

# ROBO-SELLER PROSECUTIONS AND ANTITRUST'S ERROR-COST FRAMEWORK



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## I. INTRODUCTION: THE RISE OF THE ROBO-SELLER

Over the past decade, we have seen the spread of software algorithms and automated trading beyond their initial economic beachhead in relatively software-friendly areas such as Internet searches and financial markets. As recently as the middle of the last decade, it was considered unlikely that driverless vehicles such as the Google/Waymo car plying the roads of California would be possible anytime soon, since software was only fit for “highly structured situations.”<sup>2</sup> Obviously, times have changed quickly.

Such technologies have given rise to “robo-selling”: the combined effects of mass data collection, algorithmic processing and automated pricing. Robo-sellers consist of software agents and services that promise efficiencies in market intelligence and response, thus increasing producers’ speed and accuracy beyond human capabilities, potentially at reduced cost. Rising firms such as C3IoT and Kii offer business solutions that promise to digitally supercharge the gathering of market data and the fine-tuning of prices in response. However, as with self-driving cars and philosophy’s trolley problem,<sup>3</sup> there is the possibility that robo-sellers may make decisions that are privately optimal but socially harmful – the traditional intersection for antitrust concern.

When I published the first descriptive and normative account of the robo-seller’s rise in 2013 and 2014, such an effect was only a theoretical antitrust concern, to which I applied a stylized Cournot model and noted the renewed significance of the famed Posner-Turner debate over tacit collusion.<sup>4</sup> Since then, the U.S. Department of Justice has brought the much-publicized 2015 wall décor prosecutions

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<sup>2</sup> See, e.g. Frank Levy and Richard J. Murnane, *The New Division of Labor: How Computers are Creating the Next Job Market*, 28-30 (Princeton U. Press 2004).

<sup>3</sup> Patrick Lin, “The Ethics of Self-Driving Cars,” Oct. 8, 2013, *The Atlantic*, available at: <https://www.theatlantic.com/technology/archive/2013/10/the-ethics-of-autonomous-cars/280360/>.

<sup>4</sup> Salil Mehra, ‘De-Humanizing Antitrust: The Rise of the Machines and the Regulation of Competition’ (*SSRN Electronic J*, December 2013) [https://www.researchgate.net/publication/272245466\\_De-Humanizing\\_Antitrust\\_The\\_Rise\\_of\\_the\\_Machines\\_and\\_the\\_Regulation\\_of\\_Competition](https://www.researchgate.net/publication/272245466_De-Humanizing_Antitrust_The_Rise_of_the_Machines_and_the_Regulation_of_Competition); Salil K. Mehra, ‘De-Humanizing Antitrust: The Rise of the Machines and the Regulation of Competition’ (*Temple University Legal Studies Research Paper*, August 21, 2014) [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2490651](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2490651) (later published as Salil K. Mehra, ‘Antitrust and the Robo-Seller: Competition in the Time of Algorithms’ [2016] 100 *Minnesota L Rev* 1323, 1343-49 [http://www.minnesotalawreview.org/wp-content/uploads/2016/04/mehra\\_onlinepdf1.pdf](http://www.minnesotalawreview.org/wp-content/uploads/2016/04/mehra_onlinepdf1.pdf)); SALIL K. MEHRA, ‘COMING TO A MALL NEAR YOU: ROBO-SELLER’ (*TEMPLE 10-Q*, SEPTEMBER 18, 2014) <http://www2.law.temple.edu/10q/coming-mall-near-robo-seller/>; SALIL K. MEHRA, ‘DE-HUMANIZING ANTITRUST’ (*COLUMBIA LAW SCHOOL BLUE SKY BLOG*, OCTOBER 16, 2014) <http://clsbluesky.law.columbia.edu/2014/10/16/de-humanizing-antitrust-the-rise-of-the-machines-and-the-regulation-of-competition/>.

(*Topkins, Aston*); a private price-fixing suit brought in 2016 against Uber's CEO that as of April 2017 has an appeal pending before the Second Circuit.

