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Ratings and reviews are the lifeblood of the Sharing Economy. They create a reputation proxy that makes us feel comfortable jumping into strangers' cars, sleeping in their beds, and having meals at their kitchen tables. However, new and existing evidence from the fields of psychology and behavioral economics shows us that these feedback loops might be flawed, which can impair the risk calculus for Sharing Economy users and potentially limit who has access to the benefits of Sharing Economy platforms. This Article examines how proposed theories for regulating the Sharing Economy depend on accurate feedback mechanisms, and argues that this belief should be questioned. Instead of relying on the wisdom of the crowd, we might be relying on the collective bias of the crowd to our detriment.

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INTRODUCTION

Thousands of rooms, houses, yurts, and castles are reserved on Airbnb each day.[1] Soon-to-be travelers, who are sometimes thousands of miles away from their future resting places, make their selections based on host-provided descriptions, pictures, and former guest reviews.[2] The latter are essential for building trust and giving travelers the confidence they need to interact with strangers.[3] These feedback loops or reputation systems make up part of the "real innovation"[4] of the Sharing Economy,[5]

1. Airbnb is a company that built an online marketplace that allows people to list and rent unique accommodations around the world. *About Us*, AIRBNB, https://www.airbnb.com/about/about-us (last visited Mar. 28, 2017).

2. *See id.* (stating that Airbnb has over three million listings in over 191 countries worldwide).

3. PWC, CONSUMER INTELLIGENCE SERIES: THE SHARING ECONOMY 9 (2015), http://www.pwc.com/us/en/industry/entertainment-media/publications/consumer-intelligence-series/assets/pwc-cis-sharing-economy.pdf (finding that 69% of people surveyed do not trust Sharing Economy companies until they are recommended to do so by a trusted individual).

4. Thomas L. Friedman, *Welcome to the 'Sharing Economy,'* N.Y. TIMES (July 20, 2013), http://www.nytimes.com/2013/07/21/opinion/sunday/friedman-welcome-to-the-sharing-economy.html (referring to the "framework of trust" created by ratings and reviews, insurance policies, and identity verification on Airbnb).

5. The term "Sharing Economy" is a complicated one. It is a misnomer because participants on Sharing Economy platforms are often motivated by self-interest and not altruism. Matthew Yglesias, *There Is No "Sharing Economy,"*

thereby solving George Akerlof's seminal "lemons problem"[6] and leading to a world where there is a "diminished need for regulatory oversight and legal remedies because consumers [can] police misconduct themselves."[7] As Airbnb's founder and CEO Brian Chesky states: "[C]ities can't screen as well as technologies can screen. Companies have these *magical* things called reputation systems . . . government should exist as the place of last recourse."[8]

However, examined more closely, these reputation systems appear to be skewed to the positive, which unsurprisingly can have an impact on their utility. For example, 95% of the offerings on Airbnb have guest-generated ratings of 4.5 stars or higher (out of five).[9] Similarly, Uber, the digital ride-hailing company, self-reports that in San Francisco, less than 1% of rides are rated below three out of five stars.[10] Is it possible that nearly 100% of transactions are positive? Unlikely, even with the help of "magic."[11]

In recent scholarly debates concerning the regulation of the Sharing Economy, the accuracy of the feedback mechanism incorporated into platforms has largely been unquestioned.[12]

SLATE (Dec. 26, 2013), http://www.slate.com/blogs/moneybox/2013/12/26/myth_of_the_sharing_economy_there_s_no_such_thing.html. However, for ease of argument, this paper capitalizes the term Sharing Economy and defines what exactly is meant by it in Part I of this Article. *See infra* Part I.

6. *See generally* Adam Thierer et al., *How the Internet, the Sharing Economy, and Reputational Feedback Mechanisms Solve the "Lemons" Problem*, 70 U. MIAMI L. REV. 830 (2016). The lemons problem relates to the sale of used cars. Akerlof shows that a used car barely driven will sell for well below the price of the same car new. Absent information of quality, buyers are unsure whether they are buying a lemon and thus require a significant price discount in exchange for the risk they take. George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 489 (1970).

7. Lior Jacob Strahilevitz, *Less Regulation, More Reputation*, *in* THE REPUTATION SOCIETY 63 (Hassan Masum & Mark Tovey eds., 2012).

8. Jason Clampet, *Airbnb CEO Responds to Illegal Rentals Story: "First of All It's Not Illegal Everywhere,"* SKIFT (Jan. 11, 2013, 3:00 AM), https://skift.com/2013/01/11/airbnb-responds-to-illegal-rentals-story-first-of-all-its-not-illegal-everywhere/ (emphasis added).

9. Georgios Zervas, Davide Proserpio & John W. Byers, A First Look at Online Reputation on Airbnb, Where Every Stay is Above Average 1 (Jan. 28, 2015) (unpublished manuscript), https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=2554500.

10. Nairi Hourdajian, *Feedback Is a Two-Way Street*, UBER NEWSROOM (Apr. 23, 2014), https://newsroom.uber.com/2014/04/feedback-is-a-2-way-street.

11. *See* TOM SLEE, WHAT'S YOURS IS MINE: AGAINST THE SHARING ECONOMY 91–108 (2016).

12. *See infra* note 54 and accompanying text.

However, new and existing evidence from the fields of psychology and behavioral economics shows us that these reputation systems might be flawed, which can lead to uninformed decision-making and user harm. As they develop new ways to regulate the Sharing Economy, regulators must take a critical look at their dependency on these reputation systems.

This Article is organized as follows. Part I provides a brief overview of the Sharing Economy. Part II details how reputation systems work and highlights how scholars, regulators, and industry rely on reputation systems to self-regulate the Sharing Economy. Part III demonstrates how reputation systems are flawed. They fail to accurately represent the quality of past transactions, they can be manipulated by fraudulent reviews and inappropriate inputs, and users can have difficulty interpreting the reputation information presented. The Article concludes by offering potential solutions to address various forms of feedback loop failure. By exploring the limitations of reputation systems, this Article will help regulators and industry improve this useful and essential feature of the Sharing Economy.

I. A BRIEF OVERVIEW OF THE SHARING ECONOMY

The Sharing Economy is thought to be a disruptive force that allows for the monetization of underutilized assets and schedules through modern technology.[13] At its best, the Sharing Economy facilitates transactions and the proliferation of microbusinesses through peer-to-peer information sharing.[14] Ostensibly, it also brings with it many benefits such as job creation and more efficient and sustainable allocation of resources leading to lower prices and greater access to goods and services.[15]

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13. Rachel Botsman, *The Sharing Economy Lacks a Shared Definition*, FAST COMPANY (Nov. 21, 2013), http://www.fastcoexist.com/3022028/the-sharing-economy-lacks-a-shared-definition.

14. Abbey Stemler, *Regulation 2.0: The Marriage of New Governance and* Lex Informatica, 19 VAND. J. ENT. & TECH. L. 87, 113 (2016) [hereinafter Stemler, *Regulation 2.0*].

15. *The Airbnb Community's Economic Impact in Portland*, AIRBNB CITIZEN (Apr. 22, 2014), https://www.airbnbcitizen.com/the-airbnb-communitys-economic-impact-in-portland/ (arguing that participating in the Sharing Economy allows for people to pursue entrepreneurship and non-traditional forms of work such as free lancing and self-employment); Rashmi Dyal-Chand, *Regulating Sharing: The Sharing Economy as an Alternative Capitalist System*,

However, truly wrapping one's head around the Sharing Economy is not easy for two reasons. First, the Sharing Economy involves a variety of diverse activities that allow people to capitalize on their schedules (Taskrabbit, Handy, etc.), vehicles (Uber, Lyft, RelayRides, etc.), real estate (Airbnb, VRBO, etc.), and other assets (Spinlister for bikes, LendingClub for extra cash, etc.). These activities must be distinguished from those of incumbent firms (hotels, taxi companies, banks, etc.) and passive online platforms such as Craigslist.[16] Second, the Sharing Economy is constantly changing. Many Sharing Economy companies that existed in 2013 vanished by 2016.[17] And, the ones that did survive have and will continue to evolve considerably. Therefore, a simple definition cannot possibly cover all of the diversity in and iterations of the Sharing Economy.[18] That said, many (including myself) have tried to create a working definition.[19]

In an earlier article, I defined Sharing Economy companies based on four characteristics.[20]

1. *Platforms*. The Sharing Economy relies on platforms that connect supply- and demand-side users.[21] For example, Uber has a platform that connects drivers with passengers and Lending Club has a platform that connects lenders with

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90 TUL. L. REV. 241, 256–59 (2015) (describing the supply- and demand-side benefits of the Sharing Economy); Christopher Koopman, Matthew Mitchell & Adam Thierer, *The Sharing Economy and Consumer Protection Regulation: The Case for Policy Change*, 8 J. BUS. ENTREPRENEURSHIP & L. 529, 531–34 (2015) (stating that the Sharing Economy creates value by allowing underutilized assets to be put to productive use); PWC, *supra* note 3, at 9 (finding that 86% of adults in the United States agree that the Sharing Economy makes life more affordable).

16. Abbey Stemler, *Betwixt and Between: Regulating the Shared Economy*, 43 FORDHAM URB. L.J. 31, 58 (2016) [hereinafter Stemler, *Betwixt and Between*].

17. Abbey Stemler, *The Myth of the Sharing Economy and Its Implications for Regulating Innovation*, 67 EMORY L.J. (forthcoming 2017) [hereinafter Stemler, *The Myth of the Sharing Economy*] (finding that of 152 companies that had all four characteristics (described below) of a Sharing Economy company in 2013, fewer than 60% survived to 2016).

18. Orly Lobel, *The Law of the Platform*, 101 MINN. L. REV. 87, 101 (2016) (stating that "the platform economy defies simple definitions").

19. Botsman, *supra* note 13; *see, e.g.*, ARUN SUNDARARAJAN, THE SHARING ECONOMY: THE END OF EMPLOYMENT AND THE RISE OF CROWD-BASED CAPITALISM 26–30 (2016); Stemler, *Betwixt and Between*, *supra* note 16.

20. Stemler, *Regulation 2.0*, *supra* note 14, at 115–22; Stemler, *Betwixt and Between*, *supra* note 16.

21. Stemler, *Betwixt and Between*, *supra* note 16, at 57–58.

individuals who need small loans. These platforms facilitate transactions by advertising, standardizing contract terms (including price in many cases), processing payments, creating searchable databases, and collecting and distilling information about participants for participants, among other things.[22] They also make it easy for supply-side[23] users to match their assets and schedules with consumer demand by reducing barriers of entry and overhead costs in exchange for small fees.[24]

2. *Microbusinesses*. Instead of relying on employees and full-fledged businesses to meet the demand of consumers on Sharing Economy platforms, many Sharing Economy companies (at least in their early stages) rely on microbusinesses.[25] These microbusinesses run by microentrepreneurs represent the smallest form of producers and are therefore the ones most likely to be sensitive to burdensome regulation.[26]

3. *Excess Capacity*. Supply-side users sell their personal excess capacity in whatever form on Sharing Economy Platforms.[27] Utilization of excess capacity supports the microentrepreneur frame, and distinguishes supply-side users from traditional firms who amass assets or employee workers in order to generate revenue.[28]

4. *High-Powered Information Exchange*. Lastly, platforms allow for the immediate and comprehensive exchange of information about supply- and demand-side users through the Internet.[29] This information exchange relies on GPS and other technologies and allows users to quickly assess each

22. *Id.*; Daniel E. Rauch & David Schleicher, *Like Uber, but for Local Government Policy: The Future of Local Regulation of the "Shared Economy"* 36 (N.Y.U. Marron Inst. Urban Mgmt., Working Paper No. 21, 2015).

23. Supply-side users are those that provide time and assets in exchange for money on Sharing Economy platforms. Demand-side users are those that receive and pay for access to those services and assets.

24. Stemler, *Betwixt and Between*, *supra* note 16, at 57–58; *see also* Lobel, *supra* note 18, at 110–11 (discussing the ways platforms reduce entry and overhead costs).

25. Stemler, *Betwixt and Between*, *supra* note 16, at 58–62.

26. *Id.* at 56–57.

27. *Id.* at 62–63.

28. *Id.*

29. Stemler, *Regulation 2.0*, *supra* note 14.

other's reliability and trustworthiness via reputation systems.

