NORTH CAROLINA JOURNAL OF LAW & TECHNOLOGY
VOLUME 22, ISSUE 1: OCTOBER 2020

DESIGNING A PATTERN, DARKLY

Justin (Gus) Hurwitz [*]

There is growing academic, regulatory, and legislative interest in "dark patterns"—digital design practices that influence user behavior in ways that may not align with users' interests. For instance, websites may present information in ways that influence user decisions, or use design elements that make it easier for users to engage in one behavior (e.g., purchasing the items in a shopping cart) than another (e.g., reviewing the items in that shopping cart). The general thrust of this interest is that dark patterns are problematic and require regulatory or legislative action.

While acknowledging that many concerns about dark patterns are legitimate, this Article discusses the more nuanced reality about "patterns," that design is, simply, hard. All design influences user behavior, sometimes in positive ways, sometimes in negative, sometimes deliberately, sometimes not. This Article argues for a more cautionary approach to addressing the concerns of dark patterns. The most problematic uses of dark patterns almost certainly run afoul of existing consumer protection law. That authority—not new, broader rules—should be the first recourse to addressing these concerns. Beyond that, this is an area where the marketplace—including the design professionals working to improve User Interface and User Experience design practices—should be allowed to continue to develop, but with the understanding that Congress and regulators have a keen interest in ensuring that consumer interests are reflected in those practices.

[*] Associate Professor of Law, Director of the Nebraska Governance and Technology Center, Co-Director of the Space, Cyber, & Telecom Law Program, University of Nebraska; Director of Law & Economics Programming, International Center for Law & Economics. J.D., University of Chicago Law School (2007); M.A. Economics, George Mason University (2010), B.A. St. John's College (2003).

I. INTRODUCTION

"Dark pattern" is a new term for an old practice: using design to prompt desired (not necessarily desirable) behavior.[1] For instance, a website may present terms of fservice or an upgrade offer in a window that is more difficult to cancel than it is to accept.[2] A

[1] DARK PATTERNS, https://www.darkpatterns.org/ [https://perma.cc/4N4F-RRPR] (last visited Jan. 2, 2020).

[2] Richard Thaler, *The Power of Nudges, for Good and Bad*, N.Y. TIMES (Oct. 31, 2015), https://www.nytimes.com/2015/11/01/upshot/the-power-of-nudges-for-good-and-bad.html [https://perma.cc/N3E3-ST34] (discussing examples of

website might, possibly falsely, report to a user that many other users have made a similar purchase recently or that only a limited number of units of a product remain.[3] Consumers worry that a car salesperson may present add-ons or upgrades at the end of a high-pressure negotiation, or a supermarket may stock a check-out aisle with high margin "impulse purchase" items.[4] An employer might offer on-site amenities and perks that make employees happier, but that also result in spending more time on the job.[5] Subscription services—online and offline—may run customers through a "maze" of customer service representatives to cancel service.[6] A social-media platform may make it easy and rewarding to uncritically "share" posts, facilitating the widespread dissemination of false information.[7]

These practices have the potential to harm consumers. Indeed, some of them amount to outright fraud. Others may be prohibited by other laws or regulations, such as Section 5 of the Federal Trade

website options that defaulted to "accept" and had difficult requirements to cancel a subscription).

[3] Arunesh Mathur et al., *Dark Patterns at Scale: Findings from a Crawl of 11k Shopping Websites*, 3 PRO. OF THE ACM ON HUM.-COMPUT. INTERACTIONS 81, 81:5 (2019), https://arxiv.org/pdf/1907.07032.pdf [https://perma.cc/6CTR-H259].

[4] *But see* Mario J. Miranda, *Determinants of Shoppers' Checkout Behaviour at Supermarkets*, 16 J. TARGETING, MEASUREMENT & ANALYSIS FOR MKTG. 312, 319 (2008) ("[S]hoppers' purchases at grocery checkouts may not be spontaneous and unreflective . . . but demonstrative of conscious concern with making efficient use of their shopping time. Not all purchases at checkouts can therefore be casually referred to as impulse purchase.").

[5] Mike Elgan, *Latest 'Coworking' Services Combine Remote Offices, Transportation*, EWEEK (May 15, 2016), https://www.eweek.com/mobile/latest-coworking-services-combine-remote-offices-transportation [https://perma.cc/5B64-XS95]; Gary Anthes et al., *The Right Mix*, 38 COMPUTERWORLD 24 (June 14, 2004).

[6] THALER, *supra* note 2.

[7] *See* Alex Kantrowitz, *The Man Who Built the Retweet: "We Handed a Loaded Weapon to 4-Year-Olds,"* BUZZFEED (July 23, 2019, 4:05 PM), https://www.buzzfeednews.com/article/alexkantrowitz/how-the-retweet-ruined-the-internet [https://perma.cc/2Y7C-2LD9]; *see also* Soroush Vosoughi et al., *The Spread of True and False News Online*, 359 SOC. SCI. 1146 (2018).

Commission Act.[8] Others may not run afoul of any existing law. Some of them may not even be all that likely to harm consumers—and some may even be beneficial to consumers. The ambiguity regarding the legality, potential harm, and possible benefits of dark patterns has given rise to some discussion.

In January 2020, the author of this piece was invited to testify before the United States House of Representatives Energy and Commerce Committee's Consumer Protection subcommittee on the topic of dark patterns.[9] This Article revises and expands upon the written testimony prepared for that hearing.[10] The hearing itself was on the topic of "manipulation and deception in the digital age," and focused specifically on three topics: deep and cheap fakes (generally, videos manipulated to present false or misleading information), dark patterns (generally, interfaces designed to manipulate users into certain courses of conduct), and social media bots (generally, automated accounts on social media designed to produce or promote certain types of information).

The testimony and this Article focus on dark patterns, describing the difficulties inherent in designing interfaces and of understanding the effects of design decisions as well as the risks that regulation of purportedly "dark" design decisions (that is, those that are harmful to consumers) will make all design more difficult (thereby harming consumers). Further, the author's comments in both avenues also suggest potential regulatory tools for addressing the very real risks that dark patterns can pose to consumers. This Article begins in Part II by situating concern about dark patterns within the broader context of the hearing, and generally of concerns about online mis-

[8] 15 U.S.C. § 45(a)(1) ("Unfair methods of competition in or affecting commerce, and unfair or deceptive acts or practices in or affecting commerce are hereby declared unlawful.").

[9] *Americans at Risk: Manipulation and Deception in The Digital Age: Hearing Before the Subcomm. on Consumer Prot. and Com. of the Comm. on Energy and Com.*, House Comm. On Energy & Com., 116th Cong. (Jan. 8, 2020, 10:30 AM) [hereinafter *Hearings*] (statement of Justin "Gus" Hurwitz), https://energycommerce.house.gov/ committee-activity/hearings/hearing-on-americans-at-risk-manipulation-and-deception-in-the-digital [https://perma.cc/9R92-P5HM].

[10] *See id.*

and dis-information. This discussion also reflects upon aspects of the hearing itself that relate to the topic—the very structure of Congressional hearings embeds patterns that affect their function as a vehicle for Congressional information gathering. Part III presents a general discussion of dark patterns, offering a more formal discussion of what they are and how the effects of design decisions on consumers can be bad (that is, "dark"), ambiguous, or even good. Part VI gets into the weeds of design, explaining the challenges of design in terms of the mathematical theory of complexity. And Part V considers approaches to addressing the concerns of dark patterns, from relying on competition and self-regulation, to the use of existing regulatory authority such as the Federal Trade Commission's ("FTC") authority to act against Unfair and Deceptive Acts and Practices, to more modern mechanisms such as using the same technological features that make dark patterns concerning as tools to counteract those concerns.

II. SITUATING DARK PATTERNS IN THE PANTHEON OF MIS- AND DIS-INFORMATION

> Hello, ladies, look at your man, now back to me, now back at your man, now back to me. Sadly, he isn't me . . . . Look down, back up, where are you? You're on a boat with the man your man could smell like. What's in your hand, back at me. I have it, it's an oyster with two tickets to that thing you love. Look again, the tickets are now diamonds. Anything is possible when your man smells like Old Spice and not a lady. I'm on a horse.
>
> - The Man Your Man Could Smell Like[11]

A. *Dark Patterns, the Gist*

The basic idea of dark patterns is straightforward: humans are not perfectly rational decision-makers.[12] Rather, humans constantly

[11] Old Spice, *The Man Your Man Could Smell Like*, YOUTUBE (Feb. 4, 2010), https://www.youtube.com/watch?v=owGykVbfgUE [https://perma.cc/HMR7-GZ2T].

[12] *See generally* DAN ARIELY, PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS xx (2008) (observing that "we are not only irrational, but *predictably irrational*"); RICHARD H. THALER ET AL., NUDGE: IMPROVING

use various heuristics to efficiently make decisions subject to imperfect information. These heuristics can be turned against users, however, and used, to some extent, to "program" them for specific behavior.[13]

There is a myriad of common examples of these cognitive biases. However, dark patterns present a case where it may be easier to show than to tell: the images at the top of the next page demonstrate simple "dark patterns" at work.

As these images demonstrate, there are patterns in how users interact with information. Designers study these patterns and can use them to present information in ways that influence how users respond to that information. Designers may present information in a manner that follows the flow of how readers or users are likely to naturally process it; or in a way that highlights details that may be easily missed; or by "hiding" information despite it being plainly disclosed.

The first image[14] takes advantage of how humans scan information in an image or on a page. In the first image, design is used to make the reader feel like they are being controlled by the image. While the presentation is in a somewhat jocular or didactic manner, it may nonetheless leave some readers perplexed or even feeling manipulated. It is, in a sense, a text-based version of the advertisement quoted at the beginning of this section—a popular advertisement for Old Spice in which the actor instructs the viewer: "[l]adies, look at your man, now back to me, now back at your man, now back to me. . . . Look down, back up, where are you? You're on a boat with the man your man could smell like."[15] The design of that ad, both in terms of the script and the cinematography, gives the viewer a sense of being manipulated–again in a jocular way–that is

---

DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS (2008) (explaining the nature of irrational consumers).

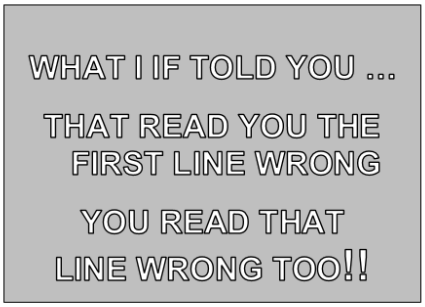
[13] *See* THALER, *supra* note 12; *see also* BRETT FRISCHMANN & EVAN SELINGER, RE-ENGINEERING HUMANITY 11 (2018) (discussing the means by which "techno-social engineering programs our behavior").

