrepublic.com/article/big-data-privacy-is-a-bigger-issue-than-you-think/>); N. Drozdiak and J. Nicas, Google Privacy-Policy Change Faces New Scrutiny in EU, *The Wall Street Journal*, January 24, 2017 (available at <https://www.wsj.com/articles/oracle-expresses-concern-to-eu-over-google-privacy-policy-1485263548>); Big Data: Individual Rights and Smart Enforcement, EDPS-BEUC Joint Conference, European Commission, September 29, 2016 (available at https://secure.edps.europa.eu/EDPSWEB/webdav/site/mySite/shared/Documents/EDPS/Publications/Speeches/2016/16-09-29_Speech_EDPS_BEUC_BigData_EN.pdf).

85 A. Klein, A Hard Look at Media Mergers, *Washington Post*, November 29, 2000 (available at <https://www.washingtonpost.com/archive/business/2000/11/29/a-hard-look-at-media-merger-s/4d8380c2d-92ee-4b1b-8f4d43893ab0055>).

86 G. Chazan and D. Robinson, Facebook Hit by German Competition Probe, *The Financial Times*, March 2, 2016 (available at <https://www.ft.com/content/1f4afa34-e05e-11e5-96b7-9f778349aba2>). M. Vestager, Making Data Work for Us, Data Ethics Event on Data as Power, September 9, 2016 (available at https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/making-data-work-us_en). The BKartA relies on precedent from the German Federal Court of Justice, *VBL-Gegenwert* (2013).

87 For example, the General Data Protection Regulation (2016/679).

governing data protection.”⁹⁹ Indeed, it could be argued that using competition law for privacy goals (instead of competition in the provision of privacy solutions) is a misuse of powers, and could lead to arbitrary results, because competition law lacks the criteria to balance privacy interests against the interests in free speech and access to information.

19. Nor is it *necessary* to rely on regulation or competition law. Online companies increasingly offer extensive and easy-to-use privacy settings for their online services, which users can adjust so as to control what data is collected on them.¹⁰⁰ People are starting to use these.¹⁰¹ Indeed, online companies now compete with each other in providing these options and to make them easily usable, considering that consumers are more likely to use platforms from which they can easily dissociate themselves.¹⁰² Data portability allows users to move their data to rival platforms if they are dissatisfied with their current platform’s privacy rules.¹⁰³ Google, for instance, allows users to move emails, search history and other data to rivals.¹⁰⁴ Users can disable search history collection and various other features. Like Google, Microsoft and Facebook offer easy-to-use privacy dashboards.¹⁰⁵ These are examples of platforms reacting to market forces and consumer preferences.

20. In sum, the market is capable of providing solutions to protect privacy and personal data. In the words of the CMA, “*The presence of competition over privacy is a useful indicator, not only of firms’ willingness to adapt to consumers’ desires, but also consumers’ understanding of the use of their data in that market, and the effectiveness of competition in the market in question.*”¹⁰⁶ Privacy rivalry is what competition authorities should encourage.

88 *Asnef-Equifax v. Ausbanc* (Case C-238/05) EU:C:2006:734, ¶ 63; see also *Facebook/Whatsapp* (Case COMP/M.7217), European Commission decision of October 3, 2014, ¶ 164 (available at http://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf).

89 See, for example, Google’s Data Policy (available at <https://privacy.google.com/intl/en-GB/your-data.html>); and Facebook’s Data Policy (available at <https://www.facebook.com/policy.php>).

90 See J. Campbell, Young people going to increasing lengths to protect online privacy, *The Independent*, March 15, 2015 (available at <http://www.independent.co.uk/news/world/young-people-going-to-increasing-lengths-to-protect-online-privacy-10108955.html>).

91 WhatsApp offers encrypted chats; Whisper anonymous communication; Snapchat photos that are automatically deleted in 24 hours; DuckDuckGo anonymous search;

Google allows users to sign out to prevent any personal data retention, etc.