These characteristics are similar to those suggested by Sharing Economy experts Professor Arun Sundararajan and Professor Orly Lobel,[30] and have been relied on to explain the uniqueness of the Sharing Economy and to justify limited regulation.[31] However, many supply-side users on Sharing Economy platforms are no longer microbusinesses selling their excess capacity.[32] Instead, much of Airbnb's revenue comes from professional hosts listing their properties full-time.[33] On Lending Club, the majority of loans come largely from institutional investors.[34] And with Uber, there is much debate about whether drivers are employees instead of independently-contracting microentrepreneurs.[35] For these reasons, we can no

30. SUNDARARAJAN, *supra* note 19, at 26–27 (identifying the following characteristics of the Sharing Economy economic system: market-based, utilization of excess capacity ("high-impact capital"), "networks" as opposed to centralized institutions, "[b]lurring [the] lines between the personal and the professional," and "[b]lurring lines between fully employed and casual labor, between independent and dependent employment, [and] between work and leisure"); Lobel, *supra* note 18, at 107–112 (identifying ten "principles" of the Sharing Economy (Lobel uses the term "platform economy") including: excess capacity, profit-motivated transactions, customized product offerings, reduced barriers to entry for supply-side users, and dynamic information via reputation systems).

31. *See* Stemler, *The Myth of the Sharing Economy*, *supra* note 17, at 12–15 (explaining how the excess capacity and microentrepreneur characteristics have caused regulators to take a "hands-off" approach); *see also infra* Part II.

32. Stemler, *The Myth of the Sharing Economy*, *supra* note 17, at 14–15 (discussing how most of platform revenue comes from supply-side users who are actually professionals listing assets on a full-time basis (as opposed to monetizing excess capacity) or employees (as opposed to independent contractors)).

33. OFFICE OF THE N.Y. STATE ATTORNEY GEN., AIRBNB IN THE CITY (2014), http://www.ag.ny.gov/pdfs/Airbnb%20report.pdf (finding that almost half of Airbnb's revenue in New York City in 2010 came from users with more than three listings); John W. O'Neill & Yuxia Ouyang, Penn State Univ. Sch. of Hosp. Mgmt., Am. Hotel & Lodging Ass'n, *From Air Mattresses to Unregulated Business: An Analysis of the Other Side of Airbnb* (Sept. 2016), https://www.ahla.com/sites/default/files/Airbnb_Analysis_September_2016_0.pdf (finding that nearly 30% of Airbnb's revenue in fourteen of the largest cities in the United States comes from full-time listings).

34. Shelly Banjo, *Wall Street Is Hogging the Peer-to-Peer Lending Market*, QUARTZ (Mar. 4, 2015), http://qz.com/355848/wall-street-is-hogging-the-peer-to-peer-lending-market/.

35. *See* Keith Cunningham-Parmeter, *From Amazon to Uber: Defining Employment in the Modern Economy*, 96 B.U. L. REV. 1673 (2016); Robert Sprague, *Worker (Mis)Classification in the Sharing Economy: Square Pegs Trying to Fit in Round Holes*, 31 ABA J. LAB. & EMP. L. 53 (2015) (applying

longer rely on the above four characteristics to distinguish Sharing Economy companies from others. Instead, we must focus on two of the four characteristics—platforms and high-powered information exchange—to define what is meant by the term "Sharing Economy."[36] Furthermore, for simplicity, this Article will focus almost all of its examples and discussion on three of the largest Sharing Economy companies—Uber, Airbnb, and Lending Club. Regardless of how we precisely slice the Sharing Economy, reputation systems can still motivate the hands-off approach taken by regulators. This is a problem because, as demonstrated in the sections below, these systems can be biased and improperly influenced.

II. "MAGICAL" REPUTATION SYSTEMS: THE REGULATORY PANACEA?

The Sharing Economy is viewed in large part as an innovative way to meet consumer needs. Hate waiting for a taxi? Request an Uber and you will be able to digitally watch a car drive to your door. Want to live like a local in Paris? Stay in an Airbnb. Both its simplicity and newness created a zeitgeist for the Sharing Economy as demonstrated by the books,[37]

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traditional tests for the employee vs. independent contractor distinction to Sharing Economy businesses).

36. These two characteristics closely resemble the four characteristics of "digital matching firms" identified by the U.S. Commerce Department's Economics and Statistics Administration. They include (1) using information technology systems to "facilitate peer-to-peer transactions," (2) relying on reputation systems, (3) providing flexibility to supply-side users, and (4) supply-side users using their own assets to provide services. Rudy Telles, U.S. Dep't of Commerce, *Digital Matching Firms: A New Definition in the "Sharing Economy" Space*, http://web.archive.org/web/20161121225411/http://esa.gov/sites/default/files/digital-matching-firms-new-definition-sharing-economy-space.pdf.

37. *See, e.g.*, RACHEL BOTSMAN & ROO ROGERS, WHAT'S MINE IS YOURS: THE RISE OF COLLABORATIVE CONSUMPTION (2010); ROBIN CHASE, PEERS INC: HOW PEOPLE AND PLATFORMS ARE INVENTING THE COLLABORATIVE ECONOMY AND REINVENTING CAPITALISM 4 (2015); BRYAN KRAMER, SHAREOLOGY: HOW SHARING IS POWERING THE HUMAN ECONOMY (2015); GEOFFREY G. PARKER, PLATFORM REVOLUTION: HOW NETWORKED MARKETS ARE TRANSFORMING THE ECONOMY AND HOW TO MAKE THEM WORK FOR YOU (2016); ALEX STEPHANY, THE BUSINESS OF SHARING: MAKING IT IN THE NEW SHARING ECONOMY (2015); SUNDARARAJAN, *supra* note 19.

conferences,[38] and organizations[39] that have sprung up since its inception. This excitement for the Sharing Economy is compounded by the positive impacts on the economy.[40] An oft-cited PricewaterhouseCoopers LLP (PwC) study estimates that by 2025 the Sharing Economy will have global revenues of around $335 billion.[41]

In response to the Sharing Economy, lawmakers have taken a variety of approaches to regulate it—from bans to creating Sharing Economy specific laws.[42] Since many activities in the Sharing Economy like short-term rentals and home sharing are regulated at the local level, a comprehensive and accurate empirical examination of Sharing Economy regulations will likely never be completed. However, we can see glimpses into general trends from industry reports published by various organizations. For example, the libertarian think tank R Street has compiled a report that provides an overview of regulations on short-term rentals such as Airbnb. R Street found that in

38. *See, e.g.*, *FT Sharing Economy Summit Europe 2016*, FINANCIAL TIMES LIVE, https://live.ft.com/Events/2016/FT-Sharing-Economy-Summit-Europe-2016 (last visited Apr. 3, 2017) (discussing the July 5, 2016 Sharing Economy Summit); *Sharing Economy Conference: Boston with Julia Ledewitz*, ROBERT & PATRICIA SWITZER FOUND., http://www.switzernetwork.org/events/sharing-economy-conference-boston-julia-ledewitz (last visited Apr. 3, 2017) (describing an all-day conference on the Sharing Economy on December 12, 2013); *The Future of the Sharing Economy*, YPO, https://www.ypo.org/2015/09/the-future-of-the-sharing-economy/ (last visited May 5, 2017) (describing YPO's Sharing Economy conference); *The Think and Be-Tank for a Collaborative Society*, OUISHARE, http://ouishare.net/en/about (last visited May 5, 2017) (discussing the yearly OuiShare Fest).

39. *See, e.g.*, *About*, PEOPLE WHO SHARE, http://www.thepeoplewhoshare.com/about/ (last visited May 5, 2017); *About*, SHAREABLE, http://www.shareable.net/about (last visited May 5, 2017); *About Us*, SHARING ECONOMY UK, http://www.sharingeconomyuk.com/about-us (last visited May 5, 2017).

40. The U.S. Conference of Mayors stated in 2013 that "Sharing Economy companies have proven to be engines of innovation and job creation, driving economic development in the hearts of American cities, where joblessness is still most pervasive." U.S. CONFERENCE OF MAYORS, 81ST ANNUAL MEETING, APPROVAL OF RESOLUTION IN SUPPORT OF POLICIES FOR SHAREABLE CITIES (2013), https://www.usmayors.org/the-conference/resolutions/?category=c10102&meeting=81st%20Annual%20Meeting.

41. PwC, *supra* note 3, at 14.

42. *See* Bryant Cannon & Hanna Chung, *A Framework for Designing Co-Regulation Models Well-Adapted to Technology-Facilitated Sharing Economies*, 31 SANTA CLARA HIGH TECH. L.J. 23, 41–53 (2015) (providing an overview of attempts to regulate ride sharing and short-term rentals); Stephen R. Miller, *First Principles for Regulating the Sharing Economy*, 53 HARV. J. ON LEGIS. 147, 184–95 (2016) (creating a taxonomy of regulatory approaches with a specific focus on short-term rentals).

fifty-nine of the largest cities in the United States, eleven do not "explicitly either allow or prohibit" short-term rentals,[43] twenty-one have "some sort of tailored legal framework," though some are more restrictive than others,[44] and ten cities "effectively ban" the practice through existing law, including some of those with short-term rental specific laws.[45] On the whole, the R Street report suggests that roughly half of cities studied were open to short-term rental services by scoring a B- or better on its report.[46] Similarly, the Texas A&M Transportation Institute's Transportation Policy Center (TTI) produced a research study on existing regulations of Transportation Network Companies (TNCs) like Uber.[47] TTI's report showed that as of the summer of 2016, around two-thirds of states (thirty-four) had enacted some form of regulation of TNCs.[48] Most of these regulations appear to codify existing TNC practices such as background checks, insurance, and cashless payments and are thus only mildly restrictive.[49]

While regulation is varied, based on their relative success it appears that major Sharing Economy companies have not been terribly overburdened with regulation.[50] This is due, in part, to

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43. R Street calls these the "silent cities." ANDREW MOYLAN, R STREET, ROOMSCORE 2016: SHORT-TERM RENTAL REGULATION IN U.S. CITIES 11 (2016), https://www.rstreet.org/wp-content/uploads/2016/03/RSTREET55.pdf.

44. *Id.* at 5–6, 11–12.

45. *Id.* at 6, 12.

46. *Id.* at 11–12.

47. *Uber, Lyft and Other TNCs: How Governments Are Approaching Ride-Hailing Regulation*, 52 TEX. TRANSP. RESEARCHER, No. 3, 2016, at 10.

48. *Id.* at 11.

49. Karen Weise, *This Is How Uber Takes Over a City*, BLOOMBERGBUSINESSWEEK (June 23, 2016), https://www.bloomberg.com/news/features/2015-06-23/this-is-how-uber-takes-over-a-city ("Each government, whether municipal or state, goes through its own process to craft rules, but in the end, officials generally codify the insurance coverage, background-check policies, and inspection protocols Uber already has in place."); *see also* Stemler, *The Myth of the Sharing Economy*, *supra* note 17 (detailing ways in which the Sharing Economy is under-regulated).

50. Uber, Lyft, Airbnb, and LendingClub are all valued at over a billion dollars. Ankit Ajmera, *Airbnb Valued at $13 Billion as It Discusses Employee Stock Sale: WSJ*, REUTERS (Oct. 23, 2014, 9:23 PM), http://www.reuters.com/article/us-airbnb-financing-idUSKCN0ID03420141024; Katie Roof, *Lyft Seeks $6 Billion Valuation in Funding Round*, TECH CRUNCH (Mar. 1, 2017), https://techcrunch.com/2017/03/01/lyft-seeks-6-billion-valuation-in-funding-round/; *Stock Valuation Information for LendingClub Corporation*, YAHOO! FINANCE, https://finance.yahoo.com/quote/LC/key-statistics?p=LC (last visited Mar. 27, 2017); Lauren Thomas, *Airbnb Just Closed a $1 Billion Round and Became*

the reputation systems that are incorporated into company platforms.[51]

Regulators and scholars cite reliance on reputation systems to help address the market failure of asymmetric information.[52] Asymmetric information is what allows buyers and sellers to take advantage of one another in a transaction.[53] In traditional transactions, each party has exclusive knowledge about the quality of what they are offering—such as the ability to pay or the authenticity of the good being sold. Buyers and sellers thus have incentives to withhold information to get a better deal for themselves. With reputation systems, by contrast, information about a participants' trustworthiness, which corresponds to the probability that the transaction will go smoothly, is right out in the open. This creates transparency and helps users make good choices and protect themselves from harm and dissatisfying transactions. Furthermore, reputation systems create incentives for participants to self-police. Logic suggests that if you know your reputation is tied to future benefits, you will be a good guest, host, passenger, borrower, etc. For these reasons, many

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Profitable in 2016, CNBC (Mar. 9, 2017), http://www.cnbc.com/2017/03/09/airbnb-closes-1-billion-round-31-billion-valuation-profitable.html.

