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CONTRACTING IN THE AGE OF THE INTERNET OF THINGS: ARTICLE 2 OF THE UCC AND BEYOND

Stacy-Ann Elvy*

This Article analyzes the global phenomenon of the Internet of Things (“IOT”) and its potential impact on consumer contracts for the sale of goods. Recent examples of IOT devices include Amazon’s Dash Replenishment Service, which allows household devices to automatically reorder goods. By 2025, the IOT is estimated to have an economic impact of as much as \$11.1 trillion. To date, there are approximately fifteen billion interconnected devices, and by 2020, there will be fifty billion such devices worldwide. IOT devices will revolutionize the way that consumers shop for consumable supplies and other goods. Consumers will no longer need to log on to a company’s website or use a mobile application to purchase goods but will be able to conclude contracts for the sale of goods by using IOT devices. This Article contends that the legion of IOT data expected to be generated about consumers and their preferences will worsen preexisting information asymmetry in consumer contracts to the benefit of companies; increase the lack of proximity between consumers and the contract formation process; further encourage consumers’ failure to read and understand contract terms prior to contracting; and likely lead businesses to further take advantage of consumer ignorance and apathy by including one-sided contract terms, such as unilateral amendment provisions and terms that restrict consumer access to judicial process. Common law agency principles, e-commerce statutes, contract law, and Article 2 of the Uniform Commercial Code (“Article 2”) are unlikely to effectively address these concerns. This Article suggests important amendments to Article 2 and argues that courts should adjust their application of existing contract law and agency principles to account for the new

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automatic and interface-free contracting environment that the age of the IOT will herald.

I. INTRODUCTION

The commercial and contract law implications of the Internet of Things (“IOT”) have been under-explored in legal scholarship.¹ The IOT is a network of products, systems, and platforms connected through enabled devices that collect, store, and communicate with other devices, cloud software, on-site infrastructure, and individuals to maximize efficiency.² Recent examples of IOT devices include the Nest thermostat,³ the Amazon Echo,⁴ and the Amazon Dash Button and Dash Replenishment Service (“DRS”), which will allow household devices to automatically order goods without human intervention (or, at the most, with a push of a button).⁵ Today, merchants frequently use electronic shopping agents in automated transactions to buy and sell goods. Consumers also consistently interact with electronic agents on merchant-operated websites and currently use online shopping agents, such as Priceline.com and eBay’s automatic bidding agent, to scour the Internet for the cheapest travel tickets and to bid on items. However, IOT robotic devices are revolutionizing the way that consumers shop for consumable supplies and other goods.⁶ Consumers no longer need to log on to a company’s website or use a mobile application to purchase goods. Instead, they are able to enter into contracts for the sale of goods by using IOT devices.⁷

Consider a consumer who has purchased a Brita-connected water pitcher or an August Smart Lock enabled with Amazon’s DRS. The

1. For a rare look at this burgeoning area of legal study, see Nancy S. Kim, *Two Alternate Visions of Contract Law in 2025*, 52 DUQ. L. REV. 303, 317 (2014) (discussing briefly the role of courts in using unconscionability and duress to prevent abusive business practices that may be facilitated by the development of new technology). See generally Adam D. Thierer, *The Internet of Things and Wearable Technology: Addressing Privacy and Security Concerns Without Derailing Innovation*, RICH. J.L. & TECH. (Feb. 2015), <http://jolt.richmond.edu/v21i2/article6.pdf>.

2. *Internet of Things Explainer*, TIME (June 22, 2015), <http://time.com/3930444/internet-of-things-explainer>.

3. See Megan Rose Dickey, *The Internet of Things Is Finally Here and Soon Your Fridge Will Buy Milk For You*, BUS. INSIDER (Jan. 11, 2013, 12:44 PM), <http://www.businessinsider.com/how-the-internet-of-things-will-evolve-2013-1>.

4. Michael Wolf, *With Echo, Amazon Creates the First Potential Hit of IoT Era*, FORBES (Nov. 11, 2015, 10:59 AM), <http://www.forbes.com/sites/michaelwolf/2015/11/11/with-echo-amazon-creates-the-first-potential-hit-of-iot-era/#33414e816241>.

5. Chris Neiger, *Amazon’s Brilliant New Service Will Make You Want the Internet of Things in Your Home*, MOTLEY FOOL (Apr. 6, 2015, 2:00 PM), <http://www.fool.com/investing/general/2015/04/06/amazons-brilliant-new-service-will-make-you-want-t.aspx>.

6. See, e.g., *id.*

7. See *id.*; *infra* text accompanying notes 65-83.

Brita device would have the capacity to measure the amount of water that passes through its filter, as well as order physical goods, such as a new filter when it needs to be changed, and the August Smart Lock could automatically order replacement batteries for the consumer.⁸ These devices will be able to collect location and consumption rate data, among other things, about the consumer on behalf of the manufacturer and retailer. The IOT has the potential to transform the advertisement and marketing industry, and the data generated by IOT devices could be used to target vulnerable consumers for contracting.⁹ Goods can be made with a readable element in the packaging, which will allow manufacturers to assess, in real time, the types of consumers who are buying and using their products.¹⁰ Digital tracking technology embedded within IOT devices and smart labels could permit a manufacturer or retailer to advertise additional products to consumers once a product is in the consumer's home or office based on the data generated by the device. Diageo, a liquor producer, has already created a similar product.¹¹

How should courts assess consumer assent to contract terms where the consumer allows an IOT device to place orders for goods but is not provided with contract terms prior to each purchase made by the device? Should the consumer's assent to contract terms, which limit the consumer's ability to obtain legal recourse, be inferred from the use of DRS and the consumer's initial acceptance of the DRS terms of use or upon each successive order placed by the device? Alternatively, should the consumer's assent to the terms be inferred from the consumer's initial purchase of the water pitcher or the Smart Lock from Amazon? What if Amazon elects to use its unilateral amendment provision to amend the contract and the device then places a new order prior to the consumer reviewing the amended provisions? How is assent determined in that instance? Is the Brita water pitcher or the August Smart Lock the consumer's electronic agent acting on the consumer's behalf despite data collection by the manufacturer, thereby suggesting the consumer's assent can be inferred from the agent's actions? Should the data obtained by companies from IOT devices about individual

8. *Introducing Amazon Dash Replenishment Service*, AMAZON, <https://www.amazon.com/oc/dash-replenishment-service> (last visited Apr. 10, 2016).

9. *See Internet of Things Data Could Fuel Ad Targeting*, ET TELECOM (June 8, 2015, 5:18 PM), <http://telecom.economictimes.indiatimes.com/news/internet/internet-of-things-data-could-fuel-ad-targeting/47586092>.

10. *Id.*

11. *Id.*; *see Diageo and Thinfilm Unveil the Connected 'Smart Bottle,'* DIAGEO, <http://www.diageo.com/en-row/ourbrands/infocus/Pages/diageo-and-thinfilm-unveil-the-connected-smart-bottle.aspx> (last visited Apr. 10, 2016).

consumers be considered in assessing consumer assent to contract terms or contract defenses?

This Article seeks to address these questions by evaluating the potential contract doctrines, agency principles, and federal and state statutes regulating e-commerce that may govern disputes involving IOT consumer contracts.¹² The goal is to introduce traditional legal principles and existing e-commerce statutes to the myriad consumer transactions likely to be entered into through the use of IOT devices, identify potential areas of concern for consumers, and lay the foundation for future work in this area.¹³ As many contract scholars have noted, the current law governing adhesion contracts is far from satisfactory. This Article ultimately argues that the existing legal framework applicable to form contracts is unlikely to provide adequate protection to consumers who enter into contracts for the sale of goods by using IOT devices, and the new, automatic, and interface-free contracting environment created by the IOT aggravates existing problems and creates difficulties in consumer transactions in a manner that compels a revision of applicable legal rules. The potential lack of effective consumer protection is due, in part, to the standards developed by courts to address consumer contracting, lack of clarity and guidance in Article 2 of the *Uniform Commercial Code* (“Article 2”) on consumer contracts, and the development of a new contracting environment.

While much has been written about e-commerce contracts, programs and software agents, contracts of adhesion, and the impact of mobile technology on freedom of contract, there is scant legal scholarship on IOT devices.¹⁴ Of the few articles that have discussed

12. See *infra* Parts III–V.

13. See *infra* Parts III–V.

14. See, e.g., Jean-Francois Lerouge, *The Use of Electronic Agents Questioned Under Contractual Law: Suggested Solutions on a European American Level*, 18 J. MARSHALL J. COMPUTER & INFO. L. 403, 418-25 (1999) (discussing the treatment of electronic agents under the National Conference of Commissioners on the Uniform State Laws’ creation of the *Uniform Computer Information Transactions Act*, which began with the purpose of revising Article 2 of the *Uniform Commercial Code*); Scott R. Peppet, *Freedom of Contract in an Augmented Reality: The Case of Consumer Contracts*, 59 UCLA L. REV. 676, 712-15 (2012) (discussing e-commerce transactions); John P. Fischer, Note, *Computers as Agents: A Proposed Approach to Revised U.C.C. Article 2*, 72 IND. L.J. 545, 558, 569-70 (1997) (analyzing the legal response to computer technology under Article 2 of the *UCC* and stating that only computers which “serve the contracting function” should be subject to agency law and “computers that serve merely as media of communication should not”); see also Sabrina Kis, *Contracts and Electronic Agents: When Commercial Pragmatism and Legal Theories Diverge* 26-41 (Aug. 1, 2004) (unpublished LL.M. thesis, University of Georgia School of Law), http://digitalcommons.law.uga.edu/stu_llm/25 (comparing U.S. and French approaches to software programs as electronic agents). See generally Juanda Lowder Daniel, *Electronic Contracting Under the 2003 Revisions to Article 2 of the*

IOT technology, many focus on its privacy, security, and discrimination implications.¹⁵ In contrast, this Article is the first to provide a comprehensive analysis of the potential impact of the IOT on contracts for the sale of goods, and it makes three salient points.¹⁶ First, in a world where IOT devices are entering into contracts on behalf of consumers, common law agency principles and current federal and state statutes that regulate e-commerce may not be equipped to adequately protect consumers. Under these laws, consumers may automatically be bound to one-sided contract terms where they elect to deploy IOT devices as their contracting agents.

Second, courts continue to struggle to effectively address consumer assent to form contracts, as evidenced by the recent Second Circuit decision in *Starkey v. G. Adventures, Inc.*, which upheld the disclosure of contract terms to consumers via email post-contract formation.¹⁷ As currently drafted and interpreted by courts, Article 2 is unprepared to adequately evaluate new developments in the IOT where robotic devices have the capacity not only to inform a consumer that a product is running low, but also to purchase replacement products directly from companies without consumers actively participating in each purchase. These technological innovations will likely exacerbate already problematic issues under Article 2, as well as compound areas of uncertainty.

For instance, IOT devices, such as Amazon's DRS and Dash Button, increase the lack of proximity between consumers, contract terms, and the contract formation process ("Contract Distancing"). The device, rather than the consumer, places the order for the goods, or the consumer places the order by clicking the Dash Button. Amazon's Dash Button allows orders to be placed automatically via a consumer's home Wi-Fi network by clicking the Dash Button—a small wireless reorder

Uniform Commercial Code: *Clarification or Chaos?*, 20 SANTA CLARA COMPUTER & HIGH TECH. L.J. 319 (2004).

15. See, e.g., Scott R. Peppet, *Regulating the Internet of Things: First Steps Toward Managing Discrimination, Privacy, Security, and Consent*, 93 TEX. L. REV. 85, 117-40 (2014) (discussing concerns regarding discrimination, privacy, and security on the IOT); Thierer, *supra* note 1, at 40-45 (noting the privacy and security implications of the IOT); Brad Turner, *When Big Data Meets Big Brother: Why Courts Should Apply United States v. Jones to Protect People's Data*, 16 N.C. J.L. & TECH. 377, 382-404 (2015) (focusing on data collection and tracking online).

16. See *infra* text accompanying notes 17-28.

17. 796 F.3d 193, 195-96, 198 (2d Cir. 2015). The *Starkey* case involved the plaintiff's purchase of a travel ticket from the defendant and, as such, may lead one to argue that the holding should be limited to carriage contracts. *Id.* However, the court's holding has much broader implications for contract formation and disclosure of contract terms in consumer contracts, and it potentially incentivizes companies to adopt similar practices. See *infra* text accompanying notes 218-25.

plastic device linked to a specific product.¹⁸ The consumer is not required to access the company's website or mobile application (which contains contract terms), review the company's terms and conditions, or click an "I agree" button before each subsequent order is placed. This complicates the analysis of mutual assent, as contract terms are not displayed on IOT devices. The ease with which goods can be purchased using these devices facilitates a contracting environment in which quick purchases without contract review are the norm, thereby further incentivizing consumers to fail to read and understand contract terms. In turn, this encourages businesses to continue to take advantage of consumer ignorance by including one-sided contract terms that impede the ability of consumers to obtain legal redress and may even lead to contractual abuse.

Amazon's terms of use permit the company to unilaterally amend the Dash Button and DRS agreement and contain warranty disclaimers, class action and jury trial waivers, and a mandatory arbitration provision that excludes small claims.¹⁹ These provisions are common to e-commerce consumer contracts and pose potential problems for consumers as they frequently permit companies to shield themselves from liability to consumers.²⁰ This has negative implications for fairness in contracting. While contract law and the *Uniform Commercial Code* ("UCC") do not mandate fair bargains, various contract doctrines, such as the doctrines of unconscionability and good faith, ensure a minimal level of fairness in both the bargaining process and the bargain itself.

18. See Gordon Fletcher, *Amazon Dash is a First Step Towards an Internet of Things That Is Actually Useful*, CONVERSATION (Apr. 8, 2015, 1:31 AM), <http://theconversation.com/amazon-dash-is-a-first-step-towards-an-internet-of-things-that-is-actually-useful-39711>; see also Brian Benchoff, *Inside the Amazon Dash Button*, HACKADAY (May 12, 2015), <http://hackaday.com/2015/05/12/inside-the-amazon-dash-button> (describing and picturing the Dash Button). The Dash Button is currently offered as an invitation-only option to Amazon Prime members. See Jennifer Van Grove, *Are Amazon's Shopping Buttons for You?*, SAN DIEGO UNION TRIB. (May 29, 2015, 6:00 AM), <http://www.utsandiego.com/news/2015/may/29/amazon-dash-review>.

19. *Amazon Dash Button and Amazon Dash Replenishment Terms of Use*, AMAZON, <https://www.amazon.com/gp/help/customer/display.html?nodeId=201730770> (last updated Nov. 18, 2015); *Conditions of Use*, AMAZON, <http://www.amazon.com/gp/help/customer/display.html/?nodeId=508088> (last updated Feb. 12, 2016). Claims that qualify for small claims court are excluded from the mandatory arbitration provisions of Amazon's Conditions of Use. *Conditions of Use*, *supra*.

20. Jessica Silver-Greenberg & Robert Gebeloff, *Arbitration Everywhere, Stacking Deck of Justice*, N.Y. TIMES (Oct. 31, 2015), <http://www.nytimes.com/2015/11/01/business/dealbook/arbitration-everywhere-stacking-the-deck-of-justice.html> (citing a study of over 1179 federal class action cases decided between 2010 and 2014, which found that courts upheld arbitration provisions in four out of every five cases and that companies have used mandatory arbitration and class action waiver provisions to prohibit consumer challenges to deceptive practices, such as "predatory lending, wage theft and discrimination," among other things).

These contract doctrines, arguably intended to police the bargain, may not provide relief to consumers in the IOT setting.

Third, the legion of data that will be generated by the IOT regarding consumers and their preferences will further shift the power dynamics between companies and consumers, thereby worsening preexisting information asymmetry in consumer contracts in favor of companies.²¹ IOT devices will be able to measure and monitor their environment, goods, and consumers in real time and provide status data, location data, and actionable data.²² With the dawn of the IOT, companies will gain access to lifestyle and consumption rate data. IOT devices can also generate health-related and biometric data about consumers, such as temperature, heart rate, hemoglobin levels, blood pressure, blood flow levels, fingerprints, voice patterns, and eye retinas and irises.²³ Other IOT devices, such as Whirlpool's washing machine enabled with Amazon's DRS and Belkin's WeMo, can measure appliance use, electricity and water consumption, and work productivity.²⁴

Once issues with interoperability—where interconnected devices from different providers communicate and share data—have been resolved, all of these devices will be able to communicate with each other and transmit data amongst themselves, as well as to manufacturers and retailers. Ford has recently announced plans to collaborate with Amazon to connect smart cars to IOT home devices, which will allow these devices to share consumer data.²⁵ Companies that have access to this information will be able to map out the daily activities, health, and lives of individual consumers and members of their households and target those individual consumers for contracting. History is replete with examples of companies that have used consumer data and information to exploit vulnerable consumers. Predatory lending is one such example, and it highlights the danger of allowing companies to easily obtain and freely use consumer data. Further, consider that consumer data generated

21. See *infra* Part V.A.2.a.

22. See David Friedman, *Get to Know the Four Types of Data in the Internet of Things*, READWRITE (Aug. 13, 2015), <http://readwrite.com/2015/08/13/five-types-data-internet-of-things>.

23. Peppet, *supra* note 15, at 88, 100, 139. At least one state has attempted to regulate the use of consumer biometric information. Biometric Information Privacy Act, 740 ILL. COMP. STAT. 14/15 (2008).

24. Peppet, *supra* note 15, at 88; *Introducing Amazon Dash Replenishment Service*, *supra* note 8.

25. Marco della Cava, *Ford Partners with Amazon to Connect Cars with Homes*, USA TODAY (Jan. 5, 2016, 11:31 AM), <http://www.usatoday.com/story/tech/2016/01/05/ford-working-amazon-boost--car-links/78284584>.

from playing videogames can be manipulated by companies to create a profile of a consumer's spending habits.²⁶

Currently, privacy law cannot effectively deal with the data collection problems posed by the IOT. Almost every privacy statute or regulation adopted in the United States embraces "the assumption that anonymization [of data] protects privacy, most often by extending safe harbors from penalty to those who anonymize their data."²⁷ As Scott Peppet notes, though, it is almost impossible to de-identify and anonymize IOT data.²⁸

This Article suggests that Article 2 should be amended to safeguard consumers and that courts should adjust their application of existing contract law and agency principles to account for the new, automatic, and interface-free contracting environment by considering the increased levels of information asymmetry and the growing distance between consumers, contract terms, and the contract formation process.²⁹

Cisco estimates that the IOT's roots can be traced back to research conducted at the Auto-ID Center at the Massachusetts Institute of Technology as early as 1999.³⁰ The IOT is already a multibillion-dollar industry, and a recent report by research firm McKinsey & Company estimates that, by 2025, the IOT will have an economic impact of as much as \$11.1 trillion.³¹ As of 2015, there were roughly fifteen billion interconnected devices, and by 2020, there will be fifty billion such devices worldwide.³² Approximately ninety percent of companies expect to access and store data generated by IOT robots via cloud infrastructure and software rather than through onsite infrastructure.³³

26. ASHLEY SAUNDERS LIPSON & ROBERT D. BRIAN, *COMPUTER AND VIDEO GAME LAW: CASES, STATUTES, FORMS, PROBLEMS & MATERIALS* 764 (2009).

27. Paul Ohm, *Broken Promises of Privacy: Responding to the Surprising Failure of Anonymization*, 57 UCLA L. REV. 1701, 1740 (2010).

28. Peppet, *supra* note 15, at 129-31, 157-58.

29. See *infra* Part VI.

30. Dave Evans, *The Internet of Things: How the Next Evolution of the Internet Is Changing Everything*, CISCO 2-3 (April 2011), http://www.cisco.com/web/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf (noting that the Auto-ID Center at the Massachusetts Institute of Technology worked on networked radio frequency identification ("RFID") and emerging sensing technologies).

31. James Manyika et al., *Unlocking the Potential of the Internet of Things*, MCKINSEY & CO. (June 2015), http://www.mckinsey.com/insights/business_technology/The_Internet_of_Things_The_value_of_digitizing_the_physical_world; Aaron Tilley, *Qualcomm: The Internet of Things Is Already a Billion Dollar Business*, FORBES (May 15, 2015, 8:00 AM), <http://www.forbes.com/sites/aarontilley/2015/05/15/qualcomm-the-internet-of-things-is-a-billion-dollar-business/print>.

32. Jennings Brown, *Connectedness: A Reckoning*, ESQUIRE MAG., May 2015, at 32, 32; Evans, *supra* note 30, at 3; Morne Janse van Rensburg, *The Internet of Things Could See Massive Changes to Logistics in South Africa*, MEMEBURN (June 2, 2015), <https://memeburn.com/2015/06/the-internet-of-things-could-see-massive-changes-to-logistics-in-south-africa>.

33. Chris Murphy, *7 Lessons from the Internet of Things Frontier*, FORBES (Aug. 4,

The IOT is expected to change supply chains, how products are built, how orders are placed, and how goods are delivered to consumers. For instance, Saia, one of the most successful carriers in the United States, uses web-enabled sensors on its fleet of trucks to track maintenance needs, driver safety, fuel economy, and several other metrics.³⁴ This information allowed Saia to save \$15 million in its first year of implementation by increasing fuel efficiency.³⁵ The IOT can allow real time data about warehouse performance and energy consumption to be generated daily.³⁶ The connected devices in the IOT are “elements found along the supply chain.”³⁷ By 2025, the IOT will likely create more than \$1.9 trillion in economic value for the supply chain sector.³⁸ Further, it has the ability to revolutionize payment systems by permitting “payment processing based [on] location or activity duration for public transport, gyms, theme parks and a variety of other scenarios.”³⁹

The IOT will also have a significant impact on consumers. A 2014 study conducted by Acquity Group found that forty-five percent of consumers planned to purchase in-home connected devices within the next two years and ninety-two percent plan to purchase such devices by

2015, 6:00 AM), <http://www.forbes.com/sites/oracle/2015/08/04/7-lessons-from-the-internet-of-things-frontier>.

34. Erica E. Phillips, *Internet of Things Reaches into the Trucking Business*, WALL STREET J. (Apr. 29, 2015, 7:17 PM), <http://www.wsj.com/articles/internet-of-things-reaches-into-the-trucking-business-1430342965>. But see Leo Sun, *Steve Wozniak Says the Internet of Things Is in 'Bubble Phase'*, MOTLEY FOOL (June 12, 2015), <http://time.com/money/3919058/steve-wozniak-internet-of-things-bubble> (noting that companies have overestimated the appeal of everyday interconnected devices).

35. Phillips, *supra* note 34.

36. See Loretta Chao, *Cisco Tests 'Internet of Things' in Its Supply Chain*, WALL STREET J. (May 13, 2015, 6:06 PM), <http://www.wsj.com/articles/cisco-tests-internet-of-things-in-its-supply-chain-1431554801> (detailing Cisco's installation of thousands of sensors in a Malaysian plant for the monitoring and reduction of energy consumption and its plans to coordinate with logistics provider DHL in order to generate real-time data on warehouse operations). Similarly, in the food industry, IOT scanning technologies, such as RFID, can tighten container management and can calculate the most efficient picking and put-away inventory sequences, which will reduce required labor and handling while managing inventory by expiration dates to reduce spoilage. David Arkles, *Internet of Things Scanning Technology and the Future of Food*, FOOD MAG. (May 14, 2015), <http://www.foodmag.com.au/features/internet-of-things-scanning-technology-and-the-fut>; see also Thor Olavsrud, *Why Johnnie Walker Joined the Internet of Things*, CIO (May 26, 2015), <http://www.cio.com/article/2926218/innovation/why-johnnie-walker-joined-the-internet-of-things.html> (discussing ThinFilm sensor technology on Johnnie Walker bottles, which allows personalized communications to be sent to consumers).

37. Rensburg, *supra* note 32.

38. Phillips, *supra* note 34.

39. Shane Schick, *10 Internet of Things Use Cases That Have Already Become Clichés*, IT WORLD CAN. (June 22, 2015), <http://www.itworldcanada.com/slideshow/10-internet-of-things-use-cases-that-have-already-become-cliches>.

2019.⁴⁰ Qualcomm, a San Diego chipmaker, estimates that it earned \$1 billion in revenue in 2014 from chips used in home appliances, cars, and other devices.⁴¹ LG and Microsoft intend to jointly develop products for the IOT.⁴² Google is now the owner of the Nest smart thermostat and the live-feed device Dropcam, and it has announced plans to develop additional smart home technology products.⁴³ Apple intends to use its HomeKit platform to connect Apple devices in consumer homes.⁴⁴ The Dash Button is expected to allow consumers to place orders for goods that are connected to a device, as well as consumables that are not associated with an IOT device, such as water or paper towels.⁴⁵ Additionally, Whirlpool, Brita, Quirky, Samsung, General Electric, August, Sealed Air, Oster, Gmate, CleverPet, Sutro, Brother, and Thync (a manufacturer of wearable technology that uses neurosignaling waveforms to boost energy levels and decrease stress levels) have all announced plans to integrate Amazon's DRS into their latest products.⁴⁶

Much of this Article focuses on Amazon's IOT services and devices, as Amazon is the first online retailer to actively engage in the IOT.⁴⁷ Amazon is now the largest online retailer in the world, and e-commerce is projected to have an annual growth rate of eleven percent per year by 2017, which is larger than any other segment of the retail industry, including brick and mortar supercenters.⁴⁸ The growth rate for e-commerce consumer packaged goods, such as household items, is projected to increase by twenty percent annually.⁴⁹

Part II of this Article describes the types of IOT devices that may be used to facilitate the sale and purchase of goods.⁵⁰ This Part also

40. *The Internet of Things: The Future of Consumer Adoption*, ACCENTURE 8 (2014), https://www.accenture.com/t20150624T211456__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Technology_9/Accenture-Internet-Things.pdf#zoom=50.

41. Tilley, *supra* note 31.

42. Kevin Parrish, *Microsoft, LG Partnering on the Internet of Things*, TOM'S HARDWARE (Sept. 24, 2014, 2:00 PM), <http://www.tomshardware.com/news/microsoft-lg-internet-things-windows,27756.html>.

43. See Brown, *supra* note 32.

44. *Id.*

45. See Van Grove, *supra* note 18.

46. *Introducing Amazon Dash Replenishment Service*, *supra* note 8; Leo Sun, *Amazon.com Inc. Assembles an Internet of Things Army*, MOTLEY FOOL (Oct. 5, 2015, 5:00 PM) <http://www.fool.com/investing/general/2015/10/05/amazoncom-inc-assembles-an-internet-of-things-army.aspx>.

47. See Fletcher, *supra* note 18.

48. Clare O'Connor, *Wal-Mart vs. Amazon: World's Biggest E-Commerce Battle Could Boil Down to Vegetables*, FORBES (Apr. 23, 2013, 4:53 PM), <http://www.forbes.com/sites/clareoconnor/2013/04/23/wal-mart-vs-amazon-worlds-biggest-e-commerce-battle-could-boil-down-to-vegetables>.

49. *Id.*

50. See *infra* Part II.

contends that these devices are distinct from existing electronic agents and subscription services provided by online retailers.⁵¹

Part III evaluates the potential role of IOT devices as electronic agents entering into transactions on behalf of consumers and sellers by employing traditional agency law, the *Uniform Computer Information Transactions Act* (“UCITA”), the *Uniform Electronic Transactions Act* (“UETA”), and the *Electronic Signatures in Global and National Commerce Act* (“E-Sign”).⁵² Under general agency principles and e-commerce statutes, consumers may be automatically bound to contracts entered into by IOT robots acting on their behalf.⁵³ This Part highlights the difficulties of applying agency principles and e-commerce statutes to IOT devices and IOT consumer transactions, such as the potential inability of IOT robots to grasp the fiduciary nature of the agency relationship, and the probable conflict of interest of IOT robots serving as the electronic agents of consumers while simultaneously collecting and reporting data on consumers to manufacturers and retailers.⁵⁴

Part IV addresses the contract formation issues posed by contracts entered into by consumers using IOT devices (“IOT Contracts”) under the *Restatement (Second) of Contracts* (“*Contracts Restatement*”), Article 2, and the UCITA; and, it illustrates the problems with applying traditional standards, such as notice and an opportunity to review, to IOT Contracts to assess mutual assent.⁵⁵ This Part posits that while providing convenience to consumers, IOT devices will increase Contract Distancing. Where there are high levels of Contract Distancing, consumers are further incentivized to enter into contracts without reviewing or understanding the terms; thus, consumer assent to contract terms is more difficult to assess under the notice and opportunity to review standard as contract terms are not displayed on IOT devices.⁵⁶

Part V addresses the doctrine of good faith, section 211(3) of the *Contracts Restatement*, and applies the traditional contract defenses of unconscionability, mistake, and misrepresentation to IOT Contracts.⁵⁷ This Part posits that IOT technological innovations will worsen information asymmetry in consumer contracts, and the application of these doctrines without accounting for the new IOT contracting environment is likely to generate negative results for consumers.⁵⁸

51. See *infra* text accompanying notes 83-97.

52. See *infra* Part III.

53. See *infra* Part III.A.

54. See *infra* Part III.A.

55. See *infra* Part IV.

56. See *infra* Part IV.C.1.

57. See *infra* Part V.

58. See *infra* notes 300-19.

To address the concerns highlighted in this Article, Part VI proposes important amendments to Article 2, including, but not limited to, amending (1) section 2-204 to prohibit post-contract formation disclosure of terms in consumer IOT Contracts; (2) section 2-209 to prohibit the use of unilateral amendment provisions, where the use of such a provision would permit contract amendments that are detrimental to a consumer's rights in an IOT Contract; (3) section 2-206 to specifically provide that restrictive notions of constructive notice and an opportunity to review are inadequate for consumer IOT Contracts; and (4) section 2-302 to provide that unconscionability can result from high levels of information asymmetry and Contract Distancing.⁵⁹ In assessing consumer assent to IOT Contracts, courts should evaluate the extent to which consumers are able to access and own the IOT data they generate, the amounts and types of data collected, and manufacturer and merchant compliance with regulatory IOT best practices, among other things. Courts must also consider the increased knowledge that companies will have about individual consumers as a result of IOT data. Article 2's unconscionability provisions should be modeled after the European Union's Council Directive on Unfair Terms in Consumer Contracts ("EU Directive").

Part VII acknowledges that the three central arguments made in this Article are subject to critique.⁶⁰ Potential counterarguments include the following: (1) consumers should always be held accountable for their failure to read contracts regardless of the setting; (2) the use of form contracts in the IOT context will lower transaction costs for both consumers and sellers rather than facilitate contractual abuse; (3) the IOT will increase consumer bargaining power, and information asymmetry will decrease, rather than increase, in the age of the IOT; and (4) there are economic justifications for information asymmetry in consumer IOT contracting.⁶¹ This Part addresses each of these critiques and demonstrates the soundness of the three central arguments of this Article.⁶² I conclude by arguing that while the IOT has the potential to enhance the shopping experience of consumers, there are serious concerns with consumers' use of IOT devices.⁶³ To ensure that the law effectively protects consumers, courts, the Uniform Law Commission ("ULC"), and the American Law Institute ("ALI") must adequately consider the new contracting environment created by the IOT.

59. See *infra* Part VI.

60. See *infra* Part VII.

61. See *infra* Part VII.

62. See *infra* Part VII.

63. See *infra* Part VIII.

This Article is part of a larger project that will examine the impact of the IOT on contracts subject to the *UCC*.⁶⁴ Subsequent work on this project will explore the role of federal and state agencies in protecting consumers in the new IOT contracting environment and will evaluate additional questions raised by IOT devices, such as the potential consumer protection concerns where consumer data (including health and biometric data generated by IOT devices) is sold to third-party companies during bankruptcy or is used as collateral by a company to obtain financing as part of a secured transaction under Article 9 of the *UCC*.