92 B. Fitzpatrick, Data Portability and Google Apps, *Google Cloud Official Blog*, September 14, 2009 (available at <https://cloud.googleblog.com/2009/09/data-portability-and-google-apps.html>).

93 *The Independent*, July 31, 2017, (available at <http://www.independent.co.uk/life-style/gadgets-and-tech/news/google-my-activity-search-history-internet-browsing-how-to-see-hide-delete-privacy-a7868401.html>).

94 T. Myerson, Our Continuing Commitment to your Privacy with Windows 10, *Microsoft Blog*, January 10, 2007 (available at <https://blogs.windows.com/windowsexperience/2017/01/10/continuing-commitment-privacy-windows-10/#qIGQyt8btEluE2Vm.97>).

95 Commercial Use of Consumer Data, Competition and Markets Authority, June 17, 2015, section 3.21.

3. Discriminatory pricing

21. There is a concern that online firms are able to use sophisticated algorithms to process consumers’ data and accurately estimate the maximum price that each individual consumer is willing to pay.¹⁰⁷ This could go beyond traditional forms of price discrimination, segmenting markets according to broad customer groups or geographic locations. With personalised pricing, firms would be able to estimate individual demand curves based on big data analysis, including a customer’s precise location, purchasing history, browsing history, and likely preferences at a particular point in time. Empirical studies have shown that the technological capability for personalised pricing is now greater than ever,¹⁰⁸ and some argue that online methods of price discrimination could soon spill over to the offline environment, where 85% of sales still take place.¹⁰⁹

22. Should competition law be used to curb this? Price discrimination is not necessarily harmful and can, in fact, help to maximise output. When providers tailor their prices, they can serve a greater range of customers, including ones with a lower willingness or lower ability to pay, who the supplier would not have reached with uniform pricing.¹¹⁰ For example, a platform that is able to show a price of £100 per widget to high-income customers and £50 per widget to a low-income customers can serve a greater number of customers than a platform with a single price of £70. Individualised pricing therefore minimizes deadweight loss by more accurately matching prices to customers’ willingness to pay. The rich and the keen cross-subsidise the poor and the indifferent. Is that so bad? On the producer side, being able to predict consumer demand more accurately can also help to eliminate waste.

23. The concern with individualised pricing is not, therefore, that it diminishes society’s overall welfare but, rather, that it supposedly transfers a disproportionate slice of wealth away from both consumers and content providers, towards producers and tech platforms.¹¹¹ At the consumer level, the ability to impose individualised prices could, in theory, allow suppliers to capture consumer surplus, i.e., the amount that consumers are willing to pay over and above the amount they actually pay. At the content-provider level, if platforms such as Amazon or Apple were to become essential gateways to the market, they could squeeze sellers—e.g., photographers, photojournalists, writers, publishers,

96 A. Ezrachi and M. Stucke, The E-Scraper and E-Monopsony, *Oxford Business Law Blog*, April 10, 2017 (available at <https://www.law.ox.ac.uk/business-law-blog/blog/2017/04/e-scraper-and-e-monopsony>).

97 B. Reed Shiller, First-Degree Price Discrimination Using Big Data, Brandeis University, January 30, 2014 (available at http://benjaminshiller.com/images/First-Degree_PD_Using_Big_Data_Jan_27_2014.pdf).

98 See J. Pounder, For What It’s Worth – The Future of Personalised Pricing, *The Guardian*, November 6, 2015 (available at <https://www.theguardian.com/media-network/2015/nov/06/personalised-pricing-future-online-offline-retail>).