51. FED. TRADE COMM'N, THE "SHARING" ECONOMY: ISSUES FACING PLATFORMS, PARTICIPANTS & REGULATORS 38 (2016), https://www.ftc.gov/system/files/documents/reports/sharing-economy-issues-facing-platforms-participants-regulators-federal-trade-commission-staff/p151200_ftc_staff_report_on_the_sharing_economy.pdf ("[R]eputation systems likely have facilitated in part the tremendous growth of sharing economy markets.").

52. *See, e.g.*, *Disrupter Series: How the Sharing Economy Creates Jobs, Benefits Consumers, and Raises Policy Questions: Hearing Before the Subcomm. on Commerce, Mfg., & Trade of the Comm. on Energy & Commerce*, 114th Cong. 2 (2015) (statement of Hon. Michael C. Burgess, Chairman, Subcomm. on Commerce, Mfg., & Trade of the Comm. on Energy & Commerce) ("Sharing platforms are inherently good [at] providing reputation feedback loops."); FED. TRADE COMM'N, *supra* note 51, at 32 ("[A] seller's favorable reputation can provide important leverage for regulators seeking to ensure consumers are protected when shopping online."); Benjamin G. Edelman & Damien Geradin, *Efficiencies and Regulatory Shortcuts: How Should We Regulate Companies Like Airbnb and Uber?*, 19 STAN. TECH. L. REV. 293, 296–301 (2016) (suggesting that regulation should focus on the "efficiencies" of platforms, including reputation systems); Sofia Ranchordás, *Does Sharing Mean Caring? Regulating Innovation in the Sharing Economy*, 16 MINN. J.L. SCI. & TECH. 413, 463–65 (2015) (arguing that regulators need to focus on the unique characteristics of the Sharing Economy when regulating, especially reputation systems); Thierer et al., *supra* note 6, at 845 (arguing that reputation systems solve information asymmetry problems).

53. *See* ROBERT BALDWIN ET AL., UNDERSTANDING REGULATION: THEORY, STRATEGY, AND PRACTICE 18 (2d ed. 2012) (citing Friedrich Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945)).

scholars believe that reputation systems can allow the Sharing Economy to self-regulate because participants will essentially police and protect themselves.[54] However, before regulators decide to let the platforms run without oversight, we must ask ourselves, do these reputation systems really work? To answer this question, it is helpful to start by looking at what reputation systems actually are.

A. THE MAKING OF REPUTATION SYSTEMS

Professor Eric Goldman asserts that reputation systems are systems that "aggregate and disseminate reputational information," which he defines as "information about an actor's past performance that helps predict the actor's future ability to perform or to satisfy the decision-maker's preferences."[55] Goldman's definition of reputational information fails to include other inputs such as gender, race, and social networks that are now used by some reputational systems to predict future behavior.[56] Therefore, this Article expands on and borrows from Goldman's definition to define a reputation system in the Sharing Economy as a system that aggregates and distills a variety of data about an individual to predict the "future ability to perform or to satisfy the decision-maker's preferences."[57]

The inner workings of reputation systems in the Sharing Economy differ based on the platform, but they are all focused on helping users predict the behavior of their counterparts and

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54. *See* Andrew T. Bond, *An App for That: Local Governments and the Rise of the Sharing Economy*, 90 NOTRE DAME L. REV. 77, 95–96 (2015) (arguing that reputational incentives require users to self-regulate and thus should face minimal regulations); Raymond H. Brescia, *Regulating the Sharing Economy: New and Old Insights into an Oversight Regime for the Peer-to-Peer Economy*, 95 NEB. L. REV. 87, 140–41 (2016) (discussing how feedback can punish bad behavior on platforms and support self-regulation); Cannon & Chung, *supra* note 42, at 63 (suggesting that reputation systems can help with quasi-self-regulation, but also noting bias and inaccuracies in those systems); Molly Cohen & Arun Sundararajan, *Self-Regulation and Innovation in the Peer-to-Peer Sharing Economy*, 82 U. CHI. L. REV. DIALOGUE 116, 129 (2015) (arguing that reputation systems can correct for information asymmetries and allow for self-regulation); Thierer et al., *supra* note 6 (arguing that reputation systems solve the problem of asymmetrical information).

55. Eric Goldman, *Regulating Reputation*, *in* THE NEXT DIGITAL DECADE: ESSAYS ON THE FUTURE OF THE INTERNET 293, 294 (Berin Szoka & Adam Marcus eds., 2010).

56. For example, Lending Club grades borrowers on a variety of data points. *See infra* notes 67–69 and accompanying text.

57. Goldman, *supra* note 55; *see also* Thierer et al., *supra* note 6, at 845.

creating incentives for participants to "behave."[58] This creates the necessary trust signals for participants to engage with one another in such intimate ways.[59] Sharing Economy platforms encourage and sometimes require both supply- and demand-side users to provide feedback about the quality of their transactions after they are complete. For example, "[a]t the end of every trip, [Uber] riders have the opportunity to rate their experience by providing 1 to 5 stars."[60] Drivers, on the other hand, *must* provide a 1 to 5 star rating to their passengers.[61] Ratings for drivers are calculated very simply by averaging the driver's past five hundred reviews.[62] Drivers whose feedback scores become too low can be deactivated from Uber's system.[63] In the context of Airbnb, hosts and guests are rated after each transaction on numerous levels from cleanliness to communication and comments are written.[64]

Reputational data is synthesized by platforms and transformed into ratings to make it easy for users to understand. These ratings, along with written reviews (depending on the platform), serve as a proxy for the reliability and trustworthiness of a participant.[65] They guide consumer decisions and reward high-quality users and punish low-quality ones.[66] For example, on peer-to-peer lending sites, like Lending

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58. For example, some reputation systems rely on large swaths of data inputs from a variety of sources, while others rely exclusively on user-generated feedback. Thierer et al., *supra* note 6, at 858, 864 (classifying reputation systems into "centralized or third-party mechanisms" and "peer-to-peer mechanisms").

59. Koen Franken & Juliet Schor, *Putting the Sharing Economy into Perspective*, ENVTL. INNOVATION & SOCIETAL TRANSITIONS (forthcoming 2017), http://dx.doi.org/10.1016/j.eist.2017.01.003 ("The digital platforms are able to make stranger sharing less risky and more appealing because they source information on users via the use of ratings and reputations.").

60. *Driving with Uber: A Closer Look at Ratings*, UBER, https://www.uber.com/info/driver-ratings/ (last visited Feb. 23, 2017).

61. *See id.*

62. *Id.*

63. *Id.*

64. *How Do Star Ratings Work?*, AIRBNB, https://www.airbnb.com/help/article/1257/how-do-star-ratings-work (last visited Feb. 23, 2017); *All About Reviews: A Community Help Guide*, AIRBNB (Mar. 1, 2016, 11:18 PM), https://community.withairbnb.com/t5/Hosts/All-About-Reviews-A-Community-Help-Guide/td-p/38099.

65. BÉNÉDICTE DAMBRINE, JOSEPH JEROME & BEN AMBROSE, FUTURE OF PRIVACY FORUM, USER REPUTATION: BUILDING TRUST AND ADDRESSING PRIVACY ISSUES IN THE SHARING ECONOMY 4 (June 2015), https://fpf.org/wp-content/uploads/FPF_SharingEconomySurvey_06_08_15.pdf.

66. Goldman, *supra* note 55, at 296.

Club, "grades" or some other form of score, which corresponds to the interest rate, are given to each loan.[67] For Lending Club, these scores are based on an individual's FICO score, a proprietary scoring model, the loan term, and loan amount.[68] Investors can then select which loans they would like one-by-one or with automatic investing criteria.[69]

Not surprisingly, markets with reputation systems are more efficient (i.e., more trades are made) than markets without.[70] And supply- and demand-side users both benefit from these systems. Supply-side users receive better prices for their goods and services when they have higher reputation scores.[71] And demand-side participants rely on reviews to make informed selection decisions.[72] However, just because they are helpful does not mean they are perfect, as the section below demonstrates.

B. HOW WELL REPUTATION SYSTEMS WORK

Reputation systems work to a degree. Because reputational information is sourced from many different data points, problems with asymmetric information are alleviated because information about quality, safety, etc. are not in the exclusive possession of participants.[73] Furthermore, if reputation systems did not work, Airbnb would not have the 60 million users it has

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67. *What Is Lending Club Offering as an Investment?*, LENDING CLUB, https://help.lendingclub.com/hc/en-us/articles/215437388-What-is-Lending-Club-offering-as-an-investment- (last visited May 5, 2017).

68. LENDING CLUB, MEMBER PAYMENT DEPENDENT NOTES PROSPECTUS 10 (2014), https://www.lendingclub.com/fileDownload.action?file=Clean_As_Filed_20140822.pdf&type=docs.

69. *Id.* at 50.

70. Gary E. Bolton et al., *How Effective Are Electronic Reputation Mechanisms? An Experimental Investigation,* 50 MGMT. SCI. 1587, 1592 (2004) (comparing various markets including those with and without feedback mechanisms).

71. Mikhail I. Melnik & James Alm, *Does a Seller's Ecommerce Reputation Matter? Evidence from eBay Auctions*, 50 J. INDUS. ECON. 337, 339 (2002) (demonstrating a positive correlation between reviews and price).

72. *Study Finds Consumers Rely on Ratings, Reviews and Recommendations During Recession*, TARGETMARKETING (Feb. 26, 2009), http://www.targetmarketingmag.com/article/study-finds-consumers-rely-ratings-reviews-and-recommendations-during-recession/ (finding that before making a purchase, 77% of online consumers consider ratings and reviews).

73. *See generally* Paul Resnick et al., *Reputation Systems: Facilitating Trust in Internet Interactions*, COMM. ASS'N COMPUTING MACHINERY, Dec. 2000, at 45, 45.

and Uber would not be coordinating over 1 million trips per day.[74]

However, reputation systems within the Sharing Economy have their flaws. Bad things can and still do happen, particularly related to consumer safety, fraud, and dissatisfying transactions. For example, in the ride-sharing arena, the consumer protection website www.whosdrivingyou.com keeps a comprehensive list of safety incidents. As of January 9, 2017, the following incidents were reported: 62 alleged assaults by drivers, 208 alleged sexual assaults and harassments, and 9 alleged kidnappings.[75] Similarly, people are sometimes fraudulently tricked into booking fake listings with fake reviews on Airbnb.[76] And more commonly consumers are dissatisfied when goods and services are not as promised. This might be why Uber has an F rating with the Better Business Bureau[77] and Airbnb has a 1.5 out of 10 stars (from 1530 reviews) from Trustpilot, an online review community.[78] These consumer complaints represent a persistent, if not terribly widespread, problem within the Sharing Economy.

III. PROBLEMS WITH REPUTATION SYSTEMS

Sharing Economy platforms want their reputation systems to facilitate trust and encourage repeat transactions. For a reputation system to work well three requirements must be met: 1) reputation information accurately represents the quality of past transactions;[79] 2) the reputation system cannot be

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74. *About Us*, *supra* note 1; UBER, *Our Commitment to Safety*, https://newsroom.uber.com/our-commitment-to-safety/ (last visited May 5, 2017).

75. The "Alleged Assaults" list contains 62 entries, which appears to be more accurate than the website's self-count of 57. *Reported List of Incidents Involving Uber and Lyft*, WHO'S DRIVING YOU?, http://www.whosdrivingyou.org/rideshare-incidents.html (last visited May 5, 2017).

76. *See infra* notes 140–42 and accompanying text.

77. Patrick Hoge, *Uber and Lyft Both Get an "F" from the Better Business Bureau; So Does Yellow Cab*, S.F. BUS. TIMES (Oct. 9, 2014), http://www.bizjournals.com/sanfrancisco/blog/2014/10/uber-lyft-f-better-business-bureau.html. Note that as of April 2017, Lyft has an A+ rating by the Better Business Bureau in San Francisco. *Lyft, Inc.*, BBB, https://www.bbb.org/greater-san-francisco/business-reviews/car-service/lyft-inc-in-san-francisco-ca-379827 (last visited Apr. 21, 2017).