II. THE THING

The IOT is projected to enhance the automatic shopping experience of consumers.⁶⁵ With Amazon's Echo, a consumer could verbally instruct the device to order a product from Amazon, all without the consumer accessing Amazon's website or a mobile application directly.⁶⁶ A General Electric washing machine that has been prebuilt with Amazon's DRS could automatically reorder laundry supplies directly from Amazon. Similarly, a Thync module using DRS could measure a consumer's stress and energy levels, adjust the consumer's mood, and automatically reorder Thync strips on behalf of the consumer.⁶⁷ DRS is expected to "leverage Amazon's authentication and payment systems, customer service, and fulfillment network."⁶⁸

The new IOT developments are distinct from the subscription services typically provided by online retailers such as Walmart, Target, and Amazon, as well as the one-click payment option offered by Amazon.⁶⁹ The success of Amazon's subscribe-and-save service

64. See *infra* note 183.

65. See Jonathan Gregory, *The Internet of Things: Revolutionizing the Retail Industry*, ACCENTURE 2 (2015), https://www.accenture.com/t20151211T035242_w_us-en/-acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_14/Accenture-The-Internet-Of-Things.pdf; Leo Sun, *3 Ways Amazon Inc. Could Become an Internet of Things Superpower*, MOTLEY FOOL (July 23, 2015, 8:43 AM), <http://www.fool.com/investing/general/2015/07/23/3-ways-amazon-inc-could-become-an-internet-of-thin.aspx>.

66. See Sun, *supra* note 65.

67. See David Nield, *Why (and How) Startups Are Tying into Amazon's DRS System*, READWRITE (Oct. 7, 2015), <http://readwrite.com/2015/10/07/amazon-drs-partners>; *supra* note 46 and accompanying text.

68. *Introducing Amazon Dash Replenishment Service*, *supra* note 8.

69. *About 1-Click Ordering*, AMAZON, <http://www.amazon.com/gp/help/customer/display.html?nodeId=468482> (last visited Apr. 10, 2016); Rick Aristotle Munariz, *Wal-Mart Takes Another Shot at Amazon*, MOTLEY FOOL (Nov. 14, 2012), <http://www.fool.com/investing/general/2012/11/14/wal-mart-takes-another-shot-at-amazon.aspx> (describing Walmart's Goodies Co. monthly shipment option for artisanal "foodies"); *Subscriptions*, TARGET,

encouraged other major online retailers, such as Walmart, to use similar services, and if Amazon's Dash Button and DRS prove to be successful, it is likely that other major online retailers will begin to provide similar products.⁷⁰ Amazon's current subscribe-and-save service allows buyers to obtain a small discount if they create an order schedule for specific products.⁷¹ With this service, buyers must log on to Amazon's website to select the intervals—between one and six months—at which new orders are to be placed.⁷² Under this service, before each order is placed, buyers routinely receive reminder emails that an order will be placed via the subscription service. As the name suggests, the one-click payment option gives buyers the ability to place subsequent orders by clicking the one-click payment button at checkout after associating a credit card with their account.⁷³

With Amazon's DRS, manufacturers have the option to either build a physical button on the device to allow for automatic reordering with the touch of a button, or enable the device to measure consumable usage and reorder products automatically without the consumer clicking a physical button.⁷⁴ The first DRS option appears similar to the Dash Button. Under this option, as well as the subscribe-and-save service and the one-click payment option, a consumer has the sole ability to determine when new orders will be placed by clicking either a physical or virtual button at checkout.⁷⁵ The Dash Button option may work in concert with the one-click payment option so that once the consumer associates a credit card with an account, the consumer's credit card will be charged upon clicking the physical button.⁷⁶

Despite the seeming similarities between these three purchasing options, the Dash Button has the capacity to increase the ease with which consumers engage in automatic shopping. Once the Dash Button has been activated, the consumer no longer has to access Amazon's website to place orders. Instead, the consumer can simply reorder goods

<http://help.target.com/help/subcategoryarticle?childcat=Subscriptions&parentcat=Delivery+Options> (last visited Apr. 10, 2016) (describing Target's subscription service); *Walmart Beauty Boxes: Brand Name Savings!*, WALMART, <https://beautybox.walmart.com> (last visited Apr. 10, 2016) (describing the Walmart beauty box subscription service).

70. Munariz, *supra* note 69; O'Connor, *supra* note 48 (contending that Walmart has "copycat[ed]" Amazon's most successful tactics).

71. *Subscribe & Save*, AMAZON, <https://www.amazon.com/gp/subscribe-and-save/details> (last visited Apr. 10, 2016).

72. *Id.*

73. *About 1-Click Ordering*, *supra* note 69.

74. *Introducing Amazon Dash Replenishment Service*, *supra* note 8.

75. Fletcher, *supra* note 18.

76. *Set Up Your Dash Button*, AMAZON, <http://www.amazon.com/gp/help/customer/display.html?nodeId=201746340> (last visited Apr. 10, 2016).

with the click of a physical button.⁷⁷ In contrast, with the one-click payment option and the subscribe-and-save option, consumers must either wait for orders to be placed based on the existing order schedule previously established by the consumer or access Amazon's website or mobile application to place a new order or change the delivery schedule.

The second DRS option is in stark contrast with the subscribe-and-save option and the one-click payment option, where consumers select the frequency with which orders are placed based on the consumer's assessment of her consumable usage. With the second DRS option, the robotic device measures the rate of consumption and potentially selects the frequency with which the consumer enters into a contract for the purchase of replacement goods based on the consumable usage determined by the device.⁷⁸ These robotic devices are also likely to have the capacity to select the type of goods that are reordered. However, it is possible that Amazon and other manufacturers will permit consumers who use DRS devices to establish preorder levels for successive orders. DRS can be integrated into any device that can be connected to the Internet, and therefore, both large and small manufacturers will be able to connect their goods to DRS.⁷⁹

IOT technology, such as DRS and the Dash Button, will usher in a new wave of automatic and interface-free shopping facilitated by autonomous electronic agents, which will be dominated by large online retailers. The goal of these new types of services and devices is to provide consumers with easy and convenient shopping methods while simultaneously locking consumers into a routine of ordering specific goods from a specific retailer online.⁸⁰ Ultimately, it is projected that IOT devices will increase consumer loyalty to specific retailers and brands, thereby increasing profitability for manufacturers and retailers.⁸¹ With the DRS, consumers "don't have to do anything—they can simply rely on the connected device to automatically reorder the consumables that keep their homes running smoothly."⁸² Thus, in the age of the IOT, it is likely that consumers will routinely elect to use IOT robotic devices

77. *Get to Know Your Dash Button*, AMAZON, <http://www.amazon.com/gp/help/customer/display.html?nodeId=201746300> (last visited Apr. 10, 2016).

78. See *Introducing Amazon Dash Replenishment Service*, *supra* note 8.

79. *Id.*

80. Jillian D'Onfro, *An 'Overlooked' Amazon Service Could Help the Company Dominate the Future of Shopping*, BUS. INSIDER (July 23, 2015, 11:47 AM), <http://www.businessinsider.com/amazon-dash-buttons-could-be-future-of-ecommerce-2015-7>.

81. *Id.*

82. Jeff Byrnes, *Amazon Dash Replenishment Service Makes Shopping Smarter*, APP ADVICE (Oct. 1, 2015) <http://appadvice.com/appnn/2015/10/amazon-dash-replenishment-service-makes-shopping-smarter> (quoting Amazon Vice President of Devices, Peter Larsen).

to contract for goods, as it is more convenient than going to a grocery store, logging on to a seller's website, or using a mobile application.

Electronic agents are not new to the contract formation process. Parties have used electronic data interchange ("EDI"), which has been around since the 1980s, and electronic online shopping agents to facilitate electronic transactions.⁸³ EDI allows businesses to enter into contracts by transferring data and documents electronically.⁸⁴ Generally, parties using EDI agree in advance to the types of transactions that will be entered into via EDI.⁸⁵ Today's online shopping electronic agents are used as mediators to assist both buyers and sellers in purchasing goods, and these agents are generally pre-programmed to make choices based on price, quality, quantity, or type of goods.⁸⁶ Examples include relatively autonomous programs that recommend products, vendors, and services, as well as websites that bid on behalf of users.⁸⁷ Additionally, in financial markets, automated trading systems routinely "use intelligent algorithms that respond to market information in real time using short-term predictive signaling techniques to determine the optimal execution timing, trading period, size, price, and execution venues, while minimizing market impact."⁸⁸

In contrast to EDI and preexisting online shopping electronic agents, IOT robotic devices will be powered by the Internet and will be able to share data between devices, cloud software, and on-site infrastructure.⁸⁹ IOT robotic devices are expected to do more than simply enter into transactions based on the parties' preexisting agreements, as is the case with EDI, or make preprogrammed choices, as is the case with current online shopping electronic agents.⁹⁰ Furthermore,

83. Anthony J. Bellia Jr., *Contracting with Electronic Agents*, 50 EMORY L.J. 1047, 1050 (2001).

84. *Id.*

85. See Stephen T. Middlebrook & John Muller, *Thoughts on Bots: The Emerging Law of Electronic Agents*, 56 BUS. LAW. 341, 347-48 (2000) (describing EDI).

86. See Bellia, *supra* note 83, at 1051-52 (describing the current electronic agents, which search the Internet for better prices, and the next generation of electronic agents that may have the capacity to negotiate contract terms and select the best product based on price and warranty terms); Kis, *supra* note 14, at 66; Emily M. Weitzenboeck, *Electronic Agents and the Formation of Contracts*, 9 INT'L J.L. & INFO. TECH. 204, 208-09 (2001) (describing the different ways in which electronic agents are currently used).

87. SAMIR CHOPRA & LAURENCE F. WHITE, A LEGAL THEORY FOR AUTONOMOUS ARTIFICIAL AGENTS 7 (2011) (noting that "relatively autonomous programs . . . do much of the 'grunt' work of the Internet").

88. CHOPRA & WHITE, *supra* note 87, at 7 (citation omitted).

89. See Angelo Corsaro, *Building the Internet of Things with DDS*, EMBEDDED COMPUTING DESIGN (July 8, 2014), <http://embedded-computing.com/guest-blogs/building-the-internet-of-things-with-dds>.

90. On the other hand, one could potentially argue that IOT devices are quite similar to EDI

such devices are projected to simultaneously measure consumable usage and enter into transactions unilaterally.⁹¹ To fully utilize the data expected to be generated by IOT robotic devices, it is expected that these devices will be embedded with artificial intelligence that will permit them to “analyze data immediately as it’s collected to accurately identify previously known and never-before seen new patterns, . . . learn normal behaviors for each [owner,] and track, uncover and flag anything outside the norm,” as well as adapt to the needs of its owner and environment.⁹²

Examples of modern day artificial intelligence include IBM’s Deep Blue computer, which beat chess champion Garry Kasparov, and, IBM’s computer, Watson, which beat seventy-four-time “Jeopardy!” champion, Ken Jennings.⁹³ Microsoft and Google have announced plans to incorporate artificial intelligence into IOT robotic devices.⁹⁴ Nvidia announced earlier this year that it has developed a super chip that will allow autonomous cars to connect to the IOT, identify parking spaces, and park themselves.⁹⁵ This suggests that these types of autonomous cars may ultimately have the capacity to enter into contracts for

and perhaps even preexisting online shopping electronic agents, as IOT devices may be preprogrammed by the manufacturer to select the types of consumable goods that can be purchased using the Amazon DRS, as well as conduct a search on Amazon’s website for the cheapest price.

91. See Bellia, *supra* note 83, at 1052; *Introducing Amazon Dash Replenishment Service*, *supra* note 8.

92. Mark Jaffe, *IOT Won’t Work Without Artificial Intelligence*, WIRED, <http://www.wired.com/insights/2014/11/iot-wont-work-without-artificial-intelligence> (last visited Apr. 10, 2016).

93. Adam Gabbatt, *IBM Computer Watson Wins Jeopardy Clash*, GUARDIAN (Feb. 17, 2011, 5:54 PM), <http://www.theguardian.com/technology/2011/feb/17/ibm-computer-watson-wins-jeopardy>; Luke Harding & Leonard Barden, *Deep Blue Win a Giant Step for Computerkind*, GUARDIAN (May 12, 1997), <http://www.theguardian.com/theguardian/2011/may/12/deep-blue-beats-kasparov-1997>.

94. See Jason Deign, *When Artificial Intelligence Meets the Internet of Everything*, CISCO: NETWORK (Nov. 17, 2014), <http://newsroom.cisco.com/feature-content?type=webcontent&articleId=1534483>; Christina Mulligan, *2015: The Internet of Things Takes Another Step*, SOFTWARE DEV. TIMES (Dec. 29, 2015), <http://sdtimes.com/2015-the-internet-of-things-takes-another-step>. Despite expectations that IOT devices will ultimately be merged with artificial intelligence, it has been suggested that the effectiveness of such a merger may be limited by incompatible operating systems. Deign, *supra*.

95. Scott Bicheno, *Nvidia Focuses on the Connected Car with New Tegra X1 Chip*, IOT WORLD NEWS (Jan. 5, 2015), <http://iotworldnews.com/2015/01/nvidia-focuses-on-the-connected-car-with-new-tegra-x1-chip>; Derrick Harris, *AI Is Coming to IOT, and not All the Brains Will Be in the Cloud*, GIGAOM (Jan. 6, 2015), <https://gigaom.com/2015/01/06/ai-is-coming-to-iot-and-not-all-the-brains-will-be-in-the-cloud>. This suggests that autonomous cars embedded with these chips will have the capacity to enter into contracts with parking attendants and parking machines and pay for parking tickets on behalf of their owners. Cf. *Thornton v. Shoe Lane Parking Ltd.*, [1970] EWCA (Civ) 2, [1971] 2 QB 163 (Eng.) (discussing offer and acceptance with a parking ticket machine); Samir Chopra & Laurence White, *Artificial Agents and the Contracting Problem: A Solution via an Agency Analysis*, 2009 U. ILL. J.L. TECH. & POL’Y 363, 373 (analyzing contract formation in the context of parking ticket machines).

parking spaces on behalf of their owners. Nvidia has also created an IOT development kit, labeled the “Jetson TK1,” which the company hopes will be incorporated into devices, robotics, and computer systems.⁹⁶

As discussed above, IOT devices are distinct from current automatic shopping options and existing electronic agents.⁹⁷ These devices will have the capacity to facilitate transactions for the sale of goods and services on behalf of consumers. But, how will agency law and the existing framework for electronic agents address the role of IOT devices?⁹⁸

III. IOT ROBOTICS AND AUTONOMOUS ELECTRONIC AGENTS

A. Agency Law

While scholars have used agency law to evaluate existing artificial electronic agents and some have contemplated the evolution of more autonomous electronic agents, legal scholars have not yet fully explored the role of agency law in transactions entered into by IOT devices.⁹⁹ Pursuant to section 1-103 of the *UCC*, the common law of agency is applicable to agreements subject to the *UCC* unless specifically displaced by a particular provision in the code.¹⁰⁰ Under traditional agency principles, the agent imposes contractual liability on the principal

96. See Ryan Smith, *NVIDIA Announces Jetson TK1 Dev Board; Adds Erista to Tegra Roadmap*, ANANDTECH (Mar. 27, 2014, 4:00 PM), <http://www.anandtech.com/show/7905/nvidia-announces-jetson-tk1-dev-board-adds-erista-to-tegra-roadmap>; see also Ryan Smith, *NVIDIA Announces Jetson TX1—A Tegra X1 Module & Development Kit*, ANANDTECH (Nov. 10, 2015, 6:50 PM), <http://www.anandtech.com/show/9779/nvidia-announces-jetson-tx1-tegra-x1-module-development-kit> (introducing an improvement on the Jetson TK1).

97. See *supra* text accompanying notes 69-92.

98. See *infra* Part III.

99. But see, e.g., SUSAN W. BRENNER, *LAW IN AN ERA OF “SMART” TECHNOLOGY* 4-6 (2007) (discussing the potential ability of smart technologies to act on their own, and contending that the law assumes “dumb” technology and, thus, fails to account for the role of modern technologies); CHOPRA & WHITE, *supra* note 87 at 160-70 (describing the requirements needed for artificial agents to be viewed as agents under traditional agency law); MIREILLE HILDEBRANDT, *SMART TECHNOLOGIES AND THE END(S) OF LAW: NOVEL ENTANGLEMENTS OF LAW AND TECHNOLOGY* 22-27 (2015) (discussing agents defined by deterministic algorithms, agents based on machine learning, and agent-based multi-agent systems that execute their own programming and negotiate with each other to achieve their own goals, as well as solve problems that their programmers could not foresee); Deborah A. DeMott, *Agency Law in Cyberspace*, 80 AUSTL. L.J. 157, 157-61 (2006) (discussing the applicability of traditional agency principles in legal relationships created by interactions involving modern technology). Courts have also addressed the role of non-IOT electronic agents and agency law. See *Thrifty-Tel, Inc. v. Bezenek*, 54 Cal. Rptr. 2d 468, 473-74 (Ct. App. 1996); *Marsh v. Am. Locker Co.*, 72 A.2d 343, 344-46 (N.J. Super. Ct. App. Div. 1950).

100. U.C.C. § 1-103 (AM. LAW INST. & UNIF. LAW COMM’N 2013); RESTATEMENT (THIRD) OF AGENCY intro. (AM. LAW INST. 2006).

for acts done on account of the principal.¹⁰¹ To establish an agency relationship, the principal must manifest consent through written words, spoken words, or conduct to the agent; the agent must consent to act on behalf of the principal; and, the principal must have the ability to exercise control over the agent.¹⁰² While both the agent and the principal must consent to the agency relationship, an express written agreement evidencing this consent is not required to establish agency.¹⁰³ Further, the agent's consent need not be manifested to the principal.¹⁰⁴

Amazon recently announced that DRS is operational on a small number of select devices, such as Gmate's smart blood glucose meter.¹⁰⁵ Consider a Quirky coffee maker that has the capacity to measure consumable usage and order coffee using DRS. This IOT robotic device could potentially be labeled as an "agent" using common law agency principles. The principal—consumer—has control over the device and has potentially manifested consent to the agency relationship by permitting the device to utilize DRS to order products on her behalf. An agent's consent to the agency relationship can be established where the agent "performs the service requested by the principal following the principal's manifestation."¹⁰⁶ The Quirky device could be said to manifest assent to the agency relationship by placing the orders for the consumable supplies on behalf of the consumer. Thus, a contract entered into by the Quirky coffee maker on behalf of the consumer (principal) with Amazon for the purchase and sale of consumable supplies would be binding on the consumer.

Moreover, under traditional agency principles, if the Quirky coffee maker acted against the wishes of the consumer and placed an order for consumable supplies, a consumer may still be bound by the actions of the device as the device could be deemed to have apparent authority.¹⁰⁷ This could happen, for instance, where the consumer attempts to disable DRS but is unable to do so or where the device acts in a manner that is

101. RESTATEMENT (SECOND) OF AGENCY § 194 (AM. LAW INST. 1958).

102. RESTATEMENT (THIRD) OF AGENCY §§ 1.01, 1.03; *see also id.* § 1.03 cmt. b. (noting that "a manifestation is conduct by a person, observable by others, that expresses meaning").

103. RESTATEMENT (SECOND) OF AGENCY § 1 cmt. b (noting that the agreement between the principal and the agent need not be in the form of a contract); WARREN A. SEAVEY, HANDBOOK OF THE LAW OF AGENCY § 3(A) (1964) (noting that, while consent is essential to establishing agency, the relationship between the principal and the agent is not necessarily contractual as consideration is not essential to establishing agency).

104. RESTATEMENT (THIRD) OF AGENCY § 1.01 cmt. d (noting that "it is not necessary to the formation of a relationship of agency that the agent manifest assent to the principal").

105. *First Amazon Dash Replenishment Devices Now Available*, Amazon Press Release (Jan. 16, 2016), <http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-newsArticle&ID=2130275>.

106. RESTATEMENT (THIRD) OF AGENCY § 1.01 cmt. d.

107. *Id.* § 2.03.

contrary to the instructions of the manufacturer. On the other hand, even where the principal becomes bound by such a contract, retailers such as Amazon routinely provide consumers with the ability to cancel orders that have been mistakenly placed or to return products.¹⁰⁸ This, of course, places consumers at the mercy of a retailer's return and cancellation policy. Despite the preceding analysis, using common law agency principles to evaluate the relationship between IOT devices and consumers is potentially problematic for a number of reasons.

First, it is not clear whether consumers will have sufficient control over IOT devices necessary to establish an agency relationship. For the purposes of agency, control is broadly defined to include the ability of the principal to "give interim instructions or directions to the agent" and influence the actions of the agent.¹⁰⁹ The principal is not required to be able to control "the full range of the agent's activities."¹¹⁰ Further, the principal's ability to control the agent assumes that the principal has the ability to terminate the agency relationship.¹¹¹ As noted above, one could argue that a consumer provides directions to the IOT robot and authorizes the purchase of consumable goods once the consumer establishes an Amazon account and elects to use the DRS.¹¹² If the consumer has the capacity to initiate the device's use of DRS, it is likely that the consumer will also have the power to prevent the device from using DRS to order products, thereby terminating the agency relationship and exercising a certain degree of control over the device. However, whether a consumer will have sufficient control over the IOT robot ultimately depends on how the DRS and other similar products are implemented by retailers and manufacturers. As currently described, DRS IOT devices—not consumers—will control the measurements of consumable usage, when and how such data is collected, and when new consumable supplies will be ordered.¹¹³ If consumers do not have the ability to determine the frequency with which orders are placed by the IOT robotic device or the types and amount of data that is collected by the device, then consumers may not have sufficient control over such devices to establish an agency relationship.

108. *About Our Returns Policies*, AMAZON, <http://www.amazon.com/gp/help/customer/display.html?nodeId=15015721> (last visited Apr. 10, 2016).

109. RESTATEMENT (THIRD) OF AGENCY, § 1.01 cmt. f; *see also* *Green v. H & R Block, Inc.*, 735 A.2d 1039, 1051 (Md. 1999) (asserting that "the principal must have ultimate responsibility to control the end result of his or her agent's actions; such control may be exercised by prescribing the agent's obligations or duties before or after the agent acts, or both").

110. RESTATEMENT (THIRD) OF AGENCY § 1.01 cmt. c.

111. *Id.* § 1.01 cmt. f.

112. *See supra* Part II.

113. *See Introducing Amazon Dash Replenishment Service*, *supra* note 8.

Second, the fiduciary character of the agency relationship and the ability of the IOT device to consent to agency must be considered. As a fiduciary, the agent must “act loyally in the principal’s interest” and “interpret the principal’s statement of authority.”¹¹⁴ Whether IOT devices will have sufficient intelligence to fulfill the duty of loyalty to the principal, as well as to understand the acts required to be performed by the principal, is unclear. To the extent that IOT robotic devices are able to measure and collect consumable usage and then determine when new orders will be placed based on each buyer’s consumption rate, one could contend that such devices have the ability to think for themselves and act independently. In such an instance, the IOT robotic device could be described as autonomous since “its behavior is determined by its own experience.”¹¹⁵ On the other hand, manufacturers may preprogram the frequency with which IOT robotic devices place orders using DRS or permit consumers to select the schedule of orders, in which case the argument in favor of artificial intelligence becomes less convincing. Even if one assumes that IOT devices will eventually possess the cognitive ability to think on their own, that capacity may be limited to solely measuring consumable usage and determining when to place new orders. It may not extend to the type of intelligence needed to express consent to the agency relationship or to understand the duty of loyalty and the fiduciary relationship between agents and principals.

Scholars evaluating non-IOT electronic agents have contended that electronic agents are less likely to breach their fiduciary duties than human agents.¹¹⁶ However, to the extent that the data generated by IOT devices about individual consumers are automatically and exclusively provided to retailers and manufacturers, the provision of such information could violate the agent’s obligation to act in the best interest of the principal and protect the principal’s confidential information.¹¹⁷ IOT devices pose significant privacy and security concerns for consumers.¹¹⁸ There is an inherent conflict of interest posed in the IOT context, where the device is following the instructions of the consumer who has initiated DRS but also generating data about the

114. RESTATEMENT (THIRD) OF AGENCY § 1.01 cmt. e.

115. STUART J. RUSSELL & PETER NORVIG, *ARTIFICIAL INTELLIGENCE: A MODERN APPROACH* 35 (1995); *see also* Tom Allen & Robin Widdison, *Can Computers Make Contracts?*, 9 HARV. J.L. & TECH. 25, 27 (1996) (contending that computers may be able to “learn through experience, modify the instructions in their own programs, and even devise new instructions”).

116. *See, e.g.*, David D. Wong, Note, *The Emerging Law of Electronic Agents: E-Commerce and Beyond* . . . , 33 SUFFOLK U. L. REV. 83, 103 (1999).

117. *See* Aronoff v. Lenkin Co., 618 A.2d 669, 687 (D.C. App. 1992); *see also* RESTATEMENT (THIRD) OF AGENCY, §§ 8.07–.09 (describing the duties of the agent).

118. Peppet, *supra* note 15, at 129–40.

consumer that can be provided to the manufacturer and Amazon and potentially sold to third parties.

Agency principles do not prohibit conflicts of interest entirely. Rather, disclosure and the principal's consent are required.¹¹⁹ Since consumers routinely fail to review terms and conditions prior to contracting, it is likely that they will also ignore such disclosures and consent to data collection without understanding the implications. Thus, a disclosure of this type of conflict of interest is unlikely to be sufficient to protect consumers. Where there is a conflict of interest, the agent must act in good faith and deal fairly with the principal, even after obtaining the principal's consent.¹²⁰ It is unclear whether IOT devices will be able to understand or meet their good faith obligations. Consumers who purchase these devices are routinely becoming aware of the data privacy implications of using them. However, upholding data collection practices solely because a manufacturer or retailer has obtained consumer consent and has disclosed the potential conflict of interest may further embolden businesses to engage in dubious data collection practices. Imposing disclosure requirements for such conflicts of interest may serve as a basis for courts to uphold form contract terms and accompanying data collection provisions under the notice and an opportunity to review standard—discussed in Part IV, below—as consumers could be deemed to have notice of the conflict once it is disclosed by the manufacturer.¹²¹

As IOT devices evolve, it is likely that these devices may ultimately collect much more than consumption rate data, thereby posing significant privacy issues for consumers. For instance, although Samsung's smart televisions do not have the capacity to purchase goods on behalf of consumers, the televisions include a voice activation feature that can listen to the chatter of television viewers.¹²² Samsung has warned consumers that any information discussed when the feature is

119. RESTATEMENT (THIRD) OF AGENCY § 8.06. However, the attorney-client context may create conflicts issues.

120. *Id.* A dual-agent must also satisfy these duties. *Id.*

121. *See infra* Part IV.C.

122. *Not in Front of the Telly: Warning Over 'Listening' TV*, BBC NEWS (Feb. 9, 2015), <http://www.bbc.com/news/technology-31296188>. Owners of a Samsung smart television have the option to purchase Domino's pizza using the device; however, the purchasing service is being provided by Domino's as part of its AnyWare suite technology, and consumers, not the device, place the pizza orders. Jonathan Maze, *Domino's Enables Ordering by Smart TV*, NATION'S RESTAURANT NEWS (Mar. 31, 2015), <http://nrn.com/technology/domino-s-enables-ordering-smart-tv>; *see also* Dale Buss, *Domino's Lets Samsung Smart TV Watchers Order From Couch*, FORBES (Mar. 31, 2015, 12:22 PM), <http://www.forbes.com/sites/dalebuss/2015/03/31/dominos-lets-samsung-smart-tv-watchers-order-from-couch> (noting that the Domino's is "constantly talking" with potential tech partners of all varieties).

active may be shared with Samsung and other third parties.¹²³ By 2020, all Samsung devices will be online and interconnected, and it is possible that Samsung devices will be manufactured to work with non-Samsung connected products.¹²⁴ Thus, potentially any data generated about a consumer by a non-Samsung IOT device could be collected by a Samsung device, sent back to Samsung, and sold to third parties.¹²⁵ Samsung's privacy policy provides that the data from the voice activation feature on its latest smart TVs can be shared with third parties.¹²⁶ Apple has also been accused of sharing consumer Siri requests with third parties despite promises to the contrary.¹²⁷

Third, given this conflict of interest and the types of data expected to be generated by IOT devices, it may be difficult to assess whether the IOT device is acting on behalf of the consumer or the manufacturer. Alternatively, the IOT device may be a dual-agent, in which case the fiduciary concerns highlighted above become even more problematic. IOT devices could potentially be characterized as the agents of retailers and manufacturers. Manufacturers will preprogram DRS IOT devices to collect data on their behalf, thereby potentially manifesting consent to an agency relationship. The manufacturer and Amazon may have sufficient control over the device as the manufacturer can regulate the type and quantity of data collected and the frequency with which the data is collected, as well as communicate with the consumer through the device to offer more information about the device or to advertise other products and services. The IOT device's assent to agency could be inferred from the collection, processing, and communication of the data back to the manufacturer and retailer. Manufacturers could permit third-party advertisers to feed product suggestions to consumers while the consumer

123. Chris Matyszczyk, *Samsung's Warning: Our Smart TVs Record Your Living Room Chatter*, CNET (Feb. 8, 2015, 2:10 PM), <http://www.cnet.com/news/samsungs-warning-our-smart-tvs-record-your-living-room-chatter>; *Not in Front of the Telly: Warning Over 'Listening' TV*, *supra* note 122. Similarly, LG has been investigated in the United Kingdom for obtaining information via its smart television sets about what programs viewers have watched, as well as the files and file names viewers stored on USB disks attached to smart televisions. Charles Arthur, *Information Commissioner Investigates LG Snooping Smart TV Data Collection*, GUARDIAN (Nov. 21, 2013, 12:25 PM), <http://www.theguardian.com/technology/2013/nov/21/information-commissioner-investigates-lg-snooping-smart-tv-data-collection>.

124. Brown, *supra* note 32.

125. To date, California is the only state that prohibits any recorded speech collected through the operation of a voice recognition feature by the manufacturer of a connected television from being sold or used for an advertising purpose. CAL. BUS. & PROF. CODE § 22948.20 (West 2016); Brian Schaller, *New State Privacy Regulation for Connected Televisions*, INFO. L. GROUP (Oct. 14, 2015), <http://www.infolawgroup.com/2015/10/articles/privacy-law/new-state-privacy-regulation-for-connected-televitions>.

126. Brown, *supra* note 32.

127. *Id.*

who has purchased the IOT device is under the impression that the IOT device is acting on her behalf or adapting to her specific needs, rather than the third-party advertiser or the manufacturer.¹²⁸ This, of course, has a number of implications, such as the potential liability of retailers and manufacturers for acts of the agent. Most retailers, like Amazon, disclaim all warranties, but manufacturers routinely extend warranties on goods sold to consumers.¹²⁹ If the device acts in a manner that is inconsistent with the manufacturer's instructions or contracts a virus and, perhaps, harms a third party, should the manufacturer as the principal be held liable where the agent is not acting within the scope of its authority? Apparent authority principles may lead to manufacturer liability in such an instance.

The *UCC* provides for manufacturer liability for breach of express and implied warranties.¹³⁰ Article 2 provides three alternatives to address third-party beneficiaries of warranties, which generally depend on whether it can be reasonably expected that the third-party beneficiary would use, consume, or be affected by the product.¹³¹ Scholars who have addressed products liability for accidents caused by autonomous self-driving cars have noted the potential problems with attributing liability where the device fails to follow the manufacturer's instructions.¹³² Consumers have unsuccessfully sued Ford, Toyota, and General Motors for selling automated cars containing software that can be easily breached by a hacker.¹³³ One potential solution that has been offered in the context of addressing self-driving cars is to assume that the injury suffered by the third party is evidence of a defect in the goods, and therefore, manufacturers, designers, and programmers should be liable.¹³⁴ However, it is difficult to assess how such liability should be shared among the various parties.