99 R. Langlois, Written Evidence to House of Lords Select Committee on EU, 2015.

100 A. Ezrachi and M. Stucke, The E-Scraper and E-Monopsony, *supra*.

journalists and musicians—by imposing increasingly onerous terms.¹¹² There are signs of this happening, with Amazon threatening to delist publishers who resist Amazon’s demands.¹¹³ This would also have implications for consumer privacy, as firms would have less incentive to protect consumer data when it is so profitable to commercialise it.¹¹⁴

24. While there are indications of emerging problems at the content-provider level, query whether micro-targeted pricing is more theory than fact at the consumer level. In practice, there appear to be few examples of personalised consumer pricing: “*The mystery about online price discrimination is why so little of it seems to be happening.*”¹¹⁵ The UK’s Office of Fair Trading concluded that “*our evidence indicates that businesses are not using information about individuals to set higher prices to them.*”¹¹⁶ There is some evidence that online platforms use “search discrimination” or “steering,” which is effectively targeted advertising of high-end products to high-income individuals (and vice versa).¹¹⁷ In another form of price discrimination, retailers have been known to vary prices based on consumer’s geographic location and their willingness to drive, which is an sign of willingness to pay.¹¹⁸ However, none of these examples cross the line from behavioural advertising into personalised pricing, and there appears to be no evidence of websites charging different prices based on browsing history or personal data.¹¹⁹

25. It may be that personalised pricing is coming and simply has not arrived yet. More likely, however, is that businesses have come to realise that the media and consumers, even at some cost to themselves, are willing to punish suppliers who discriminate because

they consider discrimination unfair.¹²⁰ As the CMA has said: “*Businesses need to be clear if they are using personalised pricing. If they are using it and it’s not clear,*

that could erode trust.”¹²¹ By way of example, customers’ iniquity aversion led Amazon to abandon an attempt at personalised pricing.¹²² Indeed, consumers already widely use price comparison tools to obtain the best available price,¹²³ and there is every reason to expect that if suppliers were to use AI to engage in personalised pricing, consumers would start to use their own AI tools to counter that effort. It appears, therefore, that in combination with existing rules against discrimination of protected categories,¹²⁴ the market would act as the ultimate arbiter on the level of price discrimination that seems tolerable and fair. Price comparison tools are the way forward. There appears to be no need to turn to competition law.

III. The brave new world of AI

26. Another solution to the perceived ills of digital consolidation is to harness the increasing power of AI. For instance, in the field of fake news, technology companies are developing technological solutions to the fake news issue, by using artificial intelligence to locate, flag and even remove certain content which does not meet editorial standards.¹²⁵ Similar technologies are also being used to flag and remove extremist, violent, and racist content.¹²⁶

27. The speed and increasing complexity of AI processing allows it to undertake certain tasks far more effectively than humans can in a similar time frame. However, with such power comes the potential for both benefits

101 Ibid.

102 Amazon Threatens Publishers as Apple Looms, *The New York Times*, March 17, 2010, <http://www.nytimes.com/2010/03/18/technology/internet/18amazon.html>

103 EDPS Opinion on Coherent Enforcement of Fundamental Rights in the Age of Big Data, EDPS Opinion No. 8/2016, September 23, 2016.

104 A. Narayanan, Online Price Discrimination: Conspicuous by its Absence, *33 Bits of Entropy*, January 8, 2013 (available at <https://33bits.org/2013/01/08/online-price-discrimination-conspicuous-by-its-absence/>), (“Narayanan”).

105 Personalised Pricing – Increasing Transparency to Improve Trust, Office of Fair Trading, November 2012.

106 Ibid. See also Narayanan.

107 Narayanan; J. Valentino-DeVries, J. Singer-Vine and A. Soltani, Websites Vary Prices, Deals Based on Users’ Information, *The Wall Street Journal*, December 24, 2012 (available at <https://www.wsj.com/articles/SB1000142412788732377204578189391813881534>).

108 Narayanan.

109 D. Kahneman, J. L. Knetsch and R. H. Thaler, Fairness as a Constraint on Profit Seeking: Entitlements in the Market, *The American Economic Review* 76(4), September 1986, p. 728 (available at https://www.princeton.edu/~kahneman/docs/Publications/Fairness_DK_JLK_RHT_1986.pdf).