78. *User Reviews of Airbnb Lodging*, TRUSTPILOT, https://www.trustpilot.com/review/www.airbnb.com (last visited Mar. 22, 2017).

79. *See* Chris Nosko & Steven Tadelis, *The Limits of Reputation in Platform Markets: An Empirical Analysis and Field Experiment* 34 (Nat'l Bureau of Econ.

manipulated by fraudulent reviews or irrelevant information; and 3) users accurately interpret reputation information.[80] Unfortunately, there is evidence that all three of these assumptions may be incorrect, which "may have a cascading error effect on the performance of the computational algorithms [used by reputation systems]."[81] These problems could lead consumers down frustrating and potentially dangerous paths. They could also unintentionally shut out good actors, whose reputational scores are incorrect because of race or other irrelevant factors.

A. ACCURATE REPRESENTATION OF PAST TRANSACTIONS

It makes intuitive sense that if incorrect information is fed to a reputation system ("garbage in"), the reputation system will not accurately reflect trustworthiness ("garbage out"). "Garbage in" can come from many sources, in particular cognitive biases. Cognitive biases involve "replicable pattern[s] in perceptual distortion, inaccurate judgment and illogical interpretation" of data.[82] These biases arise from various processes, such as information-processing shortcuts (heuristics),[83] the mind's limited information-processing capacity,[84] social influence,[85] etc.

Research, Working Paper No. 20830, 2015), http://www.nber.org/papers/w20830.

80. *Id.*

81. Tanja Pavleska & Borka Jerman Blažič, *User Bias in Online Trust Systems: Aligning the System Designers' Intentions with the Users' Expectations*, 36 BEHAV. & INFO. TECH. 404, 404, 405, 420 (2016), http://dx.doi.org/10.1080/0144929X.2016.1239761 (finding that those users involved in reputation systems "exhibit distinction bias, positivity bias, anchoring effect, and framing effect," which impacts the implementation of reputation systems).

82. Adrian P. Brady, *Error and Discrepancy in Radiology: Inevitable or Avoidable?*, 8 INSIGHTS INTO IMAGING 171, 178, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5265198/pdf/13244_2016_Article_534.pdf; *see* Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124, 1131 (1974) (looking at heuristics that "lead to systematic and predictable errors" due to cognitive biases). *See generally* DAN ARIELY, PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS (2008) (exploring cognitive biases).

83. Amos Tversky & Daniel Kahneman, *Subjective Probability: A Judgment of Representativeness*, 3 COGNITIVE PSYCHOL. 430, 431 (1972) ("[P]eople replace the laws of chance by heuristics.").

84. *See* Herbert A. Simon, *A Behavioral Model of Rational Choice*, 69 Q.J. ECON. 99, 99 (1955) (rejecting the assumption that man has "a well-organized and stable system of preferences").

85. *See generally* X. T. Wang, Frédéric Simons & Serge Brédart, *Social Cues and Verbal Framing in Risky Choice*, 14 J. BEHAV. DECISION MAKING 1 (2001) (testing the effect social cues have on behavioral decision-making).

Information about previous transactions in a reputation system may be biased for four primary reasons: reporting bias, fear of retaliation, reciprocity bias, and the herding effect.[86] Lastly, bias in the form of racial discrimination can also distort reputation scores. Each of the aforementioned forms of bias is discussed in turn.

1. Reporting Bias

Accurate reviews are public goods; therefore, they are likely to be underprovided.[87] However, non-response alone does not cause feedback loop failure. Instead, the problem comes from the well-documented reporting bias, which can positively skew the pool of provided feedback.[88]

Similar to Thumper's rule, "[i]f you can't say something nice, don't say nuthin' at all,"[89] reporting bias causes users with extremely positive (or negative) views to rate transactions more often than users with mediocre experiences. Professors Chrysanthos Dellarocas and Charles Wood, who empirically studied the accuracy of the eBay feedback system (a system very similar to those in the Sharing Economy), show how this phenomenon creates inaccurate feedback.[90] They found that in approximately 21% of all transactions, eBay buyers are mildly to very dissatisfied, despite a reported 99% satisfaction rate.[91]

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86. As demonstrated in the subsections below, these biases often bleed into one another, but for purposes of argumentation, they have been separated out.

87. They are neither excludable nor rivalrous, and they are useful for the entire population. *See* Nolan Miller, Paul Resnick & Richard Zeckhauser, *Eliciting Informative Feedback: The Peer-Prediction Method*, 51 MGMT. SCI. 1359, 1359 (2005); Andrey Fradkin, Elena Grewal & David Holtz, The Determinants of Online Review Informativeness: Evidence from Field Experiments on Airbnb 2 (Mar. 15, 2017), http://andreyfradkin.com/assets/reviews_paper.pdf.

88. Reporting bias is very similar to selection bias, which has also been found to bias reputation systems. Selection bias means that if reviews are not mandatory, "[r]eviewers are disproportionately drawn from the subset of potential consumers who are favorably predisposed toward the resource." *See* Mark A. Kramer, *Self-Selection Bias in Reputation Systems*, *in* TRUST MANAGEMENT, 238 INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING 255, 256 (2007).

89. BAMBI (Disney 1942).

90. Chrysanthos Dellarocas & Charles A. Wood, *The Sound of Silence in Online Feedback: Estimating Trading Risks in the Presence of Reporting Bias*, 54 MGMT. SCI. 460 (2008).

91. *Id.* at 461. Similar results were found for sellers. They have an estimated dissatisfaction level of roughly 14%.

Similar results have been found on Airbnb's platform.[92] Airbnb reviews are notably more positive than those posted on sites like TripAdvisor.[93] The rate of five-star reviews is "31% on TripAdvisor and 44% on Expedia compared to 75% on Airbnb."[94]

Reporting bias in the Sharing Economy is caused by two main forces. First, participants might want to avoid "pay[ing] a premium to future trading partners" for bad feedback.[95] On systems where you can see prior feedback given by a user, negative feedback might cause users to avoid transactions.[96] In other words, people may perceive the user as tough or hard to please. This explanation is related to the fear of retaliation as described below.

Second, the Sharing Economy involves more personal interaction between users (as opposed to anonymous online interactions); therefore, people are more likely to empathize with one another.[97] This empathy could cause a user to internally justify not reporting negative feedback because they may attribute the bad experience to something other than the fault of the seller (attribution bias). Furthermore, the more similarities individuals find in one another, the more likely they are to view each other positively (homophily).[98]

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92. Fradkin et al., *supra* note 87.

93. *Id.* at 5.

94. *Id.* (citing Dina Mayzlin, Yaniv Dover & Judith Chevalier, *Promotional Reviews: An Empirical Investigation of Online Review Manipulation*, 104 AM. ECON. REV. 2421 (2014)).

95. *See* JOHN J. HORTON & JOSEPH M. GOLDEN, REPUTATION INFLATION: EVIDENCE FROM AN ONLINE LABOR MARKET 13 (2015), https://pdfs.semanticscholar.org/59d6/e24bf80c01384d5ce8a64e1582208b8b7072.pdf.

96. *See id.* at 27 ("[R]eputation inflation occurs in an online marketplace and . . . the cause is driven by the costs associated with leaving negative feedback."); *see also* Seth Porges, *Dear Would-Be Airbnb Guests: Here's Why Hosts Keep Turning You Down*, FORBES (Jan. 18, 2016, 9:00 AM), http://www.forbes.com/sites/sethporges/2016/01/18/dear-would-be-airbnb-guests-heres-why-hosts-keep-turning-you-down (describing how hosts do not like to pick users who leave negative reviews on past stays with other hosts). Currently on Airbnb's site, there is a two-step process to see prior guest reviews (prospective hosts have to click on a prior host's review and scroll to see the guest's review), so hosts really have to want the information; however, they can in fact see it.

97. *See* James Andreoni & Justin M. Rao, *The Power of Asking: How Communication Affects Selfishness, Empathy, and Altruism*, 95 J. PUB. ECON. 513, 514 (2011) (finding feelings of empathy to be strongly correlated to sharing conversations with others); Fradkin et al., *supra* note 87, at 4.

98. Fereshteh Ghazizadeh Ehsaei & Ab. Razak Che Hussin, *Acceptance of Feedbacks in Reputation Systems: The Role of Online Social Interactions*, 4 INFO. MGMT. & BUS. REV. 391, 398 (2012).

The influence of social interactions might also explain why Airbnb guests who stay in private rooms as opposed to entire homes, give higher ratings.[99] They presumably have more interaction with guests. For example, when Airbnb surveyed guests who did not leave reviews, responses included: "'Our host made us feel very welcome and the accommodation was very nice so we didn't want to have any bad feelings.' 'I also assume that if they can do anything about it they will, and didn't want that feedback to mar their reputation!'"[100]

2. Fear of Retaliation

In the Sharing Economy, your reputation is your key to both earning and saving money. Therefore, in order to garner good reviews, participants have an incentive to withhold negative reviews in order to avoid retaliation. While many platforms no longer utilize non-simultaneous review systems,[101] a perceived threat might still linger, meaning people might not know that they cannot be retaliated against. To illustrate this point we can look to another eBay study, which this time was conducted by Professors Gary Bolton, Ben Greiner, and Axel Ockenfels. These professors found that on a non-simultaneous review system actual retaliation is rare (less than 2% of feedback in the data they analyzed could be considered retaliatory).[102] However, people still responded to the threat of retaliation.[103] The professors demonstrated this by analyzing the timing of feedback, which is correlated with the feedback's content. If a buyer was going to give negative feedback, 70% of the time he or she waited until after the seller had given feedback.[104]

Beyond fear of retaliation in the form of negative reviews, participants may be fearful of retaliation in other respects. For example, an Airbnb host who gives a guest a bad review might

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99. Fradkin et al., *supra* note 87, at 21.

100. *Id.* at n.4.

101. Non-simultaneous meaning that reviewers can see feedback from their counterparts as soon as it's submitted.

102. Gary Bolton, Ben Greiner & Axel Ockenfels, *Engineering Trust: Reciprocity in the Production of Reputation Information*, 59 MGMT. SCI. 265, 282 (2013). The actual level of retaliation might be higher. Professors Luís Cabral and Ali Hortaçsu found that in a sample of "almost 10,000 negative/neutral instances in [their] data, 2,462 resulted in a retaliatory comment by the seller." Luís Cabral & Ali Hortaçsu, *The Dynamics of Seller Reputation: Evidence from eBay*, 58 J. INDUS. ECON. 54, 70 (2010).

103. Bolton et al., *supra* note 102, at 282.

104. *Id.* at 268–69.

become worried that the guest knows where she lives and likely has her phone number.

3. Reciprocity Bias

People reciprocate like behavior with like.[105] For example, in restaurants, servers can positively influence tipping behavior by smiling and touching a customer, introducing themselves by name, providing candy with a check, and writing certain images and messages on checks.[106] Similar techniques can lead to inflated reviews on Sharing Economy platforms. If, for example, a host or a driver provides a bottle of wine, a mint, or a friendly smile, those actions might lead to higher reviews regardless of merit. More directly, if a platform uses a non-simultaneous reveal system, a user who receives positive feedback from a transaction partner would be more likely to reciprocate and provide positive feedback, even if a mediocre or negative review would be more accurate.[107]

105. *See, e.g.*, Ernst Fehr & Simon Gächter, *Fairness and Retaliation: The Economics of Reciprocity*, J. ECON. PERSP., Summer 2000, at 159.