128. Deign, *supra* note 94 (suggesting that the Siri of tomorrow may act on behalf of advertisers and not its owners).

129. See *Conditions of Use*, *supra* note 19; Marianne Goldstein, *Are Extended Warranties Worth the Money?*, CBS NEWS (Aug. 10, 2007, 3:36 PM), <http://www.cbsnews.com/news/are-extended-warranties-worth-the-money>.

130. Vesselin Petrov, *If Your Warranty Fails, Will You Be Liable for Consequential Losses?*, LEXOLOGY (Oct. 11, 2012), <http://www.lexology.com/library/detail.aspx?g=a314f9ca-cf9d-4cc8-8fd2-58116b0dab12>.

131. U.C.C. § 2-318 (AM. LAW INST. & UNIF. LAW COMM'N 2013) (describing all three alternatives).

132. David C. Vladeck, *Machines Without Principals: Liability Rules and Artificial Intelligence*, 89 WASH. L. REV. 117, 143-44 (2014).

133. *Cahen v. Toyota Motor Corp.*, No. 15-cv-01104-WHO, 2015 WL 7566806, at *1, *10, *12 (N.D. Cal. Nov. 25, 2015) (holding that plaintiffs' claims of harm were speculative, as there had not yet been any property or physical damage).

134. Vladeck, *supra* note 132, at 127-28.

Fourth, IOT devices are not “persons” under the law. Samir Chopra and Laurence White have argued that artificial electronic agents should, in some instances, be given legal personhood, and they contend that “[a]n artificial agent could, and should, be understood as an intentional agent, as acting for reasons that are the causes of its actions, if such an understanding leads to the best interpretation and prediction of its behavior.”¹³⁵ Further, rather than being an agent of a consumer, one could also argue that an IOT device is simply an extension or tool of the individual consumer, in the same way that a mobile phone or computer is used by the consumer to purchase products online. Both the *Restatement (Second) of Agency* and *Restatement (Third) of Agency* frequently use the term “person” to refer to agents and principals, which suggests that agency principles can apply only to parties with legal personhood.¹³⁶ Thus, although existing law recognizes artificial persons, such as corporations and business entities, as principals in the agency context, the fact that IOT devices and other electronic agents do not have legal personhood poses significant problems for the application of traditional agency principles to IOT Contracts. In fact, the *UCITA*, discussed in detail below,¹³⁷ specifically acknowledges that the legal relationship between electronic agents and individuals “is not equivalent to [the] common law [of] agency since the ‘agent’ is not a human.”¹³⁸ However, as will be discussed in detail below, under the *UCITA*, the actions of the electronic agent are binding on the principal.¹³⁹

Fifth, concepts of actual and apparent authority are difficult to apply in the IOT context. Under the *Restatement (Third) of Agency* (“*Agency Restatement*”), an agent “acts with actual authority when, at the time of taking action that has legal consequences for the principal, the agent reasonably believes, in accordance with the principal’s manifestations to the agent, that the principal wishes the agent so to act.”¹⁴⁰ Moreover, an agent’s interpretation of the principal’s instructions will be reasonable “if it reflects any meaning known by the agent to be ascribed by the principal and, in the absence of any meaning known to

135. CHOPRA & WHITE, *supra* note 87, at 12. See generally Lawrence B. Solum, *Legal Personhood for Artificial Intelligences*, 70 N.C. L. REV. 1231 (1992).

136. See, e.g., RESTATEMENT (THIRD) OF AGENCY § 1.01 cmts. a–c. (AM. LAW INST. 2006); RESTATEMENT (SECOND) OF AGENCY § 1 (AM. LAW INST. 1957).

137. See *infra* Parts III.B–IV.B.

138. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 102 cmt. 23 (amended 2002), 7 pt. 2 U.L.A. 227 (2009).

139. See *infra* Part III.B.

140. RESTATEMENT (THIRD) OF AGENCY § 2.01.

the agent, as a reasonable person in the agent's position would interpret the manifestations in light of the context."¹⁴¹

Where the IOT device acts in a manner that is similar to the actions of a reasonable person under the circumstances, the IOT device could be characterized as acting with actual authority. There may be no difference between an IOT device acting as an agent to purchase goods and a human acting on behalf of a buyer in the same capacity. Suppose, the vice president of a small corporation discovers that the corporation will need a large quantity of printer ink for an upcoming project and receives instructions from the chief executive officer to place an order on Amazon's website for 100 printer ink cartridges. In such an instance, the vice president may be said to have acted with actual authority on behalf of the corporation, and a reasonable person in the vice president's position would have ordered the ink under the circumstances. If a consumer has activated DRS on a Brother printer and the device places an order for new printer ink cartridges, the device could be said to have acted as a reasonable person under the circumstances in complying with the instructions of the consumer in the same way that the vice president has complied with the instructions received from the chief executive officer. Under the *Agency Restatement*, "[t]he focal point for determining whether an agent acted with actual authority is the agent's reasonable understanding [of the principal's instructions] at the time the agent takes action."¹⁴² It is questionable whether an IOT device will ultimately have the capacity, even with artificial intelligence, to reasonably believe that, at the time it places an order, the principal desires the action be taken or that it is acting in a manner that complies with the principal's instructions.

Assuming that an IOT device can be said to act with actual authority, the *Agency Restatement* permits principals to revoke the actual authority of the agent by notifying the agent, but a principal may be subject to liability to the agent for breach of contract.¹⁴³ While the ability of IOT devices to act as agents on behalf of consumers is likely to be revocable, this result depends in part on how IOT devices are manufactured and used by parties in contracting. Moreover, it is difficult to conceive of a scenario in which a buyer or seller may be liable to an IOT device for breach of contract due to the revocation of an agency relationship, particularly since electronic agents lack legal personhood.

141. *Id.* § 2.02(2).

142. *Id.* § 2.01 cmt. c.

143. *Id.* The *Agency Restatement* provides that a manifestation by principal or agent is effective to revoke or renounce actual authority "when the other party has notice of it." *Id.* § 3.10.

Under the *Agency Restatement*, “[a]pparent authority is the power held by an agent or other actor to affect a principal’s legal relations with third parties when a third party reasonably believes the actor has authority to act on behalf of the principal and that belief is traceable to the principal’s manifestations.”¹⁴⁴ Consider an IOT device that has the capacity to order replacement consumable goods from any seller, including Amazon. Rather than purchasing the goods from Amazon, the IOT device elects to purchase the goods from a small online retailer with a no-refund policy for final sale items because of the lower price. The small retailer could be said to reasonably believe that the IOT device, which places the online order, has the ability to act on behalf of the consumer. Suppose the IOT device succumbs to a virus and places two other orders with this small retailer. As the number of orders is not large, the small retailer may still be said to reasonably believe that the orders and actions of the agent are valid, and therefore, the consumer may be bound by the contract including the no-refund policy. What relief should be provided to a consumer in such an instance? The *Agency Restatement* provides that where the agent acts with apparent authority, the principal may be bound to contracts with third parties, but the agent may be liable to the principal.¹⁴⁵ How would a consumer be able to obtain a remedy from the IOT device? Would the consumer have to sue the manufacturer?¹⁴⁶ Has the consumer assumed the risk of mistake? There are no definitive answers to these questions in the IOT context. Part V, below, considers assumption of risk by consumers who use IOT devices as contracting electronic agents.¹⁴⁷

B. *The UCITA, the UETA, and E-Sign*

In addition to traditional agency principles, statutes such as the *UCITA*, the *UETA*, and *E-Sign* address the role of electronic agents in online transactions.¹⁴⁸ The *UCITA*, a model statute, concerns transactions involving computer information over the Internet, such as software licensing agreements, electronic books, computerized music, disks, and software that hold only computer information and contracts for access to online databases.¹⁴⁹ The *UCITA* provides a substantive set

144. *Id.* § 2.03.

145. *Id.* § 2.03 cmts. a, c.

146. See Kis, *supra* note 14, at 38 (“[I]t must be noted here that if agency principles are applied to robots, one of the human parties (the principal or the third party or perhaps a party outside the contractual relationship) will have to bear the risk of malfunction by the robot.”).

147. See *infra* Part V.B.

148. See *infra* notes 149-51 and accompanying text.

149. E.g., Deborah Tussey, *UCITA, Copyright, and Capture*, 21 CARDOZO ARTS & ENT. L.J.

of default contract rules—which will be explored in Parts IV and V, below—that apply, unless the parties agree otherwise. The *UCITA* generally validates shrinkwrap and browsewrap software license agreements, even where contract terms are disclosed to consumers after payment.¹⁵⁰ Under the *UCITA*, sellers are authorized to impose additional terms on consumers after payment, including warranty disclaimers and limitations, and arbitration, choice of law, and forum-selection provisions.¹⁵¹

The *UETA*, another model statute, has been widely adopted by states and applies to transactions in which the parties have agreed to conduct the transaction using electronic means.¹⁵² The *UETA* validates contracts using an electronic agent, as well as electronic records and signatures.¹⁵³ *E-Sign* provides that electronic records and

319, 337-39 (2003) (describing *UCITA*'s application to electronic books); see also UNIF. COMPUT. INFO. TRANSACTIONS ACT § 103(b)(3), 7 pt. 2 U.L.A. 236 (2009) (“[T]his Act applies to the entire transaction if the computer information and informational rights, or access to them, is the *primary subject matter*, but otherwise applies only to the part of the transaction involving computer information, informational rights in it, and creation or modification of it.” (emphasis added)). Under the *UCITA*, computer information is defined as “information in electronic form which is obtained from or through the use of a computer or which is in a form capable of being processed by a computer.” UNIF. COMPUT. INFO. TRANSACTIONS ACT § 102(10). The *UCITA* was initially intended to be part of the *UCC* and to replace Article 2 with respect to computer information transactions. Warren E. Agin & Scott N. Kumis, *A Framework for Understanding Electronic Information Transactions*, 15 ALB. L.J. SCI. & TECH. 277, 301-02 (2005). However, the *UCITA* does not contain rules regarding mixed transactions involving both the sale of goods or services and computer information. The *UCITA* also creates implied warranties that can be disclaimed, as well as establishes an implied warranty of compatibility. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 405.

150. WILLIAM H. ROACH, JR. ET AL., *MEDICAL RECORDS AND THE LAW* 443 (4th ed. 2006); David A. Szwak, *Uniform Computer Information Transactions Act [U.C.I.T.A.]: The Consumer's Perspective*, 63 LA. L. REV. 27, 28 n.10, 29 (2002); see *infra* Parts IV–V. To date, only Maryland and Virginia have adopted the *UCITA*. *Legislative Fact Sheet—Computer Information Transactions Act*, UNIFORM L. COMMISSION, <http://www.uniformlaws.org/LegislativeFactSheet.aspx?title=Computer%20Information%20Transactions%20Act> (last visited Apr. 10, 2016).

151. Szwak, *supra* note 150, at 30.

152. UNIF. ELEC. TRANSACTIONS ACT § 5(b), 7A pt. 1 U.L.A. 247 (2002). State adoption of the *UETA* precludes the application of the federal *E-Sign*, as expressly permitted by the latter. Electronic Signatures in Global and National Commerce Act, Pub. L. No. 106-229, § 102, 114 Stat. 467-68 (codified at 15 U.S.C. § 7002 (2012)). To date, forty-seven states have adopted the *UETA*. *Legislative Fact Sheet—Electronic Transactions Act*, UNIFORM L. COMMISSION, <http://www.uniformlaws.org/LegislativeFactSheet.aspx?title=Electronic%20Transactions%20Act> (last visited Apr. 10, 2016). The *UETA* applies to “action[s] or set of actions occurring between two or more persons relating to the conduct of business, commercial, or governmental affairs.” UNIF. ELEC. TRANSACTIONS ACT § 2(16). The *UETA* allows for the application of existing contract formation rules but allows these contract formation rules, such as the Statute of Frauds rules under Article 2 of the *UCC*, to be satisfied via the use of accurate electronic records. *Id.* pref. note.

153. *Legislative Fact Sheet—Electronic Transactions Act*, *supra* note 152 (noting that *UETA* establishes the legal equivalency of electronic records and signatures with written documents and manual signatures); see also *Williamson v. Bank of N.Y. Mellon*, 947 F. Supp. 2d 704, 710 (N.D. Tex. 2013) (holding that an automatic signature block indicates intent to be bound); *Forcelli v.*

contracts cannot be denied legal effect simply because they are in electronic form.¹⁵⁴ The *UETA* and *E-Sign* are both applicable to Article 2 transactions.¹⁵⁵

Transactions for the purchase of goods entered into by IOT devices enabled with Amazon's DRS may be subject to the provisions of the *UETA* or *E-Sign*, as such transactions will likely be entered into by the IOT device on behalf of either buyers or sellers who can be deemed to have agreed to transact using electronic means. The buyer has selected the IOT device to act on her behalf, both parties are transacting business online, and the seller is likely also using an online electronic agent on its website. DRS-enabled IOT devices may qualify as electronic agents under *E-Sign*, the *UETA*, and the *UCITA*, as they are electronic devices or automated means that can be used to initiate an action, such as the purchase of consumable supplies "without review or action by an individual."¹⁵⁶ While the consumer may need to initiate the device's use of DRS, the consumer need not review subsequent purchases made by the IOT device using DRS before each purchase is made.

E-Sign and the *UETA* treat electronic agents as both agents of the principal and tools of communication on behalf of the principal.¹⁵⁷ Under *E-Sign*, contracts generated through the involvement of electronic agents cannot be denied legal effect as long as the electronic agent's activity is attributable "to the person to be bound."¹⁵⁸ The prefatory note of the *UETA* and its text suggest that the party who deployed the electronic agent is automatically liable for all actions taken by the electronic agent, even if a human has not reviewed the transaction.¹⁵⁹

Gelco Corp., 972 N.Y.S.2d 570, 575 (App. Div. 2013) (discussing the electronic signatures iteration of the *UETA* adopted in New York and holding that the printed name at the end of an email constituted a valid signature); UNIF. ELEC. TRANSACTIONS ACT § 2(6) (defining an "electronic agent" as "a computer program or an electronic or other automated means used independently to initiate an action or respond to electronic records or performances in whole or in part, without review or action by an individual").

154. Electronic Signatures in Global and National Commerce Act § 101(a). Subject to exceptions such as adoption, divorce, and other family matters, a transaction under *E-Sign* is "an action or set of actions relating to the conduct of business, consumer, or commercial affairs between two or more persons." *Id.* §§ 103(a)(2), 106(13).

155. *Id.* § 103(a)(3); UNIF. ELEC. TRANSACTIONS ACT § 3(b)(2).

156. Electronic Signatures in Global and National Commerce Act § 106(3); UNIF. COMPUT. INFO. TRANSACTIONS ACT § 102(27) (amended 2002), 7 pt.2 U.L.A. 214 (2009); UNIF. ELEC. TRANSACTIONS ACT §§ 2(6), 14(1).

157. UNIF. ELEC. TRANSACTIONS ACT § 2 cmt. 5 ("An electronic agent, such as a computer program or other automated means employed by a person, is a tool of that person. As a general rule, the employer of a tool is responsible for the results obtained by the use of that tool since the tool has no independent volition of its own."); Kis, *supra* note 14, at 13 (describing the *UCITA*'s treatment of electronic agents as both a hybrid agent and tool of communication).

158. Electronic Signatures in Global and National Commerce Act § 101(h).

159. UNIF. ELEC. TRANSACTIONS ACT pref. note. The text of the *UETA* also provides that

Similarly, under the *UCITA*, an individual that employs an electronic agent to conduct a transaction is bound by the actions of the agent.¹⁶⁰ The *UCITA* notes that this principle is similar to the common law of agency but “does not depend on agency law.”¹⁶¹ Thus, under these statutes, a consumer that elects to use an IOT device to purchase goods and services could be bound to contracts made by these devices. On the other hand, if IOT devices are viewed as the agents of manufacturers, as discussed above, it could also be argued that the manufacturers who have deployed IOT devices should be bound by contracts entered into by these devices.¹⁶²

However, the *UETA* and *E-Sign* do not provide substantive law, and, therefore, questions of authority and contract formation are left to state law, such as Article 2 and common law.¹⁶³ The *UETA* notes that electronic agents may evolve to act autonomously rather than automatically, and then goes on to provide that, in such an instance, courts should apply the “definition of electronic agent accordingly, in order to recognize such new capabilities.”¹⁶⁴ To the extent that IOT devices act autonomously rather than automatically, common law principles of agency, including those of apparent and actual authority, may become even more relevant when determining whether consumers should be bound to contracts entered into by IOT devices acting on their behalf under the *UETA*. Thus, the preceding analysis of traditional agency principles is particularly germane to assessing the effect of electronic IOT agents in facilitating IOT transactions for the sale of

contracts can be formed though the use of electronic agents even though a human neither was aware of the electronic agent’s actions nor reviewed the contract terms. *Id.* § 14(1). However, the *UETA* does, in some instances, permit individuals to avoid the effect of an electronic record generated by an automated transaction where the electronic record resulted from an error made by the individual in dealing with the electronic agent of another person if the electronic agent did not provide an opportunity for the prevention or correction of the error and, at the time the individual learns of the error, the individual satisfies a number of conditions. *Id.* § 10(2).

160. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 107(d). Under the *UCITA*, a party being bound by an electronic agent is “limited to situations where the party selects the agent, and includes cases where the party consciously elects to employ the agent on its own behalf, whether that agent was created by it, licensed from another, or otherwise adopted for this purpose.” *Id.* § 107(d) cmt. 5. Additionally, the electronic agent “must be operating within its intended purpose.” *Id.*

161. *Id.* § 107(d) cmt. 5.

162. See *supra* Part III.A.

163. Electronic Signatures in Global and National Commerce Act § 101(b); see also Patricia Brumfield Fry, *Why Enact UETA? The Role of UETA After E-Sign*, UNIFORM L. COMMISSIONERS, <http://www.uniformlaws.org/Shared/Docs/Why%20Enact%20UETA.aspx> (last visited Apr. 10, 2016) (noting that the *UETA* defers explicitly to state law on issues of agency, contract formation, and authority).

164. UNIF. ELEC. TRANSACTIONS ACT § 2 cmt. 5.

goods and services.¹⁶⁵ Part IV, below, elaborates on contract formation issues using Article 2 and common law contract principles.¹⁶⁶

The potential applicability of the *UCITA* to IOT Contracts depends, in part, on whether such contracts fall within the scope of transactions subject to the *UCITA*, as well as whether the state has adopted the *UCITA*.¹⁶⁷ Currently, Amazon's Dash Button and DRS contemplate the sale and purchase of physical consumer goods, not computer information.¹⁶⁸ IOT DRS devices may eventually be able to order not only consumer goods but also electronic books related to those consumer goods, electronic books advertised by the IOT devices, and other types of computer information, thereby making the *UCITA* potentially relevant to the transaction. To the extent that the *UCITA* is applicable, its substantive rules regarding contract formation would govern transactions entered into by IOT devices for the sale and purchase of computer information.¹⁶⁹

IV. CONTRACT FORMATION

The often-cited goals of contract law include autonomy and efficiency.¹⁷⁰ The *UCC* specifically acknowledges protection of the principle of freedom of contract.¹⁷¹ However, the *UCC* contains limitations on this principle.¹⁷² For instance, parties may not disclaim their good faith, diligence, and reasonableness obligations, but they may determine the standards by which the performance of these obligations are to be measured as long as such standards are not unreasonable.¹⁷³ The *UCC*'s prohibition on the disclaimer of

165. See *supra* Part III.A.

166. See *infra* Part IV.

167. The scope of the *UCITA* is outlined in section 103. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 103.

168. See Rafe Needleman, *Press to Pay: Amazon Dash Button Dispatches Diapers, Razorblades, Gatorade, More*, YAHOO!TECH (Mar. 31, 2015), <https://www.yahoo.com/tech/press-to-pay-amazon-dash-button-dispatches-115073933334.html> (listing the brands onboard for the Dash Button launch and describing the function of the DRS automatic reordering of goods).

169. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 103(a).

170. Nancy S. Kim, *Evolving Business and Social Norms and Interpretation Rules: The Need for a Dynamic Approach to Contract Disputes*, 84 NEB. L. REV. 506, 509-16 (2005).

171. U.C.C. § 1-302 cmt. 1 (AM. LAW INST. & UNIF. LAW COMM'N 2013); see also John E. Murray, Jr., *The Article 2 Prism: The Underlying Philosophy of Article 2 of the Uniform Commercial Code*, 21 WASHBURN L.J. 1, 4 (1981) (contending that the *UCC* emphasizes the private agreement of the parties).

172. U.C.C. § 1-302(b).

173. *Id.*

reasonableness and good faith also evidences its recognition of the importance of fairness in contracting.¹⁷⁴

Contract law, including Article 2, was designed to address freely negotiated agreements reached by rational and informed parties with equal bargaining power.¹⁷⁵ For years, contracts and law and economics scholars have debated the impact of contracts of adhesion.¹⁷⁶ Critics of form contracts have made the case that such contracts generally place more risk on consumers.¹⁷⁷ Conversely, law and economics scholars argue that businesses are in the best position to allocate contractual risks, subscribing to the theory that businesses often treat consumers fairly because extremely one-sided pro-seller contract terms are not “the optimal technique for exploiting market power.”¹⁷⁸ Economic theory suggests that in well-functioning markets, both sellers and buyers prefer the same contract terms because the market would ensure only efficient terms are included in form contracts; and, therefore, courts should enforce form contracts.¹⁷⁹ Scholars also disagree about whether the current state of contract law adequately addresses contracting over the Internet.¹⁸⁰ The IOT has been described as “the next evolution of the Internet.”¹⁸¹ Will Article 2, the *UCITA*, and the common law of contracts adequately address contract formation issues in IOT transactions? This Part considers this question and argues that the IOT will increase the lack of proximity between consumers, contract terms, and the contract formation process, thereby complicating any analysis of consumer assent

174. *Id.*

175. See E. ALLEN FARNSWORTH, *CONTRACTS* 295-96 (3d ed. 1999).

176. Ronald J. Mann & Travis Siebeneicher, *Just One Click: The Reality of Internet Retail Contracting*, 108 COLUM. L. REV. 984, 984-85 (2008).

177. Jeffrey Davis, *Revamping Consumer-Credit Contract Law*, 68 VA. L. REV. 1333, 1333-48 (1982).

178. Lucian A. Bebchuk & Richard A. Posner, *One-Sided Contracts in Competitive Consumer Markets*, 104 MICH. L. REV. 827, 828-31 (2006); Mann & Siebeneicher, *supra* note 176, at 984-85; see Russell Korobkin, *Bounded Rationality, Standard Form Contracts, and Unconscionability*, 70 U. CHI. L. REV. 1203, 1208-12 (2003); Alan Schwartz & Louis L. Wilde, *Imperfect Information in Markets for Contract Terms: The Examples of Warranties and Interests*, 69 VA. L. REV. 1387, 1462 (1983) (“Firms have an incentive to exploit consumers only if consumers routinely understate the adverse consequences of purchase choices, and an analysis of the psychological literature dealing with cognitive error suggests that such systematic consumer optimism respecting the odds seldom exists.”).

179. Korobkin, *supra* note 178, at 1208-09.

180. Nancy S. Kim, *Contract’s Adaptation and the Online Bargain*, 79 U. CIN. L. REV. 1327, 1341-52 (2011) (calling for changes in the courts’ interpretation of contract law in order to address online contracts); Shawn E. Tuma & Christopher R. Ward, *Contracting Over the Internet in Texas*, 52 BAYLOR L. REV. 381, 390 (2000) (stating that electronic contracts are valid as long as there is mutual assent, consent, and agreement).

181. Evans, *supra* note 30, at 2.

to contract terms. This increased lack of proximity further encourages consumers to fail to read and understand contract terms.¹⁸²

A. *Internet Contracts and Basic Contract Formation Rules*

The accompanying rules of Article 2 generally apply only to parties that qualify as buyers, sellers, or merchants under Article 2, or third parties who have rights in the goods.¹⁸³ It is unclear whether transactions entered into through the use of IOT devices will be categorized solely as transactions for the sale of goods or if such transactions will also be viewed as involving the sale of services or software. This Article assumes that Article 2 applies to IOT transactions.

Section 2-103 of the *UCC* defines a “seller” as a person who sells or contracts to sell goods.¹⁸⁴ However, it is unclear whether companies such as Amazon provide only an online marketplace for merchants, or can be classified as actual retailers who offer goods for sale, which could have implications for their liability under Article 2. These companies provide both services, as Amazon sells goods directly to buyers, while also providing an online marketplace for third-party sellers to sell goods to consumers that are sometimes packaged and shipped by Amazon.¹⁸⁵ Amazon likely qualifies as a merchant-seller under the broadest definition in the *UCC*—one who deals in goods of that kind.¹⁸⁶

182. See *infra* Part IV.A–C.

183. The contract formation principles and other accompanying rules of Article 2 apply only to transactions involving the sale of goods. U.C.C. § 2-102 (AM. LAW INST. & UNIF. LAW COMM’N 2013). A future project will evaluate the types of hybrid transactions that may be entered into by IOT devices for both the provision of goods and services.

184. U.C.C. § 2-103(1)(d). A merchant is defined as follows:

[A] person who deals in goods of the kind or otherwise by his occupation holds himself out as having knowledge or skill peculiar to the practices or goods involved in the transaction or to whom such knowledge or skill may be attributed by his employment of an agent or broker or other intermediary who by his occupation holds himself out as having such knowledge or skill.

U.C.C. § 2-104(1).

185. *Milo & Gabby, LLC v. Amazon.com, Inc.*, No. C13-1932, 2015 WL 4394673, at *1-2 (W.D. Wash. July 16, 2015).

186. U.C.C. § 2-104(1). Article 2 has a number of additional rules that apply only to merchants including the implied warranty of merchantability. U.C.C. § 2-314(1). A recent district court case illustrates the problem of categorizing online companies that sell goods to consumers while allowing third-party sellers to sell goods on their websites. See *Milo & Gabby, LLC*, 2015 WL 4394673, at *1-2. The court noted that “the content of the detail pages and advertisements was supplied by thirdparties [sic] via an automated file upload system, and did not originate from Amazon.” *Id.* at *6. In *Milo*, the plaintiff sued Amazon claiming that it was responsible for copyright and trademark infringements and design patent violations because merchants used Amazon’s website to sell counterfeit goods based on its products. *Id.* at *2-3. The court held that Amazon did not qualify as a seller of goods with respect to the trademark and copyright infringements allegedly conducted by third-party sellers on its websites as Amazon did not have

The *UCC* and the *UCITA* define an agreement as a bargain of the parties, in fact, as found in their language or by implication from other circumstances, including course of dealing, usage of trade, and course of performance.¹⁸⁷ The creation of an agreement under the *UCC* requires a bargain between the parties, but the term “bargain” is not defined in the code.¹⁸⁸ Article 2 adopts the common law principle that mutual assent of the parties via offer and acceptance is crucial to contract formation.¹⁸⁹ The term offer is not defined in Article 2. The lack of a definition implies intent to adopt the common law definition of an offer—a “manifestation of willingness to enter into a bargain.”¹⁹⁰ Per section 2-204, a contract can be made for the sale of goods in any manner sufficient to show agreement.¹⁹¹ The *UCITA* contains similar language, but it also expressly notes that a contract may be formed through the use of electronic agents.¹⁹² Acceptance under the *UCC* can be made in any manner and by any medium reasonable under the circumstances.¹⁹³ The *UCITA* also provides for acceptance using electronic means.¹⁹⁴

In today’s contracting environment, businesses frequently use form contracts in e-commerce.¹⁹⁵ Consumers are routinely faced with contract terms via clickwrap, shrinkwrap, and browsewrap agreements, which they either fail to fully understand or simply ignore.¹⁹⁶ A consumer’s purported assent to contract terms differs depending on the type of electronic contract used by the seller. For instance, shrinkwrap agreements provide that buyers accept the terms of the license agreements by unwrapping the software packaging or using the software.¹⁹⁷ In such agreements, the terms are included alongside the

control over the sellers’ actions, but the court noted that as far as the plaintiffs’ direct patent claims, Amazon might have offered the goods for sale. *Id.* at *4, *6, *9, *14. The direct patent claims (a direct patent gives the holder the exclusive right to sell goods) were sent to trial. *Id.* at *13-15.

187. U.C.C. § 1-201(b)(3); UNIF. COMPUT. INFO. TRANSACTIONS ACT § 102(a)(4) (amended 2002), 7 pt. 2 U.L.A. 212 (2009). A contract is defined as the total legal obligation that results from the parties’ agreement, as determined by the *UCC* (or the *UCITA*), and as supplemented by other applicable laws. U.C.C. § 1-201(11); UNIF. COMPUT. INFO. TRANSACTIONS ACT, § 1-102(a)(17).

188. Murray, *supra* note 171, at 4-5.

189. Carolyn M. Edwards, *Contract Formulation Under Article 2 of the Uniform Commercial Code*, 61 MARQ. L. REV. 215, 218 (1977).

190. RESTATEMENT (SECOND) OF CONTRACTS § 24 (AM. LAW INST. 1979).

191. U.C.C. § 2-204(1).

192. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 202(a).

193. U.C.C. § 2-206(1)(a).

194. UNIF. COMPUT. INFO. TRANSACTIONS ACT §§ 203(4), 206.

195. Kim, *supra* note 180, at 1333-37.

196. Clayton P. Gillette, *Pre-Approved Contracts for Internet Commerce*, 42 HOUS. L. REV. 975, 975-76 (2006).

197. See Kim, *supra* note 180, at 1336.

compact disc containing the software.¹⁹⁸ In clickwrap agreements, the buyer is required to click an “I agree” button after the terms of the agreement are shown to the buyer.¹⁹⁹ Clickwrap agreements are routinely used in software downloads and goods transactions.²⁰⁰ Conversely, in browwrap agreements, the contract terms are visible to the buyer only if the buyer clicks on the provided links, and the buyer is generally assumed to have consented to the terms by continuing to use the website.²⁰¹ Sign-in wrap contracts, a new development in internet contracting, do not require consumers to click on a box accepting contract terms but, instead, provide notice of a website’s terms of use when a consumer proceeds through the login process.²⁰²

These types of contracts routinely pose significant contract formation issues under general contract law, as well as under Article 2. The *UCITA* and Article 2’s requirements of a bargained for exchange presuppose the existence of rational and informed parties that have mutually agreed on contract terms.²⁰³ Thus, “[m]utual assent is the bedrock of any agreement to which the law will give force.”²⁰⁴ If a consumer fails to understand the terms of a clickwrap or browwrap agreement, such as a provision that requires arbitration or a class action ban, how does one then assess mutual assent and bargained for exchange? The remainder of this Part evaluates mutual assent in IOT Contracts under the *UCITA*, Article 2, and the *Contracts Restatement*.²⁰⁵

198. *Id.*

199. LINDA J. RUSCH & STEPHEN L. SEPINUCK, *COMMERCIAL LAW: PROBLEMS AND MATERIALS ON SALES AND PAYMENTS* 60 (2012).

200. *Id.* Clickwrap agreements are also referred to as click-through agreements. Christina L. Kunz et al., *Click-Through Agreements: Strategies for Avoiding Disputes on Validity of Assent*, 57 *BUS. LAW.* 401, 401 (2001). Scrollwrap agreements are another type of clickwrap agreement. Juliet M. Moringiello & William L. Reynolds, *From Lord Coke to Internet Privacy: The Past, Present, and Future of the Law of Electronic Contracting*, 72 *MD. L. REV.* 452, 466 (2013) (“Click-to-agree transactions come in many flavors. Sometimes the click is at the end of the terms so that a reader must at least scroll through to reach the ‘I agree’ icon, while [at] other times the click is next to a hyperlink that leads to the terms, either in one click or in several.”).