[14] Zer0Effect, *And You Will Read This at the End*, REDDIT (2019), https://www.reddit.com/r/dankmemes/comments/apcf4f/and_you_will_read_this_at_the_end/ [https://perma.cc/3SBX-E4E9].

[15] Old Spice, *supra* note 11.

useful in portraying Old Spice deodorant (the product being advertised) as a source of confidence.

And you will read this at the end



The second image is somewhat more nefarious,[16] even if innocuously so. It contains errors that most readers' brains will automatically correct and skip over as they are read and plays with the reader by calling attention to these overlooked errors. Imagine if, instead of minor typos or grammatical errors, this image had "tricked" the reader into accepting substantive errors, such as the inclusion or omission of the word "not," or an extra digit in the price of a product. Patterns like these could be used to "trick" users into accepting terms or disclosing information, ostensibly, knowingly.

While there is nothing terribly new about merchants shaping the customer experience to their own advantage, new attention has been paid in recent years to practices like these when used in the online environment. First, given the name "dark patterns" at the beginning of the last decade, concern about these practices has grown in the academic literature and popular press in recent years.[17] The

[16] MEMEPRO1, *If You Did it Great!*, REDDIT IMAGEFLIP (2018), https://imgflip.com/i/225k37 [https://perma.cc/DSH3-TL6Z].

[17] *See, e.g.*, Ryan Calo, *Digital Market Manipulation*, 82 GEO. WASH. L. REV. 995, 1005 (2014); Paul Ohm, *Forthright Code*, 56 HOUS. L. REV. 471, 473 (2018); Ari Ezra Waldman, *Power, Process, and Automated Decision-Making*, 88 FORDHAM L. REV. 613, 632 (2019) [hereinafter Waldman, *Power*]; FRISCHMANN & SELINGER, *supra* note 13.

phenomenon has also increasingly gained legislative attention.[18] Recently, attention has been driven particularly by concerns of the privacy community about the effectiveness of privacy disclosures and notice-and-consent requirements about mis- and dis-information.[19]

B. *Dark Patterns as Mis- and Dis-information*

Dark patterns are often discussed alongside, or as a form of, online mis- and dis-information.[20] Importantly, dark patterns are meaningfully different from most other forms of mis- and dis-information—to the point that it is problematic to discuss them as though they were species within the same genus of concern. The concern about dark patterns is that firms may design websites in ways that adversely affect their users—that is, about manipulation that affects a first-party relationship. However, cheap- and deep-fakes, and social media bots, are designed to affect third-party relationships. They are intended to affect how those exposed to their content think about other parties of individuals—for instance, to embarrass a public figure or influence public debate.

It is remarkable that these different concepts would be grouped together under a heading on manipulation and deception in the digital age. Their underlying concerns and likely policy responses to each share little in common. While all can colorably be considered under a common rubric of manipulation and disinformation, grouping these concepts in this way suggests a greater similarity between them than really exists. Grouping

---

[18] *See, e.g.*, Deceptive Experiences to Online Users Reduction Act (DETOUR Act), S.1084, 116th Cong. (2019).

[19] *See* Waldman, *Power*, *supra* note 17; Ari Ezra Waldman, *Privacy's Law of Design*, 9 U.C. IRVINE L. REV. 1239, 1247 (2019); Lindsey Barrett, *Confiding in Con Men: U.S. Privacy Law, the GDPR, and Information Fiduciaries* 42 SEATTLE U. L. REV. 1057, 1071 (2019); Neil M. Richards & Woodrow Hartzog, *The Pathologies of Digital Consent*, 96 WASH. U. L. REV. 1461, 1463 (2019); Lior Jacob Strahilevitz & Jamie Luguri, *Consumertarian Default Rules*, 82 L. & CONTEMP. PROBS. 139, 154 (2019); Ohm, *supra* note 17; Lauren E. Willis, *Why not Privacy by Default*, 29 BERKELEY TECH. L.J. 61, 68 (2014); FRISCHMANN & SELINGER, *supra* note 13.

[20] *See, e.g.*, *Hearings*, *supra* note 9 (discussing dark patterns alongside other topics such as cheap and deep fakes).

concepts such as deep fakes and dark patterns together could itself be considered a form of manipulation or deception, using the concerns raised by each to create a greater specter of concern than would otherwise exist.

C. *The Curious Case of Congressional Testimony*

As noted above, the origin of this Article was Congressional testimony on the general topic of "manipulation and deception in the digital age." It is worth reflecting on the spectacle of Congressional testimony itself as a useful lens for thinking about dark patterns. The observation above, that the structure of the hearing at which the earlier version of this Article was presented—the artificial grouping of three distinct forms of potentially problematic online conduct under a unified heading of manipulation and deception—could itself be considered a form of manipulation or deception leads to some broader reflections on the nature of the Subcommittee hearing process. The entire structure of Congressional testimony is designed to elicit certain types of discussion. It would take a special sort of naiveté to believe the purpose of a hearing is to provide useful information to Congress or to engage in a probing search for truth. To the contrary, the structure of the hearing, in which each participant is given short windows in which to either make statements or ask questions, all but makes it impossible for any issue to be explored in detail or any ideas to be interrogated in depth.

Rather, the nature of the Congressional hearing is performative, providing each member a five-minute opportunity for structured colloquy with the witnesses.[21] This time may be used in various ways, from making statements to dialoguing with individual witnesses, or asking the entire panel of witnesses to respond—typically with a yes or no answer—to a question. In any event, the game is obvious to those who have played it: each member of

[21] As recently explained by a United States Senator: "Most of what happens in committee hearings isn't oversight, it's showmanship. Senators make speeches that get chopped up, shipped to home-state TV stations, and blasted across social media. They aren't trying to learn from witnesses, uncover details, or improve legislation. They're competing for sound bites." Ben Sasse, *Make the Senate Great Again*, WALL ST. J., https://www.wsj.com/articles/make-the-senate-great-again-11599589142 [https://perma.cc/UNC2-GZ7X].

Congress comes to a hearing with their own agenda, and the hearing provides them an opportunity to introduce materials into the record—be it the written record or the recorded video—in support of that agenda.

Hearings need not be designed this way. When Congress, either as individual members or an institution, wants to learn about a topic, it has better mechanisms than the public spectacle of a hearing. The purpose of a public hearing is precisely the spectacle of the thing—the opportunity it creates for grandstanding, creating soundbites, and prompting useful statements from Congressionally-certified experts. To this end, they are deliberately designed to be amenable to this purpose.

The foregoing aspects of a Congressional hearing's design makes testifying in a hearing about dark patterns—and, for that matter, mis- and dis-information generally—a curiously ironic experience. Throughout the hearing, it was unclear whether those in the room could tell how often the discussion addressed the patterns that were on display in real time.

Perhaps the greatest irony of the hearing, however, related to the topic of cheap fakes. Cheap fakes generally refer to videos edited to present the source material to portray a narrative different from the original source content. For instance, a video in which content is selectively edited, or the way in which it is played back is altered, would be a cheap fake. Examples such as using out-of-context excerpts from a recording of presidential candidate's town hall, or altering the playback-speed of a recording to make the speaker sound intoxicated, are demonstrations of cheap fakes.[22] So too is altering portions of a video to change its apparent meaning.[23]

At the beginning of her questioning of witnesses, Subcommittee Chairwoman Jan Schakowsky referenced her questioning of Mark Zuckerberg at a prior hearing, noting that "when we had Mark Zuckerberg here, I did a review of all of the apologies we have had

[22] @ubermomocmd, TWITTER (May 23, 2019, 6:25 AM), https://twitter.com/ubermomocmd/status/1131521526212243457 [https://perma.cc/JW79-M6ZQ].

[23] *See* @shaderunnr, TWITTER (Jan. 9, 2020, 12:13 PM), https://twitter.com/shaderunnr/status/1215335927511425024 [https://perma.cc/B3D5-YF6A].

from him over the years."[24] Had this reference been presented as a video compilation of various times in which Mr. Zuckerberg apologized, it would be a canonical example of a cheap fake. Indeed, such video compilations exist, and have been aired as part of news programs.[25]

The point of this discussion is not to criticize or express concern about the Subcommittee or its hearing process. To the contrary, the hearing process serves valuable purposes. And while hearings may not be particularly effective tools for information discovery, they are nonetheless important tools for incorporating information into the democratic process. The lesson from this discussion is that dark patterns—as well as other tools that can be associated with mis- or dis-information—can, in fact, serve valuable informational purposes. And more poignantly, that before Congress decides to regulate the speech practices of others, it would be advised to look to its own practices for guidance.

III. DARK PATTERNS: DEFINING THE CONCERN

A. *What are Dark Patterns?*

First coined in 2010,[26] the term "dark patterns" was created to describe user interface design patterns that are "crafted with great attention to detail, and a solid understanding of human psychology, to trick users into do[ing] things they wouldn't otherwise have done."[27]

The term is used primarily to describe user interface design choices intended to invoke a particular behavior (usually to the benefit of the designer and/or the designer's employer). Many, if not most, examples have offline analogs. But the arguably unique thing

---

[24] *Hearings*, *supra* note 9 (testimony of Monika Bickert).

[25] CBS This Morning, *Timeline of Mark Zuckerberg's Apologies*, YOUTUBE (Apr. 11, 2018), https://www.youtube.com/watch?v=AHah9agzXfs [https://perma.cc/8BZL-5S32].

[26] Harry Brignull, *Dark Patterns: Dirty Tricks Designers Use to Make People Do Stuff*, 90 PERCENT OF EVERYTHING (July 8, 2010), https://www.90percentofeverything.com/2010/07/08/dark-patterns-dirty-tricks-designers-use-to-make-people-do-stuff/ [https://perma.cc/T8KY-PRVC].

[27] *Id.*

about dark patterns is that software interfaces to online platforms are infinitely and instantly malleable. There is practically no limit to design choices, and those design choices can be changed, tweaked, updated, and targeted with ease—including in real-time and in response to specific users or user actions. The limitations of dark patterns online are inherently different from those in more traditional sales channels. For instance, a supermarket checkout aisle needs to be roughly a constant size, needs to target the average customer insofar as is impracticable to send customers to different aisles based on, e.g., their buying history, can only fit so many products on the shelves, and cannot be easily changed outside of a set schedule.

Another unique aspect of dark patterns is that, sometimes, the underlying code is available. So, for instance, if a webpage is targeting different interfaces to different users using browser-side techniques, the underlying code can be inspected. Similarly, online interfaces are typically used from the relative comfort of one's home or office, or while out and about on one's mobile device. Both of these factors give users greater control over how they choose to interact with an interface than is possible in many offline settings.