106. *See* April H. Crusco & Christopher G. Wetzel, *The Midas Touch: The Effects of Interpersonal Touch on Restaurant Tipping*, 10 PERSONALITY & SOC. PSYCHOL. BULL. 512 (1984); *see also* Stephen F. Davis et al., *Restaurant Servers Influence Tipping Behavior*, 83 PSYCHOL. REP. 223 (1998); Kimberly Garrity & Douglas Degelman, *Effect of Server Introduction on Restaurant Tipping*, 20 J. APPLIED SOC. PSYCHOL. 168 (1990); Nicolas Guéguen, *The Effects of a Joke on Tipping when It Is Delivered at the Same Time as the Bill*, 32 J. APPLIED SOC. PSYCHOL. 1955 (2002); Jacob Hornik, *Tactile Stimulation and Consumer Response*, 19 J. CONSUMER RES. 449 (1992); Amy S. Ebesu Hubbard et al., *Effects of Touch on Gratuities Received in Same-Gender and Cross-Gender Dyads*, 33 J. APPLIED SOC. PSYCHOL. 2427 (2003); Michael Lynn & Kirby Mynier, *Effect of Server Posture on Restaurant Tipping*, 23 J. APPLIED SOC. PSYCHOL. 678 (1993); Bruce Rind & Prashant Bordia, *Effect on Restaurant Tipping of Male and Female Servers Drawing a Happy, Smiling Face on the Backs of Customers' Checks*, 26 J. APPLIED SOC. PSYCHOL. 218 (1996); Bruce Rind & Prashant Bordia, *Effect of Server's "Thank You" and Personalization on Restaurant Tipping*, 25 J. APPLIED SOC. PSYCHOL. 745 (1995); Bruce Rind & David Strohmetz, *Effect on Restaurant Tipping of a Helpful Message Written on the Back of Customers' Checks*, 29 J. APPLIED SOC. PSYCHOL. 139 (1999); Reneé Stephen & Richard L. Zweigenhaft, *The Effect on Tipping of a Waitress Touching Male and Female Customers*, 126 J. SOC. PSYCHOL. 141 (1986); David B. Strohmetz et al., *Sweetening the Till: The Use of Candy to Increase Restaurant Tipping*, 32 J. APPLIED SOC. PSYCHOL. 300 (2002); Kathi L. Tidd & Joan S. Lockard, *Monetary Significance of the Affiliative Smile: A Case for Reciprocal Altruism*, 11 BULL. PSYCHONOMIC SOC'Y 344 (1978).

107. Dellarocas & Wood, *supra* note 90, at 467.

4. Herding

Lastly, the herding effect, which leads to unconscious bias based on information about prior reviews, might also lead to inflated reviews.[108] In a randomized experiment, Professors Muchnik, Aral, and Taylor demonstrated how prior positive ratings on an unnamed social news aggregator website increased the likelihood of subsequent positive ratings.[109] Their simple experiment looked at the "up" and "down" votes that comments to news articles could receive on the news website.[110] The up and down votes were aggregated and the rating for each comment was based on the total number of up votes minus the total number of negative votes.[111] The rating for any given comment was displayed next to it.[112]

The researchers randomly put comments into three groups: "up-treated, down-treated, or control."[113] The comments that were submitted to the up-treated group were given one up-vote and vice versa for the down-treated group.[114] The control group was not given a vote. While initial negative votes did not impact the likelihood of subsequent votes, initial positive votes increased the probability of someone giving a subsequent positive vote by 32%.[115] And on the whole, the overall ratings among up-treated groups were 25% higher than the control group.[116] Again, initial negative reviews had no influence.[117] This suggests that in addition to all of the ways reviews might be skewed toward the positive (as mentioned in the subsections above), initial confederate or fake positive reviews on Sharing Economy platforms can amplify the herding effect.

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108. Zervas, Proserpio & Byers, *supra* note 9, at 2. The herding effect is related to the well-studied anchoring effect. The anchoring effect relates to how people are influenced by previously suggested reference points (such as previously-given high reviews) when making their assessments. *See* Tversky & Daniel, *supra* note 82, at 1128–30.

109. *See* Lev Muchnik, Sinan Aral & Sean J. Taylor, *Social Influence Bias: A Randomized Experiment*, 341 SCIENCE 647, 647 (2013).

110. *Id.*

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.*

115. *Id.* at 648.

116. *Id.*

117. *Id.* at 649.

Confirmation bias, which is "[t]he tendency to interpret new evidence as confirmation of one's existing beliefs,"[118] can also exacerbate the herding effect. For example, if a passenger has a low rating, an Uber driver may interpret innocuous behavior, like failing to make small talk, as unfriendly and give the passenger a negative review.[119]

All four biases identified above may lead to review inflation.[120] Unfortunately, the extent to which reviews are skewed is difficult to precisely determine. Nonetheless, it is clear that inflation does exist. Tom Slee, a vocal Sharing Economy critic, compared Netflix and Yelp ratings, where there is very little if any personal connection between the reviewed and the reviewer, with Sharing Economy ratings, which often involve much more personal interaction.[121] Slee's findings show that the degree to which ratings are skewed is apparent.[122] Both Netflix and Yelp ratings show a normal (bell curve) distribution, with both sets of ratings congregating towards the middle with a fewer extremely high and low ratings (see Figures 1 and 2, respectively).[123]

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118. *Confirmation Bias*, OXFORD DICTIONARIES (last visited May 5, 2017), https://en.oxforddictionaries.com/definition/confirmation_bias.

119. Nancy Leong, *New Economy, Old Biases*, 100 MINN. L. REV. 2153, 2163 (2015).

120. The Sharing Economy is not alone in review inflation. A 2001 study of eBay found that reviews were overwhelmingly positive. Paul Resnick & Richard Zeckhauser, *Trust Among Strangers in Internet Transactions: Empirical Analysis of eBay's Reputation System*, *in* 11 ECONOMICS OF THE INTERNET AND E-COMMERCE (Michael R. Baye ed., 2002).

121. *See generally* SLEE, *supra* note 11.

122. *Id.* at 96–98.

123. Slee's data set for Netflix came from a set of 100 million ratings that Netflix released for its Netflix Prize competition. Slee's data set for Yelp came from Yelp. *Id.* at 96–97. [Figures 1–4 are used with Mr. Slee's permission. – Ed.]

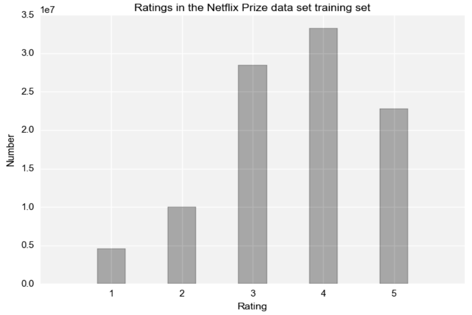

Figure 1

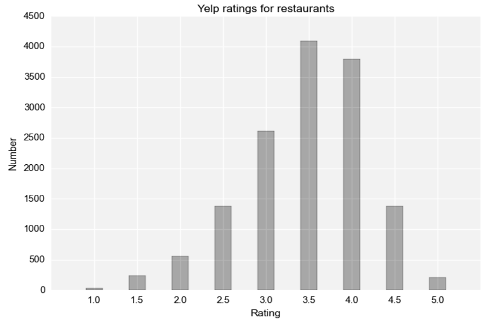

Figure 2

However, when Slee looked at Sharing Economy ratings, he found that the ratings for Airbnb and BlaBlaCar, a ride-sharing platform used mostly in Europe, to look more like J-curves than bell curves (see Figures 3 and 4, respectively).[124]

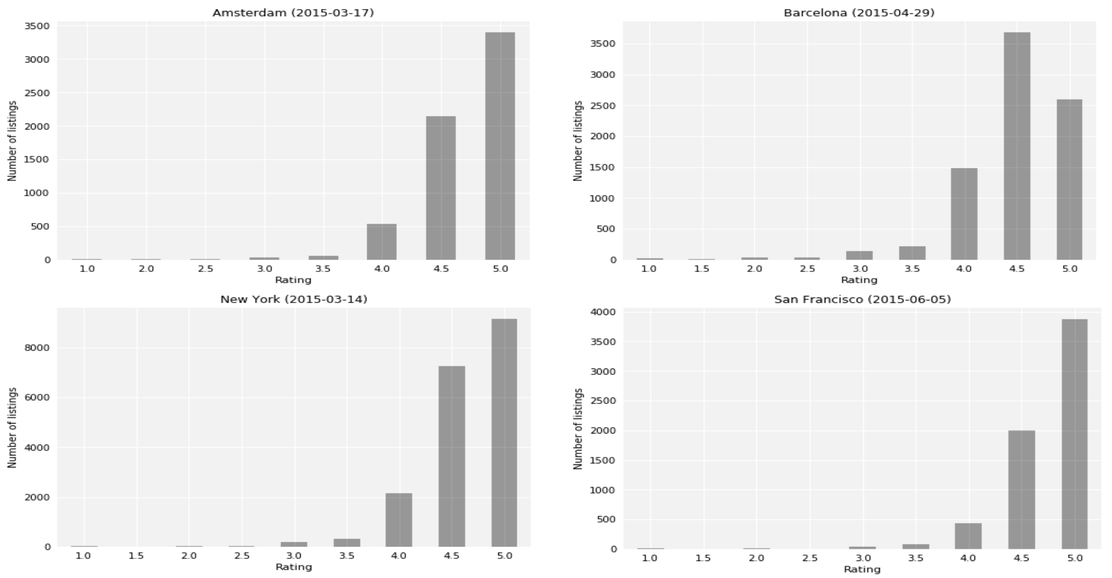

Figure 3

124. The BlaBlaCar distribution is based on distribution of a set of 190,000 ratings from the blablacar.com site. *Id.* at 98–99; Tom Slee, *Some Obvious Things About Internet Reputation Systems*, TOM SLEE (Sept. 29, 2013), http://tomslee.net/wordpress/wp-content/uploads/2013/09/2013-09-23_reputation_systems.pdf.

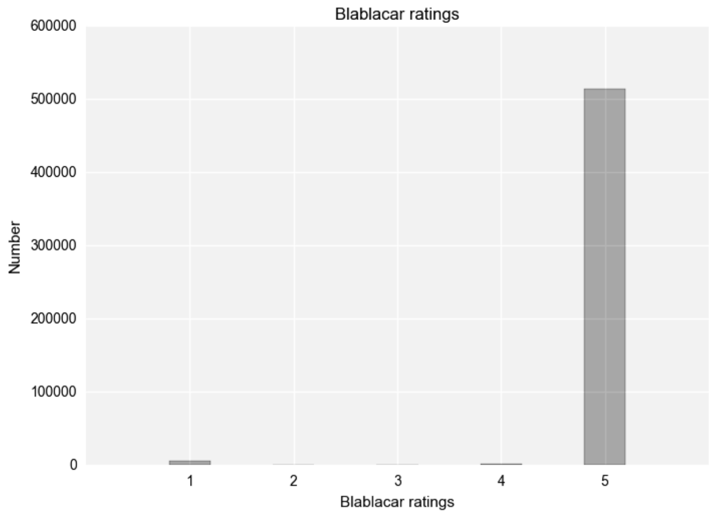

Figure 4

A study examining proprietary Airbnb data supports Slee's findings but dampens the alarm bells somewhat.[125] That study found that in both a non- and simultaneous-reveal system, there was inconsistency between what guests reported publicly (meaning the feedback would be shared on the site) and privately but it was very small.[126] In the non-simultaneous reveal system, for example, 6% of guests who privately said they "would not recommend their host" nonetheless gave their hosts a five-star public rating.[127]

Regardless of the extent, it is clear that there is a significant inflation of scores, which is likely created by biased reviews, either consciously or unconsciously given. In addition, reviews might be skewed to the positive because users may be unable to provide a negative review. On Airbnb for example, if an Airbnb guest arrives at an unacceptable host site and cancels her reservation, she is unable to give a review.[128] This means if a

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125. Andrey Fradkin et al., *Bias and Reciprocity in Online Reviews: Evidence From Field Experiments on Airbnb*, PROCEEDINGS OF THE SIXTEENTH ACM CONFERENCE ON ECONOMICS AND COMPUTATION (2015).

126. *Id.* at 2–3.

127. *Id.* at 3.

128. *See, e.g.*, *What's the Worst That Can Happen With Airbnb?*, AIRBNBHELL (Nov. 11, 2016), http://www.airbnbhell.com/whats-worst-can-

place is so dirty or unacceptable so as to cause someone to find emergency alternative accommodations, that feedback will not be reported on the public reviews.[129] All of the forms of bias and design choices mentioned in this subsection must be examined in order to make sure reputation systems can effectively protect consumers and achieve the desired goals of regulation.

5. Race and Gender Bias

A final way reputation information might not accurately represent past transactions involves implicit and explicit race and gender bias.[130] The Sharing Economy involves personal interactions that make the race and gender of the supply- and demand-side users more salient, and there is compelling evidence that Airbnb has been associated with facilitating discrimination based on race.[131] For example, Harvard Professors Benjamin Edelman and Michael Luca found that after controlling for all host information that a guest sees (number of rooms, ratings, location, etc.) non-black hosts in New York City charge 12% more in rental income than black hosts.[132] In a similar study, Edelman and Luca along with Dan Svirsky found "that requests from guests with distinctively African-American names are roughly 16% less likely to be accepted [than] identical guests with distinctively White names."[133]

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happen-airbnb/ (detailing the issues the user went through when they could not enter the property, and that when the reservation was canceled, they were unable to post a review).