201. Kim, *supra* note 180, at 1336-37.

202. *Fteja v. Facebook, Inc.*, 841 F. Supp. 2d 829, 838-41 (S.D.N.Y. 2012) (upholding the enforceability of sign-in wrap contracts). To date, the U.S. Court of Appeals has yet to address the validity of these types of contracts.

203. *See supra* notes 187-94 and accompanying text.

204. *Specht v. Netscape Commc’ns Corp.*, 150 F. Supp. 2d 585, 596 (S.D.N.Y. 2001). Courts have also held that assent can be manifested by words or other conduct. *Softman Prods. Co. v. Adobe Sys., Inc.*, 171 F. Supp. 2d 1075, 1087 (C.D. Cal. 2001) (holding that when a buyer merely receives software and does not review contract terms because there was no attempt to install the software—which would reveal the terms upon the beginning of installation—contract formation may not occur).

205. *See infra* Part IV.B-C.

*B. Mutual Assent Under Article 2 of the UCC and
the Contracts Restatement*

In transactions subject to Article 2 or the common law of contracts, courts have addressed the issue of consumer assent to online contract terms by focusing on constructive notice and an opportunity to read.²⁰⁶ This standard is problematic in the consumer context for a number of reasons. Notice and an opportunity to read do not always effectively address the issue of mutual assent. Even in clickwrap agreements, where the terms of the agreement are displayed and the consumer is required to click on the “I agree” button before being permitted to purchase the goods, notice of and an opportunity to read the contract terms does not mean that a buyer has assented to all of the terms.

Consumers routinely fail to read contract terms.²⁰⁷ A 2007 study estimates that less than one percent of users access a company’s conditions of use and that, of the few users who did access the company’s terms and conditions, half of the users’ access lasted for less than thirty seconds and ninety percent of users spent less than two minutes reviewing the terms and conditions.²⁰⁸ In *Ting v. AT&T*, the court noted that only thirty percent of AT&T’s customers read the entire updated form agreement, ten percent did not read the terms, and twenty-five percent would throw away the updated contracts without reading them.²⁰⁹ Technically, one cannot assent to a term that one has not read.²¹⁰ The failure of consumers to read or understand contract terms may

206. Nancy Kim, *Clicking and Cringing*, 86 OR. L. REV. 797, 818 (2007); see *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1448-49, 1452-53 (7th Cir. 1996) (holding that buyer had assented to contract terms by retaining goods after having had an opportunity to review the terms); *Schaer v. Webster Cnty.*, 644 N.W.2d 327, 338-39 (Iowa 2002) (identifying a “duty to investigate”); Additionally, the Electronic Contracting Group of the ABA has stated that a user should only be considered to have “validly and reliably” assented to the terms of an electronic agreement if the following four conditions are met:

- (i) The user is provided with adequate notice of the existence of the proposed terms.
- (ii) The user has a meaningful opportunity to review the terms.
- (iii) The user is provided with adequate notice that taking a specified action manifests assent to the terms.
- (iv) The user takes the action specified in the latter notice.

NANCY S. KIM, WRAP CONTRACTS: FOUNDATIONS AND RAMIFICATIONS 131-32 (2013). Most courts have ignored this test. *Id.*

207. R. Ted Cruz & Jeffrey J. Hinck, *Not My Brother’s Keeper: The Inability of an Informed Minority to Correct for Imperfect Information*, 47 HASTINGS L.J. 635, 636, 640 (1996) (noting that fine print terms are “frequently” not read by parties); Todd D. Rakoff, *Contracts of Adhesion: An Essay in Reconstruction*, 96 HARV. L. REV. 1173, 1179 (1983).

208. Yannis Bakos et al., *Does Anyone Read the Fine Print? Consumer Attention to Standard-Form Contracts*, 43 J. LEGAL STUD. 1, 10, 19-24 (2014).

209. *Ting v. AT&T*, 182 F. Supp. 2d 902, 930 (N.D. Cal. 2002).

210. Kim, *supra* note 206, at 818.

prevent markets from establishing efficient form contracts.²¹¹ Where consumers have no knowledge of contract terms they cannot shop competitively for contract terms, and therefore, sellers are not incentivized to improve contract quality.²¹² A consumer's failure to read contract terms will not excuse performance under the contract.²¹³ However, if a buyer has read but failed to understand the terms of a contract, it is unlikely that mere notice of a contract term (even after clicking the "I agree" button) provides concrete evidence of assent to the contract term.²¹⁴ Further, in shrinkwrap contracts, courts have not required that buyers be provided with an opportunity to read the contract before purchase.²¹⁵

Browsewrap agreements exacerbate the problem of lack of notice and assent. Non-conspicuous terms of use and copyright hyperlinks do not provide buyers with adequate notice of the terms of the agreement. Furthermore, even if a hyperlink is conspicuous, a buyer may not click on the terms of use hyperlink, read the terms of use, or understand the terms of the agreement prior to purchasing the goods. Despite the problems of assent posed by browsewrap agreements, retailers such as Barnes & Noble continue to use them with terms of use hyperlinks buried on the bottom of their webpages.²¹⁶ The effectiveness of a browsewrap agreement often depends on whether the seller's website places a reasonably prudent buyer on notice of the terms of the contract.²¹⁷ Under this test, courts are required to tediously review

211. Korobkin, *supra* note 178, at 1217. Even if buyers were to read and understand contract terms, all market failures would not be eliminated. Cruz & Hinck, *supra* note 207, at 664-76.

212. Ian Ayres & Alan Schwartz, *The No-Reading Problem in Consumer Contract Law*, 66 STAN. L. REV. 545, 562-63 (2014).

213. *Nguyen v. Barnes & Noble Inc.*, 763 F.3d 1171, 1179 (9th Cir. 2014).

214. Sellers often attempt to use consumer-friendly language in their terms of use. Whether consumers truly understand these terms remains to be seen. For instance, Amazon's Conditions of Use agreement stipulates the following: "All items purchased from Amazon are made pursuant to a shipment contract. This means that the risk of loss and title for such items pass to you upon our delivery to the carrier." *Conditions of Use*, *supra* note 19. However, the average consumer may not understand the myriad implications of a shipment contract and/or the risk of loss rules under the UCC. On the other hand, in practice, sellers may adopt policies that are consumer friendly, such as replacing lost packages, despite the stated contract terms.

215. *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1448-49, 1452-53 (7th Cir. 1996).

216. In *Nguyen v. Barnes & Noble*, the court held that the Barnes & Noble terms of use hyperlink, which was located on the bottom left hand corner of the webpage, failed to provide adequate notice to the buyer, and therefore the buyer was not bound by the arbitration clause. 763 F.3d at 1174, 1178-79; *see also* *Sw. Airlines Co. v. BoardFirst, L.L.C.*, No. 3: 06-CV-0891, 2007 WL 4823761, at *4-7 (N.D. Tex. Sept. 12, 2007) (validating contract formation where defendant was notified of the terms of use in a cease-and-desist letter).

217. *See Nguyen*, 763 F.3d at 1177-78; *Specht v. Netscape Commc'ns Corp.*, 306 F.3d 17, 30-32 (2d Cir. 2002) (refusing to enforce terms of use that would have become visible to plaintiffs only if they had scrolled down to the next screen); *Be In, Inc. v. Google Inc.*, No. 12-CV-03373, 2013

the design and content of the seller's website to assess whether a reasonable buyer would be put on notice of the terms of use. This assumes that judges are in the best position to assess the effectiveness of website design.

Many of the recent cases between consumers and merchants involve a flawed contract formation process, and these cases frequently involve disputes about whether the consumer consented to an arbitration clause or a forum-selection clause.²¹⁸ In *Starkey v. G Adventures, Inc.*, the Second Circuit upheld the lower court's dismissal of the plaintiff's negligence claims, as the contractual forum-selection clause required the plaintiff to file suit against the defendant in Canada.²¹⁹ The court held that since the defendant had sent the plaintiff a purchase confirmation email and other emails with hyperlinks to the terms and conditions, which included the forum-selection clause, the defendant reasonably communicated its terms and conditions to the plaintiff and had placed the plaintiff on inquiry notice.²²⁰ The defendant did not use a clickthrough or browsewrap agreement, and the plaintiff alleged that it would be unreasonable to require her to litigate in Canada.²²¹ However, the court reasoned that the plaintiff had manifested assent to the defendant's terms and conditions, even though the plaintiff did not expressly agree to the terms.²²²

Courts have routinely upheld post-contract formation disclosure of terms and conditions in shrinkwrap cases where the consumer is provided with an opportunity to return the product.²²³ Although the *Starkey* decision did not implicate Article 2, the case may extend the

WL 5568706, at *6-9 (N.D. Cal. Oct. 9, 2013) (noting that browsewrap agreements will not be enforced where the link to a website's Terms of Use is buried at the bottom of the page or tucked away in obscure corners of the website where users are unlikely to see it); *In re Zappos.com, Inc., Customer Data Sec. Breach Litig.*, 893 F. Supp. 2d 1058, 1064 (D. Nev. 2012) (noting that the Terms of Use was inconspicuous, buried in the middle to bottom of every Zappos.com webpage among many other links).

218. *Knutson v. Sirius XM Radio Inc.*, 771 F.3d 559, 565-69 (9th Cir. 2014); *Savetsky v. Pre-Paid Legal Servs., Inc.*, No. 14-03514, 2015 WL 604767, at *1, *2-4 (N.D. Cal. Feb. 12, 2015); *Sgouros v. TransUnion Corp.*, No. 14 C 1850, 2015 WL 507584, at *3, *5-7 (N.D. Ill. Feb. 5, 2015); *Nicosia v. Amazon.com, Inc.*, 84 F. Supp. 3d 142, 150 (E.D.N.Y. 2015).

219. 796 F.3d 193, 195-98 (2d Cir. 2015). Plaintiff alleged that defendant's employee assaulted her. *Id.* at 195.

220. *Id.* at 197-98.

221. *Id.* at 195-96, 198.

222. *Id.* at 197-98. In contrast, in *Holdbrook Pediatric Dental, LLC v. Pro Computer Services, LLC*, a non-consumer case, the court declined to uphold an arbitration clause contained in a hyperlinked email. No. 14-6115, 2015 WL 4476017, at *1, *6-7 (D.N.J. July 21, 2015). The court reasoned that the notice provided by the defendant, an email with the hyperlink "Download Terms and Conditions," was insufficient, particularly since the contract was not formed online as the plaintiff had to print the contract out in order to sign it. *Id.* at *1, *3, *6-7.

223. See, e.g., *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1452-53 (7th Cir. 1996).

ability of businesses to disclose contract terms by burying them in hyperlinks in a series of emails after conclusion of the contract formation process. Companies may become emboldened to use similar disclosure methods in Article 2 contracts. This could decrease the willingness and ability of consumers to sue sellers who have sold defective products or services or, in the case of *Starkey*, whose employees have assaulted consumers, as consumers could be found to have consented to contract terms, including forum-selection clauses, disclosed after contract formation, outside of the shrinkwrap and carriage context.²²⁴ Further, by using forum-selection clauses in form contracts, companies impose significant geographical hardship on consumers, severely disadvantaging them.²²⁵ These concerns become even more troublesome when forum-selection clauses are imposed after contract formation and are also problematic in the IOT context where consumers are further removed from the contract formation process.

1. Contract Distancing in IOT Contracts and the Constructive Notice Standard

Applying the constructive notice standard to assess mutual assent is also likely to be problematic in IOT Contracts. Consider an order for a product placed by a consumer using Amazon's DRS or Dash Button. In order to use the Dash Button, a consumer must first activate the device by accessing her Amazon account, select the product she would like to order, and enable the one-click payment option.²²⁶ Once the device has been activated, the consumer may order a product with a single click of the button.²²⁷ How is assent to be determined in such an instance? Under the notice and an opportunity to review standard, the consumer could be deemed to have consented to Amazon's conditions of use by clicking the Dash Button, or by allowing the device to place an order via DRS, as notice of such terms and a program agreement may have been provided upon activating the Dash Button or the DRS device.²²⁸ This result may

224. The Supreme Court has upheld post-contract formation disclosure of contract terms in carriage contracts. See *Carnival Cruise Lines, Inc. v. Shute*, 499 U.S. 585, 587-88, 595-97 (1991). The facts of the *Starkey* case can also be distinguished from *Carnival*. In *Carnival*, the contract terms were printed on the back of the consumer's tickets, but in *Starkey*, the contract terms were buried in a series of hyperlinks contained in an email. *Id.* at 587; *supra* text accompanying notes 219-23.

225. Edward A. Purcell, Jr., *Geography as a Litigation Weapon: Consumers, Forum-Selection Clauses, and the Rehnquist Court*, 40 UCLA L. REV. 423, 442 (1992).

226. See *Set Up Your Dash Button*, *supra* note 76.

227. See Benchoff, *supra* note 18.

228. *Amazon Dash Button and Amazon Dash Replenishment Terms of Use*, *supra* note 19; *Conditions of Use*, *supra* note 19.

hold true even though the consumer may not be given another opportunity to review and agree to the terms and conditions before entering into a new contract by placing successive orders for new goods through the IOT device.

Contract Distancing—the growing distance between consumers, contract terms, and the contract formation process in the IOT setting—complicates the analysis of consumer assent to contract terms. With IOT devices, a consumer no longer has to go into a store, visit a seller's website, or use a mobile application to place an order, nor does she have to review the terms of use or click the "I agree" button before each purchase.²²⁹ The device places the order for the consumer or the consumer places the order by clicking a physical button on a small wireless plastic device, thereby creating distance between consumers, contract terms, and the contract formation process.²³⁰ In such an instance, it is likely that consumers will continue to have no compelling reason to evaluate contract terms that may favor sellers prior to purchasing goods. IOT devices permit consumers to mindlessly enter into contracts for the sale of goods as these devices facilitate a seamless process between the consumer's decision to purchase goods and online ordering. Consider the following consumer review of the Dash Button:

I've got a family of five, and we've got two Dash Buttons—one set for the razors my entire family uses, and one for the toilet paper. On Sunday morning, I went to grab a new razor and saw we only had two more left, so I hit the Dash Button that I have inside the utility closet in the bathroom where we keep the razors. Three days later, I have razors, and cheaper than if I bought them at the two places in my town that sold them. Faster than using an app or going to the store, located in a spot that is convenient so I'm unlikely to forget to order or pick them up, I don't have to drive 10 miles to the store and I save a few dollars.²³¹

In today's contracting environment, where consumers can order products via subscription options and one-click payment options, there is already a lack of proximity between consumers and contract terms. These automatic shopping options create a shopping environment in which quick purchases without contract review are the norm. Courts have failed to adequately evaluate Contract Distancing. Courts have continued to apply the constructive notice and an opportunity to review test, despite the fact that consumers frequently fail to read contract terms

229. See *supra* Part II.

230. See *supra* text accompanying notes 74-83.

231. D'Onfro, *supra* note 80.

that are buried at the bottom of a seller's website or that they simply click the "I agree" button without reviewing or understanding the terms.²³² Contracting through the use of IOT devices will likely increase preexisting levels of Contract Distancing. As discussed in Part II above, even the one-click payment option and subscription services require consumers to access Amazon's website or mobile application to place a new order for goods, but the Dash Button and DRS devices do not.

The consumer described above is not required to review Amazon's terms and conditions, or express her consent to such terms by clicking an "I agree" button before placing a new order for a razor through the use of her Dash Button. Amazon's terms and conditions are not displayed on the Dash Button. Similarly, if the IOT device purchased the razors automatically by using DRS, the consumer may not be provided with contract terms prior to the device placing a sixth or tenth order for razors, but courts may infer consumer consent to Amazon's terms because notice of such terms may have been provided when the DRS device was first activated by the consumer. The IOT has the capacity to make devices and people, including consumers and sellers, more interconnected. However, where devices have the capacity to reorder goods and such devices do not display contract terms or where consumers order goods by clicking a physical button on a device that also does not display contract terms, consumers are further removed from the contract formation process and are less likely to be provided with an opportunity to review terms prior to placing successive orders.

One could contend that an IOT transaction is similar to a consumer who purchases a product in a store and who is aware that, by purchasing the goods, there is an implied contract for sale even though the consumer is not provided with the contract terms prior to purchase. However, the purchase and sale of goods online is quite different from in-store shopping. When consumers purchase goods in stores, they have the ability to view the physical product, review product descriptions and terms contained in the product packaging, and consult with store employees about the product or contract terms. This is not the case in the IOT context where the consumer simply clicks a Dash Button to place an order, or where a device places an order on behalf of the consumer. Further, a consumer who purchases an item in-store may understand that there is a contract for the sale of goods once she signs a physical piece of paper. However, online shoppers may not be aware that they have entered into a contract that restricts their access to judicial process.²³³

232. See Kim, *supra* note 180, at 1344.

233. Kim, *supra* note 180, at 1343-44.

Where a consumer is not provided with contract terms prior to each successive order placed using an IOT device, or fails to understand the impact of such terms when they are provided, the consumer should not automatically be deemed to have manifested assent or unequivocally accepted a company's terms and conditions.

On the other hand, there is more information now available to consumers than before via mobile phones, tablets, and the Internet. Consumers may be aware of some contract terms without reading a seller's terms of use. For instance, when purchasing a car, most consumers know that the warranty will expire at some point in the future and is most likely capped by mileage.²³⁴ While consumers may not read or understand the terms in form contracts, consumers may obtain information about a seller's contract terms by accessing consumer reports, blogs, and reviews.²³⁵ However, the accuracy of consumer reviews is questionable. Consumer review websites, such as Yelp and Angie's List, have been repeatedly accused of permitting companies to pay to hide negative consumer reviews.²³⁶ Federal statutes may immunize consumer review companies from liability for user-generated content.²³⁷ Angie's List has recently been sued for fraud, breach of contract, and unfair trade practices because of its alleged pay-to-play review manipulation.²³⁸

Additionally, a study conducted of end user license agreements ("EULAs"), which used a list of the twenty-five most trafficked websites likely to have information on EULAs, found that buyers accessed these websites in only 3 out of 148,522 sessions.²³⁹ This suggests that buyers are not obtaining information about a seller's contract terms by accessing information on the Internet. Where consumers do not read or understand form contract terms, and do not consider such terms in their

234. *See id.* at 1343 ("Consumers signing their name on a piece of paper register the significance of entering into a contract, even if they have no power to shape the terms of that contract.").

235. Peppet, *supra* note 14, at 703-06.

236. Eric Goldman, *Angie's List Must Defend Fraud Charges Over Pay-to-Play Review Manipulation*, FORBES (Aug. 12, 2015, 12:34 PM), <http://www.forbes.com/sites/ericgoldman/2015/08/12/angies-list-must-defend-fraud-charges-over-pay-to-play-review-manipulation>.

237. 47 U.S.C. § 230(c)(2) (2012). The statute protects companies' decisions about the filtering of user-generated data. *See id.* § 230.

238. *Moore v. Angie's List, Inc.*, 118 F. Supp. 3d 802, 808, 812-15 (E.D. Pa. 2015) (describing the plight of a plaintiff who alleged that she could not view negative reviews of a contractor she had hired until after she posted a negative review of that contractor herself). In *Moore*, the plaintiff alleged that the contractor paid to have his reviews manipulated. *Id.* at 802. The court held that the plaintiff had standing to pursue her claims and denied the defendant's motion to dismiss under rule 12(b)(1) of the *Federal Rules of Civil Procedure*. *Id.* at 812-18.

239. Florencia Marotta-Wurgler, *Does Contract Disclosure Matter?*, 168 J. INSTITUTIONAL & THEORETICAL ECON. 94, 110 (2012).

buying decisions, it is likely that sellers will elect to decrease their expenses and risk by using one-sided form contract terms.²⁴⁰ Law and economics scholars contend that an informed minority of consumers who read contract terms may provide sufficient incentives to prevent sellers from using one-sided contract terms.²⁴¹ Recent studies on consumer activities appear to discredit the informed minority hypothesis in the online context.²⁴² Further, if this hypothesis were true, then unilateral amendment provisions and jury trial and class action waivers should not be the norm in form consumer contracts.

2. Unilateral Amendment Provisions & Contract Distancing

Consumer form contracts routinely provide companies with the ability to unilaterally amend their service policies and conditions of use at any time.²⁴³ Article 2 provides that contract modifications can be enforceable without consideration; however, all contract modifications are subject to the duty of good faith.²⁴⁴ Article 2 has been criticized for failing to provide additional guidance on the requirements for a valid contract modification, and, in applying the good faith duty to contract modifications, courts have failed to develop an effective standard.²⁴⁵ The

240. A 2012 study that followed the clickstream of 47,399 households to 81 Internet software retailers suggests that mandating disclosures by sellers only increased consumer readership of form contracts by 0.1%. *Id.* at 95-96.

241. See Bakos et al., *supra* note 208, at 6-7; see also, e.g., Robert A. Hillman & Jeffrey J. Rachlinski, *Standard Form Contracting in the Electronic Age*, 77 N.Y.U. L. REV. 429, 441-45 (2002) (describing arguments for and against the informed minority hypothesis).

242. Bakos et al., *supra* note 208, at 32. Only between 0.05% and 0.22% of retail software shoppers access online agreements, which casts doubt on the validity of the informed minority argument, as the percentage of consumers who access and read online contracts is not large enough to constitute an informed minority. *Id.*; see James Gibson, *Vertical Boilerplate*, 70 WASH. & LEE L. REV. 161, 169-80 (2013) (questioning the assumption of the informed minority hypothesis that presupposes the notion that consumers evaluate standard form contract terms).

243. See *supra* note 19 and accompanying text. At least one court has refused to enforce a contract that allowed the seller to unilaterally amend the conditions of use. *Harris v. Blockbuster, Inc.*, 622 F. Supp. 2d 396, 398-400 (N.D. Tex. 2009). In *Discount Drug Mart, Inc. v. Devos Ltd.*, the court noted that the unilateral amendment contract provision could result in unfair hardship and surprise. No. 1:12 CV 00386, 2013 WL 5820044, at *2 (N.D. Ohio Oct. 29, 2013). However, in *Nicosia v. Amazon.com, Inc.*, the court upheld Amazon's terms of use and the accompanying arbitration clause despite the unilateral amendment clause. 84 F. Supp. 3d 142, 152-54 (E.D.N.Y. 2015).

244. U.C.C. § 2-209 & cmt. 2. (AM. LAW INST. & UNIF. LAW COMM'N 2013). Where a merchant is involved in a transaction, good faith means honesty in fact and the observance of reasonable commercial standards of fair dealing in the trade. *Id.* § 2-103(1)(b).

245. See Robert A. Hillman, *Contract Modification Under the Restatement (Second) of Contracts*, 67 CORNELL L. REV. 680, 686 (1982) (contending that Article 2's approach to contract modification has been unsuccessful because it fails to provide guidance on which contract modifications should be enforced); Robert A. Hillman, *Policing Contract Modifications Under the UCC: Good Faith and the Doctrine of Economic Duress*, 64 IOWA L. REV. 849, 856-74 (1979);

UCITA's position on this issue is much clearer, as it expressly authorizes the formation of a contract despite the fact that one party has reserved the right to unilaterally amend the contract.²⁴⁶

Consider an amendment to Amazon's Dash Button terms of use that removes the mutual waiver of the right to a jury trial so that only consumers make such a waiver, an amendment that changes the applicable law from Washington to New York, or an amendment that imposes a forum selection clause: Where a consumer uses an already activated Dash Button to purchase a replacement product without first checking the Amazon website to review the amended conditions of use, a consumer has not unequivocally assented to the new terms simply by clicking the Dash Button. Further, in such an instance, the consumer should not be deemed to have had notice and an opportunity to review the amended terms.

The high level of Contract Distancing in the IOT context all but ensures that consumers will have less of an opportunity to review the amended terms before clicking the Dash Button. Recall that Amazon's terms of use are not displayed on the Dash Button or on DRS devices, as these IOT products lack the traditional screen found on laptops, tablets and mobile phones. To view any amendments to the terms of use, the consumer has to log on to Amazon's website and attempt to decipher which provisions were amended, as the terms of use currently only indicate the date the terms were updated, but not the specific provision that was amended. If sellers retain the ability to unilaterally amend the terms of use, consumers are less likely to view or have the opportunity to read amended terms of use where IOT devices routinely purchase goods on behalf of consumers.

One may argue that by previously agreeing to the original conditions of use, which authorized unilateral amendments, the consumer has agreed to the newly amended conditions of use. This argument places the burden of notice on the consumer, which is particularly harsh given the lack of a traditional bargained for exchange in contracts of adhesion. It requires consumers to continually review the seller's website to ensure that the conditions of use have not been

Richard E. Speidel, *Contract Formation and Modification Under Revised Article 2*, 35 WM. & MARY L. REV. 1305, 1308-13 (1994).

246. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 202(b) (amended 2002), 7 pt. 2 U.L.A. 297 (2009).

amended.²⁴⁷ Further, how can there be a real and voluntary meeting of the minds where one party is unaware of the contract terms?

Suppose that the consumer in the hypothetical above simply continues to use the product purchased on Amazon, but Amazon then modifies its terms of use and the consumer has a potential claim regarding the product purchased prior to the amendment. In such an instance, the consumer may believe that the original contract terms are still in place. Consumers may not fully understand the impact of a unilateral amendment clause and the almost limitless power it gives to companies to affect the rights of consumers under the contract.

Retailers such as Sears explicitly obligate consumers to periodically review their online conditions of use for modifications. Continued use of the company's website after an amendment constitutes acceptance of the revised terms.²⁴⁸ Rational buyers are unlikely to willingly incur the costs of searching for and understanding a seller's terms of use.²⁴⁹ Companies could simply notify buyers of any changes to the terms of use. However, not all form contracts require companies to notify consumers of amendments to their terms of use prior to implementing such changes. Barnes & Noble, Costco, and Home Depot's terms of use provide that these companies may unilaterally amend the terms of use without providing notice to consumers.²⁵⁰ Even if retailers provided such notifications to consumers, it would not address the problem of whether consumers truly understand the terms provided in the seller's conditions of use or whether consumers actually view the email notices, click on hyperlinks contained in email notices, or realize that the email notice provided relates to services or goods that they have already purchased.

3. Battle of the Forms & Contract Distancing

Suppose an IOT device purchases a consumable supply from an online seller and the seller's website does not include all of the applicable terms and conditions. Rather, the complete set of terms and

247. At least one court has held that sellers should bear the burden of explaining contract terms to consumers rather than buyers being expected to seek out hidden terms. *Berkson v. Gogo LLC*, 97 F. Supp. 3d 359, 402-03 (E.D.N.Y. 2015).

248. *Terms of Use*, SEARS, <http://www.sears.com/cstermsofservice/nb-100000000022530> (last visited Apr. 10, 2016).

249. Melvin Aron Eisenberg, *The Limits of Cognition and the Limits of Contract*, 47 STAN. L. REV. 211, 243 (1995).

250. *Terms and Conditions of Use*, BARNES & NOBLE, <http://www.barnesandnoble.com/h/help/about/terms-of-use> (last visited Apr. 10, 2016); *Terms and Conditions of Use*, COSTCO WHOLESALE, <http://www.costco.com/terms-and-conditions-of-use.html#Modification-of-Site-Terms> (last visited Apr. 10, 2016); *Terms of Use*, HOME DEPOT, http://www.homedepot.com/c/Terms_of_Use (last visited Apr. 10, 2016).

conditions, including a requirement of arbitration, is sent to the consumer's email address along with the order confirmation. In order to accept an offer, the offeree must be aware of the terms prior to contracting.²⁵¹ Article 2 provides that, where one of the parties to the contract is a non-merchant, additional terms proposed in an acceptance are to be viewed as mere proposals.²⁵² As such, where a merchant submits additional contract terms, such as an arbitration clause, to consumers via a confirmation email, the consumer should have the ability to accept or reject those additional terms under Article 2. If the consumer does not expressly accept the additional terms, these terms should not form part of the contract. The consumer's failure to reject the terms should not be viewed as conduct that evidences acceptance of the additional terms.

Consumers may review an order confirmation email only to confirm that it correctly summarizes the price, quantity, and type of product purchased and may not subsequently click on hyperlinks to review additional terms and conditions. Despite Article 2's "battle of the forms" rules, "the conventional chronology of contract-making has become unsettled over recent years by courts' increased acceptance of 'terms-later' contracting."²⁵³ Courts may view the ordinary confirmation email as placing a reasonable consumer on inquiry notice of additional contract terms and the consumer's failure to expressly reject the additional terms as an acceptance of the additional terms. Further, courts have refused to apply the battle of the forms rules to consumer contracts by reasoning that these rules are not applicable where only one form is involved in the transaction, which is often the case in consumer transactions.²⁵⁴

251. 1 SAMUEL WILLISTON & RICHARD A. LORD, A TREATISE ON THE LAW OF CONTRACTS § 4:16 (4th ed. 2007) ("As a general principle, an offeree cannot actually assent to an offer unless the offeree knows of its existence.").

252. U.C.C. § 2-207(2) (AM. LAW INST. & UNIF. LAW COMM'N 2013).

253. *Schnabel v. Trilegiant Corp.*, 697 F.3d 110, 121 (2d Cir. 2012). In *Schnabel*, the plaintiffs purchased a ticket using Priceline.com and were offered defendant's service at checkout, but plaintiffs claimed they were unaware they were dealing with the defendant, a third party to the original transaction, despite being provided with a hyperlink. *Id.* at 114-15. The court refused to enforce an arbitration clause that was emailed to plaintiffs after contract formation, explaining that no reasonable person could expect, under those circumstances, that contract terms would be delivered via email, and held that plaintiffs did not assent to the terms simply by failing to cancel the service provided by the defendant. *Id.* at 127-29.

254. *See, e.g., ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1452 (7th Cir. 1996) (stating that, because there is only one form involved in a consumer transaction, section 2-207 of the *UCC* is irrelevant). *But see Kloczek v. Gateway, Inc.*, 104 F. Supp. 2d 1332, 1339 (D. Kan. 2000) (finding that nothing in the language of section 2-207 "precludes application in a case which involves only one form").

C. *Mutual Assent Under the UCITA*

To the extent an IOT device is engaged in a transaction that qualifies as a computer information transaction under the *UCITA*, the provisions of the *UCITA* could be applicable to assess notice and assent to contract terms. Although only two states have adopted the *UCITA*, some courts have used its notice and assent provisions to assess a buyer's consent to a seller's terms and conditions, even where the *UCITA* does not apply to a transaction.²⁵⁵

Consider a consumer located in Virginia or Maryland, the only two states that have enacted the *UCITA*, who has purchased a web-enabled bottle of spirits from a grocery store—this bottle has the ability to order additional products, such as electronic books on spirits, on behalf of the consumer, as well as order home delivery services for additional bottles of spirits. This scenario is no longer the domain of science fiction. As part of its IOT program, Pernod Ricard, a producer of premium spirits and wine, including Absolut Vodka, has created a “library of book-shaped containers that hold a sealed bottle of spirits, which are set on a platform connected to a computer.”²⁵⁶ The product can supply home delivery services, cocktail recipes, and other tailored offers to consumers.