Dark patterns take advantage of a few key behaviors of imperfectly rational humans. First, people are unwilling to devote a large amount of cognitive resources to relatively low value activities. As such, people skim when they read, often missing some details—particularly those that may be designed in a way that makes them relatively easier to miss. People's eyes follow common patterns when reading text on a screen or page, as a result of how salient information has been presented in their prior experiences.[28] Second, if there is a cost to correct a mistake, people may just accept the mistake if the cost in time or effort exceeds the cost of continuing on their present course. Few people will take the time to return a product for a $2.00 refund, even if that product was shipped to them (and they were charged for it) in error (or fraud). Third, people are social creatures and frequently rely on the behavior of others to

[28] A search on Amazon.com for books on "eye tracking," for instance, yields dozens of results. *Results for "Eye Tracking,"* AMAZON, https://www.amazon.com/s?k=eye+tracking&ref=nb_sb_noss_2 (last visited Aug. 22, 2020).

guide their own conduct. Thus, when presented with information such as "Bonnie in New Jersey recently purchased item X" or "12 other people are looking at this deal right now," consumers will potentially feel an elevated sense of pressure to commit to a purchase. This heuristic, sometimes referred to as "social proof," can be understood as entirely rational, reflecting the wisdom of the crowd; but it can also be taken advantage of to present a decision as more desirable than it really is.[29]

There is no doubt that firms use dark patterns, or that they can be effective. One recent study analyzed 53,000 different product pages across 11,000 different online shopping sites, and found 1,818 instances of dark pattern usage.[30] In another study, respondents presented with either a "mild" or "aggressive" dark pattern designed to push them into purchasing credit monitoring services were 228% to 371% more likely to purchase the offered services.[31]

At the same time, and as discussed below, design is, simply put, hard, and not all "dark" patterns are intentional or malicious. Some are benign or even beneficial.[32] Design decisions are necessary to any interface and negative effects may be inadvertent or practicably unavoidable. For example, one of the studies above used screen shots from the PlayStation live service and its promotion of a 12-month subscription over the 1-month option by using larger text for the former to demonstrate a deceptive dark pattern.[33] But, considering the large volume of gamers that use that service, it may

---

[29] *See generally* ROBERT B. CIALDINI, INFLUENCE: THE PSYCHOLOGY OF PERSUASION (Harper Bus. rev. ed. 2006). Indeed, the term "social proof," is generally traced to Robert Cialdini's 1984 book INFLUENCE: THE PSYCHOLOGY OF PERSUASION, one of the seminal books on the psychology of persuasion and marketing.

[30] Mathur, *supra* note 3.

[31] Jamie Luguri & Lior Strahilevitz, *Shining a Light on Dark Patterns* 22 (Univ. of Chic. Pub. L. Working Paper No. 719, 2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3431205 [https://perma.cc/P2NA-CLJP].

[32] *See* Jonathan Cribb & Carl Emmerson, *What Happens When Employers Are Obliged to Nudge? Automatic Enrolment and Pension Savings in the UK* 34 (Inst. Fiscal Stud., Working Paper No. 1619, 2016), https://www.ifs.org.uk/uploads/wp1619.pdf [https://perma.cc/PDN3-MUJB] (finding that automatic enrollment in pension programs lead to large increases in savings by employees).

[33] *See* Luguri & Strahilevitz, *supra* note 31, at 13–17.

simply be the case that the annual savings and convenience of not having to subscribe monthly benefits one group of users, even though it may be annoying or undesirable to a second set of users. In other words, using larger text sizes to make the option most desired by most users easier to find, while leaving the alternate option available on the same page for users who prefer it, may be the preferred design for most users. Further, designs intended to bring about certain effects may be ineffective, and intended effects may be beneficial—for example, reminding users of abandoned shopping carts and reminding users of necessary complementary products may confer a benefit on both the seller (more sales) and the buyer (purchasing desired products). It may be the case that the annoyance of being "pushed" to purchase items in a cart, or to buy items related to those in a cart, is relatively minor, even spread across thousands of users, to avoid a greater inconvenience for users who fail to click the final button to complete a purchase, or who are about to purchase a product only to later discover that they needed to have purchased complementary goods to use it.

Dark patterns are also nothing new. Indeed, most have existed in one form or another in the offline world for a long time. Stores keep candy near registers because it is easier for parents to simply placate a whining child than to discipline them in a checkout aisle. Similarly, tabloids art kept near registers to entertain customers and distract them from the feeling of impatience while waiting to pay. When purchasing a car at a dealership, the salesperson may "consult" with a hidden "manager" to make a customer feel he is getting a good deal. The customer then frequently needs to go through two or three layers of personnel to finalize the deal, each time being offered various "upgrades" to the vehicle being purchased. Homeowners needing contractors for home remodeling, fence installation, or a major repair will frequently not be able to receive a price over the phone—even if pricing is relatively standard—because such companies prefer to send a salesperson to the premises who can talk the potential customer through objections.

These are all common "tricks" of the sales trade. These tricks are patterns of doing business that allow firms to generate more revenue from customers. In some cases, these tricks may be deceptive or harmful, or at least have no positive social value (as

opposed to merely transferring wealth from customer to firm). In other cases, there may be real value to these tricks. A company may prefer to send contractors to visit customers' homes because experience shows customers often do not understand which products best suit their needs, or have the wrong work done on their houses to solve a given problem. Sending the contractor to inspect the job site before giving a quote may allow for better quotes and performance and, even more importantly, avoids creating unhappy, or complaining, customers. And in other cases, these tricks may be a mechanism for price discrimination—sorting customers by their willingness to pay for a given product. While controversial, the economics of price discrimination are widely understood and, generally, legal. The net effect of price discrimination in competitive markets generally does not increase firm revenues significantly. Rather, by charging some customers more and keeping the average price the same, firms are able to offer other customers lower prices, which can allow them to offer their goods or services to consumers who may otherwise be priced out of the market.

B. *Dark Patterns: the Good, the Bad, and the Ambiguous*[34]

Although the literature on dark patterns is relatively new, there are some readily identifiable patterns which deserve discussion. What follows is a discussion of some of these common patterns, and an attempt to differentiate them, along with other examples in terms of "good," "bad" and "ambiguous" effects.

1. *Bad-effect Design*

Websites may use designs to trick consumers into undesired action. These designs include, for instance, employing things such as "countdown timers"[35] indicating that a customer only has "X" amount of time remaining to complete a purchase. Using fraudulent information, website designs may create a needless sense of urgency that compels a customer to make a purchase that they would not have made upon less pressured reflection. Sites also employ a

[34] Note, these "bad/ambiguous/good" behavior headings are approximate, meant to offer intuitive examples to demonstrate that design can be good or bad.

[35] Mathur et al., *supra* note 3, at 8:12.

"limited-time message" or "scarcity message"[36] indicating that a particular deal will only exist for a short period of time, or that the item is on the verge of selling out. When fraudulent, the artificial urgency created by countdown timers and similar features is used to motivate a buyer without need. Upsells, a design that introduces steps meant to encourage users to purchase an additional good or service (e.g. insurance for a travel ticket), are also common. When a design "confirmshames"[37] users, it employs a choice interface ("yes" or "no") in a way that manipulates a consumer's emotions. Thus, instead of just allowing a "no" choice to decline optional insurance for a vacation, the offered choice may be "No, I don't want to protect my valuables and loved ones during my trip."

Visual interference[38] is used to display important text in obscured or otherwise difficult to see color and layout scheme.[39] One-way visual interference manifests online is to offer users upgrade options in a window that offers them an obvious way to accept, but obscures how to decline, the offer. The cognitive effect of this design is that it gives users inclined to decline the offer a few additional seconds to change their minds, and, because people have a natural predisposition to ideas that they have encountered recently, the design may in fact make these users marginally more likely to do so. Even if the conversion rate is small, if offered immediately after a sale, this mechanism only has upside revenue potential.

More traditionally, supermarkets manage the length of lines to generate a sunk-cost bias. Also, as noted above, impulse buy items

---

[36] *Id.* at 8:16–17.

[37] *Id.* at 8:17.

[38] *Id.*

[39] *See* Kaitlyn Tiffany, *This Instagram Story Ad with a Fake Hair in it is Sort of Disturbing*, THE VERGE (Dec. 11, 2017), https://www.theverge.com/tldr/2017/12/11/16763664/sneaker-ad-instagram-stories-swipe-up-trick [https://perma.cc/ M7LQ-ABVC]. Note, however, that deceptively obtained consent is ineffective. At times, this pattern goes beyond simple design choices in terms of font and color, and moves into introducing wholly out of place elements clearly meant to confuse a user. For example, one shoe retailer placed a picture of a hair over top of their otherwise legitimate ad in an effort to trick users into swiping up. *Id.* Some users, thinking they were ridding their screen of a hair, actually ended up on the retailer's website. *Id.*

are offered alongside the waiting shoppers to encourage them to add more to their order. Sites sometimes use "sneaking,"[40] which automatically adds items to a shopper's cart. One of the most classic examples of off-line manipulative behavior is creating roadblocks for users to shape their behavior. Typically, these roadblocks take the form of making it difficult to cancel a service or return a product. For example, cancelling cell phone service frequently requires transfers between multiple sales representatives and navigation of complex phone menus. Cancelling cable or internet services often requires consumers to go through a similarly circuitous experience.

2. *Ambiguous-effect Design*

There are a host of behaviors that arguably straddle the line between benign and unsavory. Websites frequently employ automated messaging systems that periodically remind browsing customers of items they left in their carts. Technically unsolicited, messages such as these may be an annoyance, but may also serve to remind users of purchases that they want to return to or even thought that they had completed. Complementary product notices are similar. To some users, being offered complementary products may be an annoyance or even induce undesired purchases, but for others they can provide important information and avoid substantial future costs. For instance, a site may suggest a customer who is buying a plumbing fixture also buy Teflon plumbing tape. If the customer is unaware that Teflon plumbing tape is needed to properly install most fixtures, this is valuable information that may save the consumer from having to make a subsequent purchase, or even from improperly installing the fixture. On the other hand, if the customer already has such tape, this may be a minor annoyance. Further, if the suggested product is not actually needed, this suggestion may be harmful to the customer.