129. This inability to report cancelled reservations is reported consistently on the AirbnbHell webpage. *Id.*

130. *See* Anthony G. Greenwald & Linda Hamilton Krieger, *Implicit Bias: Scientific Foundations*, 94 CALIF. L. REV. 945 (2006) (introducing the general concept of implicit bias in the discrimination context).

131. Naomi Schoenbaum, *Gender and the Sharing Economy*, 43 FORDHAM URB. L.J. (forthcoming 2017) (explaining how the intimate nature of transactions in the Sharing Economy heightens the salience of sex and can lead to discrimination).

132. Benjamin Edelman & Michael Luca, *Digital Discrimination: The Case of Airbnb.com* 3, 8 (Harvard Bus. Sch., Working Paper No. 14-054, 2014), http://www.hbs.edu/faculty/Publication%20Files/Airbnb_92dd6086-6e46-4eaf-9cea-60fe5ba3c596.pdf.

133. Benjamin Edelman, Michael Luca & Dan Svirsky, *Racial Discrimination in the Sharing Economy: Evidence from a Field Experiment* 1 (Harvard Bus. Sch., Working Paper No. 16-069), http://www.hbs.edu/faculty/Publication%20Files/16-069_5c3b2b36-d9f8-4b38-9639-2175aaf9ebc9.pdf.

Clearly, race is inappropriately used to signal the quality of both supply- and demand-side users.[134]

In terms of reputation scores specifically, a recent study showed that with regard to TaskRabbit,[135] "[b]lack workers, especially men, receive significantly lower feedback scores than other workers with similar attributes."[136] These low scores could be compounded by the herding effect and the associated confirmation bias. In addition, "[w]omen, especially White women, receive 10% fewer reviews than men with equivalent work experience."[137] While this finding does not indicate whether women are scored lower than men, it is indicative of a distortion in reputation scores.

Unfortunately, Sharing Economy companies have much less incentive to prevent biases based on immutable or irrelevant traits (such as race, gender, religion, national origin, or sexual orientation), than they do to prevent bias that could lead to consumer harm or dissatisfaction. Therefore, regulation is necessary to address this form of market failure.

B. REVIEW MANIPULATION AND INAPPROPRIATE INPUTS

Sharing Economy advocate, Rachel Botsman, stated in one of her very popular TED Talks that in the Sharing Economy, "reputation will be your most valuable asset."[138] Indeed, positive ratings and reviews can increase revenues,[139] and negative ones can decrease them.[140] However, once people start viewing

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134. Note that Airbnb has taken several steps to reduce discrimination on its platform as detailed in a report produced in 2016. LAURA W. MURPHY, AIRBNB'S WORK TO FIGHT DISCRIMINATION AND BUILD INCLUSION: A REPORT SUBMITTED TO AIRBNB (2016), http://blog.airbnb.com/wp-content/uploads/2016/09/REPORT_Airbnbs-Work-to-Fight-Discrimination-and-Build-Inclusion.pdf.

135. TaskRabbit is a platform that allows users to hire help for small jobs and tasks.

136. ANIKO HANNAK ET AL., BIAS IN ONLINE FREELANCE MARKETPLACES: EVIDENCE FROM TASKRABBIT 5 (2016), http://datworkshop.org/papers/dat16-final22.pdf.

137. *Id.*

138. Rachel Botsman, *The Currency of the New Economy Is Trust*, TEDGLOBAL (June 2012), https://www.ted.com/talks/rachel_botsman_the_currency_of_the_new_economy_is_trust.

139. *See* Michael Luca, *Reviews, Reputation, and Revenue: The Case of Yelp.com* 13–15 (Harvard Bus. Sch. Working Paper No. 12-016, 2011), http://www.hbs.edu/faculty/Pages/item.aspx?num=41233.

140. Lucille M. Ponte, *Protecting Brand Image or Gaming the System? Consumer "Gag" Contracts in an Age of Crowdsourced Ratings and Reviews*, 7 WM. & MARY BUS. L. REV. 59, 66 (2016).

reputation as an asset, there are strong market incentives to make that asset as valuable as possible even through ethically (and perhaps legally) dubious means, such as writing fake reviews for themselves, having friends and family write fake reviews, or paying or offering free goods and services to people who write positive reviews.[141] Fake reviews are especially likely at the beginning of a supply-side user's engagement on a platform when there is the "cold start" problem.[142] The cold start problem involves a chicken or the egg situation—in order to build a reputation, you have to have a reputation. Therefore, people have a strong incentive at the beginning of their time on a platform to generate fake reviews.

Reviews manipulation problems have plagued online commerce since the dawn of the modern Internet era.[143] Outside of the Sharing Economy, there are both anecdotes and research studies that reveal how pervasive and easy manipulation of online reviews can be.[144] For example, when a software error caused Amazon's Canadian website to reveal the actual identities of book reviewers, it was clear that a large number of reviews were written by confederates, such as the authors and their friends and publishers.[145] Similarly, a recent study found that 16% of the reviews on the crowd-sourced review site for local businesses, Yelp, were not genuine.[146] A few instances have even been reported where reviews were written for fake or never-opened establishments.[147] Thus, it would not be surprising that

141. *See generally* Kaitlin A. Dohse, Note, *Fabricating Feedback: Blurring the Line Between Brand Management and Bogus Reviews*, 2013 U. ILL. J.L. TECH. & POL'Y 363, 365 (2013).

142. FED. TRADE COMM'N, *supra* note 51, at 43.

143. *See, e.g.*, Nan Hu et al., *Manipulation of Online Reviews: An Analysis of Ratings, Readability, and Sentiments*, 52 DECISION SUPPORT SYS. 674 (2012), http://dx.doi.org/10.1016/j.dss.2011.11.002; Nan Hu et al., *Manipulation in Digital Word-of-Mouth: A Reality Check for Book Reviews*, 50 DECISION SUPPORT SYS. 627 (2011), http://dx.doi.org/10.1016/j.dss.2011.11.002; Nan Hu et al., *Fraud Detection in Online Consumer Reviews*, 50 DECISION SUPPORT SYS. 614 (2011), http://dx.doi.org/10.1016/j.dss.2010.08.012.

144. *See generally* Umit G. Gurun & Alexander W. Butler, *Don't Believe the Hype: Local Media Slant, Local Advertising, and Firm Value*, 67 J. FIN. 561 (2012).

145. Hu et al., *Manipulation of Online Reviews: An Analysis of Ratings, Readability, and Sentiments*, *supra* note 143, at 674.

146. Michael Luca & Georgios Zervas, *Fake It Till You Make It: Reputation, Competition, and Yelp Review Fraud* (Harvard Bus. Sch. Working Paper Series, No. 14-006, 2015).

147. *See* Raphael Brion, *Graham Elliot's Unopened Resto Gets a Negative Yelp Review*, EATER (Sept. 1, 2010, 4:55 AM), http://eater.com/archives /2010/09

reviews on Sharing Economy platforms may be inappropriately manipulated.

While some Sharing Economy platforms are likely to be more susceptible to review manipulation than others,[148] spend a few minutes on www.airbnbhell.com and you are likely to see how people can get tricked into booking and perhaps staying in unacceptable accommodations because of fraudulent reviews.[149] Some even suspect that platforms themselves manipulate reviews through deletion.[150] While these suspicions have not been proven, based on Airbnb's content policy it would have the ability to remove a review, "in whole or part," for any reason at its "sole discretion."[151] Furthermore, Airbnb and other platforms do have an incentive to inflate the quality of reviews somewhat in order to increase the number of transactions from which they derive revenue.[152]

/01/graham-elliots-grahamwich-gets-negative-yelp-review.php; *see also* Grant Martin, *Fake Nautical Restaurant on TripAdvisor Gets Glowing Reviews*, FORBES (July 29, 2013, 11:16 AM), http://www.forbes.com/sites/grantmartin/2013/07/29/fake-restaurant-on-tripadvisor-gets-glowing-reviews.

148. Uber drivers, for example, have no easy way to select their passengers. Therefore, it is harder to manipulate their ratings through confederate reviews. *Requesting a Specific Driver*, UBER, https://help.uber.com/h/1aaf0913-484f-4695-9042-e61fc7613f24 (last visited May 5, 2017) ("The Uber app cannot match you with a specific driver. When you request a ride, your app sends your request to nearby drivers to pick you up at your pickup location.").

149. *Airbnb: A Place for Scammers and Fraud*, AIRBNBHELL (Oct. 30, 2016), http://www.airbnbhell.com/airbnb-a-place-for-scammer-fraud/ (describing how a listing on Airbnb had several good reviews and pictures, but turned out to be completely fake); *From a Loyal Airbnb Customer to a Duped One*, AIRBNBHELL (July 16, 2016), http://www.airbnbhell.com/loyal-airbnb-customer-duped-one/ (describing how an Airbnb listing with good reviews actually turned out to be a fraudulent listing); *Terrible Airbnb Apartment in San Diego Hillcrest*, AIRBNBHELL (Oct. 14, 2016), http://www.airbnbhell.com/terrible-airbnb-apartment-san-diego-hillcrest/ (describing how an apartment was terribly dirty and unacceptable despite having positive reviews).

150. *Airbnb Deletes Negative Reviews, Favors Hosts*, AIRBNBHELL (Jan. 2, 2016), http://www.airbnbhell.com/airbnb-deletes-negative-reviews-favors-hosts (claiming that Airbnb deleted the negative aspects of the guest's review); *Airbnb Removes Negative Reviews and Host Scams Guests!*, AIRBNBHELL (Feb. 24, 2016), http://www.airbnbhell.com/airbnb-removes-negative-reviews-host-scams-guests/ (claiming that review was deleted); Angela Rhodes, *Our Bleh Airbnb Experience*, PERPETUAL TRAVELS (Feb. 6, 2012), http://angelarhodes.blogspot.com/2012/02/our-bleh-airbnb-experience.html (claiming that Airbnb deleted the guest's negative review).

151. *What Is Airbnb's Content Policy?*, AIRBNB, https://www.airbnb.com/help/article/546/what-is-airbnb-s-content-policy (last visited May 5, 2017).

152. FED. TRADE COMM'N, *supra* note 51, at 46 (citing Chrysanthos Dellarocas's comments about how Sharing Economy companies have the incentives to increase the number of transactions on platforms).

In addition to review manipulation, inappropriate inputs can affect the quality of reputation systems. These inputs can come from big and small data sources. Small data is in the context of user-generated inputs, which can be influenced by factors that are outside the control of the person being evaluated. For example, an Uber passenger may give a driver a bad review because they are frustrated by traffic. Big data in the context of reputation scores are the products of more complex algorithms powered by a huge variety of inputs. These algorithms may perpetuate inappropriate and inaccurate biases.[153]

As outlined in her best-selling book, *Weapons of Math Destruction*, Cathy O'Neil describes how inputs that comprise what she calls e-scores for platforms like Lending Club "march us back in time" and allow for users to base reputation on proxies unrelated to a person's actual trustworthiness.[154] This is why someone who lives in a bad neighborhood that is associated with a risky demographic in terms of credit might end up with an inappropriately low grade on Lending Club's platform.[155] O'Neil argues that reputation systems should exclusively focus on how an individual has behaved in the past and not how people who are similar to that individual have behaved in the past.[156]

If reputation systems rely on inappropriate data, they might shut out certain "worthy" members of the Sharing Economy.[157] Think again of someone trying to get a loan on Lending Club. If her grade is low because of her neighborhood, social network, etc., she may be unable to get a loan despite her actual ability to repay the loan. As reputation systems become more sophisticated, concerns about the "black box" algorithms they use will likely grow.[158] To address these concerns, regulators will

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153. *See* CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY 3 (2016) ("[M]any of these [algorithms] encod[e] human prejudice, misunderstanding, and bias into the software systems that increasingly manag[e] our lives.").

154. *Id.* at 145 (she calls these "people like you" proxies).

155. *Id.* (noting that when e-score systems carry out "people like you" calculations in reference to a particular individual, "if enough of these 'similar' people turn out to be deadbeats or, worse, criminals, that individual will be treated accordingly").

156. *Id.* at 146.