Suppose this library of spirits or the bottle of spirits purchased by the consumer places an online order for an electronic book on the history of vodka by contracting with a seller's online electronic agent, and the seller is located in one of the two *UCITA* states.²⁵⁷ The *UCITA* expressly provides that a contract can be formed via the interaction of two electronic agents and acceptance can occur where the electronic agent engages in behavior that, under the circumstances, indicates acceptance

255. *Specht v. Netscape Commc'ns Corp.*, 306 F.3d 17, 34 (2d Cir. 2002) (“We hasten to point out that UCITA, which has been enacted into law only in Maryland and Virginia, does not govern the parties’ transactions in the present case but we nevertheless find that UCITA’s provisions offer insight into the evolving online ‘circumstances’ that defendants argue placed plaintiffs on inquiry notice of the existence of the SmartDownload license terms.”); *see also Rhone-Poulenc Agro, S.A. v. DeKalb Genetics Corp.*, 284 F.3d 1323, 1330-31 (Fed. Cir. 2002) (noting that the *UCITA* does not apply to the transaction at issue, but the *UCITA* can provide guidance on the *UCC*’s view of common law); *see also infra* text accompanying notes 260-61.

256. Gemma Charles, *Pernod Ricard Reveals Connected Bottle Kit to ‘Reinvent’ Home Cocktail-Making*, *MARKETING MAG.* (Jan. 29, 2014), <http://www.marketingmagazine.co.uk/article/1229084/pernod-ricard-reveals-connected-bottle-kit-reinvent-home-cocktail-making>; Shona Ghosh, *How Absolut Vodka Will Use the Internet of Things to Sell More Than ‘Static Pieces of Glass’*, *MARKETING MAG.* (Aug. 6, 2015), <http://www.marketingmagazine.co.uk/article/1359043/absolut-vodka-will-use-internet-things-sell-static-pieces-glass>.

257. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 109(b)(1), (d) (stating that the location of the licensor’s principal place of business can determine applicability of the *UCITA*).

has occurred.²⁵⁸ Thus, by placing the order for the electronic book, the IOT library of spirits or bottle has arguably engaged in behavior that indicates it has accepted, on behalf of the consumer, the seller's offer for the sale of the electronic book. Now, suppose that the seller's terms and conditions, which are displayed on the seller's website using either a clickwrap or browsewrap agreement, includes a forum-selection clause, a waiver of the right to jury trial, and a class action waiver. Will the electronic agent's placement of the order for the electronic book constitute assent on behalf of the consumer to these online terms and conditions under the *UCITA*?

The *UCITA* provides that an electronic agent manifests assent to a record or term "if, after having an opportunity to review it, the electronic agent: (1) authenticates the record or term; or (2) engages in operations that in the circumstances indicate acceptance of the record or term."²⁵⁹ Electronic agents will have an opportunity to review contract terms if the contract terms are provided in a manner that permits a reasonably configured electronic agent to respond to the terms.²⁶⁰ Where the seller's terms and conditions are displayed using a clickwrap or browsewrap agreement, one could contend that the IOT device was provided with an opportunity to review and respond to the terms prior to placing the order. However, the extent to which the library or bottle of spirits acting on behalf of the consumer has assented to the seller's contract terms under the *UCITA* depends, in part, on whether the device is sophisticated enough to understand the terms and conditions of sale provided by the seller.²⁶¹

Although IOT devices may not have the intelligence necessary to understand a retailer's terms and conditions, if the device has the

258. *Id.* § 206(a). With respect to contract formation between individuals and electronic agents, the *UCITA* provides that contract formation can occur in the following circumstance:

[T]he individual takes an action or makes a statement that the individual can refuse to take or say and that the individual has reason to know will: (1) cause the electronic agent to perform . . . ; or (2) indicate acceptance, regardless of other expressions or actions by the individual to which the individual has reason to know the electronic agent cannot react.

Id. § 206(b).

259. *Id.* § 112(b). Under the *UCITA*, individuals manifest assent to contract terms in the following manner:

[I]f the person, acting with knowledge of, or after having an opportunity to review the record or term or copy of it: (1) authenticates the record or term with intent to adopt or accept it; or (2) intentionally engages in conduct or makes statements with reason to know that the other party or its electronic agent may infer from the conduct or statement that the person assents to the record or term.

Id. § 112(a).

260. *Id.* §§ 112 cmt. 3, 113(b).

261. *Id.* § 206 cmt. 2.

capacity to communicate these terms to the consumer before the order is placed, the consumer could be deemed to have had notice and an opportunity to review. If the device can be said to understand the terms, then the buyer will be bound to the terms of the contract for sale of the electronic book, even though the consumer may not have actually reviewed or seen the terms of sale prior to purchase.²⁶² How can a party be deemed to have assented to terms that they have never seen? This result is unfair for consumers where the electronic agent contracts a virus, malfunctions, or has a design flaw.²⁶³

Such a result is also problematic under the autonomy theory of contract law. Under this theory, contracts are enforceable because they are an expression of the parties' free will.²⁶⁴ If the device is acting under the instructions of a malicious third party and not the consumer, the resulting contract does not adequately express the will of the parties, and thus, the contract should not be enforced.²⁶⁵ Support for this argument can also be found in the *Contracts Restatement*, which provides that "[t]he conduct of a party is not effective as a manifestation of his assent unless he intends to engage in the conduct and knows or has reason to know that the other party may infer from his conduct that he assents."²⁶⁶ Where the electronic agent does not act in accordance with the instructions of the consumer due to no fault of the consumer, the intent of the consumer to contract in such a circumstance is questionable.²⁶⁷

The *UCITA* has been heavily criticized for failing to adequately protect consumers.²⁶⁸ For instance, the *UCITA* allows licensors to prove consumer assent to changes in contract terms by showing that the user continued to use the software.²⁶⁹ The preceding application of the *UCITA*'s provisions to IOT Contracts indicates that consumers who use IOT devices to contract for the sale and purchase of computer

262. *Id.* § 107(d) (stating that a person is bound by the actions of an electronic agent).

263. Chopra & White, *supra* note 95, at 371.

264. MARGARET JANE RADIN, *BOILERPLATE: THE FINE PRINT, VANISHING RIGHTS, AND THE RULE OF LAW* 58-59 (2013).

265. *See id.*

266. RESTATEMENT (SECOND) OF CONTRACTS § 19(2) (AM. LAW INST. 1979).

267. *See id.* § 2(1) ("A promise is a manifestation of intention to act or refrain from acting in a specified way, so made as to justify a promisee in understanding that a commitment has been made."). A party should be responsible for the creation of the manifestation, even if by mere negligence. *See id.* § 19 cmt. c.

268. Szwak, *supra* note 150, at 30-37. Iowa, North Carolina, and West Virginia have adopted statutes to protect their citizens from the *UCITA* laws, which have been adopted in Maryland and Virginia. *See, e.g.,* IOWA CODE § 554D.104 (2015); N.C. GEN. STAT. § 66-313 (2015); W. VA. CODE § 39A-1-1 (2015).

269. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 112 cmt. 3 (amended 2002), 7 pt. 2 U.L.A. 273 (2009).

information could be deemed to have assented to a seller's online terms and conditions. Automatic enforcement of seller terms and conditions does not incentivize sellers to include reasonable, efficient, or fair contract terms. Instead, it potentially authorizes them to include anti-consumer provisions, such as non-disparagement clauses, in their online terms and conditions.

V. CHALLENGES TO CONTRACT ENFORCEMENT

This Part assesses the potential use of the good faith doctrine, section 211(3) of the *Contracts Restatement*, and the standard contract defenses of unconscionability, mistake, and misrepresentation in IOT Contracts. It suggests that the IOT will worsen preexisting information asymmetry in consumer contracts to the benefit of companies and that a merchant's subjective knowledge about the consumer obtained from data provided by IOT devices should be considered when evaluating issues related to contract formation and enforcement.²⁷⁰

A. Unconscionability

Article 2 and the *UCITA* permit courts to refuse to enforce a contract or clause that is unconscionable.²⁷¹ Some scholars have

270. See *infra* Part V.A; *infra* notes 355-71 and accompanying text.

271. See U.C.C. § 2-302 (AM. LAW INST. & UNIF. LAW COMM'N 2013); UNIF. COMPUT. INFO. TRANSACTIONS ACT § 111 (amended 2002), 7 pt. 2 U.L.A. 270 (2009). Unconscionability is a legal question for the court to address, not the jury, and generally, the party raising the issue of unconscionability has the burden of proof. However, the language of U.C.C. § 2-302(1) suggests that the court may raise the issue sua sponte. See 1 JAMES J. WHITE ET AL., UNIFORM COMMERCIAL CODE 413-15 (6th ed. 2012). Unconscionability is measured at the time of contracting, not performance. *Id.* While this Article focuses solely on U.C.C. § 2-302, states have adopted legislation to police unconscionable practices in the sale of goods and in other areas. For instance, numerous states have adopted unfair and deceptive practice statutes that apply to a range of transactions including the sale of goods, lease transactions, and real estate transactions. See Carolyn L. Carter, *Consumer Protection in the States: A 50-State Report on Unfair and Deceptive Acts and Practices Statutes*, NAT'L CONSUMER L. CTR. 13-15 (2009), https://www.nclc.org/images/pdf/udap/report_50_states.pdf. While all states have one or more consumer protection statutes, these laws generally prohibit only fraudulent, unfair, and deceptive practices, and are modeled after the Federal Trade Commission Act. See CAROLYN L. CARTER & JONATHAN SHELDON, NAT'L CONSUMER L. CTR., UNFAIR AND DECEPTIVE ACTS AND PRACTICES 967-89 (6th ed. 2004) (surveying each states' consumer protection statute); MICHAEL M. GREENFIELD, CONSUMER LAW: A GUIDE FOR THOSE WHO REPRESENT SELLERS, LENDERS, AND CONSUMERS 158-62 (1995) (noting that, unlike the Federal Trade Commission Act, most state statutes add a private cause of action). However, these state statutes do not regulate all aspects of consumer form contracts and other statutes, such as the *UCITA*, may trump the consumer protection provisions of such statutes. Jean Braucher, *The Failed Promise of the UCITA Mass-Market Concept and Its Lessons for Policing of Standard Form Contracts*, 7 J. SMALL & EMERGING BUS. L. 393, 405 n.60 (2003); Irma S. Russell, *Got Wheels? Article 2A Standardized Rental Car Terms, Rational Inaction, and Unilateral Private Ordering*, 40 LOY. L.A. L. REV. 137, 159-60 (2006). For instance, the *UCITA* allows for delayed disclosure of

suggested that the defense of unconscionability adequately protects consumer rights in form contracts.²⁷² However, courts frequently refrain from finding contract terms unconscionable in an effort to protect freedom of contract.²⁷³ Empirical studies of unconscionability case law have found that the number of decisions finding unconscionability in Article 2 cases is quite small.²⁷⁴ As Margaret Jane Radin suggests, businesses frequently use class action waivers, arbitration clauses, liability limitations, and forum-selection clauses to insulate themselves from liability, thereby restricting the ability of consumers to obtain legal redress.²⁷⁵ Supreme Court Justice Elena Kagan highlighted similar concerns in her dissenting opinion in *American Express Co. v. Italian Colors Restaurant*, where she noted that a large business such as American Express can use its “monopol[istic] power to insist on a contract effectively depriving its victims of all legal recourse.”²⁷⁶

Courts find unconscionability only where the contract term is extremely oppressive or shocks the conscience, but “[n]ot surprisingly, when the context is not so stark the judicial approach is less predictable.”²⁷⁷ The willingness of courts to find unconscionability only in the gravest of circumstances is alarming considering that almost all consumer contracts are form contracts that routinely contain terms that significantly disadvantage consumers.²⁷⁸ These contracts frequently grant unilateral amendment rights to sellers, place the risk of loss on

contract terms in consumer contracts, which may “water down state protection laws written in general terms to prohibit ‘unfair and deceptive practices.’” Braucher, *supra*, at 405.

272. See Steven W. Feldman, *Mutual Assent, Normative Degradation, and Mass Market Standard Form Contracts—A Two-Part Critique of Boilerplate: The Fine Print, Vanishing Rights and the Rule of Law (Part I)*, 62 CLEV. ST. L. REV. 373, 428-29 (2014).

273. RUSCH & SEPINUCK, *supra* note 199, at 79.

274. Larry A. DiMatteo & Bruce Louis Rich, *A Consent Theory of Unconscionability: An Empirical Study of Law in Action*, 33 FLA. ST. U. L. REV. 1067, 1097 (2006).

275. See RADIN, *supra* note 264, at 33-34, 41-42.

276. 133 S. Ct. 2304, 2313 (2013) (Kagan, J., dissenting). The majority of the Court in *American Express* upheld a class action waiver. See *id.* at 2310-13 (majority opinion).

277. Hillman & Rachlinski, *supra* note 241, at 457-58; see also Wayne R. Barnes, *Toward a Fairer Model of Consumer Assent to Standard Form Contracts: In Defense of Restatement Subsection 211(3)*, 82 WASH. L. REV. 227, 230-31 n.18 (2007) (noting that courts find unconscionability in only the gravest of circumstances).

278. Hillman & Rachlinski, *supra* note 241, at 431; Rakoff, *supra* note 207, at 1188-89 (noting that the majority of contracts are contracts of adhesion); W. David Slawson, *Standard Form Contracts and Democratic Control of Lawmaking Power*, 84 HARV. L. REV. 529, 529 (1971). The terms of use for Amazon and Barnes & Noble label all purchases as shipment contracts with the buyer assuming the risk of loss once the goods are delivered to the carrier. See *Conditions of Use*, *supra* note 19; *Terms and Conditions of Use*, *supra* note 250. Sears’s terms of use also allow for unilateral amendment, which becomes effective upon posting. See *Terms of Use*, SEARS (Sept. 25, 2013), <http://www.sears.com/cstermsofsevice/nb-100000000022530>.

consumers, and require arbitration of disputes, class action waivers, and jury trial waivers.

The doctrine of unconscionability is intended to prevent oppression and unfair surprise on a party and to correct bargaining misbehavior.²⁷⁹ Given this underlying principle, courts have concluded that there are two prongs to unconscionability: one substantive and one procedural.²⁸⁰ Courts often require the existence of some aspect of both procedural and substantive unconscionability; however, where one aspect predominates over the other, some courts will still find that a term or contract is unconscionable despite the presence of only one aspect.²⁸¹

1. Substantive Unconscionability

Substantive unconscionability evaluates whether contract terms are “illegal, contrary to public policy or grossly unfair.”²⁸² Many of the cases addressing substantive unconscionability have involved unfair prices, warranties, and limitations of remedies.²⁸³ Contract terms can be found to be substantively unconscionable where such terms unreasonably favor the party with stronger bargaining power.²⁸⁴

In *Williams v. Walker-Thomas Furniture Co.*, one of the first cases to acknowledge the ability of courts to render contract terms unconscionable, the court stated:

Ordinarily, one who signs an agreement without full knowledge of its terms might be held to assume the risk that he has entered a one-sided

279. U.C.C. § 2-302 cmt. 1 (AM. LAW INST. & UNIF. LAW COMM’N 2013); Danielle Kie Hart, *Contract Formation and the Entrenchment of Power*, 41 LOY. U. CHI. L. J. 175, 193-94 (2009).

280. See *Fiser v. Dell Comp. Corp.* 188 P.3d 1215, 1221 (N.M. 2008); *Brower v. Gateway 2000, Inc.*, 676 N.Y.S.2d 569, 574 (App. Div. 1998).

281. See *Am. Home Improvement Inc. v. MacIver*, 201 A.2d 886, 888-89 (N.H. 1964); *Toker v. Westernman*, 274 A.2d 78, 80-81 (N.J. Union Cty. Ct. 1970); *Padilla v. State Farm Mut. Auto. Ins. Co.*, 68 P.3d 901, 907 (N.M. 2003); *Guthmann v. La Vida Llena*, 709 P.2d 675, 679 (N.M. 1985). See generally *RUSCH & SEPINUCK*, *supra* note 199, at 78. In response to a claim of unconscionability, the defending party has the opportunity to prove that the clause or contract is reasonable given the commercial setting. U.C.C. § 2-302(2).

282. *Fiser*, 188 P.3d at 1221. The Uniform Consumer Sales Practices Act, which has been adopted by Utah, Kansas, and Ohio, also lists a series of factors that should be considered when assessing unconscionability, including whether the seller took advantage of the inability of the consumer to protect his interests reasonably because of physical infirmity, ignorance, illiteracy, inability to understand the language, or similar factors. UNIF. CONSUMER SALES PRACTICES ACT § 4 (UNIF. LAW COMM’N 1970).

283. See, e.g., *Murphy v. McNamara*, 416 A.2d 170, 175 (Conn. Super. Ct. 1979) (holding that a contract of sale was unconscionable because a buyer paid \$1268 for a television worth \$499.00); *Sho-Pro of Ind., Inc. v. Brown*, 585 N.E.2d 1357, 1361 (Ind. Ct. App. 1992) (finding that it was unconscionable for a seller to charge \$4322.00 for windows that only cost the seller \$1080.50); *Frostifresh Corp. v. Reynoso*, 274 N.Y.S.2d 757, 759-60 (Dist. Ct. 1966) (holding that the contract was unconscionable as the buyer was charged three times the value of an appliance).

284. RESTATEMENT (SECOND) OF CONTRACTS § 208 cmt. d (AM. LAW INST. 1981).

bargain. But when a party of little bargaining power, and hence little real choice, signs a commercially unreasonable contract with little or no knowledge of its terms, it is hardly likely that his consent, or even an objective manifestation of his consent, was ever given to all the terms. In such a case the usual rule that the terms of the agreement are not to be questioned should be abandoned and the court should consider whether the terms of the contract are so unfair that enforcement should be withheld.²⁸⁵

Consider an Amazon consumer who purchases a Quirky smart appliance, such as a coffee machine, a baby formula maker, or a pet food dispenser, that is enabled with DRS. Amazon's current terms of use require consumers to either submit all claims to arbitration or to small claims court if the claim qualifies.²⁸⁶ The unilateral amendment provisions in Amazon's current terms of use could permit Amazon to remove the small claims court option at any time. Thus, a consumer who has purchased a Quirky machine may have the option of bringing any potential claims in small claims court at the time of purchasing the product, but this ability may be restricted or eliminated once the consumer enables the Quirky device to use DRS to order replacement products. In such a scenario, the consumer is subject to different terms of use upon the purchase of the Quirky device and upon the device's purchase of replacement goods using DRS. This should qualify as an unfair result, particularly since the provision heavily favors Amazon—the party with stronger bargaining power—thereby satisfying the requirements of substantive unconscionability. However, given the unwillingness of most courts to strike down unilateral amendment provisions, the doctrine of unconscionability may not be useful to consumers faced with this problem.²⁸⁷

285. 350 F.2d 445, 449-50 (D.C. Cir. 1965).

286. *Conditions of Use*, *supra* note 19.

287. Many courts have upheld unilateral amendment of provisions, including unilateral amendment of dispute resolution provisions. *See Vigil v. Sears Nat'l Bank*, 205 F. Supp. 2d 566, 572-73 (E.D. La. 2002) (holding that Sears's unilateral amendment provision in its credit agreement, which was exercised by Sears to include a class action arbitration waiver, was not procedurally unconscionable because the plaintiff was provided with notice of the amendment); *see also Blaz v. Belfer*, 368 F.3d 501, 504-05 (5th Cir. 2004) (stating that "there is no substantive right to a class remedy"); *Snowden v. CheckPoint Check Cashing*, 290 F.3d 631, 638-39 (4th Cir. 2002) (rejecting plaintiffs' argument that an arbitration clause was unconscionable because of a class action ban); *Johnson v. W. Suburban Bank*, 225 F.3d 366, 374-75 (3d Cir. 2000) (upholding a class action arbitration waiver). However, a few courts in New Jersey, California, Illinois, and Washington have held that class action arbitration waivers are substantively unconscionable where the cost of bringing an individual suit is much higher than the individuals' expected recovery. *See David Horton, The Shadow Terms: Contract Procedure and Unilateral Amendments*, 57 UCLA L. REV. 605, 634 (2010). For examples of cases in which the court struck down a class arbitration waiver, *see Homa v. American Express Co.*, 558 F.3d 225, 230-31 (3d Cir. 2009); *Lowden v. T-*

Further, as discussed in Part IV above, since IOT devices will have the capacity to automatically reorder products upon depletion, it is unlikely that a consumer will review any amendment to the terms of use prior to goods being purchased by the IOT device.²⁸⁸ In the consumer context, sellers have frequently exercised their rights to unilaterally amend terms of use without notifying buyers.²⁸⁹ For instance, in *McKee v. AT&T Corp.*, a case in which a consumer class action alleged that AT&T had overcharged customers, AT&T had amended the lead plaintiff's contract to change its dispute resolution provisions at least five times after the plaintiff executed the contract.²⁹⁰ In *McKee*, the Washington Supreme Court held that the dispute resolution provisions were substantively unconscionable.²⁹¹ However, the ability of sellers to unilaterally amend contracts has been protected by statutes in the credit card context.²⁹² Despite the holding in *McKee*, unilateral amendment provisions routinely withstand unconscionability claims.²⁹³

Even where consumers are provided with advanced notice of proposed changes, consumers may not understand the impact of such amendments or may be so overwhelmed with repeated notices about contract modifications from different online retailers, service providers, banks, and credit card companies that such notices become useless, proving ineffective at providing notice to consumers.²⁹⁴ How many amended contract terms can a consumer be reasonably expected to review and understand without the aid of an attorney in light of the frequency with which merchants unilaterally amend contracts terms, and where sellers who draft these form contracts have superior information

Mobile USA, Inc., 512 F.3d 1213, 1219 (9th Cir. 2008); *Dale v. Comcast Corp.*, 498 F.3d 1216, 1224 (11th Cir. 2007); *Discover Bank v. Superior Court of L.A.*, 113 P.3d 1100, 1108-10 (Cal. 2005); *Kinkel v. Cingular Wireless LLC*, 857 N.E.2d 250, 274-75 (Ill. 2006); *Muhammad v. County Bank of Rehoboth Beach*, 912 A.2d 88, 99-101 (N.J. 2006); and *Scott v. Cingular Wireless*, 161 P.3d 1000, 1007-08 (Wash. 2007).

288. See *supra* Part IV.

289. See Horton, *supra* note 287, at 606 (discussing an example of one company unilaterally amending the terms of use).

290. 191 P.3d 845, 850 n.2 (Wash. 2008).

291. *Id.* at 860-61.

292. See DEL. CODE ANN. tit. 5, § 952(a) (2001); 6 R.I. GEN. LAWS § 6-26.1-11(a) (2008); UTAH CODE ANN. § 70C-4-102(2)(b) (LexisNexis 2008); VA. CODE ANN. § 6.1-330.63(D) (Supp. 2009).

293. See *infra* notes 294-326 and accompanying text.

294. In the social media context, companies such as Facebook and Twitter provide buyers with advanced notice of changes to terms of use. Jessica Kaufman, *Potential Limitations Placed on Unilateral Right to Modify Terms of Use*, SOCIALLY AWARE (Dec. 3, 2013), <http://www.sociallyawareblog.com/2013/12/03/potential-limitations-placed-on-unilateral-right-to-modify-terms-of-use> (noting that Facebook provides seven days notice and Twitter will notify users of changes to its terms of service via an "@Twitter" update or through email, but only for changes that Twitter deems to be material in its sole discretion).

and understanding about these contract terms? Given the willingness of courts to uphold unilateral contract amendments, it is likely that sellers in the IOT context will continue to hold consumers to unfair, one-sided contract terms by utilizing their ability to unilaterally amend their terms and conditions.

2. Procedural Unconscionability

Procedural unconscionability relates to the circumstances surrounding contract formation, including the bargaining power of the parties, deceptive practices, unfair surprise, and contracts of adhesion.²⁹⁵ In addressing procedural unconscionability and the bargaining power of the parties, courts often focus on whether the parties had a meaningful choice, which relates to a party's ability to fully understand the contract terms, the availability of alternative products to the purchaser, and the ability of the purchaser to walk away from the transaction.²⁹⁶ Most form contracts offered to consumers contain the same terms, even if offered from different sellers.²⁹⁷ Thus, in today's commercial environment, rather than having the freedom to negotiate contract terms, consumers are free only to "choose the organization by which he will be dominated."²⁹⁸ Courts tend to find unfair surprise only where there are "hidden provisions, unintelligible language, and surreptitious attempts to contract out key provisions."²⁹⁹

a. Seller's Knowledge and Increased Information Asymmetry

Contract law, including the *UCC*, assumes that parties either freely enter into contracts or bargain for contract terms with all pertinent information available equally to the parties.³⁰⁰ Information asymmetry

295. See M. Neil Browne & Lauren Biksacky, *Unconscionability and the Contingent Assumptions of Contract Theory*, 2013 MICH. ST. L. REV. 211, 222-23.

296. *Bowlin's, Inc. v. Ramsey Oil Co.*, 662 P.2d 661, 669 (N.M. Ct. App. 1983) (citing *Williams v. Walker-Thomas Furniture Co.*, 350 F.2d 445, 449 (D.C. Cir. 1965)); see *In re Friedman*, 407 N.Y.S.2d 999, 1008 (App. Div. 1978); *Ryan v. Dan's Food Stores* 972 P.2d 395, 403-04 (Utah 1998); *Deminsky v. Arlington Plastics Mach.*, 638 N.W.2d 331, 342-43 (Wis. Ct. App. 2001).

297. See Rakoff, *supra* note 207, at 1227-29 (noting that most forms are protective of the sellers as the drafting parties).

298. *Id.* at 1229.

299. Omar Anorga, Note, *Music Contracts Have Musicians Playing in the Key of Unconscionability*, 24 WHITTIER L. REV. 739, 745 (2003).

300. LAURENCE KOFFMAN & ELIZABETH MACDONALD, *THE LAW OF CONTRACT* 4 (6th ed. 2007); see also Robert A. Hillman & Ibrahim Barakat, *Warranties and Disclaimers in the Electronic Age*, 11 YALE J.L. & TECH. 1, 3 (2009) (noting that "[a]n important goal of contract law is to enforce a party's manifestation of assent to a contract made with full access to all pertinent information and with time to contemplate the terms"). Lack of adequate information and failure to

occurs in contracting when one party has a different level of information available to it than the other party.³⁰¹ Examples of information asymmetry include the superior knowledge that sellers generally have about their form contracts and “the contingencies under which [they] operate.”³⁰² Where one party enjoys overwhelming bargaining power, that party may impose one-sided contract terms.³⁰³ When there is information asymmetry in contracts, a party may enter into an agreement without thoroughly understanding the implications or enter into a contract with incorrect beliefs about the value exchanged between parties.³⁰⁴ A consumer who lacks knowledge of her rights or contract terms is unlikely to actively negotiate contract terms or attempt to protect her rights. Information asymmetry is exacerbated in the online context where consumers are not able to physically view goods before purchasing them.³⁰⁵

In assessing unconscionability, rather than evaluating the seller’s knowledge about the consumer, courts often focus on what the consumer knew or should have known by exercising her opportunity to read before entering into the contract.³⁰⁶ Today, companies track Internet users’ web

fully understand transactions consistently plagues other types of consumer transactions, including mortgages. Cassandra Jones Harvard, *Invisible Markets Netting Visible Results: When Sub-Prime Lending Becomes Predatory*, 26 OKLA. CITY U. L. REV. 1057, 1064 (2001).

301. See MICHAEL J. TREBILCOCK, *THE LIMITS OF FREEDOM OF CONTRACT* 102-03 (1993) (discussing the concept of information asymmetry); Eric H. Franklin, *Mandating Precontractual Disclosure*, 67 U. MIAMI L. REV. 553, 561 (2013) (contending that information asymmetry is the norm in contracting).

302. Praveen R. Nayyar, *Information Asymmetries: A Source of Competitive Advantage for Diversified Service Firms*, 11 STRATEGIC MGMT. J. 513, 514 (1990); see RADIN, *supra* note 264, at 24.

303. See Albert Choi & George Triantis, *The Effect of Bargaining Power on Contract Design*, 98 VA. L. REV. 1665, 1710-12, 1730 (2012) (contending that one-sided contract terms can persist, even between sophisticated parties, where there is unequal bargaining power when the seller engages in screening by imposing harsh contract terms or when the buyer engages in signaling).

304. Franklin, *supra* note 301, at 563.

305. See Gregory Lewis, *Asymmetric Information, Adverse Selection and Online Disclosure: The Case of eBay Motors*, 101 AM. ECON. REV. 1535, 1536 (2011) (contending “that disclosure costs—whether caused by technology, bandwidth, or time costs—are an important determinant of the extent to which parties can create well-defined contracts online, and therefore of the success of online goods marketplaces”).

306. At least one court has held that the seller’s knowledge of the buyer’s circumstances is relevant in applying the doctrine of unconscionability and that “the meaningfulness of choice essential to the making of a contract, can be negated by a gross inequality of bargaining power.” *Jones v. Star Credit Corp.*, 298 N.Y.S.2d 264, 267 (Sup. Ct. 1969) (citation omitted). The court in *Jones* found unconscionability where there was a large disparity in value obtained and price paid, the seller knowingly took advantage of the buyer, and gross inequality of bargaining power precluded any meaningful choice and held that the very limited financial resources of a purchaser, known to a seller at the time of a sale, is entitled to weight in the balance to determine whether an agreement is unconscionable. *Id.* at 266-67.

activities via cookies and other digital tools, and companies frequently purchase lists of consumer names, addresses, and phone numbers.³⁰⁷ The IOT is projected to drastically increase the amount and types of data about individual consumers that will be available to sellers,³⁰⁸ thereby increasing information asymmetry in consumer contracts. Not only will companies be able to know how many times consumers have visited their websites, but interconnected goods will also generate a wealth of data, such as information about a consumer's heart rate, while browsing or purchasing goods, fingerprint, voice patterns, stress levels, and rates of product consumption, among other things.³⁰⁹ Presumably, companies will also have access to information about how many consumers review conditions of use prior to purchasing goods. This increased knowledge that is likely to become available to sellers impacts the relative bargaining power of the parties—a factor relevant to assessing procedural unconscionability.

Currently, the data generated by web-enabled devices can be easily accessed and used by companies and sold to third parties, but consumers are, in some instances, unable to access information generated about their own behavior without a subpoena.³¹⁰ Amazon recently bolstered its IOT efforts by acquiring 2lemetry, a platform for tracking and managing connected devices that complements Amazon's existing platforms, which “analyze high-volume data streams from various sources in real time.”³¹¹ These platforms could easily be integrated into the Dash Button, DRS, and Echo to allow for the real time collection of consumer generated data.³¹² Manufacturers that embed Amazon's DRS into their products, such as Whirlpool, Brother, and Brita, could have unparalleled access to data about how consumers use such products once the product is in a consumer's home.³¹³ Data collected by IOT devices can provide an “overall assessment of observations of daily living” of individual users, as well as include health and biometric information.³¹⁴ IOT

307. See Bryant Walker Smith, *Proximity-Driven Liability*, 102 GEO. L.J. 1777, 1782-83 (2014).

308. See Peppet, *supra* note 15, at 120-22.

309. *Id.* at 98-104, 114-17.

310. See Smith, *supra* note 307, at 1783 (describing the need for a subpoena in order for a buyer to access records of consumer behavior from a cellular service provider, electrical utility, and health club); Toby Wolpe, *Data Privacy: You May Call It Privacy but Who Actually Owns It?*, ZDNET (June 11, 2015), <http://www.zdnet.com/article/data-privacy-you-may-call-it-personal-data-but-who-actually-owns-it> (describing lack of clarity regarding who owns and can access the data generated by smart devices).

311. Sun, *supra* note 65.

312. *Id.*

313. See *id.*

314. David Glance, *Will the Elderly Rely on the Internet of Things to Look After Them?*,

devices will act as sensors, which monitor not only their environment but also consumers.³¹⁵ As discussed in Part III, above, companies, such as Samsung, may even be able to record confidential consumer conversations and use that information to their advantage.