Recently, speculation has grown that algorithmic prosecutions may become a new focus for antitrust agencies. Commissioner Margrethe Vestager has recently warned that “companies can't escape responsibility for collusion by hiding behind a computer program.” A rush to prosecution would be, I believe, a mistake. While there are a number of reasons to think so, I would like to highlight one set: the implications of antitrust's traditional error-cost framework, a paradigm whose usefulness has achieved a fair degree of consensus among the antitrust community, even if we may disagree about its application in specific cases. The rise of the robo-seller promises a tremendous degree of cost savings, as well as potentially robust allocative and dynamic efficiency gains. Overzealous prosecution, that is, false positives, may chill significant gains to both producers and consumers through better-functioning markets – including markets that would not exist in the absence of the robo-seller. Moreover, some of the concerns expressed concerning robo-selling, such as increased price discrimination or abstract domination of humankind by algorithms, are quite dubious subjects for antitrust enforcement. That said, moves towards openness concerning the use of algorithms have the potential to improve the accuracy for antitrust enforcement. Economists' ability to estimate demand curve with data, for example in the case of Uber, may, from the standpoint of antitrust's error-cost framework, make possible the reduction of overall error. In contrast to the longstanding debates about how to weigh false negatives versus false positives, reduced error would be inarguably good. As a result, proactive regulation through a dialogue with stakeholders to promote such improved estimates may be a much better choice than premature decisions to prosecute.

## II. TOPKINS, UBER AND BEYOND

Before *Topkins*, whether and how the law would deal with algorithm-related competitive harm was purely a matter of theory. As the Organization for Economic Cooperation and Development Secretariat's issues paper, “Competition Enforcement in Oligopolistic Markets” (2015), recognized:

[i]n a relatively new area of research, Mehra (2014) and Ezrachi and Stucke (2015) argue that increased digitalization of market data and proliferation of algorithmic selling may increase the risk of tacit collusion and stretch traditional antitrust concepts developed for human actors.<sup>5</sup>

The OECD issues paper went on to point out that, after *Topkins*, “[t]he concern is not entirely theoretical.”

Despite significant attention in the press and among legal commentators to the competition law implications of algorithms, in fact, such accounts have largely had two main foci: the wall décor prosecutions (*Topkins, Aston*) and the antitrust case against Uber's CEO, Travis Kalanick. The *Topkins* and *Aston* prosecutions seem like easy cases, in which robo-selling was employed as a tool by a pre-existing explicit cartel; the Uber-related case involves the question of whether the firm is a ringleader in a hub-and-spoke conspiracy. The possibility of enhanced tacit collusion or big data turbocharged anticompetitive action remains theoretical.

Typical antitrust prosecutions may work fine in the easy cases, but the middling and difficult cases are likely to be another matter. Professors Ezrachi and Stucke have laid out a useful set of categories, using wall décor as an example of a first type, Uber as possibly an example of algorithmic hub-and-spoke price fixing, and two further more challenging types of cases that antitrust as it exists may struggle to handle, which they term “predictive agent” (more effective tacit collusion) and “digital eye” (something further beyond resulting from the harnessing of mass data and machine learning).<sup>6</sup> This categorization scheme is helpful for understanding the range of cases from likely easier to quite likely much harder.

## III. ROBO-SELLERS AND THE ERROR-COST FRAMEWORK: TO OPEN THE BLACK BOX?

Robo-seller prosecutions carry a significant risk. Each of the last three categories carries a significant possibility of procompetitive effects. Prosecution carries the possibility of chilling these positive effects. Consider the predictive agent and digital eye categories first. Both raise the possibility of significant cost savings from a firm perspective. More accurate market intelligence and better competitive response

5 Competition Enforcement in Oligopolistic Markets [2015] 5 <http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COM-P%282015%292&docLanguage=En> (omitting parenthetical) (issues paper by the Secretariat prepared for the 123rd meeting of the OECD Competition Committee on June 16-18, 2015).

6 Maurice E. Stucke and Ariel Ezrachi, “How Pricing Bots Could Form Cartels and Make Things More Expensive,” Harvard Business Review, Oct. 27, 2016, available at: <https://hbr.org/2016/10/how-pricing-bots-could-form-cartels-and-make-things-more-expensive>.

should make firms better competitors, which in turn should improve consumer welfare – exactly the goal of antitrust law. They also raise the possibility of improving consumer welfare by reducing the search cost of being a consumer – what Cass Sunstein has referred to as the benefit of a “data-fied you,” to the extent that the search costs of being a consumer are perceived as a cost.<sup>7</sup>

With respect to the possibility that algorithms may increase the potential for hub-and-spoke cartels, it is worth noting that economists studying Uber’s effect on consumer welfare suggest that even that relatively straightforward example may, in fact, be a poor choice for traditional antitrust prosecution. The Uber-related case pending before the Second Circuit alleges such a hub-and-spoke arrangement, which Ezrachi and Stucke use to exemplify a middle tier of potential cases, between wall décor (easiest) and the harder types of cases already discussed. The basic concept, as limned in cases such as *Toys R Us* and *Apple/eBooks*, is that a ringleader, usually receiving some benefit from the arrangement, establishes separate vertical agreements with a number of competitors that function collectively as a horizontal cartel.