110 See J. Pounder, For What It’s Worth – The Future of Personalised Pricing, supra; see also Online Platforms [Should] Be Required to Inform Consumers if they Engage in Personalised Pricing, House of Lords Select Committee on EU, 2016. Note that Article 22 GDPR provides that “*The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her.*” Recital 71 GDPR indicates that such processing includes “profiling” needed for personalised pricing: “*any form of automated processing of personal data evaluating the personal aspects relating to a natural person, in particular to analyse or predict aspects concerning the data subject’s (...) economic situation, health, personal preferences or interests, (...) behaviour, location or movements.*” Suitable safeguards should include specific information to the data subject about the use of data gathered, and sellers must inform data subjects about personalising prices.

111 Narayanan.

112 According to the CMA Market Study on Digital Comparison Tools, CMA Final Report on Private Motor Insurance, 2014, remedies “*giving consumers more transparent information*” about no claims bonuses, including on comparison websites “*increase competition (...) and lead to a reduction in prices.*” Private Motor Insurance Market Investigation, Final Report, Competition and Markets Authority, 2014, at 11.57 (available at https://assets.publishing.service.gov.uk/media/5421c2ade5274a1314000001/Final_report.pdf).

113 “*The Equality Act (2010) makes it unlawful for a firm to discriminate against a person using or seeking to use its services because of a protected characteristic*”; Customer Vulnerability, Financial Conduct Authority, Occasional Paper No. 8, February 2015. Categories include age; disability; gender reassignment; marriage and civil partnership; pregnancy and maternity; race; religion or belief; sex; sexual orientation.

114 Various such initiatives are summarised in B. Marr, Fake News: How Big Data and AI Can Help, *Forbes*, March 1, 2017 (available at <https://www.forbes.com/forbes/welcome/?toURL=https://www.forbes.com/sites/bernardmarr/2017/03/01/fake-news-how-big-data-and-ai-can-help/2/&refURL=&referrer=#1573cca42039>).

115 See, for example, M. Bergen, Biggest Test for Google’s Artificial Intelligence: Hunting Down Hate in YouTube Videos, *Seattle Times*, April 2, 2017 (available at <http://www.seattletimes.com/business/biggest-test-for-googles-artificial-intelligence-hunting-down-hate-in-youtube-videos>).

and dangers, recognised by both digital companies and regulators. In February 2017, Mark Zuckerberg wrote an open letter on “Building Global Community”: “(...) *one of our greatest opportunities to keep people safe is building artificial intelligence to understand more quickly and accurately what is happening across our community.*”¹¹⁷ Elon Musk, on the other hand, sees AI as an existential threat.¹¹⁸

28. In the sphere of competition policy, Profs Ezrachi and Stucke have warned that AI analysis of big data could lead to high pricing even in non-oligopolistic markets.¹¹⁹ This remains to be seen. AI’s ability to process large volumes of data may indeed soften conditions that normally prevent tacit coordination, and self-learning systems may learn to coordinate and even collude. But that is not the only likely strategy: AI systems may learn to cheat (using encrypted communication to avoid detection),¹²⁰ invite or arrange new entry, and even behave competitively to exclude rivals, particularly if they have access to the necessary market share, asset, capital reserve, employee count, and cost information necessary to assess the success of predation. When testing “*more and more complex forms of DeepMind (...) sabotage, greed, and aggression set in.*”¹²¹ It is, finally, important to see this concern in the context of other market developments that can be expected to dampen tacit collusion risks: products are becoming increasingly differentiated, with increasing speed of innovation, and are being replaced by “products as a service” in a sharing economy. Instead of collusion in commoditized markets, we expect more innovation, customized and differentiated products, and customer-specific pricing that make it hard even for AIs to compare “like for like” prices and achieve collusive equilibria. In commoditized stable markets, we expect

that buyers (or buy-side AIs) will use AI to counteract oligopolistic pricing attempts by selling AIs.