Through the use of IOT devices, companies such as Amazon will be able to further market products to consumers and make product recommendations to each consumer in real time based on the individualized data collected from interconnected devices.³¹⁶ Predictive analytics using aggregated IOT data sets could forecast the behaviors, patterns, and preferences of individual consumers and members of their households and neighborhoods.³¹⁷ Amazon has obtained a patent for an anticipatory package shipping system that will analyze and predict consumer habits and deliver goods to consumers before they place an order.³¹⁸ Companies that have access to IOT data will be able to more effectively shape and influence consumer behavior. There continues to be an ongoing debate about who actually owns or should be able to access and manipulate the data generated by IOT devices. It is unlikely that consumers will have equal access to the legion of information expected to be generated by their use of IOT devices, including consumer data analysis reports and information garnered from the use of predictive, descriptive, and prescriptive analytics. Thus, preexisting information asymmetry in contracting will be exacerbated by the IOT. The goal of freedom of contract is likely undermined when there is large information asymmetry between the parties.³¹⁹

PHYS.ORG (Aug. 18, 2015), <http://phys.org/news/2015-08-elderly-internet.html>.

315. *Id.*

316. See Kim, *supra* note 1, at 311.

317. FED. TRADE COMM'N, BIG DATA: A TOOL FOR INCLUSION OR EXCLUSION?, at i-v, 10 (2016), <https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-rpt.pdf>; see Michael Wu, *Big Data Reduction 1: Descriptive Analytics*, LITHIUM (Mar. 14, 2013 1:58 PM), <http://community.lithium.com/t5/Science-of-Social-blog/Big-Data-Reduction-1-Descriptive-Analytics/ba-p/77766> (describing the use of predictive, prescriptive, and descriptive analytics to transform big data into accessible information); see also Michael Wu, *Big Data Reduction 2: Understanding Predictive Analytics*, LITHIUM (Mar. 26, 2013, 9:41 AM), <http://community.lithium.com/t5/Science-of-Social-blog/Big-Data-Reduction-2-Understanding-Predictive-Analytics/ba-p/79616> (noting that, while predictive analytics cannot predict the future, they could forecast future action).

318. U.S. Patent No. 8,615,473 (filed Dec. 24, 2013); Praveen Kopalle, *Why Amazon's Anticipatory Shipping Is Pure Genius*, FORBES (Jan. 28, 2014, 11:34 AM), <http://www.forbes.com/sites/onmarketing/2014/01/28/why-amazons-anticipatory-shipping-is-pure-genius/#332584882fac>.

319. Franklin, *supra* note 301, at 563. However, others have contended that information asymmetry is to be expected and cannot, nor should not, be completely eradicated, as to do so would undermine the contract system. Roberto Mangabeira Unger, *The Critical Legal Studies Movement*, 96 HARV. L. REV. 561, 626 (1983).

b. Explanation of Contract Terms

A seller's explanation of contract terms to consumers is another factor considered by courts in assessing unfair surprise in the unconscionability context.³²⁰ In *Weaver v. American Oil Co.*, the court expressly noted, in assessing unconscionability, that "[t]he party seeking to enforce such a contract has the burden of showing that the provisions were explained to the other party and came to his knowledge and there was in fact a real and voluntary meeting of the minds and not merely an objective meeting."³²¹ IOT manufacturers and sellers may be able to program IOT devices to provide explanations of terms and conditions to consumers, as well as track how long a consumer spent reviewing the explanations and follow up with consumers regarding their understanding of such terms.

The home robot Jibo has the ability to remind its owner of events, provide recipes, monitor its owner's home, read phone messages, and take photos.³²² In the future, robots such as Jibo may also be able to provide consumers with explanations of contract terms for the purchase of IOT devices, as well as terms for goods purchased using IOT devices. Notwithstanding the possibilities of such developments, explanations of contract terms after conclusion of the contract formation process may still be problematic, particularly where consumers are not provided with the option to return the devices or products, and where the device simply reads to the consumer the company's online terms and conditions rather than explaining these terms without legalese or explaining the potential implications of the terms. Moreover, consumers may continue to ignore contract explanations, even in the IOT context. On the other hand, consumers' repeated willingness to ignore terms and conditions, even where companies have provided detailed and easily understandable contract terms prior to contracting in the IOT context, may provide a justification for courts to uphold one-sided contract terms.

Additionally, one-sided contract provisions, such as unilateral amendment clauses, are so common that perhaps consumers should not

320. See 8 SAMUEL WILLISTON & RICHARD A. LORD, A TREATISE ON THE LAW OF CONTRACTS § 18:9, at 66-67 (4th ed. 2010); see also Peppet, *supra* note 15, at 140-43 (discussing seller's use of digital technology to explain contract terms to consumers). For case law melding unconscionability with sellers' explanation of contract terms, see *American General Financial Services, Inc. v. Griffin*, 327 F. Supp. 2d 678, 685 (N.D. Miss. 2004), and *Caley v. Gulfstream Aerospace Corp.*, 428 F.3d 1359, 1377 (11th Cir. 2005).

321. 276 N.E.2d 144, 148 (Ind. 1971).

322. See Dominic Basulto, *Social Robots Want to Help at Home*, VALLEY NEWS (July 26, 2015), <http://www.vnews.com/specialpublications/businessxml/17859976-95/social-robots-want-to-help-at-home>.

be unfairly surprised by the inclusion of such terms. The fact that consumers may become accustomed to one-sided form contract terms should not be used as a justification to encourage contractual abuse by companies, particularly in light of the various contract doctrines intended to ensure a minimal level of fairness in contracting. One could also argue that a company's concern for its reputation should prevent it from including one-sided contract terms, even if consumers do not read contracts. This argument suggests that businesses should be trusted to act in the best interest of consumers and themselves. Further, if this argument held true, then today's form contracts should not routinely consist of one-sided contract terms that strip away the rights of consumers.

B. The Doctrine of Good Faith and Unilateral Amendment Provisions

Consumers have attempted to use the doctrine of good faith to challenge form-contract terms with limited success. In *Rodriguez v. Instagram, LLC*, the Superior Court of California held that the unilateral amendment of contract terms by Instagram to include an arbitration provision, among other things, did not violate the duty of good faith as the plaintiff had the option to stop using the service.³²³ In contrast, in *Badie v. Bank of America*, the California Court of Appeals held that a bank breached the duty of good faith when it attempted to unilaterally amend a contract to include an arbitration clause, a topic that was not previously covered in the original contract.³²⁴ Federal courts, as well as the *Rodriguez* court, have routinely distinguished the holding in *Badie* where there is an option to opt out of the contract before the terms take effect, and have consistently upheld unilateral contract amendments on those grounds.³²⁵

The rationale used by courts to distinguish *Badie* from other unilateral amendment cases is rooted in the same rationale used to uphold browsewrap contracts—consumers have consented to amended terms by continuing to use the seller's website.³²⁶ In the IOT context, where the consumer continues to permit an IOT device to use DRS to order products after an amendment to the terms of use, a consumer's breach of the duty of good faith claim may be unsuccessful.

323. *Rodriguez v. Instagram, LLC*, No. CGC-13-532875 (Cal. Sup. Ct. S.F. Cty. Feb. 28, 2014), <http://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=1656&context=historical>.

324. 79 Cal. Rptr. 2d 273, 290-91 (Ct. App. 1998).

325. *Ackerberg v. Citicorp USA, Inc.*, 898 F. Supp. 2d 1172, 1176 (N.D. Cal. 2012); *Cayanan v. Citi Holdings, Inc.*, 928 F. Supp. 2d 1182, 1200 (S.D. Cal. 2013).

326. See *Ackerberg*, 898 F. Supp. 2d at 1176 (noting that plaintiff continued to use the credit card after being provided with the amended terms).

C. Section 211(3) of the Restatement (Second) of Contracts

Section 211(3) of the *Contracts Restatement*, provides that “[w]here the other party has reason to believe that the party manifesting such assent would not do so if he knew that the writing contained a particular term, the term is not part of the agreement.”³²⁷ This rule is closely related to the *Contracts Restatement’s* policy against unconscionable contract terms, as well as the objective theory of contracts, which encourages the enforcement of the reasonable expectations of the parties.³²⁸ The reasonable expectations doctrine of section 211(3) was rejected by drafters of the proposed revisions to Article 2, the *UCITA*, and the proposed Article 2B of the *UCC*.³²⁹ Courts addressing unconscionability have, in some instances, relied on the rule from section 211(3) to assess the validity of contracts of adhesion, while other courts have expressly rejected the reasonable expectations doctrine.³³⁰ Although section 211(3) is distinct from the reasonable expectations doctrine as applied in the insurance context, two of the four examples given in the *Contracts Restatement* applying section 211(3) involve insurance disputes.³³¹

327. RESTATEMENT (SECOND) OF CONTRACTS § 211(3) (AM. LAW INST. 1981). The comments to section 211(3) suggest that where a party was not provided with an opportunity to review a contested term, the term is oppressive, or the terms are hidden from view, the reasonable expectations doctrine should apply to prevent application of such terms. *See id.* § 211 cmt. f.

328. *See id.*; Barnes, *supra* note 277, at 231.

329. Barnes, *supra* note 277, at 231-32.

330. *See* Lowey v. Watt, 684 F.2d 957, 970-71 (D.C. Cir. 1982) (discussing section 211(3) in connection with the parole evidence rule and contract interpretation). *Compare* Berkson v. Gogo LLC, 97 F. Supp. 3d 359, 391 (E.D.N.Y. 2015) (relying on the reasonable expectation rule of section 211(3) in considering the unconscionability of an agreement), *and* Broemmer v. Abortion Servs. of Phx., Ltd., 840 P.2d 1013, 1016 (Ariz. 1992) (explaining that “[t]o determine whether [a] contract of adhesion is enforceable, [the court will] look to two factors: the reasonable expectations of the adhering party and whether the contract is unconscionable”), *with* Wallace v. Balint, 761 N.E.2d 598, 606 (Ohio 2002) (noting that “there is not yet a majority on this court willing to accept the reasonable-expectations doctrine”).

331. *See* RESTATEMENT (SECOND) OF CONTRACTS § 211 cmt. f, illus. 5-8; *see also* Barnes, *supra* note 277, at 251-52 (explaining how the language in section 211(3) differs from the reasonable expectations doctrine). The reasonable expectations doctrine, in the insurance context, provides that “[t]he objectively reasonable expectations of applicants and intended beneficiaries regarding the terms of insurance contracts will be honored even though painstaking study of the policy provisions would have negated those expectations.” Robert E. Keeton, *Insurance Law Rights at Variance with Policy Provisions*, 83 HARV. L. REV. 961, 967 (1970). Most cases applying the reasonable expectations doctrine involve the standardized forms used in the insurance industry, rather than disputes about standardized forms used in the sale of goods and non-insurance services. *See, e.g.,* Interstate Fire & Cas. Co. v. N.H. Ins. Co., No. CV-12-01237, 2013 WL 4759257, at *5 (D. Ariz. Sept. 4, 2013) (applying the reasonable expectations doctrine in considering the enforceability of terms of a rental insurance agreement); State Farm Mut. Auto. Ins. Co. v. Bogart, 717 P.2d 449, 454-57 (Ariz. 1986) (applying the reasonable expectation doctrine in striking down ambiguity in an automobile insurance policy); Darner Motor Sales, Inc. v. Universal Underwriters

Section 211 acknowledges that consumers are unlikely to read contract terms, but does not allow consumers to avoid contractual liability based solely on their failure to read or inability to understand the contract terms.³³² However, section 211(3) is intended to restrict the ability of sellers to engage in contractual abuse by using one-sided contract terms that the consumer would not expect to be included in the contract.³³³ Section 211(3) has been critiqued on the grounds that it only protects consumers where a merchant is likely to have advanced knowledge that the consumer may find the term objectionable.³³⁴ Nevertheless, section 211(3) could be particularly useful in protecting consumers in the IOT context where sellers will have increased access to detailed, and perhaps even confidential, information about individual consumers. A company that has access to the data and information generated by IOT devices may have reason to believe that one or more contract terms would be objectionable to a particular consumer had she been aware of the term.

The usefulness of section 211(3) to consumers in the IOT context will depend on courts' willingness to apply the rule to transactions involving the sale of goods; the ability of consumers to submit sufficient evidence to prove that the merchant had reason to know that the term was objectionable; and, whether courts will interpret section 211(3) in a manner that considers not only the objective knowledge of merchants but also a merchant's subjective knowledge of an individual consumer, rather than focusing solely on the reasonable expectations of an average consumer.³³⁵ The average consumer may be so accustomed to unilateral amendment, class action waiver, arbitration, and choice of forum clauses that limiting section 211(3)'s applicability to the reasonable expectations of an average consumer may not provide much help to consumers who

Ins. Co., 682 P.2d 388, 392, 396-97 (Ariz. 1984) (adopting the reasonable expectation doctrine when considering whether to enforce certain provisions of an insurance policy where the insured failed to read its terms); *Tucker v. Scottsdale Indem. Co.*, No. CA-CV 09-0732, 2010 WL 5313753, at *4-6 (Ariz. Ct. App. Dec. 21, 2010) (applying the reasonable expectations principles of section 211 in consideration of the validity of an assault and battery exclusion contained in an insurance policy); see also Kenneth S. Abraham, *Judge-Made Law and Judge-Made Insurance: Honoring the Reasonable Expectations of the Insured*, 67 VA. L. REV. 1151, 1152-55 (1981) (discussing the variety of instances in which courts have relied upon the reasonable expectations doctrine in the insurance context).

332. See RESTATEMENT (SECOND) OF CONTRACTS § 211 cmt. b.

333. Barnes, *supra* note 277, at 249, 263.

334. See W. David Slawson, *The New Meaning of Contract: The Transformation of Contracts Law by Standard Forms*, 46 U. PITT. L. REV. 21, 62 (1984).

335. Scholars have critiqued some courts' application of section 211(3) for ignoring the merchants' expectations and knowledge of the consumer and focusing on the expectations of the average or reasonable consumer. See James J. White, *Form Contracts Under Revised Article 2*, 75 WASH. U. L.Q. 315, 346-47 (1997).

seek to avoid the operation of such clauses. One could argue that since consumers assume they have a right to judicial process that cannot be contracted away, the average consumer would not expect such provisions to be included in a contract or upheld by a court. However, as discussed in Part VI below, Supreme Court decisions on arbitration provisions may limit the ability of courts to use contract law doctrine to protect consumers.

D. Fraudulent and Material Misrepresentation and Mistake

The *UETA* notes that the avoidance defenses of misrepresentation, fraud, and mistake can be used by courts to police bad conduct in e-commerce.³³⁶ Similarly, the *UCITA* provides that courts may negate contract formation by electronic agents when there is electronic mistake or fraud.³³⁷ Although the term “electronic mistake” is not defined in the *UCITA*, the comments suggest that electronic mistake and fraud in the e-commerce context are analogous to the common law doctrines of fraud and mistake.³³⁸ Section 1-103 of the *UCC* provides that the contract defenses of mistake, misrepresentation, and fraud are also applicable to transactions subject to the *UCC*, unless they have been specifically displaced by a provision in the *UCC*.³³⁹

Where there is a unilateral mistake by one party to the contract, the mistaken party cannot escape its obligations under the contract unless the contract is unconscionable or the non-mistaken party had reason to know of the mistake or caused the mistake.³⁴⁰ With respect to mutual mistake, the *Contracts Restatement* authorizes avoidance of a contract by the adversely affected party or reformation where there has been a mistake by both parties at the time of contracting about a “basic assumption on which the contract was made,” which has a “material effect on the agreed exchange of performances.”³⁴¹ However, avoidance

336. ELEC. TRANSACTIONS ACT § 3 legis. note 4, 7A pt. 1 U.L.A. 239 (2002); see also *id.* § 9 cmt. 2, at 261 (explaining that an electric signature is attributable to a person unless that person establishes fraud or forgery).

337. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 206(a) (amended 2002), 7A pt. 2 U.L.A. 305 (2009).

338. See *id.* § 206 cmt. 3, at 306; see also Ian R. Kerr, *Spirits in the Material World: Intelligent Agents as Intermediaries in Electronic Commerce*, 22 DALHOUSIE L.J., no. 2, 1999, at 190, 231 (contending that *UCITA* does not define electronic mistake).

339. U.C.C. § 1-103 (AM. LAW INST. & UNIF. LAW COMM’N 2001). Section 2-721 of the *UCC* provides that the remedies available for fraudulent or material misrepresentation are also available for non-fraudulent breach. *Id.* § 2-721.

340. RESTATEMENT (SECOND) OF CONTRACTS § 153 (AM. LAW INST. 1981).

341. *Id.* § 152(1). A mistake is “a belief that is not in accord with the facts.” *Id.* § 151. The parol evidence rule does not preclude the use of prior or contemporaneous agreements or negotiations to establish that the parties were mistaken. See *id.* §§ 214(d), 152 cmt. a. In order to

is not permitted when the adversely affected party bears the risk of mutual or unilateral mistake.³⁴² A party bears the risk of mistake if she expressly agrees to assume the risk by contract, enters into a contract with the awareness that she has limited knowledge about the facts related to the mistake but treats such knowledge as sufficient, or the court allocates the risk to her where it is reasonable to do so under the circumstances.³⁴³ The *UCITA* also allows the parties to freely allocate between themselves, in advance, which party should bear the risk of fraud or mistake.³⁴⁴

Suppose a consumer purchases an IOT washing machine that has the ability to order Tide high-efficiency detergent, and the device routinely places online orders with a specific seller for that detergent. Assume the seller uses a computer program to generate product descriptions; however, the manufacturer changes the formula for the detergent unexpectedly, and the consumer and the seller both discover this change after the consumer receives the detergent with the new formula. The consumer would like to return the product for a refund, perhaps because the consumer is allergic to an ingredient in the new formula, but the consumer has already used the detergent to do a load of laundry, and the seller's return policy prevents returns of used goods.

Both the seller and the buyer, via its electronic agent, have contracted for the sale of a specific detergent, but both are unaware of the change in the product and, thus, have made a faulty assumption about a core aspect of the contract and the basis of the bargain.³⁴⁵ This error is material as "[t]his mistake went to the essence of the enforcement of legal obligations and was, therefore, significantly material to the contract."³⁴⁶ However, where a party elects to use an electronic agent to conclude a transaction, the party does so under the assumption that the actions of the electronic agent will be binding without first having an opportunity to review the terms of the contract.³⁴⁷ The party electing to use the electronic agent could

establish materiality, a party must show that "the resulting imbalance in the agreed exchange is so severe that he cannot fairly be required to carry it out." *Id.* § 152 cmt. c. Market conditions and financial ability do not constitute mistake. *Id.* § 152 cmt. b.

342. *Id.* § 153.

343. *Id.* § 154.

344. UNIF. COMPUT. INFO. TRANSACTIONS ACT § 206 cmt. 3 (amended 2002), 7A pt. 2 U.L.A. 306 (2009).

345. See *Consol. Rail Corp. v. Portlight, Inc.*, 188 F.3d 93, 96 (3d Cir. 1999) (noting that a basic assumption "relates to the basis of the bargain").

346. *Plains Cotton Coop. Ass'n v. Wolf*, 553 S.W.2d 800, 805 (Tex. Civ. App. 1977); see also *Reliance Fin. Corp. v. Miller*, 557 F.2d 674, 680 (9th Cir. 1977) (distinguishing the concepts of materiality and essence).

347. See Daniel, *supra* note 14, at 343.

be deemed to have been aware it would have limited knowledge about facts surrounding the transaction, including the actual product description and, thus, bears the risk of mistake.³⁴⁸ One could also argue that the consumer should be aware that manufacturers routinely change the formula for their products.

The limited consumer protection provisions under the *UCITA* for electronic errors are unlikely to protect a consumer where a similar type of error occurs in a computer information transaction, as those provisions are only applicable to electronic messages, automated transactions, and where the consumer has not used or received any benefit from the messages.³⁴⁹ Consumers may not fully understand or appreciate the risks of contracting with electronic agents.³⁵⁰ As new IOT devices, including those with artificial intelligence, are released, consumer knowledge and understanding of the abilities and implications of the use of IOT devices as electronic agents may vary. Although most consumers are purchasing smart devices, such as web-enabled refrigerators and watches, they have limited knowledge about the IOT and the capabilities of IOT devices.³⁵¹ Consumers are unaware that the smart devices that they purchase are connected to other devices that can communicate with each other and send data back to manufacturers and retailers.³⁵² The potential conflicts of interest posed by consumers using IOT devices as contracting electronic agents, as discussed in Part III, above, further complicate arguments regarding consumer responsibility for the risk of mistake in IOT Contracts.³⁵³

In the previous example, the source of the mistake is not the electronic agent, but rather the seller and the manufacturer. As noted in Parts III and IV, viruses, malfunction errors, and security breaches may plague IOT devices.³⁵⁴ If the electronic agent malfunctions and

348. Kis, *supra* note 14, at 56-57; *see also* Ayer v. W. Union Tel. Co., 10 A. 495, 497 (Me. 1887) (placing the risk of mistake on the party electing to use a telegraph to communicate).

349. *See* UNIF. COMPUT. INFO. TRANSACTIONS ACT § 213 cmt. 4 (amended 2002), 7A pt. 2 U.L.A. 325 (2009). Under the *UCITA*, an automated transaction “means a transaction in which a contract is formed in whole or part by electronic actions of one or both parties which are not previously reviewed by an individual in the ordinary course.” *Id.* § 102(7), at 212. The *UETA* contains similar provisions to address electronic error. *See* UNIF. ELEC. TRANSACTIONS ACT § 10, 7A pt. 1 U.L.A. 263 (2002).

350. Lerouge, *supra* note 14, at 430.

351. David Roe, *Say What? Most Consumers Clueless About the Internet of Things*, CMS WIRE (Aug. 26, 2014), <http://www.cmswire.com/cms/internet-of-things/say-what-most-consumers-clueless-about-the-internet-of-things-026294.php> (noting that a survey of 2000 consumers by Acquity Group found that 87% of consumers do not know about the IOT).

352. *Id.*

353. *See supra* Part III.A.

354. *See supra* text accompanying notes 129-30, 144-45, 264-67.

erroneously orders the wrong product, a consumer may not be able to escape contract performance where the seller does not have a generous return policy. Such a mistake by an IOT device acting as an electronic agent is likely a unilateral mistake, and unless the contract is unconscionable or the seller has reason to know of or caused the mistake, the contract cannot be avoided. Although a seller should be charged with knowledge of the product descriptions it provides to consumers, one could also argue that a consumer assumes the risk that the web-enabled IOT device could contract a virus in the same way that computers routinely contract viruses. If an IOT device is infected with a virus or malfunctions due to no fault of the consumer, it is unfair to consumers to assume that they have elected to bear the risk of mistake.

In the original hypothetical posed above,³⁵⁵ the defense of misrepresentation may also be applicable. This defense may be used to void a contract where a party was induced to enter into the contract by fraud or material misrepresentation caused by the other party, together with justifiable reliance on such misrepresentation.³⁵⁶ The seller of the detergent may have advertised the detergent as containing the original formula rather than the new formula; therefore, the assertion that was made by the seller about the product was not in accord with the facts.³⁵⁷ With respect to fraudulent misrepresentation, the seller must have had the intent to deceive and induce the buyer, which may not be present if the seller is unaware of the change in the formula, perhaps because the manufacturer failed to provide public information on its updated formula.³⁵⁸ The seller may be negligent in providing an inaccurate product description and may be liable for damages due to a breach of warranty. To the extent that the seller is aware of the new formula but fails to disclose this information, the consumer may be

355. See *supra* text accompanying notes 344-46, 353-54.

356. RESTATEMENT (SECOND) OF CONTRACTS § 164(1) (AM. LAW INST. 1981). Some courts have found that the party seeking to use the defense of misrepresentation may not need to prove harm. See *id.* § 165 cmt. a. However, under the *Contracts Restatement*, the mistaken party may be barred from using the defense of misrepresentation where a third party is the source of the material or fraudulent misrepresentation, and the non-mistaken party gave value in good faith and did not have reason to know of the misrepresentation. *Id.* § 164(2). The UCC contains similar rules regarding innocent parties. U.C.C. §§ 2-403(1), 3-305(a) (AM. LAW INST. & UNIF. LAW COMM'N 2002). Article 2 also provides remedies for material misrepresentation or fraud. *Id.* § 2-721.

357. See RESTATEMENT (SECOND) OF CONTRACTS § 159. Such a seller may also be subject to liability under false advertising statutes.

358. *Id.* § 162(1). Fraud occurs where a party intends his misrepresentation to induce the non-fraudulent party to manifest assent and the party (a) knows or believes that the assertion is not in accord with the facts; (b) does not have the confidence that he states or implies in the truth of the assertion; or (c) knows that he does not have the basis that he states or implies for the assertion, and the non-fraudulent party justifiably relies. RESTATEMENT (SECOND) OF CONTRACTS §§ 162, 164.

able to rescind the contract where the misrepresentation is material.³⁵⁹ Non-disclosure typically results in liability only where there is a fiduciary or confidential relationship between the parties or where the misrepresenting party has superior information that cannot be easily discovered by the non-misrepresenting party.³⁶⁰ It is unlikely that sellers and consumers will be viewed as having a fiduciary or confidential relationship.

However, material misrepresentation can be proven by showing that a reasonable recipient would have been induced to make the contract, or that the maker knew for some special reason that the misrepresentation was likely to induce that particular party.³⁶¹ Given the wealth of information that will become available to companies about consumers via IOT devices, it is likely that companies may have specific knowledge about the special circumstances of an individual consumer, which could help to prove material misrepresentation. This assumes that consumers would be able to obtain proof of the company's knowledge of their special circumstances, and it also assumes that the manufacturer's knowledge about the consumer has been shared with the retailer.

Further, to use the defense of misrepresentation, a party must prove that they were justified in relying on the misrepresentation.³⁶² Courts, generally, require that the adversely affected party prove that she engaged in some type of due diligence.³⁶³ Some courts have also used the duty to read to deny application of the defense of misrepresentation.³⁶⁴ A consumer who has relied on a misrepresentation while neglecting to read the writing may not be viewed as justifiably relying on the misrepresentation. However, a reasonable consumer, as well as a reasonable electronic agent, may have been induced into relying on the product description provided by the seller.³⁶⁵ One could

359. See E. ALLEN FARNSWORTH, *CONTRACTS* § 4.11, at 239-42 (4th ed. 2004).

360. *Id.*

361. RESTATEMENT (SECOND) OF CONTRACTS § 162(2).

362. *Id.* § 164.

363. See *Brown v. Wells Fargo Bank, NA*, 85 Cal. Rptr. 3d 817, 833-34 (Ct. App. 2008) (noting that where the adversely affected party had reasonable opportunity to discover the truth, the contract cannot be voided); *Mims v. Cooper*, 46 S.E.2d 909, 910-11 (Ga. 1948) (noting that the adversely affected party must exercise ordinary diligence in an effort to discover the fraud); *Taggart v. Claxton*, 318 S.E.2d 208, 210 (Ga. Ct. App. 1984) (stating that the adversely affected party must prove that he exercised due care to discover the fraud); Stephanie R. Hoffer, *Misrepresentation: The Restatement's Second Mistake*, 2014 U. ILL. L. REV. 115, 132-33 (2014) (noting that most courts require the adversely affected party to investigate the truth of the counterparty's assertion).

364. *Dowagiac Mfg. Co. v. Schroeder*, 84 N.W. 14, 14 (Wis. 1900) (noting that "clear neglect in signing the contract without ascertaining its contents" will prevent avoidance of the contract). *But see* FARNSWORTH, *supra* note 359, at 248 (suggesting that the trend is in the opposite direction particularly where "some artifice was used to prevent the recipient from reading the writing").

365. See *supra* note 361 and accompanying text.

contend that it is questionable for a consumer to rely exclusively on an IOT device to review contract terms and product descriptions on its behalf and that the consumer should perform her own due diligence prior to using an electronic agent to purchase products.

Now, suppose the manufacturer of the IOT device experiences a security breach and the data collected by the IOT device becomes available to fraudsters, who are then able to hack into the IOT device and place orders with sellers for consumable supplies using an innocent consumer's IOT device, and that the orders are shipped to various third parties or the consumer. Neither the consumer nor the electronic agent, assuming that it possesses artificial intelligence, had the necessary intent or knowledge to defraud the seller.³⁶⁶ Rather, a third party used the electronic agent to facilitate fraud to the detriment of the consumer and the seller. Of course, the potential for exposure to criminal liability may serve as a deterrent to fraudsters.³⁶⁷ Recent reports suggest that even the Dash Button is susceptible to hacking.³⁶⁸

Manufacturers of IOT devices are better prepared to bear the risks and costs associated with this type of fraud in the IOT context. The breach of the manufacturer's database led to the fraud, which, perhaps, indicates that it should bear some contractual responsibility.³⁶⁹ IOT

366. See *supra* notes 356-58 and accompanying text.

367. See 18 U.S.C. § 1030 (2012) (prohibiting unauthorized access to computers and networks). While there are a number of federal and state anti-hacking statutes, computer hacking continues to occur despite the adoption of these statutes. Cyber criminal attacks on industrial control systems, which are now part of the IOT, are increasing. See Alasdair Gilchrist, *Cyber Attacks on Industrial Internet of Things Are on the Rise*, BETANEWS, <http://betanews.com/2016/01/18/cyber-attacks-on-industrial-internet-of-things-are-on-the-rise> (last visited Apr. 10, 2016).

368. Ted Benson, *How I Hacked Amazon's \$5 WiFi Button to Track Baby Data*, MEDIUM (Aug. 10, 2015), <https://medium.com/@edwardbenson/how-i-hacked-amazon-s-5-wifi-button-to-track-baby-data-794214b0bdd8#tw2mjti61>; see Mark Gibbs, *Hacking the Dash Button*, NETWORK WORLD (Oct. 10, 2015, 6:21 PM) <http://www.networkworld.com/article/2991411/internet-of-things/hacking-amazons-dash-button.html>; Rich McCormick, *Hacked Amazon Dash Button is the Fastest Way to get Pizza Delivered to Your Mouth*, VERGE (Sept. 28, 2015), <http://www.theverge.com/2015/9/28/9407669/amazon-dash-button-hack-pizza>.

369. The Federal Trade Commission ("FTC") has attempted to hold companies liable for failing to adequately protect consumers' personal information in accordance with the privacy and data security promises made by such companies. See *FTC Files Complaint Against Wyndham Hotels For Failure to Protect Consumers' Personal Information*, FED. TRADE COMMISSION (June 26, 2012), <https://www.ftc.gov/news-events/press-releases/2012/06/ftc-files-complaint-against-wyndham-hotels-failure-protect>. For instance, the FTC filed a complaint against Wyndham Hotels and Resorts contending that the company's failure to protect consumers' personal information led to substantial injury, was unfair and deceptive, and violated the Federal Trade Commission Act. *Id.* Other federal statutes may also impose liability for intercepting or disclosing consumer data. For instance, the Electronic Communications Privacy Act provides a private cause of action for individuals whose communications and records have been intercepted, disclosed, or intentionally used in violation of law. See 18 U.S.C. §§ 2520, 2707(a) (2012). Similarly, the Computer Fraud and Abuse Act prohibits unauthorized access to computers and networks. 18 U.S.C. § 1030. However,

device manufacturers, such as Samsung, have placed consumers on notice that information provided via IOT devices will be collected.³⁷⁰ One could posit that, given the frequency with which companies have been subject to security breaches, consumers who elect to use IOT devices should be aware of the potential data security risks of using them. On the other hand, in light of the risks of data breaches that may plague IOT devices and other electronic agents, the seller's reliance on orders placed by the IOT device may not be reasonable.