Grocery stores use inconsistent labeling on the price stickers placed on goods—similar items may have their unit prices calculated using different units.[41] Inconsistent labeling can be

[40] *Id.*

[41] Melanie Pinola, *How the Unit Pricing Labels in Stores Can Trick You into Spending More*, LIFEHACKER (Oct. 3, 2014, 11:00 A.M.), https://lifehacker.com/

misleading (making more expensive products appear less expensive), or just irritating, as it forces consumers to do their own comparisons and makes pure price competition among vendors more difficult. Some argue that inconsistent labeling is a devious mechanism forcing consumers into buying more expensive products by making it harder for customers to identify which products have the best prices. It can, however, also be a way of promoting non-price competition, where consumers are unlikely to compare the quality of products if their sole focus is price. Indeed, research suggests that consumers may over-rely on price comparisons as strong indicators of quality.[42]

Doctors, dentists, and similar healthcare providers increasingly insist upon scheduling follow-up appointments at the beginning of an appointment. Requesting that patients schedule follow-ups before their initial appointment may pressure patients into scheduling appointments that they do not need, or more often than they need. These appointments may even be decided based upon what a patient's insurance will cover, not what the patient needs from a medical or professional perspective—a practice that may increase overall healthcare costs for everyone in society. On the other hand, this practice may also make it more likely that needed follow-up appointments are scheduled, which may be better for patients, reduce providers' administrative costs, and reduce overall healthcare costs for society. It is possible that on average, some portion of such appointments are wasteful or beneficial—but in any given case the effects may be either beneficial or harmful.

Arguably, even familiar and widely used user interface elements such as a "like" button or a "retweet" button represent a degree of user manipulation, albeit with ambiguous effects. Social networks are today defined, to some extent, on the degree of reach that individual users can affect. Much of this reach is measured by user

---

how-the-unit-pricing-labels-in-stores-can-trick-you-int-1641793755 [https://perma.cc/K3KZ-5GDF].

[42] Dengfeng Yan et al., *Package Size and Perceived Quality: The Intervening Role of Unit Price Perception*, 24 J. OF CONSUMER PSYCH. 3, 14 (2014) (finding that consumers use unit price as a proxy to determine quality when comparing similarly sized and different sized goods).

engagement, which is, in turn, driven by activities such as liking and retweeting.[43] These design features were explicit choices meant to encourage user interaction on the social networks, and thus represent user manipulation to a degree. The social value of these platforms is subject to important debate and scrutiny, from their ability to serve as vectors for and amplifiers of mis- and dis-information and concerns about potentially addictive behavior patterns.[44] Nonetheless, social media has unquestionably been beneficial to many in society—most often to minority and other disadvantaged voices that have historically not had access to high-profile platforms. For those voices, social media has served as a significant amplifier of their messages, concerns, and ideas—and the design elements that have allowed these platforms to succeed have allowed these user groups to benefit from them.

Or, to return to an echo of the PlayStation example used above, during its regular membership drive, NPR strongly encourages listeners to become "sustaining members." That is, NPR wants listeners to agree to small, automatic, monthly donations instead of larger, one-time donations. But why should NPR care if a listener gives $120 once in January or $10 per month over a period of twelve months? The answer is that this encouragement is a dark pattern.[45] Getting listeners to sign up for the monthly subscription makes it more likely that they will continue paying long into the future. Rather than hoping that each year the listener will affirmatively choose to make a single large donation, the psychological burden is

---

[43] Jeffrey Kranz, *7 Social Media Engagement Metrics for Tracking Followers and Growing Community*, BUFFER (Sept. 21, 2015), https://buffer.com/resources/measure-social-media-engagement [https://perma.cc/PZ5H-FAKU].

[44] *See* Christian Montag et al., *Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories*, 16 INT'L. J. ENVTL. RSCH. PUB. HEALTH 2612, 2623 (2019); Hilary Andersson, *Social Media Apps are 'Deliberately' Addictive to Users*, BBC NEWS (July 3, 2018), https://www.bbc.com/news/technology-44640959 [https://perma.cc/RHY4-FQWB].

[45] *See* Priscella Esser, *Getting Users' Long-Term Commitment with a Monthly Charge*, INTERACTION DESIGN FOUNDATION (2018), https://www.interaction-design.org/literature/article/getting-users-long-term-commitment-with-a-monthly-charge [https://perma.cc/3CDP-RDJ5].

shifted to the listener to discontinue making small regular donations, which many are unlikely to do. NPR, of course, is a good, honest, hardworking news organization with pure motives, so it would never be criticized for taking advantage of its listeners by tricking them into emptying their pocketbooks into public broadcasting's coffers. But when companies like Microsoft and Adobe use this same practice,[46] it is clearly deceptive.

3. *Good-effect Design*

Design choices can also obviously be aimed toward good ends. Apple and Amazon are two of the best examples of carefully considered design meant to drive positive user experiences. The so-called "Apple tax," the price premium that Apple is able to charge for its products compared to similar-quality products from other companies, is a reflection of Apple's reputation for producing well-designed products.[47] Amazon, likewise, to an important degree made e-commerce accepted and trusted through the great strides it made in both creating secure environments that customers could trust, and in removing as much of the friction in the shopping experience as possible. Its famous "1-click" patent, and the associated ease with which it designed its checkout experience, was an important part of that innovation.[48]

Individual apps that cater to different user lifestyles also introduce design choices—often using the same techniques derided as manipulative in the social media context—to encourage, for example, healthier lifestyles. Apple's watch has a built-in app that reminds users to breathe deeply periodically,[49] and an app that

[46] *Id*. Lest the dripping irony be lost, the effects of these practices in the cases of both NPR and commercial entities like Microsoft and Adobe are ambiguous, with both positive and negative effects for different groups of users.

[47] Kevin Downey, *Why are Apple Products so Friggin' Expensive?*, KIMKOMANDO (Mar. 9, 2019), https://www.komando.com/money-tips/why-are-apple-products-so-friggin-expensive/549472/ [https://perma.cc/L89X-GLUM].

[48] *Why Amazon's '1-Click' Ordering Was a Game Changer*, KNOWLEDGE@WHARTON (Sept. 14, 2017), https://knowledge.wharton.upenn.edu/article/amazons-1-click-goes-off-patent/# [https://perma.cc/86R6-38QN].

[49] Lucy Hattersley, *What is Breath for Apple Watch | How to use Apple Breathe app in watchOS3*, MACWORLD (Oct. 3, 2016), https://www.macworld.co.uk/

reminds users to stand up and walk around once an hour to combat the problems associated with modern work habits.[50] Other apps help dieters remember when they are allowed to eat, encourage them to make healthier choices, and to drink enough water.

IV. THE DARK TRUTH: DESIGN IS HARD

Design is difficult. It is also necessary. A car must have a mechanism for steering, which must be located somewhere and be articulated in a certain manner. Design choices will affect how easy it is to operate the car, how responsive the car is to the driver and to road conditions, and how safely the car can be operated. Design decisions will affect the aesthetics of the car, how comfortable the car is, and the cost of manufacturing the car. Indeed, the decision of whether to invest significantly in research and development relating to the car's steering mechanisms will affect the cost, quality, and safety of the car.

Things just get more complicated from there. If regulators want to ensure the safety of cars, they need to design systems for measuring, monitoring, and enforcing safety metrics. If, for instance, regulators use crash test dummies modeled after the typical male driver, car manufacturers will design cars that are safe for typical male drivers—and possibly unsafe for female drivers.[51] Design, in other words, is difficult.

A. . . . *it's Complicated*

In some systems, including nearly all software-based systems, design is more than just difficult, it is "complicated." Complex systems are systems with many interconnected parts, in which changes to any one of those parts can affect other parts, often in

---

feature/iphone/what-is-breathe-for-apple-watch-how-use-apple-breathe-app-in-watchos-3-3643692/ [https://perma.cc/FBD4-V8C7].

[50] *Close Your Rings*, APPLE, https://www.apple.com/watch/close-your-rings/ [https://perma.cc/47NB-7F7R] (last visited Jan. 5, 2020).

[51] This is a topic that has been discussed extensively in recent years. *See, e.g.*, Astrid Linder & Mats Svensson, *Road Safety: The Average Male as a Norm in Vehicle Occupant Crash Safety Assessment*, 44 INTERDISC. SCI. REVS. 140, 140 (2019).

unexpected and hard to understand ways. The measure of complexity in these systems is said to grow polynomially, exponentially, or even factorially in proportion to the total number of components in the system.[52] In other words, doubling the number of components in a system from five to ten may increase the overall complexity—the possible number of interactions between those components—by a factor of over 30,000.[53]

One of the primary goals of "design" is to reduce complexity. Complexity is primarily controlled by reducing the number of possible interactions between the components of a system—and this, in turn, means reducing the overall functionality of the system. The challenge is figuring out which functionality to excise and which to retain. Sometimes, reducing overall system complexity can even entail adding new components. For instance, a system can be designed with a "basic" or "default" mode in which users cannot change most settings, but can also have an additional "advanced" mode in which users have greater control. Designing such a system requires developing two separate interfaces, a way to switch between them, and user education on this multi-interface system.

Complexity abounds, often with tragic results. The Three Mile Island disaster is a classic example—perhaps the most famous. As described by the Washington Post following the disaster, "[t]he [Three Mile Island] control room is a vision from science fiction. It sits under the shadow of the 190-foot-high domed reactor containment building. Inside, a horseshoe-shaped panel stretches 40 feet along three walls lined with dials, gauges and 1,200 warning lights color-coded red and green."[54] All of those dials, gauges, and warning lights were working well when the disaster occurred. They presented, however, too much information to be useful, and did so in a way that could not be useful, in the event of a real-time

---

[52] *See* Eric Kades, *The Laws of Complexity and the Complexity of Laws*, 49 RUTGERS L. REV 403, 431 (1997) (providing an overview of the concept of computational complexity).

[53] *Id*. at 435–36 (giving a similar example that demonstrates exponential and factorial growth).

[54] *A Pump Failure and Claxon Alert*, WASH. POST, http://www.washingtonpost.com/wp-srv/national/longterm/tmi/stories/ch1.htm [https://perma.cc/4FUR-HYJE].

emergency. Subsequent investigation determined that the indicator light for the pump responsible for the chain of events that led to the eventual disaster communicated ambiguous information that misled the facility staff as they tried to figure out why the power plant was malfunctioning.[55] As Don Norman, Emeritus Professor and Director of the University of California San Diego Design Lab explained: "[t]he control room and computer interfaces at Three Mile Island could not have been more confusing if they had tried."[56]

The August 21, 2017 collision of the Navy destroyer John S. McCain presents a more recent, and more poignantly tragic, example of the complexity and stakes of design decisions. The National Transportation Safety Board's ("NTSB") report on that incident identifies "the design of the destroyer's Integrated Bridge and Navigation System" ("IBNS") as one of the factors contributing to the collision, and finds that "the design of the *John S. McCain's* touch-screen steering and thrust control system increased the likelihood of the operator errors that led to the collision."[57] Moreover, the report focuses extensively on issues relating to operational procedures and crew training that are directly related to the design of the IBNS.[58] As documented in a subsequent ProPublica report, the IBNS design failures eerily echo the design failures at Three Mile Island: an easily-overlooked pop-up window indicated which station had steering and thrust control at any given time.[59] In a more modern twist, the use of touch-screens added additional

---

[55] Pulkit Verma, *3 Button Designs from 3 Different Decades That Almost Results in Catastrophe*, UX COLLECTIVE (Oct. 18, 2019), https://uxdesign.cc/3-button-designs-from-3-different-decades-that-almost-results-in-catastrophe-9ac65498c9c4 [https://perma.cc/Z57C-7GWY].