157. Inappropriate data is perhaps a more precise term than inaccurate, because there is likely some predictive value of that data.

158. FRANK PASQUALE, THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION 8–9 (2015).

have to insist on transparency to make sure that these systems are fair and nondiscriminatory.[159]

C. ACCURATE INTERPRETATION OF REPUTATION INFORMATION

Assuming platforms could ensure complete accuracy of reviews and appropriate inputs, users would still need to correctly interpret the reputational data. Previous work on intuitive judgment in psychology suggests that even given accurate feedback information, humans are still subject to a number of biases that impair their interpretation of reputational information.[160] More specifically, consumers will interpret reputational information based on how it is presented.[161] For example, in a controlled experiment, Professors James Wolf and Waleed Muhanna found that users will have a preference for someone with a handful of very good ratings (meaning the "strength" is high) over someone with a much greater number of ratings but a slightly lower overall score (meaning the "weight" is high).[162]

Users might also have difficultly interpreting reputational data because it is presented in a confusing or limited manner. For example, Lending Club has a somewhat befuddling way of presenting loans.[163] There are blogs and numerous help guides designed to teach people how to interpret the data.[164] Furthermore, Uber does not let you see anything but the star ratings of drivers and passengers, meaning you do not have context as to how many times they have been reviewed or more detailed comments about their past performance. When

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159. *Id.*

160. Miriam J. Metzger, Andrew J. Flanagin & Ryan B. Medders, *Social and Heuristic Approaches to Credibility Evaluation Online*, 60 J. COMM. 413 (2010); James R. Wolf & Waleed A. Muhanna, *Feedback Mechanisms, Judgment Bias, and Trust Formation in Online Auctions*, 42 DECISION SCI. J. 43, 45 (2011).

161. Wolf & Muhanna, *supra* note 160, at 45.

162. *Id.* (describing this phenomenon as overemphasizing "compositional strength (i.e. the proportion of positive ratings given in the past)" and under-emphasizing the "weight" of the evidence, which is based on the total number of transactions rated).

163. *See Manual Investing*, LENDING CLUB, https://www.lendingclub.com/browse/browse.action (last visited May 5, 2017).

164. *See, e.g.*, Simon Cunningham, *Risk Tolerance 101: What P2P Loan Grades Should I Pick?*, LENDINGMEMO (Sept. 19, 2014), http://www.lendingmemo.com/risk-grades-lending-club-prosper/; *FAQ*, LENDING CLUB, https://www.lendingclub.com/public/investing-faq.action (last visited May 5, 2017).

reputational data is not easily understood, or can easily play into known cognitive biases, the usefulness of the data is limited.

IV. IMPROVING REPUTATION SYSTEMS

Flaws in reputation systems are real. However, all three problems with reputation systems discussed above can be mitigated through thoughtful design choices. This section suggests improvements for each reputation system problem and highlights the need for regulation to assure systems are effective.

A. IMPROVING THE QUALITY OF INPUTS

Bias significantly inflates reviews and impairs the risk calculus for users.[165] To correct for bias in reputation systems platforms and regulators should consider the following design recommendations.

1. Make Reviews Mandatory

Reporting bias causes people who have mediocre experiences to not report their feedback.[166] To ensure that mediocre feedback is recorded, platforms can require users to provide feedback before they can use the platform again. For example, before a passenger can book another Uber ride or a guest can book another Airbnb, he or she must give feedback. Platforms would likely argue that making reviews mandatory, especially for demand-side users, could potentially impact user satisfaction—not many people enjoy giving reviews. However, tradeoffs will have to be made to make the reputation systems more accurate.

2. Mathematically Correct for Certain Biases

Platforms can mathematically correct for reporting and reciprocity biases by identifying various “red flags” for inflated reviews and adjusting feedback scores accordingly. For example, platforms can begin or continue to collect two sets of feedback: feedback that the user knows will become public and feedback that the user knows will stay private. If the public review is more positive than the private review (because of reciprocity or fear of retaliation), the review can be discounted (i.e. not be given as much weight in an overall user score). In addition, if reviews are

165. *See supra* Part III.
166. SLEE, *supra* note 11, at 103–05.

not mandatory and a user is consistently not reviewed (presumably because of the reporting bias), the user's overall score can be lowered appropriately.[167] Platforms can also continue to study the biases and tendencies discussed in this Article and identify other potential red flags to correct for inflated reviews.

3. Make Feedback Non-Instantaneous

Platforms can utilize non-instantaneous feedback in order to reduce retaliation bias. An experiment by researchers at MIT and Airbnb, showed that implementation of simultaneous reveal increased review rates by 1.8% and decreased five-star ratings by 1.5%, thereby suggesting that people were being more honest.[168] Furthermore, to reduce perceived threats of retaliation, systems can clearly inform users that feedback will not be available to the other user until that user has submitted feedback.

4. Inform Users of Bias

While the literature is limited, there is some evidence that suggests that awareness of bias can reduce biased behavior.[169] For example, Professors Devin Pope, Joseph Price, and Justin Wolfers analyzed the behavior of NBA referees after a very well-publicized study on referee bias was released.[170] The original study examined over a decade of referee personal foul calls.[171] It found that personal fouls were more likely to be called against players by opposite-race referees than by same-race referees (so much so that it had an appreciable effect on the outcome of

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167. *See* Dellarocas & Wood, *supra* note 90, at 474–75 (finding that the decision not to provide feedback provides useful information about the quality of the transaction).

168. Fradkin et al., *supra* note 87, at 24.

169. *See* Devin G. Pope, Joseph Price & Justin Wolfers, *Awareness Reduces Racial Bias* (ES Working Paper Series, 2014), https://www.brookings.edu/wp-content/uploads/2016/06/awareness_reduces_racial_bias_wolfers.pdf; Laurie A. Rudman, Richard D. Ashmore & Melvin L. Gary, *"Unlearning" Automatic Biases: The Malleability of Implicit Prejudice and Stereotypes*, 81 J. PERSONALITY & SOC. PSYCHOL. 856, 866 (2001) (finding that individuals who became aware of their own racial bias and cared about correcting it had reduced levels of explicit prejudice and stereotyping; however, the same was not found for implicit biases).

170. Pope, Price & Wolfers, *supra* note 169.

171. Joseph Price & Justin Wolfers, *Racial Discrimination Among NBA Referees*, 125 Q.J. ECON. 1859 (2010).

games).[172] Pope and his colleagues found that after the original study was released, the bias among referees disappeared.[173] They argue that "decisions made by individual referees can be impacted by simply making them aware of their own racial bias."[174] Similar studies have demonstrated how strategies to prevent bias can influence behavior.[175]

The studies above fall in line with the dual-process theory of cognition, which breaks down judgment into two basic systems: System 1 and System 2.[176] System 1 thinking deals with operations that are "automatic, effortless, associative, [and] implicit (not available to introspection)."[177] System 2 thinking, by contrast, deals with operations that are "slower, serial, effortful, [and] more likely to be consciously monitored and deliberately controlled."[178] Dual-process theory suggests that if people become more aware of the biases in their System 1 thinking, they can more easily shift to System 2 thinking and question and correct the biases that influence their judgment.[179]

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172. *Id.* at 1885 (finding "that players have up to 4% fewer fouls called against them and score up to 2 1/2% more points on nights in which their race matches that of the refereeing crew").

173. Pope, Price and Wolfers used the same approach as Price and Wolfers to determine bias. Pope, Price & Wolfers, *supra* note 169.

174. *Id.* at 2.

175. *See* Patricia G. Devine et al., *Long-Term Reduction in Implicit Race Bias: A Prejudice Habit-Breaking Intervention*, 48 J. EXPERIMENTAL SOC. PSYCHOL. 1267 (2012) (describing a twelve-week study in which participants were both exposed to their implicit race bias and taught how to mitigate their bias via a variety of strategies; experimental group self-regulated and demonstrated a reduction in bias; control group did not); Kevin W. Eva et al., *Teaching from the Clinical Reasoning Literature: Combined Reasoning Strategies Help Novice Diagnosticians Overcome Misleading Information*, 41 MED. EDUC. 1152, 1155 (2007) (demonstrating how providing instructions to "use a combination of analytic and non-analytic reasoning strategies" reduced the influence of bias and improved clinical decision-making among participants).

176. Daniel Kahneman, *A Perspective on Judgment and Choice: Mapping Bounded Rationality*, 58 AM. PSYCHOL. 697, 698 (2003).

177. *Id.*

178. *Id.*

179. *See* Richard P. Larrick, *Debiasing*, *in* BLACKWELL HANDBOOK OF JUDGMENT AND DECISION MAKING 316 (Derek J. Koehler & Nigel Harvey eds., 2004) (providing an overview of various techniques for reducing bias). The same might also be true for ethical behavior. *See* Todd Haugh, *Nudging Corporate Compliance*, 54 AM. BUS. L. REV. (forthcoming). *Contra* John A. Bargh, *The Cognitive Monster: The Case Against the Controllability of Automatic Stereotype Effects*, *in* DUAL-PROCESS THEORIES IN SOCIAL PSYCHOLOGY 361, 378 (Shelly Chaiken & Yaacov Trope eds., 1999) (stating "[i]n my opinion, the evidence to

Simple nudges to push people into System 2 thinking can come from the user interface on Sharing Economy platforms. For example, in order to avoid the reciprocity bias, platforms could inform users about the bias and tell them to critically reflect on their transaction. In order to reduce implicit and explicit racial and gender bias, platforms can provide information to users about what should and should not be considered when providing a reputation score. Airbnb currently requires supply-side users to click-through a screen that says, "[b]efore making a decision about this trip, focus on your listing's availability and whether the guest meets the house rules you set. Factors like race, religion, or sexual orientation shouldn't affect your decision" before accepting or declining a guest.[180] Something similar could be used when asking users to give a review.

5. Avoid Providing Context for Reviews

In order to avoid the consequences of the herding effect, feedback forms can intentionally make prior reviews difficult, if not impossible, to see at the time a review is given. Airbnb already does this by giving each user a specific link via email for writing a review.[181] This link goes directly to the feedback form, making it difficult to find the specific host information without opening another computer window and searching for that information specifically. With ride-sharing apps like Uber, this is more of a challenge, since rides are typically short and users can easily remember the reputation scores of their counterparts.[182]

6. Aggregate Scores Across Multiple Platforms

Lastly and more ambitiously, Sharing Economy platforms could collaborate (or at least give a third-party access to reputational data) to create universal reputation scores that will translate across multiple platforms. Companies such as eRated

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date concerning people's realistic chances of controlling the influence of their automatically activated stereotypes weighs heavily on the negative side").

180. [The warning only becomes visible when making a reservation, so a citation is not possible. – ed.]

181. *All About Reviews: A Community Help Guide*, AIRBNB: COMMUNITY (Mar. 1, 2016), https://community.airbnb.com/t5/Hosts/All-About-Reviews-A-Community-Help-Guide/td-p/38099.

182. The United States' average Uber trip is 6.4 miles. *Uber Trips Are Becoming Longer and Faster, But Are They More Profitable?*, SHERPASHARE BLOG (Feb. 2, 2016), http://www.sherpashareblog.com/2016/02/uber-trips-are-becoming-longer-and-faster-but-are-they-more-profitable.

or Traity are already starting to create such aggregated personal scores for online sellers.[183] Because a universal score would be based on a more complete set of reputational data, it would presumably be more accurate as long as the inputs are of high quality. However, with universal reputation scores, concerns about privacy and the right to be forgotten will need to be addressed. China, for example, is working to create a national system that tracks social credit.[184] Such an idea brings up a host of ethical and legal concerns that are beyond the scope of this Article.

B. REDUCING REVIEW MANIPULATION

The incentives to manipulate reviews are apparent. Every Eatwith host,[185] TaskRabbit Tasker,[186] and Uber driver knows that his or her business lives and dies by reviews and reputation scores. How then can Platforms and regulators prevent review manipulation? The answer lies in both design choices and enforcing existing legal regimes.

As Professors Mayzlin, Dover, and Chevalier's research suggests, when reviews can be made by anyone (even people who did not actually utilize a good or service), it is more likely that fraudulent reviews will be given.[187] In their study, they found that hotel reviews on TripAdvisor, where you need not stay in order to review, were more often fake than Expedia, where you must stay in order to review.[188] To eliminate the opportunity for reviews to be made by people that did not actually experience a good or service, Sharing Economy companies should only allow people to give reviews if they've experienced a good or service.