29. Nonetheless, the issues Ezrachi and Stucke raise are fascinating. Do AIs replace the “invisible hand” with an “invisible hive mind,” and what can we do when they become too competitive, break the law, or act against consumer welfare?¹²² We think the solution is a “digital conscience” and “compliance by design.” Here, too, private and public initiatives are providing possible solutions. The 2017 Asilomar principles comprise a series of directives for AI developers including “Research Issues,” such as the need to ensure a culture of cooperation, trust, and transparency, “Ethics and Values” such as liberty and privacy, and finally “Longer-Term Issues,” such as the need to consider the common good, and a suggestion that AI systems designed to recursively self-improve or self-replicate in a manner that could lead to rapidly increasing quality or quantity must be subject to strict safety and control measures.¹²³ The Institute of Electrical and Electronics Engineers (IEEE), a standards organisation, has started an initiative on ethics in design of AI systems. To this end, the IEEE published in December 2016 a paper entitled “Ethically Aligned Design,” a paper whose purpose is to “*advance a public discussion of how these intelligent and autonomous technologies can be aligned to moral values and ethical principles that prioritize human wellbeing.*”¹²⁴ Other initiatives include the Global Initiative on Ethical Autonomous Systems;¹²⁵ the GoodAI Virtual School for programmers,¹²⁶ the Berkman Klein Center for Internet¹²⁷ and Society at Harvard University and the Knight Foundation (with the MIT Media Lab),¹²⁸ and the Partnership on AI.¹²⁹ Importantly, work is being done to develop tools to ensure that self-learning AIs cannot learn to override or circumvent their in-built conscience (“safe interruptibility”).¹⁴⁰ Going beyond these ethical

116 M. Zuckerberg, Building Global Community, Facebook, February 16, 2017 (available at <https://www.facebook.com/notes/mark-zuckerberg/building-global-community/10154544292806634>).

117 Elon Musk says we need to regulate AI before it becomes a danger to humanity, The Verge, July 17, 2017, (available at <https://www.theverge.com/2017/7/17/15980954/elon-musk-ai-regulation-existential-threat>).

118 M. E. Stucke and A. Ezrachi, *Virtual Competition* (Harvard University Press, 2016); M. E. Stucke and A. Ezrachi, Artificial Intelligence & Collusion: When Computers Inhibit Competition, *University of Tennessee College of Law, Research Paper* No. 267, May 2015; S. Mehra, Antitrust and the Robo-Seller: Competition in the Time of Algorithms, *Minnesota Law Review*, Vol. 10, 2015. See also, Directorate for Financial and Enterprise Affairs Competition Committee, Algorithms and Collusion – Background Note by the Secretariat, OECD, June 21, 2017 (available at [https://one.oecd.org/document/DAF/COMP\(2017\)4/en/pdf](https://one.oecd.org/document/DAF/COMP(2017)4/en/pdf)).

119 See, for example, J. Biggs, Google’s AI creates its own inhuman encryption, *TechCrunch*, October 28, 2016 (available at <https://techcrunch.com/2016/10/28/google-ai-creates-its-own-inhuman-encryption/>).

120 See, for example, M. Burgess, DeepMind’s AI Has Learnt to Become ‘Highly Aggressive’ When it Feels like it’s Going to Lose, *Wired*, February 9, 2017 (available at <http://www.wired.co.uk/article/artificial-intelligence-social-impact-deepmind>).

122 We do not see a gap if an AI is used to break the law, since any collusive AI acts on behalf of (or is a tool used by) a firm that owns it. That firm is liable for an AI on the same basis as it is liable for conduct of a rogue employee or an animal it owns.