[56] *Id*.

[57] NAT'L. TRANSP. SAFETY BD., MARINE ACCIDENT REPORT NTSB/MAR-1901 COLLISION BETWEEN US NAVY DESTROYER JOHN S MCCAIN AND TANKER ALNIC MC SINGAPORE STRAIT, 5 MILES NORTHEAST OF HORSBURGH LIGHTHOUSE 33 (2019), https://www.ntsb.gov/investigations/AccidentReports/Reports/MAR1901.pdf [https://perma.cc/N3EF-H6SV] [hereinafter NTSB].

[58] *Id*. at 33–34.

[59] *See* T. Christian Miller et al., *Collision Course*, PROPUBLICA (Dec. 20, 2019), https://features.propublica.org/navy-uss-mccain-crash/navy-installed-touch-screen-steering-ten-sailors-paid-with-their-lives/ [https://perma.cc/ND76-BNAB].

complexity. As noted by the NTSB report, "the touch-screen throttle controls deprived the lee helmsman of tactile feedback when the throttles were unganged and mismatched," which was likely another contributing factor to the incident.[60]

Both of these tragedies are examples of "normal accidents" —a term first coined by Charles Perrow.[61] The core of Perrow's insight into "normal accidents" is that they are an inevitable part of any sufficiently complex, tightly coupled system. Perrow specifically considered the potential for these accidents in systems with a high catastrophic potential—Three Mile Island was his motivating example—to argue that society must either accept the inevitable tragedies that accompany complex systems such as these or abandon them. His basic insight, that complex systems will behave in unpredictable and at times undesirable ways and that their creators cannot design this characteristic out of them, generalizes across any complex system.

Almost all software is a complex system, subject to the analysis above. Consider, alone, the challenges that websites face in standardizing their user interface across different web browsers and operating systems. Although the problem is less severe now due to browsers relying on more standardized rendering engines, for the first decade or two of the world wide web, it was a common phenomenon for a website to only work well on one browser and one operating system (typically Windows with Internet Explorer). Websites functioning only on certain browsers and operating systems was not the result of a nefarious plan on the part of web developers, but was, rather, the result of developers making design decisions under imperfect conditions.[62] The rendering engines of different browsers often made it difficult to perfectly render the same user interface in the same manner across every browser and

---

[60] NTSB, *supra* note 57, at 33.

[61] CHARLES PERROW, NORMAL ACCIDENTS: LIVING WITH HIGH-RISK TECHNOLOGIES 5 (Princeton Univ. Press rev. ed. 2011).

[62] *See* Tom Warren, *Chrome is Turning into the New Internet Explorer 6*, THE VERGE (Jan. 4, 2018, 9:30 AM), https://www.theverge.com/2018/1/4/16805216/google-chrome-only-sites-internet-explorer-6-web-standards [https://perma.cc/2RUZ-FES9].

operating system combination.[63] Thus, websites frequently would have problems with certain sections not rendering correctly, functionality missing, or scripts not executing as expected.

With the entrance of mobile phones and tablets, the problem has been made more complicated. Designers now face the challenge of designing interfaces to run on multiple browsers running on multiple classes of devices with dramatically different user interfaces—both in terms of display and input—across desktops, laptops, tablets, and phones. Sometimes, firms have the resources to customize their interfaces for many combinations of devices and browsers, but this is often not the case. Thus, designers create interfaces that attempt to average out the differences across device and browser combinations or choose to focus on certain more popular or higher-value combination to the exclusion of others.[64] These concerns are compounded by the presence of different types of users—both in terms of soft characteristics like preferences and harder characteristics like age and disability.

It is nigh impossible to design an interface that accommodates any given set of user preferences and system requirements perfectly. Additionally, the more variables that designers try to accommodate, the more complex the system becomes—with the result that the better a job a designer tries to do in delivering a satisfactory experience to all users, the more likely it becomes that the system will fail catastrophically.

Of course, the degree of catastrophe between Three Mile Island and a website recommending the wrong product to a shopper is not truly comparable. It is nonetheless the case, though, that the underlying causes of many seemingly "dark patterns" may be as innocent and inevitable as the Three Mile Island accident.

---

[63] Marco Tabini, *Why Some Websites Don't Work Properly in Your Favorite Browser*, MACWORLD (Jan. 10, 2013, 8:00 AM), https://www.macworld.com/article/2023682/why-some-websites-dont-work-properly-in-your-favorite-browser.html [https://perma.cc/4HQF-U58D].

[64] *See* CLAIRE ROWLAND ET AL., DESIGNING CONNECTED PRODUCTS: UX FOR THE CONSUMER INTERNET OF THINGS 337 (2015) ("In systems where functionality and interactions are distributed across more than one device, it's not enough to design individual UIs in isolation. Designers need to create a coherent UX across *all* the devices with which the user interacts.").

However, the sometimes-innocuous nature of dark patterns is not to excuse the myriad of truly inexcusable deceptive dark patterns that many firms unquestionably use. A firm that programs its system to provide false information to a user knowing that the user may act upon that information is not an example of a normal accident, or the sort of design mishap that results from the complex nature of systems. On the other hand, this example is a cautionary story about inserting regulators or regulation into the design process. Such regulatory intervention increases complexity, sometimes dramatically. Importantly, the potential for added complexity due to regulation is not a reason to avoid design-related regulation—it is, however, a reason to regulate cautiously and narrowly.

B. . . . *it's Unpredictable*

Another challenge of design is that its effects can be unpredictable. Design choices are intended to affect how human actors interact with a system—but the human-design interface is not mechanistic. Humans are not simple machines that respond in a predictable, linear way to design choices on an interface. Rather, humans are intelligent agents. Design choices present users with information in different ways, and they make, more or less, informed decisions based upon this information. Sometimes these decisions are surprising; often they are unpredictable.

Efforts to use "nudges" to encourage individuals to register as organ donors demonstrate one category of examples of this unpredictability.[65] Following the popularization of nudges in the 2000s, regulators around the world began experimenting with how to use them to implement public policy. One such public policy was organ donor registration. The U.K. government studies the effectiveness of using nudges to encourage individuals to register as organ donors through its Behavioral Insights Team. This Team attempted to increase organ donor registration using several different nudges. "None of these approaches was as successful as

[65] *See* Tim Harford, *Behavioral Economics and Public Policy*, FIN. TIMES (Mar. 21, 2014), https://www.ft.com/content/9d7d31a4-aea8-11e3-aaa6-00144feab7de [https://perma.cc/A2Q3-4CT8].

the best alternatives at persuading people to sign up."[66] Indeed, one of the approaches—using a photograph that illustrated the value of organ donation—actually decreased organ donor registrations.[67]

There has been similar study of using the design of cigarette packaging to deter smoking. One of the most commonly studied design is the use of Graphic Warning Labels ("GWLs") on packaging to deter smokers. Here, too, the effects have been mixed. Some studies, for instance, demonstrate that GWLs produce no effect on purchasers of cigarettes, including among daily-, occasional-, and non-smokers,[68] and may even increase daily- and occasional smokers' positive attitudes towards smoking.[69] Studies also show that these warnings may decrease the likelihood of nonsmokers taking up smoking.[70] Perhaps most tellingly, some of these studies show that non-smokers and smokers have different expectations for how GWLs will affect individuals' views towards smoking, suggesting that designers' expectations may not be a sufficient guide to understand how their design decisions will affect the users of a system.[71]

Other examples abound. Studies of policy interventions designed to nudge credit card users to reduce their debt by tweaking what information was provided to them in monthly statements

---

[66] *Id.*

[67] CABINET OFFICE, APPLYING BEHAVIOURAL INSIGHTS TO ORGAN DONATION: PRELIMINARY RESULTS FROM A RANDOMIZED CONTROLLED TRIAL 5 (Dec. 23, 2013) (UK), https://www.bi.team/wp-content/uploads/2015/07/Applying_Behavioural_Insights_to_Organ_Donation_report.pdf [https://perma.cc/D7MW-TC33].

[68] Pieter Van Dessel et al., *Graphic Cigarette Pack Warnings do not Produce More Negative Implicit Evaluations of Smoking Compared to Text-only Warnings*, PLOS ONE (Mar. 15, 2018), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194627 [https://perma.cc/3PHZ-PN8L].

[69] *Id.*; William G. Shadel et al., *Do Graphic Health Warning Labels on Cigarette Packages Deter Purchases at Point-of-Sale? An Experiment with Adult Smokers*, 34 HEALTH EDUC. RSCH. 321, 329 (Apr. 1, 2019), https://academic.oup.com/her/article/ 34/3/321/5424102 [https://perma.cc/JZ4K-J3KE].

[70] Van Dessel et al., *supra* note 68; Minsoo Jung, *Implications of Graphic Cigarette Warning Labels on Smoking Behavior: An International Perspective*, 21 J. CANCER PREVENTION 22 (2016), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4819662 [https://perma.cc/FE4C-6TPR].

[71] Van Dessel, *supra* note 68.

actually increased the amount that already-indebted users borrowed.[72] Studies of requirements that fast-food restaurants list calorie-counts on their menus, as a means of reducing caloric intake, have shown at best insignificant effects, and in some cases suggest such nudges can actually increase calorie-consumption for many lower-income consumers.[73] Efforts to reduce energy consumption by reporting how homeowners' energy usage compared to that of their neighbors has had a similarly ambiguous effect.[74]

To take yet another example, in recent years, many states have adopted "ban-the-box" laws that prohibit allowing employers from including a question on job applications that asks candidates whether they have a criminal record.[75] The idea behind these laws is to give individuals with criminal records a greater chance at getting to the interview stage of a job application—at which they can discuss and explain their records—by preventing employers from

---

[72] *See* Omri Ben-Shahar, *More Failed Nudges: Evidence of Ineffective "Behaviorally Informed" Disclosures*, J. OF THINGS WE LIKE (LOTS) (Aug. 10, 2017), https://contracts.jotwell.com/more-failed-nudges-evidence-of-ineffective-behaviorally-informed-disclosures/ [https://perma.cc/N9PX-SX5L].

[73] Christopher Berry et al., *Understanding the Calorie Labeling Paradox in Chain Restaurants: Why Menu Calorie Labeling Alone May Not Affect Average Calories Ordered*, 38 J. OF PUB. POL'Y & MKTG. 192, 195–96 (2019) (discussing how quantity value oriented consumers may increase calories ordered based on required menu calorie labeling).