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183. *See About eRated*, ERATED, http://www.erated.co/about.html (last visited May 5, 2017); *Our Mission*, TRAITY, https://traity.com/our-mission (last visited May 5, 2017).

184. *See* Josh Chin & Gillian Wong, *China's New Tool for Social Control: A Credit Rating for Everything*, WALL ST. J. (Nov. 28, 2016), https://www.wsj.com/articles/chinas-new-tool-for-social-control-a-credit-rating-for-everything-1480351590.

185. Eatwith is a Sharing Economy company that allows people to host and join meals in people's homes. *Who We Are*, EATWITH, https://www.eatwith.com/brand/about/ (last visited June 13, 2017).

186. TaskRabbit is a website where people can outsource chores such as shopping and waiting in line for concert tickets to Taskers (people who are willing to work for small fees). *Revolutionizing Everyday Work*, TASKRABBIT, https://www.taskrabbit.com/about (last visited June 13, 2017).

187. *See generally* Mayzlin, Dover & Chevelier, *supra* note 94.

188. *Id.*

Currently, many Sharing Economy companies do allow only actual users to provide feedback. However, some platforms do not permit people to leave a review who cancel a transaction because it is dissatisfactory (e.g., an Uber rider who cancels when a dilapidated car pulls up or an Airbnb guest who arrives at an ant-infested house and decides not to stay). These users should have an opportunity to give a review, unless they cancel sight unseen. Furthermore, there should be clear and defensible guidelines, created by the platforms to determine when a platform will delete or modify a review.

Similar to detecting and adjusting for biases, algorithms can also be used to detect fraudulent reviews.[189] Crowd-source review websites like TripAdvisor and Yelp already use such filters.[190] These algorithms are proprietary, but it is clear that they use inputs such as IP addresses, user-given information (such as email addresses, physical addresses, Facebook, and LinkedIn profiles), and past reviews.[191] Sharing Economy

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189. *See, e.g.*, *Review Moderation and Fraud Detection*, TRIPADVISOR, https://www.tripadvisor.com/vpages/review_mod_fraud_detect.html (last visited June 13, 2017).

190. *Id.*; *Why Yelp Has a Review Filter*, YELPBLOG (Oct. 5, 2009), https://www.yelpblog.com/2009/10/why-yelp-has-a-review-filter. TripAdvisor considers the following reviews to be fraudulent:

> [1] Attempts by an owner to boost his/her own property's reputation by:
> - Writing a review for his/her own property
> - Asking friends or relatives to write positive reviews
> - Submitting a review on behalf of a guest
> - Copying comment cards and submitting them as reviews
> - Pressuring a TripAdvisor member to remove a negative review
> - Offering incentives such as discounts, upgrades, or any special treatment in exchange for reviews
> - Hiring an optimization company, third party marketing organization, or anyone to submit false reviews
> - Impersonating a competitor or a guest in any way
>
> [2] Attempts by an owner to damage his/her competitors by submitting a negative review.

Review Moderation and Fraud Detection, *supra* note 189.

191. Leigh Held, *Behind the Curtain of Yelp's Powerful Reviews*, ENTREPRENEUR (July 9, 2014), https://www.entrepreneur.com/article/235271; Christopher Williams, *TripAdvisor Borrows Anti-Fraud Techniques from Finance Industry*, TELEGRAPH (Apr. 1, 2013), http://www.telegraph.co.uk/finance/newsbysector/mediatechnologyandtelecoms/digital-media/9965211/TripAdvisor-borrows-anti-fraud-techniques-from-finance-industry.html. On TripAdvisor, reviews go through an automated process that filters them for integrity. Linda Fox, *Online DNA-How TripAdvisor Puts Reviews Under the Microscope*, TNOOZ (May 28, 2015), https://www.tnooz.com/articles/tripadvisor-fraudulent-reviews/.

companies, especially those that create opportunities for confederate reviews, should adopt similar capabilities.

Furthermore, Sharing Economy companies should remind reviewers about the Federal Trade Commission's (FTC) Endorsement Guidelines (Guidelines).[192] These Guidelines were first crafted in 1975[193] to protect consumers under Section 5 of the FTC Act[194] and competitors under the Lanham Act.[195] The Guidelines were updated in 2009 to "more explicitly capture online advertising messages and endorsements through social media."[196] They create an obligation to disclose any material connections between the speaker and sponsor[197] when writing an endorsement.[198] Examples in the guidelines make it "clear that a material connection or relationship means anything not disclosed to the general public that might impact or bias one's opinion about a product of service."[199] This could include a friend or family member writing a confederate review, paying someone to write a positive review, giving someone a free stay or ride to give a positive review, etc.[200]

Platforms should also remind users that various state laws might penalize them for fake reviews.[201] For example, nineteen businesses in New York were fined over $350,000 in 2013 for astroturfing, which involves generating false or deceptive reviews that consumers believe would be from a neutral third-

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192. FTC Guides Concerning the Use of Endorsement and Testimonials in Advertising, 74 Fed. Reg. 53,124, 53,130–32 (Oct. 15, 2009) (to be codified at 16 C.F.R. pt. 255). For a general discussion of these guidelines, see Robert Sprague & Mary Ellen Wells, *Regulating Online Buzz Marketing: Untangling a Web of Deceit*, 47 AM. BUS. L.J. 415, 415–16 (2010).

193. FTC Guides Concerning the Use of Endorsement and Testimonials in Advertising, 74 Fed. Reg. at 53,130–32.

194. 15 U.S.C. § 45 (2012).

195. 15 U.S.C. § 1051 (2012); Lucille M. Ponte, *Mad Men Posting as Ordinary Consumers: The Essential Role of Self-Regulation and Industry Ethics on Decreasing Deceptive Online Consumer Ratings and Reviews*, 12 J. MARSHALL REV. INTELL. PROP. L. 462, 472 (2013).

196. Ponte, *supra* note 195, at 472.

197. The sponsor can be persons, partnerships, or corporations including Airbnb hosts and Uber drivers. *See* 15 U.S.C. § 45(a)(2).

198. 16 C.F.R. § 255.5 (2009).

199. Ponte, *supra* note 195, at 473.

200. *Id.*

201. *See* Stephen G. Amato, *When Rave Reviews Become Risky Re: Internet Reviews*, NAT'L L. REV. (May 22, 2014), http://www.natlawreview.com/article/when-rave-reviews-become-risky-re-internet-reviews.

party—in violation of New York state law.[202] Consumer protection laws related to fraudulent reviews vary from state to state, but generally prohibit such activity.[203]

Finally, to reduce the cold start problem and the strong incentive to generate fake reviews at the early stages of a users' participation on a platform, platforms could adopt some of the proposals mentioned at the Federal Trade Commissions' Sharing Economy workshop in June 2015 and later reported on in its very comprehensive report, *The "Sharing" Economy: Issues Facing Platforms, Participants & Regulators*.[204] One proposal would require new users to post some sort of bond so that other users would feel more secure in knowing they would be compensated if they are dissatisfied with the transaction.[205] Another involved platforms screening new participants more carefully so they would be less dependent on reviews.[206] Increasing the awareness of punishment and decreasing incentives for fake reviews will improve the accuracy of feedback systems.

C. REDUCING INCORRECT AND INAPPROPRIATE INPUTS

In order to perfect reputation systems, Sharing Economy platforms must also be open to how to correct for inaccurate and inappropriate reputational information. Just as we can correct misinformation about our credit score, platforms should have a process in place for users to appeal truly baseless feedback.

Furthermore, when big data and algorithms are used to rate participants, "transparency, meaningful oversight and procedures to remediate decisions that adversely affect individuals who have been wrongly categorized by correlation"

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202. Press Release, N.Y. State Attorney Gen. Eric T. Schneiderman, A.G. Schneiderman Announces Agreement with 19 Companies to Stop Writing Fake Online Reviews and Pay More Than $350,000 in Fines (Sept. 23, 2013), https://ag.ny.gov/press-release/ag-schneiderman-announces-agreement-19-companies-stop-writing-fake-online-reviews-and (stating that astroturfing violates New York Executive Law § 63(12) and New York General Business Law §§ 349 and 350).

203. Amato, *supra* note 201. For example, in Kentucky the Kentucky Consumer Protection Act, KY. REV. STAT. ANN. § 367.170 (LexisNexis 1976), protects against "unfair, false, misleading or deceptive acts or practice in trade or commerce."

204. FED. TRADE COMM'N, *supra* note 51.

205. *Id.* at 44.

206. *Id.* at 43–44.

is required.[207] As Professors Danielle Keats Citron and Frank Pasquale argue, there needs to be some form of "technological due process" to ensure "algorithms live up to some standard of review and revision to ensure their fairness and accuracy."[208] Technological due process can be created by allowing individuals to inspect the accuracy of data inputs and by providing sufficient information to regulators so that they can ensure systems are not improperly influenced by irrelevant factors such as race, gender, or national origin.[209]

D. Improving Information Comprehension

We know that people rely more on an overall reputation score than they do on the predictive validity of that score, which is based on the number of reviews previously given.[210] Therefore, Platforms should do the math for people and provide them with a rating that incorporates weight based on previous transactions.[211] In addition, to provide a more accurate single number, platforms can provide optional multidimensional reputational data and written comments to provide individuals a full picture of a participants' trustworthiness.[212]

V. CONCLUSION

The recommendations outlined in this Article are but a few of the approaches Sharing Economy companies can use to improve reputation systems. But as Professor Dellacoras writes: "In general, it [is] impossible to design a totally manipulation-resistant reputation system. No matter what mechanisms one puts into place, creative and determined users are bound to find a way around them. For that reason, community administrators

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207. Edith Ramirez, Chairwoman, Fed. Trade Comm'n, Keynote Address at the Technology Policy Institute Aspen Forum: Privacy Challenges in the Era of Big Data: A View from the Lifeguard's Chair 8 (Aug. 19, 2013), http://www.ftc.gov/sites/default/files/documents/public_statements/privacy-challenges-big-data-view-lifeguard's-chair/130819bigdataaspen.pdf.

208. *See* Danielle Keats Citron & Frank Pasquale, *The Scored Society: Due Process for Automated Predictions*, 89 WASH. L. REV. 1, 19 (2014).

209. *Id.* at 20, 25.

210. Bolton et al., *supra* note 70; Melnik & Alm, *supra* note 71.

211. Wolf & Muhanna, *supra* note 160, at 62.

212. Ross A. Malaga, *Web-Based Reputation Management Systems: Problems and Suggested Solutions*, 1 ELECTRONIC COM. RES. 403, 413 (2001).

must constantly monitor such systems, organically evolving their designs."[213]

To encourage innovation and constant improvement of reputation systems, regulators should embrace principles of New Governance. "New Governance" is an umbrella term for an approach to regulation that encourages experimentation and flexibility in regulatory systems.[214] New Governance principles rely on "privileging performance standards over design standards," bringing industry into regulatory decision-making processes, and incorporating "audited self-regulation."[215] By incorporating these principles in the design of regulations, regulators can be sure to utilize the expertise of the Sharing Economy companies themselves. For example, if regulators focus on the ends and not the means of regulations (improved consumer safety and prevention of fraud and discrimination, etc.) via performance standards, they can open the door to creative problem solving.[216] These performance standards can then be monitored by regulators through the meaningful sharing of data.

In the future, reputation systems will most likely continue to be used to create trust between strangers and facilitate transactions. However, as these systems continue to evolve and be integrated into the fabric of our daily lives, it becomes increasingly important to question their utility and identify problems and strategies for improvement. Assuming data can provide us with a better picture of the truth than we can achieve on our own is dangerous, because data's lack of intimacy is its greatest weakness. As demonstrated in this Article, reputation systems can be flawed and creative regulatory oversight is necessary to ensure these systems are fair, transparent, and accurate.

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213. Chrysanthos Dellarocas, *Designing Reputation Systems for the Social Web* (B.U. Sch. Mgmt., Research Paper No. 2010–18) (2010).

214. *See* Cristie L. Ford, *New Governance, Compliance, and Principles-Based Securities Regulation*, 45 AM. BUS. L.J. 1, 6–11 (2008). Other terms for New Governance concepts include "democratic experimentalism," "reflexive law," "responsive regulation," and "network governance." *Id.*

215. Stemler, *Regulation 2.0*, *supra* note 14, at 91.

216. Performance-based regulation sets performance goals and allows firms to decide how to meet them. *See id.* at 102.