The foregoing discussion illustrates that, while the *UCITA* and the *UETA* expressly permit, and the *UCC* authorizes, application of the contract defenses of mistake and misrepresentation to contracts formed through the use of IOT devices, application of these avoidance doctrines in the IOT setting may not lead to clear, consistent, or consumer-friendly results.³⁷¹

VI. PROPOSALS

As discussed in Parts IV and V above, new technological advances in the IOT, such as Amazon's DRS, worsen preexisting levels of information asymmetry and Contract Distancing in consumer contracts, thereby hindering a true meeting of the minds.³⁷² All of this incentivizes consumers to fail to read and understand contract terms. A coordinated approach involving courts, legislative bodies, and state and federal agencies is necessary to effectively address the concerns highlighted in this Article. This Part proposes important amendments to the *UCC* and calls for a nuanced approach to the application of agency and contract law principles by courts to IOT consumer contracts that considers the rapidly increasing levels of information asymmetry and Contract Distancing.³⁷³

Although courts should play a crucial role in ensuring that consumers are adequately protected in IOT Contracts, it is unlikely that courts will routinely have the opportunity to do so as consumer access to courts is limited by the class action waiver and arbitration provisions in

companies have, in some instances, opposed legislative attempts to promote cyber security. Tim Starks, *Automakers Fight Car Hacking Bill—Computer Fraud and Abuse Act Takes Some Blows*, POLITICO (Aug. 27, 2015, 10:02 AM), <http://www.politico.com/tipsheets/morning-cybersecurity/2015/08/automakers-fight-car-hacking-bill-computer-fraud-and-abuse-act-takes-some-blows-019811>.

370. See Matyszczyk, *supra* note 123.

371. See *supra* text accompanying notes 336-70.

372. See *supra* Parts IV-V.

373. See *infra* notes 374-425 and accompanying text.

form contracts, which have been upheld by the Supreme Court.³⁷⁴ Moreover, even if a consumer contract does not contain an arbitration provision, the individual claim of a consumer could be so small that an attorney may not be willing to take on such a case, or a consumer may not be willing to file a claim against a company. Ultimately, a legislative solution from Congress may be necessary. Federal agencies such as the Consumer Financial Protection Bureau and the Federal Trade Commission (“FTC”) must also take an active role in policing companies and protecting consumers in IOT Contracts.

The provisions of Article 2 stand in stark contrast to consumer protection standards adopted in other countries.³⁷⁵ The *UCC* was drafted in an era when bilateral contracts negotiated in person between individuals were the norm.³⁷⁶ This is no longer the case.³⁷⁷ With the dawn of the IOT, individual consumers will no longer be the primary actors in contracting. IOT robotic devices will enter into contracts for consumable goods on behalf of consumers. Courts’ current standards for assessing consumer assent to electronic contracts cannot adequately protect consumers in this new era.

There have been previous failed attempts to amend the *UCC* to include consumer protection provisions.³⁷⁸ The time is ripe for courts to adjust their application of contract and agency principles, as well as for the ULC and the ALI to consider amendments to Article 2 to address consumer contracting. This Part proposes six amendments to Article 2 and encourages courts to reevaluate existing contract and agency law principles.³⁷⁹ The amendments proposed and the issues raised in this Article should also be considered by the ALI when drafting the proposed *Restatement of the Law of Consumer Contracts* (“Consumer

374. See *infra* note 416 and accompanying text.

375. See Jennifer S. Martin, *An Emerging Worldwide Standard for Protections of Consumers in the Sale of Goods: Did We Miss an Opportunity With Revised UCC Article 2*, 41 TEX. INT’L L.J. 223, 238-58, 266-68 (2006) (comparing Article 2 to consumer protection provisions in the European Union (“EU”), Eastern Europe, China, Japan, and India, and arguing that Article 2 inadequately protects consumers); Robert L. Oakley, *Fairness in Electronic Contracting: Minimum Standards for Non-Negotiated Contracts*, 42 HOUS. L. REV. 1041, 1071-73 (2005) (contending that the EU approach to consumer contracts and the “Stop Before You Click Principles” are better alternatives for assessing unconscionability).

376. See Martin, *supra* note 375, at 226-27.

377. See discussion *supra* notes 1-15 and accompanying text.

378. See Martin, *supra* note 375, at 226-27. These amendments, which were ultimately withdrawn, contained meager attempts to address consumer protection issues. For instance, revised section 2-316 would have imposed additional requirements to disclaim implied warranties in consumer contracts, and revised section 2-710 would have expressly prohibited sellers from obtaining consequential damages from consumers in consumer contracts. *Id.* at 231-32, 238 & n.106.

379. See *infra* notes 383-425 and accompanying text.

Restatement”), a project aimed at clarifying the treatment of consumer contracts.³⁸⁰ The new IOT contracting environment and its implications for consumers must be evaluated by the ALI and addressed in the *Consumer Restatement*.

Given the tedious and lengthy process for amending the *UCC* and previous failed attempts to revise Article 2 to address consumer contracting, a private ordering approach to remedy the problems addressed in this Article may be preferable. One could envision a world in which IOT companies voluntarily adopt consumer-friendly data protection standards and eliminate the use of contract terms that are detrimental to the ability of consumers to seek legal redress. Industries that have adopted a self-regulatory approach to addressing consumer privacy concerns include the mobile-marketing industry and the automaker industry.³⁸¹ In the absence of a timely and effective private ordering solution, the need for the amendments discussed below becomes even more pressing.³⁸²

A. Defining Consumer Transactions

First, rather than section 2-103(3) merely referencing the application of the definition of consumer goods contained in Article 9, Article 2 should be amended to include specific and clear definitions of consumer transactions and consumer contracts. The drafters of the *UCC* have acknowledged the uniqueness of consumer transactions in other sections of the *UCC*.³⁸³ Article 9 of the *UCC* currently contains a definition for consumer transactions and consumer-goods transactions, and has special rules for these transactions.³⁸⁴ Thus, there is no reason that Article 2 should not be amended to more specifically address the sale and purchase of goods by consumers. The definitions of consumer transactions and consumer goods contained in Article 9 focus on whether the obligation was incurred or goods were bought or used,

380. The *Restatement of Law of Consumer Contracts* was proposed by the ALI in 2012, and a revised draft of the Restatement will be presented to the ALI Council in October 2016. *Restatement of the Law, Consumer Contracts*, ALI, <https://www.ali.org/projects/show/consumer-contracts> (last visited Apr. 10, 2016).

381. Jay Cline, *A Privacy Standard for Internet of Things Suppliers*, COMPUTER WORLD (Dec. 1, 2015), <http://www.computerworld.com/article/3010626/internet-of-things/a-privacy-standard-for-internet-of-things-suppliers.html> (describing the mobile marketing industry’s mobile application privacy policy framework and the automaker industry’s consumer privacy protection principles for vehicle technologies and services).

382. See *infra* notes 383-425 and accompanying text.

383. See U.C.C. § 9-109(a) (AM. LAW INST. & UNIF. LAW COMM’N 2015) (describing the scope of Article 9).

384. *Id.* §§ 9-102(23)–(26), 9-620(g), 9-614.

primarily for personal, family, or household purposes.³⁸⁵ Section 2-103 should be amended to more specifically define terms related to consumer transactions and Article 9 should serve as the model for these revisions.³⁸⁶

B. Amending Section 2-206's Contract Formation Rules to Account for Increasing Levels of Information Asymmetry and Contract Distancing

Increased information asymmetry in IOT Contracts and companies' increased knowledge about individual consumers provides a strong justification to rework the application of contract formation rules in the IOT consumer setting. Section 2-206 should be amended to provide that traditional views of assent, which rely solely on restrictive notions of constructive notice and an opportunity to read, are inadequate for consumer contracting in the age of the IOT.³⁸⁷ This section should require courts to evaluate the level of Contract Distancing and information asymmetry, which favors companies, when determining whether a consumer has consented to a company's terms and conditions.

IOT technology facilitates an environment in which automatic and interface-free contracting is the norm.³⁸⁸ The very nature of the IOT devices manufactured by companies encourages consumers to shop for goods without reviewing contract terms. As noted in Part IV, although contract terms are provided upon activating Amazon's Dash Button, consumers are not provided with contract terms before clicking the Dash

385. *Id.*

386. The withdrawn 2003 amendments to Article 2 of the UCC contained a definition of consumer contracts and consumers which was similar to the consumer related definitions found in Article 9. In the proposed amendment, section 2-103(1)(d) defines "consumer" as "an individual who buys or contracts to buy goods that, at the time of contracting, are intended by the individual to be used primarily for personal, family, or household purposes." U.C.C. § 2-103(1)(d) (withdrawn 2003). "Consumer contract" is defined as a "contract between a merchant seller and a consumer." *Id.* § 2-103(1)(e) (withdrawn 2003 revision). The definition of consumer contract should be included in Article 2.

387. Using an objective theory of contract formation may also be insufficient to protect consumers in IOT contracts. This theory evaluates whether the person to whom a manifestation is made is justified in viewing the opposing party's actions as assent and whether a reasonable person in the opposing party's position should know that her actions would be viewed as assenting to contract terms. *See Morales v. Sun Constructors, Inc.*, 541 F.3d 218, 223 (3d Cir. 2008) (holding that a Spanish-speaking employee who signed an English-language employment agreement was bound by the arbitration clause therein because the employee had not alleged fraud or misrepresentation and that it was the employee's duty to ensure that he understood the agreement before signing it). An objective theory of contract formation fails to effectively consider whether a consumer truly assented to contract terms, and it may not adequately take into consideration the increased levels of contract distancing and information asymmetry.

388. *See supra* notes 65-82 and accompanying text.

Button to place subsequent orders.³⁸⁹ Rather, the Dash Button and other IOT devices were created to incentivize consumers to purchase goods without having to continually access Amazon's website or the Amazon application, which contains the company's terms and conditions, before each subsequent purchase.³⁹⁰ In the IOT context, consumer assent to contract terms should be assessed by looking at the level of Contract Distancing and information asymmetry. The higher the level of Contract Distancing and information asymmetry, the less likely it should be that the consumer is bound to unfair contract terms.

To assess the level of Contract Distancing, courts should consider the following: (1) the type of IOT device used by the consumer (for instance, contracting via a Dash Button is different from contracting via Amazon's DRS, as discussed in Part II of this Article); (2) the type of consumer form contract at issue, such as browsewrap, clickwrap, or sign-in wrap contracts; (3) the individual consumer's understanding of the contract terms, particularly in cases where IOT data has been used to target vulnerable consumers, low income individuals, and underserved communities for contracting; and (4) the method of notice used by the manufacturer or retailer to provide notice of contract terms to the consumer prior to contracting. As discussed in Part V above, IOT devices, such as the Jibo home robot, may be able to explain contract terms to consumers prior to each successive purchase by an IOT device.³⁹¹ Amazon's Echo may also have the ability to read contract terms to consumers. Consumers should not be deemed to have assented to contract terms based solely on the fact that they have either continued to allow the IOT device to place orders or continued to use the company's goods. Courts should be wary of automatically finding mutual assent where parties attach drastically different meanings to contract terms, such as where consumers believe that their right to access the judicial system cannot be varied by contract. A consumer's understanding of contract terms at the time of contracting may be difficult to assess or prove. However, where vulnerable consumers are targeted for contracting by companies using IOT data, consumers should not continue to be bound to contracts where it is clear that they failed to fully understand the contract's terms and implications.

Further, it may be time to expressly limit the application of the duty to read in the consumer setting as it is often detrimental to consumer claims. In the IOT setting, a company's privacy policy and adherence to

389. See *supra* text accompanying notes 226-53.

390. See *supra* text accompanying notes 226-53.

391. See *supra* Part V.B.

its provisions are particularly important given the amounts and types of data that can be collected from a consumer's use of IOT devices. Consider that a company's disclosure of consumer data in violation of its published privacy policy may not give rise to a breach of contract claim, as some courts have held that privacy policies are simply broad statements of company policy rather than enforceable agreements.³⁹² Other courts require that the party alleging a breach have read the policy and relied on its provisions before contracting in order for the policy to constitute a contract.³⁹³ Thus, in the privacy context, a consumer's failure to read a privacy policy prior to contracting may prevent the consumer from bringing an action for breach of contract where the company violates the privacy policy, but the consumer is unable to use her failure to read a company's conditions of use as grounds for preventing enforcement of the company's terms and conditions.

With respect to information asymmetry, courts should evaluate the following factors: (1) the extent to which consumers have access to and ownership of their IOT data; (2) whether the consumer has the ability to opt-out of or opt-in to having their IOT data disclosed to the manufacturer and other third parties without impacting their ability to use the IOT device; (3) the amount and types of data that the retailer and manufacturer have collected from the consumer based on the consumer's use of IOT devices; and (4) the manufacturer and merchant's compliance with the FTC's IOT best practices, which includes data minimization and the use of measures to keep unauthorized users from accessing a consumer's device, data, and personal information. If a consumer is required to transfer title of her data to the manufacturer or retailer to use all of the features of the device, has no ability to limit the types and amount of data that can be collected or request that her data be deleted, or is required to opt-out of having her data disclosed and collected, rather than actively opt-in, then the consumer should be less likely to be deemed to have consented to contract terms that are detrimental to her ability to seek legal redress. The more data the manufacturer and retailer are able to aggregate about the consumer and her preferences, the higher the level of information asymmetry. In the event of a dispute with the consumer, manufacturers and retailers should be required to disclose this

392. See, e.g., *Dyer v. Nw. Airlines Corps.*, 334 F. Supp. 2d 1196, 1199-200 (D.N.D. 2004) (holding that a lawsuit alleging disclosure of consumer information in violation of a company's stated privacy policy did not give rise to a claim for breach of contract).

393. *Id.*; see also *Meyer v. Christie*, 2007 WL 3120695, at *5-6 (D. Kan. Oct. 24, 2007) (noting that a privacy policy can constitute a contract where the party alleging a breach of the company's privacy policy read and relied on the policy before contracting with the company).

information to the consumer.³⁹⁴ Adherence to other IOT regulation that may be issued by federal and state agencies should also be considered.

C. *Prohibiting Post-Contract Formation Disclosure of Contract Terms*

Section 2-204 of the *UCC*, which addresses contract formation, should be amended to expressly prohibit post-contract formation disclosure of terms in consumer transactions. In no event should contract terms be disclosed to consumers after they have purchased goods. The inclusion of such a provision would prevent merchants from surprising consumers with contract terms after buying goods. Enforcing contracts in which the terms are disclosed after contract formation is also problematic, particularly where the seller does not have a generous return policy. Such an amendment would also prohibit the post-contract disclosure of terms by email and would signal to sellers that the holding in *Starkey* is not applicable to Article 2 consumer transactions.

Courts should be wary of enforcing contracts where terms are disclosed via email. Disclosure of terms and conditions via email may not provide adequate notice to consumers. Even if a notice of contract terms email is provided to consumers before contract formation, it does not mean that the consumer has reviewed the email or has clicked on the hyperlinked contract terms contained in the email. There are many potential reasons that may explain a consumer's failure to read emailed contract terms. Emails may end up in a spam folder, or delivery of the email could be delayed or blocked due to server issues beyond the consumer's control that may decrease the likelihood that a consumer will view the terms. In an interface-free contracting environment in which companies routinely rely on emails to provide contract terms before contract formation, consumers may become overwhelmed with the volume of such emails, which may decrease the probability that consumers will have adequate notice of such terms.

D. *Restricting the Use of Unilateral Amendment Provisions Under Section 2-209*

The provisions of section 2-209, which address contract amendments, should be revised to prohibit the use of unilateral amendment provisions in consumer contracts where the use of such provisions would permit amendments that are detrimental to consumer

394. See *FTC Report on Internet of Things Urges Companies to Adopt Best Practices to Address Consumer Privacy and Security Risks*, FED. TRADE COMMISSION (Jan. 27, 2015), <https://www.ftc.gov/news-events/press-releases/2015/01/ftc-report-internet-things-urges-companies-adopt-best-practices>.

rights under the contract.³⁹⁵ Consumers should not be deemed to automatically agree to revised terms simply because they consented to a unilateral amendment provision upon activating an IOT device or simply because they have continued to permit the IOT device to order products on their behalf. Further, consumers should not bear the burden of conducting investigations and routinely checking a company's website to determine if the terms and conditions have been amended.

An example of a prohibited unilateral amendment could include a revision that removes a small claims court option or that decreases the length of time that a consumer has to bring a claim. Similarly, unilateral amendments that impact the way consumers assent to contract terms (such as, switching from a clickwrap to a browsewrap format), or places the risk of loss on consumers, or amends preexisting forum-selection or choice of law provisions, should all be prohibited where doing so is harmful to the consumer's ability to seek redress in the event of a dispute. The goal of this proposed amendment to section 2-209 is to prevent merchants from amending contract terms to the detriment of consumers after the consumer activates the IOT device to place successive orders for goods.

E. Amending Section 2-302's Unconscionability Provisions to Account for Increasing Levels of Information Asymmetry and Contract Distancing

Section 2-302's provisions on unconscionability should be revised to provide that unconscionability could result from high levels of information asymmetry and Contract Distancing.³⁹⁶ The courts' current interpretation of 2-302 fails to adequately consider that consumers have no incentive to read contract terms, in part because they have no ability to change such terms.³⁹⁷ The ease with which consumers can enter into contracts through the use of IOT devices will encourage consumers to continue to fail to read contracts. Article 2 can no longer ignore this fact. Article 2 does not contain a definition of unconscionability, and, as a result, case law and the *Contracts Restatement* become relevant.³⁹⁸

The *Contracts Restatement* currently provides, in pertinent part, that "[a] bargain is not unconscionable merely because the parties to it are unequal in bargaining position, nor even because the inequality

395. U.C.C. § 2-209 (AM. LAW INST. & UNIF. LAW COMM'N 2013).

396. *Id.* § 2-302.

397. See Hazel Glenn Beh, *Curing the Infirmities of the Unconscionability Doctrine*, 66 HASTINGS L.J. 1011, 1040-41 (2015).

398. See *id.* at 1041.

results in an allocation of risks to the weaker party.”³⁹⁹ High levels of information asymmetry favoring sellers can lead to gross inequalities in bargaining power, and where this is combined with contract terms that heavily benefit the party with superior bargaining power, such as unilateral amendment rights, it may confirm indications that the consumer did not assent to the contract or had no real meaningful choice or alternative. Article 2 should clearly authorize courts to find unconscionability in such an instance. Consider, for instance, that OfficeMax obtained information about the death of a father’s daughter, which it purchased from a third-party data broker, and sent a targeted mailing to the father addressed to “Daughter Killed in Car Crash or Current Business.”⁴⁰⁰ Data brokers have attempted to sell lists of rape victims, alcoholics, and erectile dysfunction sufferers.⁴⁰¹

Case law suggests that a seller’s knowledge of the buyer can be considered in a contract formation and unconscionability analysis where the seller knew that the buyer was not fluent in the language used in the contract, or where the seller had knowledge of the buyer’s limited financial resources.⁴⁰² However, courts are generally disinclined to allow contract defenses such as unconscionability to serve as a basis for contract avoidance.⁴⁰³

In addition to assessing potential language barriers and awareness of consumer finances, a merchant’s knowledge of the individual buyer gained from IOT data should also be considered when evaluating contract formation and defenses in the new interface-free contracting environment. Courts must be willing to let go of their reluctance to strike down unconscionable contract terms.⁴⁰⁴ As currently applied by courts, the doctrine of unconscionability holds consumers accountable for their failure to read but does not adequately account for increased levels of

399. RESTATEMENT (SECOND) OF CONTRACTS § 208 cmt. d (AM. LAW INST. 1981).

400. Kashmir Hill, *OfficeMax Blames Data Broker for ‘Daughter Killed in Car Crash’ Letter*, FORBES (Jan. 22, 2014, 12:09 PM), <http://www.forbes.com/sites/kashmirhill/2014/01/22/officemax-blames-data-broker-for-daughter-killed-in-car-crash-letter>.

401. Kashmir Hill, *Data Broker Was Selling Lists of Rape Victims, Alcoholics and ‘Erection Dysfunction Sufferers’*, FORBES (Dec. 19, 2013, 3:40 PM), <http://www.forbes.com/sites/kashmirhill/2013/12/19/data-broker-was-selling-lists-of-rape-alcoholism-and-erectile-dysfunction-sufferers>.

402. See *Jones v. Star Credit Corp.*, 298 N.Y.S.2d 264, 265-67 (Sup. Ct. 1969) (finding unconscionability where there was a large disparity in value obtained and price paid, and that the seller knowingly took advantage of the buyer); *Frostifresh Corp. v. Reynoso*, 274 N.Y.S.2d 757, 759-60 (Dist. Ct. 1966) (holding that a contract involving a sale of a refrigerator to a Spanish-speaking couple was found to be unconscionable where the installment contract was in English and was not translated or explained to the couple).

403. See Beh, *supra* note 397, at 1039-42 (describing the reasons for courts’ reluctance to allow successful use of the unconscionability defense, such as contract law’s infatuation with formalism and freedom of contract).

404. See RESTATEMENT (SECOND) OF CONTRACTS § 208 cmt. a (AM. LAW INST. 1981).

information asymmetry, which may further incentivize companies to use one-sided contract terms and unilaterally amend terms of use to the detriment of consumers.⁴⁰⁵ Amending section 2-302 to acknowledge information asymmetry and high levels of Contract Distancing should encourage courts to be more open to finding unconscionability in consumer contracts.

The U.S. approach to addressing unconscionability in electronic form contracts is quite different from the view taken in the European Union ("EU").⁴⁰⁶ The EU Directive contains a non-exhaustive list of form contract terms that are deemed to be unfair and invalid.⁴⁰⁷ Jury trial and class action waivers and mandatory arbitration provisions fall into that category.⁴⁰⁸ Where a contract term is deemed unfair, the term will not be binding on consumers, but the contract will still be enforceable if it is "capable of continuing in existence without the unfair terms."⁴⁰⁹ The EU Directive provides a great starting point for consumer friendly revisions to Article 2. American companies operating in Europe have been required to amend their form contracts to comply with legislation adopted by EU states in accordance with the EU Directive.⁴¹⁰ In 2004, a French court found thirty-one provisions of AOL's form contract unfair and void, including a provision which provided that the use of the website constituted acceptance of web site terms and a provision that granted AOL the right to unilaterally modify the contract terms.⁴¹¹ If this dispute had been heard in a U.S. court, it is likely that these AOL contract provisions would have withstood an unconscionability and assent analysis.⁴¹²

405. See *supra* Part V.A.2.a.

406. See Jane K. Winn & Mark Webber, *The Impact of EU Unfair Contract Terms Law on U.S. Business-to-Consumer Internet Merchants*, 62 BUS. LAW. 209, 212-13 (2006).

407. Council Directive 93/13/EEC, art. 3, 1993 O.J. (L 095) (EC). Under the EU Directive, form contract provisions that result in a significant imbalance in the parties' rights and obligations under the contract to the detriment of the consumer are also viewed as unfair. *Id.*

408. See *id.* The directive explicitly bans mandatory arbitration provisions. *Id.*; see also *Zealand v. Laing Homes Ltd.*, 2 T.C.L.R. 724 (2000) (interpreting the Unfair Terms in Consumer Contracts Regulation, which was adopted to give effect to the EU Directive, and striking down a mandatory arbitration provision in a consumer contract).

409. Council Directive 93/13/EEC, *supra* note 407, art. 6.

410. See Winn & Webber, *supra* note 406, at 209-10.

411. *Id.* at 223-24; see Bradley Joslove & Andréi V. Krylov, *Standard American Business to Consumer Terms and Conditions in the EU*, 18 MICH. INT'L LAW., no.2, Spring 2005, at 2-3.

412. See Winn & Webber, *supra* note 406, at 225.

Consider that Amazon's U.S. terms and conditions contain a class action ban, a mandatory arbitration provision that excludes small claims, and a waiver of the right to a jury trial.⁴¹³ In contrast, Amazon's U.K. terms and conditions do not contain such provisions.⁴¹⁴ Amazon's arbitration provisions have withstood unconscionability attacks by U.S. consumers.⁴¹⁵ U.S. consumers should be afforded protections under Article 2 similar to those found in the EU Directive. Imposing such protections would not be burdensome on companies, as many companies have already adapted their form contracts to comply with consumer protection standards in the EU.

Given recent Supreme Court decisions restricting the ability of states to enact legislation that prohibits mandatory arbitration and class action waiver provisions and limiting the authority of state courts to use contract law doctrines to invalidate such clauses, Article 2 is unlikely to be the appropriate instrument for addressing such provisions.⁴¹⁶ Congressional intervention to prohibit the use of such anti-collective action provisions in consumer contracts is sorely needed.⁴¹⁷ Such an

413. See *Amazon Dash Button and Amazon Dash Replenishment Terms of Use*, *supra* note 19.

414. See *Conditions of Use & Sale*, AMAZON.CO.UK., <http://www.amazon.co.uk/gp/help/customer/display.html?nodeId=1040616> (last updated Aug. 4, 2015).

415. See, e.g., *Fagerstrom v. Amazon.com, Inc.*, No. 15-cv-96-BAS-DHB, 2015 U.S. Dist. LEXIS 143295, at *30-48 (S.D. Cal. Oct. 20, 2015) (holding that Amazon's arbitration provisions were not unconscionable when consumers contended that Amazon overstated the amount of discounts consumers would receive from Amazon in comparison to discounts from other retailers).

416. In *AT&T Mobility LLC v. Concepcion*, the Supreme Court noted that while the Federal Arbitration Act ("FAA") restricts the application of state law to evaluate the fairness of arbitration provisions, the FAA does not preempt the use of "generally applicable contract defenses" subject to the FAA's overriding policy favoring arbitration. 131 S. Ct. 1740, 1746 (2011) (citation omitted); see also *Sanchez v. Valencia Holding Co., LLC*, 353 P.3d 741, 745-46 (Cal. 2015) (applying the doctrine of unconscionability to evaluate the validity of class action waiver and arbitration provisions and noting that, under *Concepcion*, contract defenses, such as the doctrine of unconscionability can be used to invalidate such provisions, as long as they are applied "evenhandedly and do not interfere with fundamental attributes of arbitration"). In *DirecTV, Inc. v. Imburgia*, plaintiff-consumers initiated a class action and contended that the company imposed illegal early termination fees. 135 S. Ct. 463, 466 (2015). The service terms and conditions, which were governed by the FAA, provided that the class action arbitration provisions would be ineffective if state law would find the provisions unenforceable. *Id.* The lower California court held that the reference to state law in the arbitration clause required the application of that state's law because the parties were free to refer to California law in the contract, as it would have been absent federal preemption. *Id.* at 467. The court concluded that California's interpretation of the phrase, "law of your state," did not place arbitration contracts "on equal footing with all other contracts" and was preempted by the FAA. *Id.* at 468.

417. A congressional bill introduced in 2015 would prohibit the enforcement of mandatory arbitration provisions in employment, consumer, antitrust, and civil rights disputes. See *Arbitration Fairness Act of 2015*, S. 1133, 114th Cong. § 3; *Arbitration Fairness Act of 2015*, H.R. 2087, 114th Cong. § 3. The Consumer Financial Protection Bureau is also currently considering a proposal to ban class action waiver provisions in consumer financial contracts. See *CFPB Considers Proposal to Ban Arbitration Clauses that Allow Companies to Avoid Accountability to Their Consumers*,

approach would prohibit the use of such clauses even though state courts may not always strike down these provisions under an unconscionability analysis. One could argue that this approach impedes freedom of contract. However, these anti-collective action provisions should be prohibited given the extent to which corporations use them to insulate themselves from consumer liability.⁴¹⁸

Moreover, a recent empirical study of consumer contracts suggests consumers assume they have a right to judicial process that cannot be varied by contract and are unwittingly waiving these rights because they fail to understand the consequences of entering into consumer contracts.⁴¹⁹ The study found that only nine percent of the 5000 respondents realized that the sample credit card form contract contained an arbitration clause that would prevent them from suing in court, and although the class action waiver was printed twice in bold in the sample contract, more than seventy percent of the respondents failed to realize that they could not participate in a class action.⁴²⁰ Companies are well aware that consumers fail to adequately understand form contract terms.⁴²¹ Further, once a court upholds a mandatory arbitration provision and dismisses a class action, very few consumers elect to use the

CFPB (Oct. 7, 2015), <http://www.consumerfinance.gov/newsroom/cfpb-considers-proposal-to-ban-arbitration-clauses-that-allow-companies-to-avoid-accountability-to-their-customers>.

418. CFPB Considers Proposal to Ban Arbitration Clauses that Allow Companies to Avoid Accountability to Their Consumers, *supra* note 417. A party may contractually insulate itself from civil but not criminal liability. Corporations are recognized as subjects for purposes of criminal laws and can be held criminally liable for the federal crimes of their employees and agents. *See* 1 U.S.C. § 1 (2012) (“[T]he words ‘person’ and ‘whoever’ include corporations, companies, associations, firms, partnerships, societies, and joint stock companies, as well as individuals.”); CHARLES DOYLE, CONG. RESEARCH SERV., R43293, CORPORATE CRIMINAL LIABILITY: AN OVERVIEW OF FEDERAL LAW 2-5 (2013). Criminal liability may deter corporations from engaging in behavior that may be harmful to consumers. *See* *State v. Graziani*, 158 A.2d 375, 381-84, 387 (N.J. Super. Ct. App. Div. 1959) (finding a corporation and its officers criminally liable for unlawfully conspiring to obtain money by false pretenses from members of the general public by falsely representing to some customers that certain cars were leftover new cars when in fact they were used cars). Critics of corporate criminal liability have often contended that corporations cannot form the specific intent to commit certain criminal offenses and are not actors for the purposes of relevant criminal standards. *See* Jeffrey F. Ghent, Annotation, *Criminal Liability of Corporation for Extortion, False Pretenses, or Similar Offenses*, 49 A.L.R. Fed. 3d Art. 2 (1973); Nora A. Uehlein, Annotation, *Corporation’s Criminal Liability for Homicide*, 45 A.L.R. Fed. 4th Art. 2, 6 (1986). Despite the potential role of criminal law in discouraging abusive practices against consumers, criminal law is unlikely to be able to fully protect consumers from contractual abuse. Thus, contract law must also play an important role in safeguarding consumers.

419. Jeff Sovern et al., “Whimsy Little Contracts” with Unexpected Consequences: An Empirical Analysis of Consumer Understanding of Arbitration Agreements, 75 MD. L. REV. 1, 47-51 (2015).

420. *Id.* at 47, 54-55.

421. *See* Silver-Greenberg & Gebeloff, *supra* note 20.

arbitration process.⁴²² These concerns justify prohibiting the use of such clauses in consumer contracts.

F. Addressing the Agency Problem

Lastly, Article 2 should be amended to more specifically address the question of agency in IOT consumer contracts. Section 1-103 suggests that common law principles of agency are applicable to Article 2 contracts.⁴²³ As discussed in Part III, above, agency law may not effectively protect consumers in IOT Contracts.⁴²⁴ Courts must be cautious in applying common law agency principles to IOT consumer contracts. Article 2 should be amended to provide that consumers are not automatically bound to contracts entered into on their behalf by IOT robotic devices under traditional agency principles.