[74] Christophe Charlier et al., *Under Pressure! Nudging Electricity Consumption within Firms: Feedback from a Field Experiment* 3 (Groupe de Recherche en Droit, Economie et Gesion, Working Paper No. 2019-18, 2020), https://hal.archives-ouvertes.fr/hal-02421815/document [https://perma.cc/39WE-495N] (Fr.); Laurent Belsie, *Peer Comparisons Reduce Residential Energy Use*, THE NAT'L BUREAU OF ECON. RSCH, https://www.nber.org/digest /feb10/w15386.html [https://perma.cc/6SZF-WWFP].

[75] Jennifer L. Doleac & Benjamin Hansen, *The Unintended Consequences of "Ban the Box": Statistical Discrimination and Employment Outcomes When Criminal Histories Are Hidden*, 38 J. LAB. ECON. 321, 323–24 (2020), https://doi.org/10.1086/705880 [https://perma.cc/NZE6-M5VG] ("When BTB removes information about a criminal record from job applications, employers may respond by using the remaining observable information to try to guess who the ex-offenders are and avoid interviewing them . . . Since young, low-skilled black and Hispanic men are the most likely to fall into this category, employers may respond to BTB by avoiding interviews with this group.").

filtering them out at a screening stage. The results of this design intervention have also been mixed. Many employers, under the assumption that younger African American men are more likely to have criminal records than other potential employees, appear to be screening out *all* job applications that appear to be from younger African American men.[76] The result is that, in states that adopt ban-the-box laws, fewer African American men get jobs (whether or not they have a criminal record) but more non-African American men get jobs (even if they do have criminal records).[77]

A final example is Braess's Paradox, which comes from the traffic engineering literature.[78] Intuitively, if a city's roads are congested, this congestion can be reduced by adding more roads. Some of the cars on existing roads will move to the new roads, which should reduce the average congestion. But, it turns out, designing road networks is more complicated than one would intuitively expect. Adding new roads can actually increase congestion.[79] The reason is that drivers will expect the new roads to be less congested than the existing congested roads, so they will all abandon the existing roads and attempt to use the new roads instead.[80] The result of adding a new road, therefore, can be to create a tragedy of the commons in which the new road, and roads needed to access it, face significantly increased congestion while other, lower capacity, roads go largely unused.

There is a range of mechanisms at play across these examples. In some cases, designers may simply not understand how users will respond to design cues. In the case of fast-food calorie counts, for instance, lower-income consumers, who are working to maximize the amount of food they can get per dollar spent, may view these counts as a useful way to maximize their caloric intake. In other cases, the design cues may be interpreted differently by different

---

[76] *Id.*

[77] *Id.* at 326.

[78] *See generally* Von D. Braess, *Über ein Paradoxon aus der Verkehrsplanung*. 12 UNTERNEHMENSFORSCHUNG 258, 259 (1968) (Ger.); DAVID EASLEY & JON KLEINBERG, NETWORKS, CROWDS, AND MARKETS: REASONING ABOUT A HIGHLY CONNECTED WORLD 229, 231–32 (2010) (explaining Braess's paradox).

[79] *See* EASLEY & KLEINBERG, *supra* note 78, at 232.

[80] *Id.*

user groups. Such may be the case with cigarette smokers, where GWLs serve as a warning for non-smokers but an enticement for existing smokers. Perhaps the greatest difficulty in predicting outcomes arises where users respond strategically to design decision. In the case of ban-the-box laws, employers may devise proxies to assess the employability of job applicants that are, in fact, worse than the information being withheld from them. Rather than respond to the design cue as intended by the designers (that is, by interviewing more candidates who may have criminal records), they respond strategically by trying to filter out candidates who they believe may have criminal records. The example of Braess's Paradox is an even more complicated example of strategic behavior in response to design decision. Here, users are not only responding to the design decision, but to how they expect other users will respond to that decision as well.

C. . . . *it's Competitive*

Product design is a key margin along which firms compete.[81] Consumers desire products that are "user friendly" and "easy to use." Importantly, "user friendly" and "easy to use" are defined in terms of the users, not the product designers. The story of Apple's success is one tale that captures this. Apple's recent history, and the role of design in it, is reasonably well known.[82] The iPod, the iMac, and the iPhone were all as revolutionary and successful as they were largely due to their design. Apple took a streamlined and minimalist approach to design, delivering products with simplified interfaces designed to operate smoothly and intuitively. This approach served Apple and Apple's customers well, but it is important to note that it does not serve all customers well.

---

[81] Aaron Rasmussen, *Software ate the World. Now it's Design's Turn*, FAST CO. (Jan. 23, 2020), https://www.fastcompany.com/90454781/software-ate-the-world-now-its-designs-turn [https://perma.cc/4B46-XT7L].

[82] For a recent account, focusing on the recent departure of Apple's longtime chief of design Jony Ive, see Chris Welch, *Jony Ive Leaving Apple After Nearly 30 Years to Start New Design Firm*, THE VERGE (June 27, 2019), https://www.theverge.com/2019/6/27/18761736/jony-ive-apple-leave-iphone-chief-design-officer-lovefrom-company-quit [https://perma.cc/TTP5-D7ST].

Apple's history, however, goes back far before the iPod. The introduction of the original Macintosh computer in 1984 was arguably even more revolutionary. It marked a transition in computer design from computers that were designed for computer engineers to computers that were designed for ordinary users. It could be used by anyone without specialized training. It included basic applications that did most of the things that ordinary users wanted, in ways that most of them understood: simple word processing, simple graphics editing, simple file management, and a simple graphical interface.

But this simplicity—both from the Macintosh era and the iPod era—comes at a cost. Apple products are exceptionally good at doing what they are designed to do, but part of creating such products is "locking them down." They can be relatively difficult to customize or to configure for applications unanticipated by Apple's design. The result is that some users rather dislike Apple products. The competition for the personal computer in the 1980s was largely between locked-down architectures like Apple's and open architectures like the IBM compatible PC. The competition on mobile devices today is largely between the closed-platform iPhone and open-platform Android devices.

To take but one recent example, most modern computers are designed to operate in various high- and lower-power modes. High-power modes may drain batteries, generate lots of heat, and require the use of noisy fans. Lower-power modes may slow down system performance and leave computers feeling sluggish and nonresponsive. Apple has historically designed its computers so that they will not feel sluggish, even if this causes reduced battery life or the need to run fans to cool down the computer's internal components.[83] Users are not able to override these settings—for

[83] Marco Arment, *Low Power Mode for Mac Laptops: Making the Case Again*, MARCO.ORG (Jan. 13, 2020) https://marco.org/2020/01/13/macos-low-power-mode-redux [https://perma.cc/MCU8-A4J7] (explaining that "[m]odern [computer] hardware constantly pushes thermal and power limits, trying to strike a balance that minimizes noise and heat while maximizing performance and battery life," but that "Apple's customers don't usually have control over these balances, and they're usually fixed at design time," and "Mac laptops need Low

instance, a user who wants to slow down the computer in order to maintain battery life is not able to do this on most Apple computers. PC users, on the other hand, have significant control over their computers' power consumption. The result is that it is harder to properly configure a PC, and its performance may more likely not be satisfactory to the user, but when the user does want to alter that performance, they are able to do so.[84] These design considerations echo the discussions above that product design is complicated and unpredictable—they also demonstrate the competitive nature of design decisions. Apple differentiates its products by making them easier to use and ensuring that they always run smoothly, which comes at the cost of users potentially having less control and poorer battery life when needed. PCs, on the other hand, offer less convenience but greater control. Consumers are better served by a market that gives them both options—particularly because no product exists that offers both the simple interface of an Apple computer but the configurability of a PC. Indeed, it may not be possible for such a product to exist.

Neither of these approaches is necessarily better or worse than the other. To the contrary, these design elements define how the platforms compete. Apple provides a more consistent, uniform, and in some ways limited, set of product features, and affords greater integration across its ecosystem of products. Android and PCs are less consistent, but support a wider range of hardware and applications, and generally require more complicated tools for cross-device integration. Different users prefer differently designed systems. The fact that there are multiple, different, competing designs makes all users better off.

It is also important to consider the development process that is popular among technology producers. Given the complexity of design, the initial version of new products rarely supports a full range of features, platforms, and users. It is prohibitively expensive to develop fully-featured software in an initial release, particularly given the high failure rate of new products. Rather, firms develop an

---

Power Mode," which allows users "to greatly extend their battery life when they know they'll need it.").

[84] *Id.*

initial release targeting a specific cohort for entry—perhaps a hypothetical typical customer, or perhaps a specific type of customer that the firm thinks is suitable to target for the product's initial launch. Once the product has achieved a minimum successful launch, the design can be incrementally modified to support wider or more specific user bases.

This model of software design has distinct benefits. It enables rapid delivery of new goods and services to market, and it enables competition from smaller firms. Introducing requirements that a design must be "complete" before release—however that is determined—would make entry difficult or impossible for many potential entrepreneurs. Further, even the products of medium and large firms would be negatively affected by requiring completed designs. The rapid prototyping process works the same for both small and large firms.

In the context of dark patterns, these observations urge two types of caution. First, what may appear to be a "dark pattern" may merely be a design artifact. A product may have been designed for one user cohort or for one interface and may currently be used by other users or on other devices. The default settings for an initial user base may not be the same as may be expected for the expanded user base, and it may appear that the platform is designed to push users into disadvantageous decisions. Or, an interface that was designed, for instance, to run on desktop or laptop computers, may be awkward to use on a mobile device in ways that, again, seem to be intentionally-designed dark patterns. On the other side of this coin, requiring firms to "completely" design systems prior to launching them is, at best, a burden that is detrimental to competition and, at worst, impossible. Such a requirement would dramatically increase the cost of developing new products and bringing them to market, disproportionately hampering smaller competitors. And it would make these firms liable for unanticipated uses of their products.

A better approach to addressing concerns like this is to rely on competition. Customers are generally keenly aware of design issues. There is little better way to drive customers away from a product than for it to have an awkward, cumbersome, or "unfriendly" interface. Where firms are able to compete, and especially where

there is evidence that firms compete, regulation over design elements or design decisions is likely undesirable except in the rarest cases of overtly intentional or exceptionally harmful design patterns.

V. PATTERNS OF REGULATING DESIGN

None of the discussion above is meant to argue that dark patterns may not be used in problematic ways—or that they are, in fact, being used in problematic ways. There is, without a doubt, plenty of bad conduct happening, both online and off. Industry behavior in this regard is frequently disappointing. The question becomes what should be done about bad conduct, particularly given the difficulties of distinguishing between good and bad design practices, the potential for competitive pressures to address some of these concerns, and the danger of poor regulation exacerbating already difficult design challenges. The solution is made even more complicated in the online setting where so many parts of the ecosystem continue to change. To the extent industry standards and self-regulation presents viable solutions to these concerns, such mechanisms are yet in their infancy. Given time, such mechanisms may address many of the concerns of dark patterns—or they may not.