123 Asilomar AI Principles, Future of Life Institute, 2017 (available at <https://futureoflife.org/ai-principles/>).

124 See Ethically Aligned Design: A Vision for Prioritizing Human Wellbeing with Artificial Intelligence and Autonomous Systems, Institute of Electrical and Electronics Engineers, December 13, 2016 (available at http://standards.ieee.org/develop/indconn/ec/ead_v1.pdf). See also Resolution on Civil Law Rules on Robotics, February 16, 2017 (including Annex on ethical design) and *A Roadmap for US Robotics*, UC San Diego, November 7, 2016, Chapter 10 (available at <http://jacobschool.ucsd.edu/contextualrobotics/docs/rm3-final-rs.pdf>).

125 Website of the IEEE (available at https://standards.ieee.org/develop/indconn/ec/autonomous_systems.html).

126 Website of the GoodAI initiative (available at <https://www.goodai.com/ai-programmers/>).

127 D. C. Pendergrass, Get Smart: The Berkman Klein Center Takes On Artificial Intelligence, *Harvard Crimson*, February 23, 2017 (available at <https://www.thecrimson.com/article/2017/2/23/artificial-intelligence-berkman-klein>).

128 Website of the Knight Foundation (available at <https://www.knightfoundation.org/aifund-faq>); Knight Foundation, Omidyar Network and LinkedIn Founder Reid Hoffman Create \$27 Million Fund to Research Artificial Intelligence for the Public Interest, Knight Foundation, Press Release, January 10, 2017 (available at <https://knightfoundation.org/press/releases/knight-foundation-omidyar-network-and-linkedin-founder-reid-hoffman-create-27-million-fund-to-research-artificial-intelligence-for-the-public-interest>).

129 Website of the Partnership on AI (available at <https://www.partnershiponai.org/>).

140 L. Orseau and S. Armstrong, Safely Interruptible Agents, Google DeepMind and The Future of Humanity Institute, University of Oxford, July 2016. (“AIs are unlikely to behave optimally all the time (...) Now and then it may be necessary for a human operator to press the big red button to prevent the agent from continuing a harmful sequence of action. (...) Safe interruptibility can be useful to take control of a robot that is misbehaving and may lead to irreversible consequences, or to take it out of a delicate situation”).

codes, there are strong arguments that some form of international treaty on AI might be necessary in the long-term, so as to provide predictability and standardisation in its governance.¹⁴¹

IV. Conclusion

30. The Internet is blamed for all manner of social and economic ills, including fake news, loss of privacy, discriminatory pricing, consumer exploitation, the increasing gap between rich and poor, robots and AI replacing employees, rampant consumerism, loss of attention span, loss of civility in public discourse, the demise of proper public debate, the creation of echo chambers, manipulation of politics with targeted leaks and hypertargeted ads, and the end of democracy. There is a tendency in the press (especially traditional print press who have an axe to grind with online platforms that disrupt their business) to blame consolidation and global online firms for these problems, and to suggest that the solution is to use competition law to break up these global businesses.

31. A cynic would say that consolidation and abuse of online power are blamed for some of these problems because people fear disruption and want to slow down change, protect incumbents, and force platforms to allow them to free-ride, instead of themselves running the innovation race and providing quality. Another cynic might say that accusations against online firms are designed to distract attention from political trends undermining democracy.¹⁴² There may be truth in these cynical views.¹⁴³

32. We think that reduction of competition is neither the cause nor the effect of these manifold problems. Consolidation is not the same as loss of competition or monopolization. The emergence of large online firms may have the effect of disrupting offline businesses, but it is leading to *more*, rather than less, competition. We see intense “innovation competition” and “attention rivalry” at a global level, and the development of multi-sided markets, which have made a host of new services available for free to consumers who could not afford them otherwise. Where loss of competition is not the problem, using competition law as a Luddite sledgehammer to smash the Internet or online firms in pieces is not the way to deal with the negative side effects of the globalization and digitalization. Since digital disruption intensifies competition rather than reducing

it, there is no justification for structural remedies or aggressive intervention based on competition law. Structural intervention will not change the root causes, and digitalization, globalization and disruption will not go away. It will just slow down innovation, create inefficiencies, and reduce consumer welfare.