If IOT devices are ultimately provided with the capacity to think and act independently so that they qualify as agents under agency principles, the extent to which consumers should be bound to IOT Contracts under an agency rationale should depend, in part, on whether the IOT device can fulfill its fiduciary duties to the consumer and the amount of control that the consumer has over the IOT device. This depends on the amounts and types of data that the IOT device will be disclosing to the manufacturer or retailer while simultaneously contracting on behalf of the consumer, as well as whether the consumer will have the ability to prevent the IOT device from disclosing certain types of data. The more confidential the data (for instance, biometric data or health data) or where a consumer's ability to restrict disclosure of her data without rendering the device useless is limited, the less likely it is that a consumer should be bound to one-sided contract terms under an agency rationale. Further, in assessing the validity of contract defenses such as mistake, a consumer should not automatically be deemed to have assumed the risk of mistake simply because they have elected to contract using an IOT electronic agent. As I have discussed above, IOT devices have been created by companies to encourage consumers to use these devices to purchase goods without accessing the company's website, which contains contract terms, as well as to encourage brand loyalty.⁴²⁵

422. *Id.* Additionally, consider, for instance, that consumers can be sued for failing to pay old debts by debt collectors but anti-collective action provisions in such contracts prohibit these consumers from suing these companies. Jessica Silver-Greenberg & Michael Corkery, *Creditors Sue, Then Block Use of Courts to Fight Back*, N.Y. TIMES, Dec. 23, 2015, at A1.

423. See U.C.C. § 1-103 (AM. LAW INST. & UNIF. LAW COMM'N 2001).

424. See *supra* Part III.

425. See *supra* notes 80-83 and accompanying text.

In short, in the age of the IOT, contract-formation and contract-defense rules, as well as agency principles, should not be used to automatically bind consumers to contracts of adhesion without accounting for the new contracting environment. Courts should reevaluate concepts crucial to the application of the contract defenses of misrepresentation, mistake, and unconscionability, such as lack of a meaningful choice, unfair surprise, unequal bargaining power, justifiable reliance, and assumption of risk, all of which were discussed in Part V, above.⁴²⁶ In conducting this reevaluation, this Article suggests that courts, the ULC, and the ALI adopt an Article 2 framework that adequately considers the ways in which increased levels of information asymmetry and Contract Distancing impact contract formation and standards related to contract defenses in the new, interface-free contracting environment.

VII. CRITIQUES

A. *Conscious Consumer Ignorance and Responsibility*

The first critique of the arguments posed in this Article is a normative one. Even if the IOT incentivizes consumers to fail to read contracts, consumers should be held accountable for their failure to read. A number of cognitive and psychological reasons have been offered to explain consumers' reasons for failing to read contracts, including bounded rationality, rational ignorance, disposition, and defective capability limits.⁴²⁷ Generally, consumers are aware that, even if they read consumer contracts, it is highly unlikely that large retailers like Amazon will be willing to change contract terms, such as risk of loss, class action and jury trial waivers, and forum-selection provisions.⁴²⁸ As a result, consumers may simply decide to ignore contract terms.⁴²⁹

426. See *supra* Part V.

427. Barnes, *supra* note 277, at 254-59. According to the disposition limits theory, consumers are optimistic and "underestimate the possibility of negative consequences resulting from their behavior." *Id.* at 256. Unrealistic optimism is a behavioral bias that is found not only in consumers' purchasing of goods but also in consumers' use of credit cards. See Eboni S. Nelson, *Young Consumer Protection in the "Millennial" Age*, 2011 UTAH L. REV. 369, 380-81 (2011). Defective capability limits include several potential heuristics, such as when people: (1) evaluate data based on factors immediately available to them, often giving disproportionate value to such factors; (2) make erroneous decisions based on statistically unsound samplings of data they nevertheless judge to be sufficiently representative; (3) value present and immediate benefits and expenditures disproportionately more than they value benefits or expenditures which may occur in the future; or (4) systematically underestimate the risks that they undertake. Barnes, *supra* note 277, at 257-59.

428. Barnes, *supra* note 277, at 259.

429. *Id.*

Further, as Nancy Kim and Jeremy Telman have argued:

[Internet companies] use contracts to insulate themselves from legal claims that derive from consumer protection legislation [As a result, u]ntold hours of toil in the realm of public policy advocacy are undone with the stroke of a pen, or more likely, with a reflexive and unreflective click on an “I agree” icon.⁴³⁰

Consider that courts have allowed companies to use arbitration agreements to defeat consumer claims under federal and state debt collection statutes.⁴³¹

It is worth noting that this Article does not adopt the position that courts should strike down all consumer IOT Contracts simply because consumers are unlikely to read such contracts. Rather, I claim that the IOT will bring about a new, automatic, and interface-free contracting environment that is likely to further exacerbate this problem while simultaneously benefiting companies such as Amazon and other big brands that will reap the rewards of locking consumers into their products, while locking their competitors out.⁴³² Dash Buttons are configured to purchase only replacement goods from a specific brand.⁴³³ Glad Dash Buttons can only order trash bags produced by Glad, and cannot purchase replacement trash bags from competing brands. Amazon only provides a Dash Button for certain large brands such as Bounty, Olay, and Clorox.⁴³⁴ Consumers who elect to use the Dash Button will only be given the option to purchase replacement goods from brands that have been approved by Amazon.⁴³⁵ Thus, companies that manufacture and provide IOT devices to consumers will have a significant advantage over companies that do not.

Consumers are unlikely to be fully safeguarded from contractual abuse and contractual provisions that restrict their right to legal recourse in the IOT setting, given the current absence of clear consumer

430. Nancy S. Kim & D.A. Jeremy Telman, *Internet Giants as Quasi-Governmental Actors and the Limits of Contractual Consent*, 80 MO. L. REV. 723, 753 (2015).

431. *Grant-Fletcher v. Collecto, Inc.*, No. RDB-13-3505, 2014 U.S. Dist. LEXIS 64163, at *28 (D. Md. May 9, 2014) (enforcing an arbitration provision in favor of a debt collection company and noting that “keeping in mind the broad federal principle favoring arbitration, the claims pursuant to the Fair Debt Collection Practices Act and the Maryland Consumer Debt Collection Act are squarely within the scope of the valid Arbitration Agreement that is enforceable by Defendant Collecto”).

432. Needleman, *supra* note 168.

433. *Id.*

434. *Id.*

435. *See id.*

protection provisions in Article 2 and courts' current interpretations of contract law principles.⁴³⁶

Neither traditional contract law principles nor Article 2 have historically provided complete protection from contractual abuse in the consumer setting. However, the harms that consumers may face in the IOT setting are significant and may have grave consequences for consumers. Examples of potential problems discussed in this Article include exacerbation of the lack of reading and understanding problem due to increased levels of Contract Distancing and manipulation of the IOT lifestyle, biometric, and health data to generate an even more accurate picture of consumer habits, which may lead companies to target consumers for contracting. IOT devices may generate data about adults who purchase these devices, as well as data about the preferences and activities of children and guests in a consumer's household.⁴³⁷ These concerns warrant a new approach in the application and interpretation of traditional contract law and agency principles.

B. *Lowered Transaction Costs*

A second concern is that form contracts, including those with class action waiver, unilateral amendment, and forum-selection clauses, are beneficial to consumers and companies because they lower transaction costs.⁴³⁸ These lowered transaction costs include lower agency costs, certainty regarding contract terms, and negotiation-free contracts.⁴³⁹ Such savings are supposedly passed on to consumers in the form of lower prices.⁴⁴⁰ Additionally, one could also argue that if form IOT Contracts were individually negotiated or contained more balanced provisions, such as allowing consumers to sue in their home state, IOT devices would become more expensive to make. Such an increase in

436. See *supra* Part IV.

437. However, to the extent that the Children's Online Privacy Protection Act is applicable to IOT transactions, companies may be prohibited from collecting and using the information of children under 13 years of age. 15 U.S.C. §§ 6501–6506.

438. See ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 302-04 (5th ed. 2008); Mark R. Patterson, *Standardization of Standard-Form Contracts: Competition and Contract Implications*, 52 WM. & MARY L. REV. 327, 342-45 (2010). Form contracts allow goods to be provided to a larger segment of the population than would be possible if contracts were individually negotiated. Russell, *supra* note 271, at 160.

439. See John J.A. Burke, *Contract as Commodity: A Nonfiction Approach*, 24 SETON HALL LEGIS. J. 285, 289 (2000).

440. See Horton, *supra* note 287, at 622. A study of consumer financial contracts conducted by the Consumer Financial Bureau found no evidence that the inclusion of mandatory arbitration provisions led to decreased prices for consumers. See CONSUMER FIN. PROT. BUREAU, *ARBITRATION STUDY: REPORT TO CONGRESS, PURSUANT TO DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT § 1028(a), § 10.3*, at 15 (2015) [hereinafter "CFPB STUDY"].

production costs could result in manufacturers electing not to make these devices, or consumers not being able to afford IOT devices once they are made. However, a recent study suggests that the inclusion of standard form contract terms, such as arbitration provisions, does not lead to decreased prices for consumers.⁴⁴¹ It is questionable whether the exclusion of such terms from form contracts will automatically lead to higher prices for consumers.

In the IOT context, transaction costs for sellers and consumers may also be lowered, as sellers can now easily explain contract terms to consumers, which can be a central factor when assessing unconscionability. Consumers will also have easier access to information about products.⁴⁴² For instance, as discussed in Part V, above, IOT devices, such as the Jibo home robot, may be able to easily find consumer reviews and warranty information on products and inform consumers of them, thereby lowering the transaction costs for consumers searching for information about products and contract terms.⁴⁴³

Further, law and economics scholars attempt to negate the concerns of contract scholars that unequal bargaining power can result in unfair contract terms by arguing, in part, that each contract term generates value for at least one party to the contract.⁴⁴⁴ These scholars contend that “[p]arties jointly choose the contract terms so as to maximize the surplus, which the parties may then divide unequally.”⁴⁴⁵

Forum-selection clauses, unilateral amendment provisions, and class action waiver provisions may lower transaction costs for companies that impose such provisions, but may increase costs for consumers, and any savings received by companies through the use of such provisions may not be passed on to consumers. Forum-selection clauses can be a serious deterrent to consumer litigation, thereby insulating companies from liability.⁴⁴⁶ Consumers with limited resources may elect not to sue in a distant venue and, as a result, will forego receiving compensation for their injuries. Consumers who elect to initiate the litigation process may ultimately accept smaller settlements during negotiations, as they may become overwhelmed by the costs and uncertainties involved in litigating in a foreign forum.⁴⁴⁷ Class action waivers require consumers to individually litigate or arbitrate claims.⁴⁴⁸

441. See CFPB STUDY, *supra* note 440.

442. See *infra* notes 443-44 and accompanying text.

443. See *supra* Part V.B.

444. Choi & Triantis, *supra* note 303, at 1679.

445. *Id.* (citations omitted).

446. Purcell, *supra* note 225, at 455.

447. See *id.* at 445-48.

448. See CFPB Considers Proposal to Ban Arbitration Clauses that Allow Companies to Avoid

Individual consumers must generally bear the costs of bringing such claims rather than sharing these costs with class members.⁴⁴⁹ Unilateral amendment provisions permit companies to amend contract terms, including choice of law provisions.⁴⁵⁰ Such amendments do not impact the price of the product purchased under the original contract, and therefore, companies which use such provisions cannot share a portion of the litigation savings they receive with consumers who accept a one-sided amended contract term. Thus, consumers who have already purchased a product from a company are unlikely to be compensated for accepting a unilateral amendment provision.⁴⁵¹ Moreover, consumers who are unhappy with a company's unilateral amendment of a contract provision are unlikely to elect to reject such terms and contract with other companies, as the form contracts of other companies will also likely contain a unilateral amendment provision.

While the use of form contracts in the consumer setting has advantages, including the potential lowering of transaction costs, there are also significant drawbacks to using such contracts in both the IOT and non-IOT consumer setting.⁴⁵² Companies routinely exert social pressure on consumers to sign contracts without reading the terms, thereby "draw[ing] upon a host of social conventions and influences that lead people into quiet compliance when signing standard form contracts."⁴⁵³ Companies such as Facebook and Google routinely use social shaming and pressure to shape public opinion and legitimize questionable provisions in their form contracts (for example, data collection provisions).⁴⁵⁴

As companies obtain more data about individual consumers via the IOT, they will be able to create even more ingenious ways to encourage consumers to sign form contracts without reflection, understanding, or review. Companies know that consumers are unlikely to read contract terms and may be tempted to include abusive terms, as well as use form contracts and data generated by the IOT to discriminate between consumers.⁴⁵⁵ Companies are also aware that one-sided contract terms

Accountability to Their Consumers, *supra* note 417.

449. *See id.*

450. Horton, *supra* note 287, at 636-37.

451. *Id.* at 609.

452. *See supra* notes 438-51 and accompanying text.

453. Hillman & Rachlinski, *supra* note 241, at 450; *see* Barnes, *supra* note 277, at 260.

454. *See* Kim & Telman, *supra* note 430, at 731-32.

455. Contract scholars have also argued that sellers may include inefficient terms in form contracts to differentiate between different types of consumers. *See* David Gilo & Ariel Porat, *The Hidden Roles of Boilerplate and Standard-Form Contracts: Strategic Imposition of Transaction Costs, Segmentation of Consumers, and Anticompetitive Effects*, 104 MICH. L. REV. 983, 988-1003

that strip away consumer rights, and which are offered on a take-it or leave-it basis, will be upheld by courts where the company's website contains a conspicuous disclosure of the terms.⁴⁵⁶ Courts routinely hold that in such an instance the consumers had notice and an opportunity to review the contract terms.⁴⁵⁷ In some instances, courts have allowed notice of a seller's terms and conditions to defeat consumer claims of false advertising and deceptive practices, although such notice may be inadequate for assessing consumer assent to contract terms.⁴⁵⁸

Moreover, the lowered transaction cost benefits of form contracts may not outweigh the many consumer concerns posed by form IOT Contracts, including increased information asymmetry and Contract Distancing. Although IOT devices may make it easier for consumers to obtain information about products, access customer reviews, and even explain warranty information to consumers, this may not serve as an adequate proxy for explaining the legalese oftentimes contained in the terms and conditions of companies' websites.

C. Increased Consumer Bargaining Power and Decreased Information Asymmetry

Another notable critique is that the IOT may increase consumer bargaining power and will decrease, rather than increase, preexisting information asymmetry in consumer contracts. This critique is a continuation of the lowered transaction costs argument posed above. If the transaction costs of consumers searching for information are lowered because product and contract information is readily available to consumers via IOT devices, then consumers will have more information about products and contract terms before contracting. As a result, information asymmetry in consumer contracts will be decreased, and consumers will have more bargaining power.

(2006); Jonathan Klick, *The Microfoundations of Standard Form Contracts: Price Discrimination vs. Behavioral Bias*, 32 FLA. ST. U. L. REV. 555, 562-69 (2005) (contending that form contracts can be used as a price discrimination mechanism).

456. See Hillman & Rachlinski, *supra* note 241, at 489-90.

457. *Id.* at 487-88.

458. See *Handy v. LogMeln, Inc.*, No. 1:14-cv-01355, 2015 U.S. Dist. LEXIS 97021, at *21-23 (E.D. Cal. July 24, 2015) (holding that notice of a company's terms and conditions of use was sufficient to defeat consumer claims under California's Unfair Competition and False Advertising Statute); Nancy Kim, *Good Enough Notice—Even if not for Assent*, LAW PROF. BLOGS NETWORK (Aug. 24, 2015), http://lawprofessors.typepad.com/contractsprof_blog/2015/08/good-enough-notice-even-if-not-for-assent.html (contending that the *Handy* court held that there was notice good enough to defeat the consumer's claims—even if that notice might not be sufficient for contract formation).

Scholars have contended that the Internet has increased consumer bargaining power as more consumers have taken to Twitter, Facebook, and YouTube to share their dissatisfaction with contract terms and products.⁴⁵⁹ Several companies, including United Airlines and Bank of America, have relented in the face of widespread consumer criticism.⁴⁶⁰ Consumers have also exercised their newfound bargaining power through local undertakings, such as the farm to table movement. One could argue that the IOT, which is the next evolution of the Internet, may facilitate the creation of similar consumer movements, thereby increasing consumer bargaining power in IOT Contracts. However, companies have attempted to restrain this supposed increase in consumer bargaining power by restricting the ability of consumers to post negative reviews through the use of non-disparagement clauses in contracts, as well as suing consumers who have given negative reviews.⁴⁶¹

Moreover, as discussed in Part IV, above, the data suggests that consumer reviews and complaints are not an adequate proxy for contract terms, and these reviews are only effective to the extent that they are seen and reviewed by other consumers.⁴⁶² According to the concept of bounded rationality, consumers “have limited time, money, energy, and memory, and so cannot make ‘perfect’ decisions when entering into contracts.”⁴⁶³ With the plethora of available product descriptions and

459. See Wayne R. Barnes, *Social Media and the Rise in Consumer Bargaining Power*, 14 U. PA. J. BUS. L. 661, 693-96 (2012).

460. *Id.* at 694-95.

461. See *Company That Threatened to Sue Negative Reviewer Just Lost Its Amazon Account*, NAT'L J. (May 9, 2014), <http://www.nationaljournal.com/tech/company-that-threatened-to-sue-negative-reviewer-just-lost-its-amazon-account-20140509>; Alison Smith-Squire, *Patient Who Posted Bad Review of Dentist on Yelp Sued for £125,000 by Practice, with Legal Move Slammed as Being a 'Poor' Substitute for Customer Service*, DAILY MAIL (Feb. 1, 2015, 8:27 AM), <http://www.dailymail.co.uk/news/article-2934801/Patient-posted-bad-review-dentist-Yelp-sued-125-000-practice-legal-slammed-poor-substitute-customer-service.html>; Herb Weisbaum, *Can a Company Stop You from Writing a Negative Online Review? Not if Congress Passes This Bill*, TODAY (Sept. 24, 2014, 9:58 AM), <http://www.today.com/money/congress-wants-you-be-able-criticize-companies-2D80168557>. California has been adopting statutes to preclude non-disparagement clauses, but such clauses are still permissible in consumer contracts in other states. See CAL. CIV. CODE § 1670.8 (West 2014); Melanie Mason, *Gov. Jerry Brown Signs Bill Protecting Consumers' Online Reviews*, L.A. TIMES (Sept. 9, 2014, 5:28 PM), <http://www.latimes.com/local/political/la-me-pc-brown-bill-signing-20140909-story.html>. The proposed Federal Consumer Review Freedom Act would also prohibit the use of such clauses. H.R. 2110, 114th Cong. § 2 (2015). The FTC has recently attempted to discourage the use of non-disparagement clauses in consumer contracts by instituting lawsuits against companies using such provisions. *FTC Sues Marketers Who Used "Gag Clauses," Monetary Threats, and Lawsuits to Stop Negative Customer Reviews for Unproven Weight-Loss Products*, FED. TRADE COMMISSION (Sept. 28, 2015), <https://www.ftc.gov/news-events/press-releases/2015/09/ftc-sues-marketers-who-used-gag-clauses-monetary-threats-lawsuits>.

462. See *supra* Part IV.

463. Barnes, *supra* note 459, at 669.

customer reviews, consumers may become so overwhelmed with this wealth of available information that the data becomes unhelpful to them in making purchasing decisions.⁴⁶⁴

Admittedly, Amazon and other large companies are certainly concerned about public opinion and confidence in their IOT devices.⁴⁶⁵ As a result, these companies may eagerly seek to address consumer concerns about IOT data collection. Despite this fear of public opinion, to date, Amazon, like so many other companies, continues to use contract terms that are detrimental to a consumer's right to seek legal redress. The fear of negative public perception and an increase in consumer bargaining power may not be significant enough to encourage these companies to eliminate one-sided contract terms, even in the IOT setting.

Other related objections are that information asymmetry in contracts favors consumers over sellers and that information asymmetry will decrease in the IOT context as consumers will have access to the same data generated by IOT devices as companies. Following that line of argument, a consumer should know how many times a device places an order, as well as the rate at which they consume a product. Moreover, consumers are not required to disclose to sellers information that they have about the seller or the value of their goods.⁴⁶⁶ Sellers routinely provide material information about their products to consumers.⁴⁶⁷

However, much of the information available to consumers about sellers and goods is likely to come from consumer reviews, which are also publicly available to sellers. Further, sellers and manufacturers are likely to have more detailed information about their IOT devices than consumers. Although consumer knowledge and access to information about products may increase in the age of the IOT, it is also likely that companies will have more information about individual consumers and their preferences, which will further shift the power dynamics between consumers and companies. Today, the vast majority of the data generated by web-enabled devices is not collected or fully analyzed.⁴⁶⁸ A large portion of the estimated economic value of the IOT will be

464. Peppet, *supra* note 14, at 729-30.

465. See Barnes, *supra* note 459, at 698 (contending that the ability of the consumer to post comments to sites like Facebook that reach a widespread audience puts pressure on merchants to worry about public opinion, adding to consumers' bargaining power).

466. Marc Ramsay, *The Buyer/Seller Asymmetry: Corrective Justice and Material Non-Disclosure*, 56 U. TORONTO L.J. 115, 116, 120 (2006).

467. *Id.*

468. Jonathan Camhi, *Here's What Happened in the Internet of Things This Week*, BUS. INSIDER (June 28, 2015, 3:00 AM), <http://www.businessinsider.com/heres-what-happened-in-internet-of-things-this-week-2015-6-27>.

maximized once companies begin to fully exploit the data generated by the IOT. Once interoperability issues are remedied, companies will be able to fully collect, analyze, and aggregate the multitude of data generated by such devices.⁴⁶⁹

Through various digital marketing techniques, companies can use data generated by IOT devices to predict the preferences, behaviors, and habits of consumers and individuals in their households in real time. IOT data could also be used in real time to allow companies to learn which advertisements are most effective with specific consumers. There is significant value in aggregating IOT data and categorizing consumers by type to forecast consumer behavior. The FTC has acknowledged the potential use of IOT data and predictive analytics to discriminate against low income and underserved communities and to target vulnerable consumers for fraud.⁴⁷⁰ Even if consumers were given unlimited access to their IOT data, they are unlikely to be able to manipulate and aggregate the data in the same manner as companies to glean the same information that could be used to target them for contracting.

Currently, the terms and conditions of websites routinely imply that data collection is being done mainly to benefit consumers, but companies clearly do not collect consumer data only to meet the needs of their customers.⁴⁷¹ For instance, Amazon's privacy policy states, "[w]e use the information that you provide for such purposes as responding to your requests, customizing future shopping for you, improving our stores, and communicating with you."⁴⁷² The policy also states, "we are not in the business of selling [information about our consumers] to others," but the notice then goes on to provide exceptions to this policy where consumer information may be disclosed, such as upon the purchase and sale of subsidiaries and business units and upon the acquisition of Amazon by a third-party company.⁴⁷³ The language used in Amazon's terms of use to describe the class action waiver

469. See *id.* The McKinney research firm estimates that at least forty percent of the economic value of the IOT will not be achieved if interoperability issues remain unresolved. Manyika et al., *supra* note 31. The Institute of Electrical and Electronic Engineers has called for the adoption of the time sensitive networking standard to aid in the resolution of interoperability issues in the industrial IOT. Todd Walter, *It's About Time: The Evolving Time-Sensitive Networking Standard for the Industrial IoT*, DESIGN WORLD (Jan. 11, 2016), <http://www.designworldonline.com/its-about-time-the-evolving-time-sensitive-networking-standard-for-the-industrial-iot>.

470. See FED. TRADE COMM'N, *supra* note 317, at 9-12. The FTC has also expressed concerns about companies drawing conclusions from big data and then discriminating against consumers as correlation does not imply causation. *Id.* at 9.

471. See, e.g., *Amazon.com Privacy Notice*, AMAZON, <http://www.amazon.com/gp/help/customer/display.html?nodeId=468496> (last updated Mar. 3, 2014).

472. *Id.*

473. *Id.* Consumer information can also be disclosed to affiliated businesses and third-party service providers and to further promotional offers, per the Amazon notice. *Id.*

implies that the provision is fair to both consumers and Amazon, as both parties are waiving the right to sue on a class action basis.⁴⁷⁴ The ability to bring suit on a class action basis is more valuable to consumers than to businesses.

As part of its advertising business, Amazon has created targeted audiences for marketers based on consumer purchasers, which allows specific marketers to bid on advertising to specific consumers.⁴⁷⁵ Data about consumer purchases via inter-connected devices may be sold to consumer data companies, such as Datalogix, and data brokers who, in turn, sell this information to companies that will use the data to market products directly to consumers.⁴⁷⁶ While there may ultimately be some restrictions placed on the data that companies may collect from IOT devices, the amount and type of information available to companies about individual consumers in the age of the IOT is likely to increase, and the resulting information asymmetry will favor companies over consumers.⁴⁷⁷

474. Amazon's terms of use provide as follows: "We each agree that any dispute resolution proceedings will be conducted only on an individual basis and not in a class, consolidated or representative action." *Conditions of Use*, *supra* note 19.

475. See Ginny Marvin, *Big Data: Amazon Set to Sell Advertisers on Its Trove of Consumer Buying Data*, MARKETING LAND (Jan. 22, 2013, 3:21 PM), <http://marketingland.com/big-data-amazon-set-to-sell-advertisers-on-consumer-buying-dat31344-31344>.

476. See Lois Beckett, *Everything We Know About What Data Brokers Know About You*, PRO PUBLICA (June 13, 2014, 12:59 PM), <http://www.propublica.org/article/everything-we-know-about-what-data-brokers-know-about-you>.

477. See *Internet of Things: Hearing Before the Subcomm. on Courts, Intellectual Prop., and the Internet of the Comm. on the Judiciary*, 114th Cong. 3-4 (2015) (statement of Jerrold Nadler, Ranking Member, Subcomm. on Courts, Intellectual Prop., and the Internet) (discussing data collection and privacy concerns). The FTC has encouraged companies using IOT devices to adopt its recommended best practices, which include data minimization and the use of measures to keep unauthorized users from accessing a consumer's device, data, or personal information stored on the network. See *FTC Report on Internet of Things Urges Companies to Adopt Best Practices to Address Consumer Privacy and Security Risks*, *supra* note 394. The FTC has acknowledged the importance of providing consumers with notice and a choice in connection with data collection. FED. TRADE COMM'N, *INTERNET OF THINGS: PRIVACY AND SECURITY IN A CONNECTED WORLD* 39-40 (2015), <https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-staff-report-november-2013-workshop-entitled-internet-things-privacy/150127iotrpt.pdf>. However, with respect to the IOT, the FTC has also stated:

[C]ompanies should not be compelled to provide choice before collecting and using consumer data for practices that are consistent with the context of a transaction or the company's relationship with the consumer. Indeed, because these data uses are generally consistent with consumers' reasonable expectations, the cost to consumers and businesses of providing notice and choice likely outweighs the benefits.

Id. at 40.

D. Economic Justifications for Information Asymmetry

A fourth objection is that, given conscious consumer ignorance, information asymmetry in consumer contracting is to be expected, and any resulting information asymmetry in favor of companies can be rationalized using economic justifications. Obtaining information is costly and, therefore, those who have paid to obtain such information or through their own innovation have created IOT devices should be rewarded over those who have not.⁴⁷⁸ Further, information asymmetry is necessary for the functioning of proper markets.⁴⁷⁹ Buyer and seller information asymmetry encourages efficient use of resources.⁴⁸⁰ Following this line of argument, businesses, rather than consumers, are likely to be able to bear the cost of paying for relevant information. Therefore, manufacturers and sellers of IOT devices should be able to collect, use, and sell data generated by IOT devices and reap the benefits of such data collection and the resulting information asymmetry. A second related argument is that warranties provided by sellers and manufacturers can guard against the negative effects of information asymmetry and that products liability law can adequately protect consumers in the IOT setting.⁴⁸¹ However, given the frequency with which large retailers and manufacturers limit or fully disclaim warranties, the effectiveness of warranties in solving this problem is questionable. Further, products liability is only relevant to the extent that consumers are injured by a company's defective product.

As to the first argument, manufacturers and retailers who invest in the IOT are obviously entitled to expect a return on their investment, and it is likely that there will always be some level of information asymmetry in consumer contracts regardless of the context. This does not mean that contract law should fail to consider the ways in which these new technologies may disadvantage consumers in contracting to the benefit of companies. The law certainly cannot ignore the data collection and privacy implications of the IOT.

Consider that RadioShack attempted to sell its 100-million-consumer database, containing consumer addresses and phone numbers, as part of its bankruptcy asset sale.⁴⁸² As previously discussed, IOT

478. Franklin, *supra* note 301, at 562.

479. Unger, *supra* note 319, at 626.

480. See Ramsay, *supra* note 466, at 116, 125-26 (noting that buyer-seller information asymmetry promotes the efficient use of resources).

481. See Nayyar, *supra* note 302, at 514.

482. Paula Rosenblum, *Bankrupt RadioShack's Attempts to Sell Customer Data Meets Resistance*, FORBES (Mar. 24, 2015, 2:55 PM), <http://www.forbes.com/sites/paularosenblum/>

devices are expected to generate even more data about consumers.⁴⁸³ Should a company that has obtained data about consumers and individuals in their household via IOT devices (such as health and biometric data, including DNA, fingerprints, stress levels, eye retinas and irises, voice patterns, facial patterns, and hand measurements) be able to sell these types of consumer data during bankruptcy to satisfy debts to creditors? Or, should a company be able to use these types of consumer data as collateral in a secured financing transaction under Article 9 of the *UCC*, even when the company has made promises to consumers about protecting their information? These are questions that cannot be easily answered by relying on the justification that, because a party has paid for the data or has invested in obtaining the information, the sale and collateralization of the data should be possible.

VIII. CONCLUSION

The IOT will allow devices, businesses, and consumers to make more valuable connections.⁴⁸⁴ One such useful connection is the convenient and easy facilitation of the purchase and sale of goods and services.⁴⁸⁵ The application of e-commerce statutes, agency law, and contract law principles found in Article 2 and the *Contracts Restatement* to IOT Contracts to evaluate mutual assent, unconscionability, good faith, mistake, and misrepresentation may lead to problematic results for consumers.⁴⁸⁶ The increased interconnectivity generated by the IOT brings along with it certain concerns including exacerbating preexisting information asymmetry and Contract Distancing in consumer contracts to the benefit of businesses.⁴⁸⁷ This may encourage consumers to continue to fail to review and understand contract terms, lead businesses to continue to include one-sided contract terms in form contracts, and encourage contractual abuse. The types and amount of data that will be generated by IOT devices will increase companies' knowledge about the

2015/03/24/bankrupt-radioshacks-attempts-to-sell-customer-data-meets-resistance. Other companies have also attempted to sell consumer data after they filed for bankruptcy. See Walter W. Miller, Jr. & Maureen A. O'Rourke, *Bankruptcy Law v. Privacy Rights: Which Holds the Trump Card?*, 38 HOUS. L. REV. 777, 790-92 (2001) (discussing the sale of consumer data in bankruptcy proceedings, and acknowledging that the practice is common); Daniel Solove, *Going Bankrupt with Your Personal Data*, TEACH PRIVACY (July 6, 2015), <https://www.teachprivacy.com/going-bankrupt-with-your-personal-data> (explaining the use of consumer data by some companies as an asset).

483. See *supra* notes 308-19 and accompanying text.

484. Evans, *supra* note 30, at 2.

485. See *supra* notes 80-97 and accompanying text.

486. See *supra* Parts III-IV.

487. See *supra* Part V.

health, lifestyle, and everyday activities of consumers and individuals in their households and communities.

Courts should adjust their application of common law agency and contract law principles, as well as that of Article 2, by considering IOT information asymmetry and Contract Distancing. The IOT will create a new contracting environment in which interface-free automatic shopping and consumer use of electronic agents is widespread.⁴⁸⁸ Courts, the ULC, and the ALI must acknowledge this new contracting environment and ensure that consumers are adequately protected in the age of the IOT.

488. *See supra* notes 1-11 and accompanying text.