In other words, the point of the above is that regulators need to be careful in how and why they regulate these practices, including understanding when and whether they should at all. In some cases, regulatory efforts may be better focused on other areas. In some cases, it may make more sense to allow the underlying technology and markets to continue to improve before stepping in with regulatory intervention. In other cases, still, beneficial regulatory intervention may simply not be possible.

A. *Assessing the Problem*

There is little empirical evidence about the extent of the dark patterns as a problem—meaning both the incidence of use of dark patterns, the effectiveness of those patterns, and ultimately, the extent to which use of these patterns actually harms consumers. The literature cited above, such as recent studies showing that various dark patterns are being used on shopping websites and that these patterns can be effective at increasing the likelihood of consumers

taking actions that they otherwise would not, are compelling evidence that there is reason to be concerned.[85] But demonstrating that something *may* be a problem is not the same as demonstrating that it *is*, in fact, a problem. As discussed above, the literature on using nudges to control user behavior demonstrates that the effects of such tools are unpredictable.[86]

Indeed, there is evidence that tools such as dark patterns are most likely to be effective where their potential harms are least, and least likely to be effective when their potential harms are significant. Behavioral psychology literature studying the effects of disclosure rules in high-stakes transactions, such as home mortgages, have found that regulation of disclosures—effectively the design of how and what information is presented to consumer borrowers—have little to no effect on borrowing behavior.[87] The paradox illustrated by that literature raises questions about whether regulation of dark patterns is justified. If the effect is only limited to low-value transactions, the impact on consumers may not be sufficient to justify regulation that may or may not prove effective. Accordingly, if the concern is that firms use dark patterns to extract small, additional revenue from a large number of consumers that may be particularly at-risk of exploitation, caution may be particularly warranted. Increasing regulatory compliance costs on these firms could result in the firms leaving markets entirely, and leaving those consumers entirely unserved, rather than incurring compliance costs and facing potential enforcement actions if they do not comply correctly. In an imperfect world, regulations must accordingly be

---

[85] *See* Mathur et al., *supra* note 3 (presenting data showing widespread use of some categories of dark patterns on shopping websites); *see generally* Luguri & Strahievitz, *supra* note 31 (showing that dark patterns can be effectively used in some cases to manipulate user behaviour).

[86] *See* Thaler, *supra* note 2; *see also* Luguri & Strahievitz, *supra* note 31, at 37–38.

[87] *See, e.g.*, Michael S. Barr et al., *Behaviorally Informed Home Mortgage Credit Regulation* (Joint Ctr. for Hous. Studies of Harv. Univ., Working Paper, Paper No. UCC08-12, 2009), https:// papers.ssrn.com/sol3/papers.cfm?abstract_id=1121199 [https://perma.cc/TM7U-ZWRH] (explaining that when consumers lack an understanding of mortgage transactions, increased disclosures may be ineffectual).

judged by their likely real-world effects, not against a world of costless and perfectly effective regulation.[88]

It is also unclear how much of this behavior is fraudulent or deceptive, and how much of it is simply advertising by another name. Calling a shopper's attention to a complementary product during a checkout flow could be called trickery, but it is not clear how it is materially different than showing the user an advertisement they need to dismiss when they land on the site's home page. On the other hand, practices like cramming, slamming, and "sneaking into cart" are much more likely to be harmful because the transaction costs of returning or cancelling unwanted items may exceed the value that the firm extracts from the consumer, leading the consumer to move on with their day and take the loss.

Research on the effects of dark patterns on consumers is still in its infancy. There is not enough research today to justify any broad regulatory undertakings that would not incur substantial risk of unintended consequences. In all likelihood, the best regulatory approach—to the extent that one proves to be justified—will be one that is tailored to specific types of patterns. Such regulation could, for instance, make specific design practices (e.g., providing fraudulent information to consumers at or near the time of purchase) illegal, or could, alternatively, task or empower an agency such as the FTC to identify specific practices as violations of the FTC Act.

B. *The Marketplace is Working to Address These Problems*

Even as some firms take advantage of dark patterns, other firms are voluntarily working to protect consumers from them. As discussed above, design is a key margin along which firms compete.[89] It is arguably among the most important margins. Google, for instance, banned advertisers from its network that used pop-under ads, which it viewed as a poor design pattern providing a

[88] Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J. OF L. & ECON. 1, 1–2 (1969) (elaborating on the "Nirvana Fallacy," comparing the ideal scenario as more efficient than the real choices presented).

[89] *Supra*, Part IV.C.

bad user experience.[90] Most major browsers now allow users to automatically block pop-up windows—another design practice designed to draw users' attention similar to windows that cannot easily be closed. Malware and spyware frequently attempt to take over a user's web browsing experience via browser hijacking—the installation of a software add-on that would permit third parties to interfere with and observe the web browsing of a user. As of Windows 10, Microsoft had disabled the key behavior of web browsers that facilitated browser hijacking.

These are all examples of platform-level efforts that combat these practices by disabling features needed to implement designs that are particularly likely to be harmful to users. There is also effort among industry professionals to combat the use by designers of dark pattern techniques. For instance, at the time of this writing twenty-seven of the first thirty results from a search for the term "dark patterns" on Google demonstrate a widespread understanding and condemnation of using dark patterns to trick users.[91] These search results show that designers are warning peers not to use these and similar tactics and, where the practice may have value they offer alternative design tools. The remaining three search results link to more general discussions of dark patterns—these discussions all also describe use of the approach as problematic.

Given the complexity of design, there is reason to prefer to rely on the marketplace to address the concerns raised by dark patterns—particularly given that this market-based approach appears to be working. Some patterns that seem to be, or even in fact are, being used in ways that are problematic may also have good uses. For instance, pop-up windows are often used in problematic ways, but some websites make good use of them. Rather than prohibit them entirely, modern web browsers indicate to users when a website has tried to use a pop-up window and empower users to allow them on a case-by-case basis, for specific websites, or generally. Regulation

---

[90] *See* Sarah Perez, *Google Bans its Ads on Sites that use Those Annoying 'Pop-unders,'* TECHCRUNCH (July 11, 2017), https://techcrunch.com/2017/07/11/google-bans-its-ads-on-sites-that-use-those-annoying-pop-unders [https://perma.cc/8JL6-A3JE].

[91] A copy of these search results is on file with UNC Journal of Law and Technology.

is unlikely to implement a similarly nuanced approach. Features empowering users to control the behavior of pop-up windows was phased in over time and across a range of browser platforms, allowing for industry to experiment and gather data on how best to implement this feature. Moreover, it is also notable that this feature was implemented at the browser (platform) level. Regulation of design features can be undertaken at various levels in the software stack. The use and behavior of pop-up windows, for instance, could be controlled by the web browser. The operating system could also limit the ability of the browser to open new windows. Code that opens new windows could be intercepted by firewalls. Finally, of course pop-up windows can only be implemented if the programming languages for writing web pages implement them. To which of these layers should regulation of design patterns apply? How does this choice affect the overall complexity of the design ecosystem?

Indeed, even aside from this problem, there is a great deal of value in maintaining stable interfaces, even where those interfaces may contain some poor design. Frequent design change is itself a dark pattern, or deviation from established design elements. Consumers are more likely to make mistakes—or to be tricked into doing things they would not otherwise do—if they are unfamiliar with a design or an interface.[92] Regulatory intervention into design could force widespread redesign of interfaces, especially if undertaken regularly or in a way that lacks the precision of changes that industry itself may be able to make. This mass-redesign, in turn,

[92] *See, e.g.*, ROWLAND ET AL., *supra* note 64, at 360 ("Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.") (citation omitted); Euphemia Wong, *Principles of Consistency and Standards in User Interface Design*, INTERACTION DESIGN FOUND. (Aug. 2020) https://www.interaction-design.org/literature/article/principle -of-consistency-and-standards-in-user-interface-design [https://perma.cc/A43F-CQXH] (discussing the reasons for consistent design). *But see* Priscilla Esser, *How to Get Users' Agreement with the Opt-in/Opt-out Dance*, INTERACTION DESIGN FOUND. (Aug. 2020), https://www. interaction-design.org/literature/article/how-to-get-users-agreement-with-the-opt-in-opt-out-dance [https://perma.cc/XY82-KFXX] (discussing the use of inconsistent design as a dark pattern, explaining that "[b]y being purposefully inconsistent, the designers [create a situation that] is intended to trick users.").

could have widespread adverse effects on consumers. Again, this is not to say that regulation is unwarranted or not possible—only that it must be undertaken with care and with due consideration of alternatives such as industry standardization (which would increase stability, both over time and across websites) and self-regulation.

C. *The Sufficiency of Existing Law*

Existing law is sufficient to address many, possibly most, of the concerns raised by dark patterns. Most of the egregious dark patterns should fall within the ambit of the FTC's consumer protection authority. To the extent that they are harmful, most of these patterns involve making representations or engaging in practices that are designed to deceive consumers. Such conduct is covered by Section 5 of the FTC Act's prohibition against unfair and deceptive acts and practices.[93] In order to make out such a claim, the FTC Act, and the FTC's subsequently adopted Policy Statement on Deception,[94] require that the Commission must establish that the practice is likely to mislead the ordinary, reasonable consumer in a way that is material, causing injury to that consumer.[95] The Commission "presume[s] that express claims are material."[96] Thus, the Commission needs only to demonstrate injury—i.e., that a reasonable consumer did, in fact, make purchases that they otherwise would not have—to take action against firms employing design practices (dark patterns), such as falsely asserting that a certain number of people have recently purchased a product or that a specific limited number of units remain available for sale. Other practices, such as obscuring how to close a window, may require that a more substantial evidentiary burden be met by the Commission.

---

[93] 15 U.S.C. § 45(a).

[94] FED. TRADE COMM'N, FTC POLICY STATEMENT ON DECEPTION (1983), https://www.ftc.gov/system/files/documents/public_statements/410531/831014deceptionstmt.pdf [https://perma.cc/B5SF-ZPYY].

[95] *Id*. at 1–2, 4.

[96] *Id*. at 5 (explaining that "when evidence exists that a seller intended to make an implied claim, the Commission will infer materiality").

Should the FTC decide to act against firms making use of dark patterns, there are several approaches that it could take. In general, like most regulatory agencies, the FTC has both adjudicative and rulemaking authorities, as provided for under the Administrative Procedure Act ("APA")[97] —though its rulemaking authority has been modified by the Magnusson-Moss Act and is more involved than the traditional APA rulemaking procedures.[98] In general, the Commission may bring an administrative enforcement action to enjoin any conduct that the Commission determines violates Section 5, after an investigation and administrative hearing.[99] It may also seek damages for such action in federal court for conduct that "a reasonable man would have known under the circumstances was dishonest or fraudulent."[100] It may also issue rules that "define with specificity acts or practices which are unfair or deceptive acts or practices in or affecting commerce."[101] Once enacted, it can enforce such rules through administrative action or directly in federal court, seeking both injunctive relief or damages.[102]

In recent decades, the FTC has been reluctant to engage in rulemaking proceedings, due largely to misunderstandings of both the FTC Act and general administrative law dating back to important judicial losses in the 1980s—however, this does not mean that it lacks such authority.[103] Given the broad, and generally unexplored,

---

[97] *See* 5 U.S.C. § 500.