33. Instead, we should focus on market- and technology-driven solutions to deal with specific problems. We already see the emergence of such solutions, such as fact-checkers to address fake news, privacy dashboards to give individuals control over their privacy, price comparison engines to avoid price discrimination and manipulation, better platform management and AI tools to curb hate speech, and standards for “ethical AI.” We should encourage these initiatives, and allow experimentation, before turning to competition law or regulation as a measure of last resort. That is not to say we should leave it all to the market. We are not merely economic beings. Solutions should include “civics” education to teach people Internet hygiene, critical thinking, responsible conduct, and civil discourse. In the longer run, the remedy for painful side effects of disruption (like the replacement of labor-intensive activities by capital intensive ones, affecting employment opportunities) may also involve universal income or other ways to redesign social support in society,¹⁴⁴ steps to reduce income inequality, offering education so as to allow people to adapt and retrain if their job is taken by a robot or an AI system, and turning to science and IT to create new jobs—to win the “race against the machine.” Technologies such as AI also open new possibilities for designing programs and entities that are self-regulating.

34. Because regulation tends to stifle or slow down innovation, we should impose regulatory measures only if they meet a proportionality test. Thus, regulatory measures should meet three conditions: First, they should serve legitimate goals, excluding protectionism, because countries that favour regulation and protectionism over innovation and education will inevitably lag behind fast-growing economies and deprive their consumers of the fruits of this growth. Second, they should be effective and adequate to achieve those goals. Third, they should be “no more than necessary,” in that there should be no less restrictive alternative. Top-down regulation by the state does not meet this “necessity” test in circumstances where there are reasonable technology-based or market-based alternatives, and so long we have limited ability to predict the future. Finally, if regulation and government

141 J. Turner, Elon Musk and Mark Zuckerberg are both wrong about AI and the robot apocalypse, Quartz, 2 August 2017, (available at <https://qz.com/1044119/elon-musk-and-mark-zuckerbergs-view-on-ai-dont-account-for-which-regulatory-body-will-oversee-our-robot-overlords/>).

142 Steve Bannon Wants to Regulate Facebook and Google as Utilities (Fortune), July 29, 2017, <http://fortune.com/2017/07/29/bannon-facebook-google-monopoly/>

143 Perhaps more existentially, we stare in a glass darkly, watch a reflection of ourselves, and fear that we are creating online technology and artificial intelligence in our own image, but imperfectly: competitive, even aggressive and potentially destructive, yet lacking in human qualities like compassion and altruism.

144 One such example might be universal basic income. See, for example, S. Sodha, Is Finland's Basic Universal Income a Solution to Automation, Fewer Jobs and Lower Wages?, *The Guardian*, February 19, 2017 (available at <https://www.theguardian.com/society/2017/feb/19/basic-income-finland-low-wages-fewer-jobs>). This could be funded by a tax on artificial intelligence. See *however* Basic Income as a Policy Option, OECD, May 2017 (available at <http://www.oecd.org/els/soc/Basic-Income-Policy-Option-2017-Background-Technical-Note.pdf>), which concludes that a universal basic income paid at a flat rate to all citizens would fail to reduce poverty levels in advanced economies and require substantially higher taxes to fund its simplicity. See also A. McAfee and E. Brynjolfsson, Why “How many jobs will be killed by AI?” is the wrong question, 24 June 2017, <https://www.linkedin.com/pulse/why-how-many-jobs-killed-ai-wrong-question-andrew-mcafee>. The authors argue that instead of universal income, a further policy solution to technological unemployment/retraining could be a large expansion of the Earned Income Tax Credit, a wage subsidy currently available to low-income workers.

intervention are needed, they should be based on evidence, not ideology or fear, or a desire to protect offline incumbents. With all the online ills released into the world, there is still hope in Pandora's box: We can rely on human autonomy and inventiveness, and use technology for good rather than resisting it.