However, there is a serious risk to too-easily applying that because Uber resembles such an arrangement that has been seen as harmful in the past, it must therefore be anticompetitive. Notably, economists from Oxford and Chicago, working together with experts at Uber, have drawn on a massive data set of Uber users’ behavior to conclude that Uber has in fact been a massive boon to consumer welfare, to the tune of \$2.9 billion during *only* 2015 in just *four* U.S. cities – suggesting a total consumer surplus from Uber nationwide of \$6.8 billion.<sup>8</sup> Such an estimate makes sense intuitively if we remember that examples like *Toys R US* and *Apple* largely involve changes to commercial relationships that already existed. As the economists’ study observes – and dwellers of several big U.S. coastal cities know – Uber and its competitors have “made” a vast market for ride-sharing transactions that would not have previously taken place.<sup>9</sup>

If accurate, this massive estimate of Uber’s benefit to consumers suggests the downside of overreactions to robo-selling. For example, Ezrachi and Stucke warn that corporate use of mass data collection may mark for consumers “a descent from king to slave on the data treadmill.”<sup>10</sup> Leaving aside the jarringly blithe comparison to the horrors of slavery, their rightful concern for consumer welfare may be best served by a turn towards empowering evidence-based policymaking in this area. One thing to consider about the economists’ Uber study is that access to data from Uber on similar rides that consumers chose to take and chose not to, depending on the price (due to the familiar 1X, 1.2X, 2X, etc. “surge pricing”) allowed an unusually – and possibly unprecedentedly – accurate estimation of a real-world demand curve. As a result, there may be a huge benefit to robo-selling for antitrust enforcement. If antitrust enforcers are allowed access to, and make diligent use of, the data robo-sellers collect, they may be able to make more robust estimates of the degree to which robo-sellers help or harm consumers.

Prominent commentators from other legal areas have already suggested a need for algorithmic openness;<sup>11</sup> targeted opening of these “black boxes” to antitrust agencies may provide a great benefit. Specifically, from the standpoint of the error-cost framework, the relative size of the errors may decrease if demand curves (and perhaps supply curves depending on data availability) can be more accurately estimated. We might see observers disagree about which type of error is more important in this context, false negatives or false positives; less error overall would be inarguably beneficial. As a result, the best step at this time may be for agencies to enter into a dialogue with stakeholders about how to develop a regime that best allows enforcement agency experts access to interpret this data.

## IV. CONCLUSION

Robo-selling’s potential implications for consumers are too important for competition law and theory to ignore. But some of those implications are likely to be quite beneficial. Such benefits may include cost reductions in firms’ competitive intelligence and marketing functions; allocative efficiencies in the form of better matched supply and demand; and dynamic gains by making possible unprecedented markets for products and services. As a result, caution in antitrust prosecution may be warranted, since false positives could carry a fairly significant risk of actually harming consumers. Accordingly, policy in this area should be measured, evidence-based and shaped in consultation with stakeholders and technologists.

<sup>7</sup> Cass R. Sunstein, *Choosing Not to Choose* (Oxford, 2015), pp. 176-81.

<sup>8</sup> Peter Cohen, Robert Hahn, Jonathan Hall, Steven Levitt, Robert Metcalfe, *Using Big Data to Estimate Consumer Surplus: The Case of Uber*, NBER Working Paper No. 22627 (Sept. 2016), available at: <http://www.nber.org/papers/w22627>.

<sup>9</sup> For example, during the year of the study, in Philadelphia, Uber deployed 8 times as many drivers as the legacy licensed taxi system, with 20 percent of rides serving previously underserved neighborhoods. Anna Orso, *Uber in Philly: One year in, how’s the ride-sharing service doing?* BillyPenn.com, Oct. 26, 2015, available at: <https://billypenn.com/2015/10/26/uber-in-philly-one-year-in-hows-the-not-quite-legal-ride-sharing-service-doing/>.

<sup>10</sup> Ezrachi, Ariel and Maurice Stucke, *Virtual Competition*, Harvard Univ. Press, 2016 (start of section entitled “Final Reflections”).

<sup>11</sup> Frank Pasquale, *The Black Box Society* (Harvard U. Press 2015).