[98] *See* 15 U.S.C. § 57a. These procedures were amended in 1975 by the Magnuson-Moss Warranty–Federal Trade Commission Improvement Act of 1975, Pub. L. 93-637 to facilitate heightened Congressional oversight of FTC rules relative to ordinary rulemaking procedures under the APA.

[99] 15 U.S.C. § 45(a)(2).

[100] *Id.* § 57b(a)(2).

[101] *Id.* § 57a(a)(1)(B).

[102] *Id.* §§ 45(b), 57b(a)(1).

[103] *See generally*, Justin Hurwitz, *Chevron and the Limits of Administrative Antitrust*, 76 UNIV. PITT. L. REV. 209, 239 (2014) (noting that high-profile losses in federal circuit courts contributed to decreased FTC rulemaking); *see also* Fed. Trade Comm'r Rohit Chopra, Comment of Federal Trade Commissioner Rohit Chopra: Hearing #1 on Competition and Consumer Protection in the 21st Century 8 (2018), https://www.ftc.gov/system/files/documents/public_statements/1408196/chopra_-_comment_to_hearing_1_9-6-18.pdf [https:// perma.cc/6FUD-

depth of the FTC's authority directly relevant to the practice of dark patterns, it would be preferable for the FTC to take the lead in developing rules relating to regulation of dark patterns. It only makes sense for legislative approaches to be explored should the FTC's authority prove insufficient to the task.

It also bears noting that, in addition to authority that the FTC has, it is established law that consent obtained through material deception is not valid.[104] Many dark patterns exploit the boundaries of consent. But this issue is broader than the issue of dark patterns, relating, for instance, to contracts of adhesion, the process of contract formation in the online setting, and the enforceability of contracts that are generally known to go unread. These are topics of significant and ongoing (arguably endless) discussion—to the extent that legislative attention should be given to this issue, it should focus on the validity of consent, not on the sub-issue of dark patterns.

On the other side of the regulatory equation is concern that some efforts to regulate dark patterns may run headlong into the First Amendment.[105] The threshold question is whether design decisions constitute expression protected by the First Amendment. There is ample reason to believe that regulation of interface design could trigger First Amendment scrutiny, at least in some cases. The most

---

CFMN] (observing that the FTC has "largely neglected" its rulemaking capabilities).

[104] *See* Restatement (Second) of Torts § 892B (A.L.I. 1979) (discussing cases where courts held consent procured through fraudulent means invalid); *see also* Restatement (Second) of Contracts § 163 (A.L.I. 1981) (discussing cases where fraudulent inducement allowed the rescission of contracts).

[105] *See, e.g.*, Mark MacCarthy, *Online Manipulation is the Latest Data Protection*, CIO (Aug. 14, 2018) https://www.cio.com/article/3297536/online-manipulation-is-the-latest-data-protection-debate.html [https://perma.cc/KF4L-KHDG] (arguing that "calls for prohibition [of dark patterns] might threaten activities protected by the First Amendment"); *see also* VALERIE C. BRANNON, CONG. RSCH. SERV., LSB10309, REGULATING BIG TECH: LEGAL IMPLICATIONS 4 (2019) https://fas.org/sgp/crs/misc/LSB10309.pdf [https://perma.cc/8SBK-FGSP] (discussing various regulatory proposals relating to "big tech," including the DETOUR Act, and noting that "[a]ny of the general proposals discussed in this Sidebar could raise First Amendment concerns, depending on the precise contours of a given regulation.").

poignant case is likely *Reed v. Town of Gilbert,*[106] in which the Supreme Court found a city's "sign code" to be a content-based regulation of speech that could not survive strict scrutiny.[107] "Sign codes" are laws that regulate the use, placement, and design of signs—such as the temporary signs placed along streets announcing the opening and location of a new church.[108] To use the facts of *Reed* as an example, sign codes are a physical-world analogy to a hypothetical law purporting to regulate the use, placement, or other design elements of a computer interface.

The application of *Reed* in the context of dark patterns should not be over-stated. *Reed* does not say that all design is speech, that it is necessarily subject to strict scrutiny, or that it necessarily cannot be regulated. The sign code at issue in *Reed* applied differently to different users of those signs, such that the Court found it was regulating the speech of different speakers differently.[109] A more general, content-neutral, regulation would likely not face strict scrutiny—though it may face intermediate scrutiny. Moreover, while the case clearly demonstrates that regulation of some design elements or decisions may constitute speech, this does not mean that all design elements are speech, nor does it provide clear guidance on when they do. Rather, in *Reed* the Court focuses on the fact of the signs' "communicative content" to determine that the sign code made content-based distinctions.[110] To the extent that design elements lack communicative content, they are more likely to fall outside the scope of First Amendment protections.

But the concern also should not be minimized. Most concerns about dark patterns arise in the commercial context—where the concern is, in effect, that firms are using design elements to influence decisions about whether and what to purchase. The Supreme Court's treatment of commercial speech has become controversial and confused in recent years, following both *Reed* and

[106] 576 U.S. 155 (2015).
[107] *Id.* at 159.
[108] *Id*.
[109] *Id.* at 164.
[110] *Id.* at 163.

the earlier *Sorrell* case.[111] Whereas commercial speech has long been understood to face less Constitutional protection than most other forms of speech,[112] recent cases like *Sorrell* and *Reed* suggest that regulations that subject commercial speech to distinct rules make content-based distinctions and are therefore subject to "heightened scrutiny."[113] Prior to these cases, the longstanding understanding was that commercial speech, which would likely include decisions about design elements of commercial products, to the extent that they constitute speech at all, were subject to the most modest of First Amendment protections.[114]

The purpose of this argument is not to say that design decisions necessarily constitute speech or that regulation of those decisions necessarily implicates First Amendment concerns or review. There are ample examples of laws that regulate aspects of design that have survived First Amendment challenges—or that simply are longstanding regulations which have not been challenged as raising First Amendment concerns. Food and drug labels are highly regulated, as is disclosure of various financial information by banks and lenders. Fuel economy information is regulated. Different types of vehicles are required to bear different types of information disclosures. States often regulate how prices are disclosed. Additionally, of course, it is illegal to sell mattresses as new without a standardized tag.

In light of cases like *Sorrell* and *Reed*, the delineation between design regulations that do and do not implicate First Amendment

---

[111] Sorrell v. IMS Health, Inc., 564 U.S. 552 (2011).

[112] Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n of New York, 447 U.S. 557, 562–63 (1980).

[113] The Court in *Sorrell* applies what it calls "heightened scrutiny," which is not clearly the same as the Court's more traditional standards of either intermediate or strict scrutiny. *Sorrell*, 564 U.S. at 557, 565, 566. For discussion of the Court's evolving understanding of commercial speech, see Amanda Shanor, *The New Lochner*, 2016 WIS. L. REV. 133, 178 (2016); *see also* Caitlin E. Jokubaitis, *There and Back: Vindicating the Listener's Interests in Targeted Advertising in the Internet Information Economy*, 42 COLUM. J.L. & ARTS 85, 95 (2018); Thomas A. Zelante, Jr., *Paper or Plastic: Speech in an Unlikely Place*, 48 SETON HALL L. REV. 931, 932 (2018).

[114] That is, the commercial speech standard established under *Central Hudson*, 447 U.S. 557.

concerns is unclear. Any attempt to regulate design decisions should be undertaken with awareness that such regulations could raise such concerns.

Importantly, in cases where the First Amendment does apply, regulations of purported dark patterns could well face trouble—even under the more forgiving standards of intermediate scrutiny. As discussed in Part II, design is hard to do well and the effects of design decisions can be hard to predict. Assuming the courts find that regulators have a sufficiently important interest in regulating design decisions, it may be difficult to demonstrate that those regulations are not either underinclusive or overinclusive, let alone that they are sufficiently tailored to address the underlying interest justifying the regulation.[115] A regulation that encumbers protected speech, while failing to curtail the speech that the government has a sufficient interest in restraining, is very likely to be struck down by the courts. Courts are particularly likely to rule against regulations when there are less restrictive means of addressing those concerns, such as relying on market forces that appear to be responsive to those same concerns.[116]

D. *Better Approaches than Regulation: New Technologies and Self-Regulation*

To the extent that existing legal rules are insufficient to address harms from dark patterns, it is likely either because the conduct is not clearly harmful or those patterns may at times be beneficial. If such is the case, the conduct likely should not be prohibited. Nonetheless, dark patterns are a reasonable area of legislative concern where regulation, either today or in the future, may be warranted.

Should regulation be desired, a few ideas to keep in mind when approaching regulation in the area of dark patterns are discussed below. Importantly, many of these ideas are intended to only

---

[115] RODNEY A. SMOLLA, LAW OF LAWYER ADVERTISING § 2:4 (2019) (explaining that the government must "demonstrate 'important' or 'substantial' justifications for its actions and . . . a 'substantial nexus' or a 'narrow tailoring' of ends to means").

[116] *See supra* Part IV.C (discussing the competitive market forces that govern design decisions).

regulate patterns indirectly, or by enabling new ways that users may identify, avoid, or respond to potentially harmful design practices.

Dark patterns are well-suited to industry self-regulation, where standardized industry practices are given some presumption of being inoffensive, but entities deviating from those practices bear a burden of demonstrating that their design choices are in the interest of consumers. Importantly, and contrary to the understanding demonstrated by some members of the House Subcommittee, industry self-regulation emphatically does not mean non-regulation. Self-regulation carries with it an expectation that an industry will, in fact, endeavor to limit harmful conduct. Specifically, this includes an expectation that the industry will take action against industry participants who eschew the norms of the industry, and that industry will expect regulators to take action against it if it fails to do so. Both categories of sanction may be formal or informal, and may be internally or externally imposed. At the least formal end of the spectrum, an industry's customary practices may be considered by courts as persuasive evidence of the appropriateness of a member of that industry's conduct. If interface designers have standard practices, and particularly if they have a presumption against the use of certain patterns, this is compelling evidence for a court to consider. More formally, many industries and professions have formal self-governance bodies, such as medical licensing boards or financial oversight entities. Participation in the industry requires membership in one of these bodies, and the bodies are expected to police the conduct of their members.

As discussed above, industry is, and has consistently been, working to improve the status quo and deter the use of pernicious dark patterns.[117] The most viable approach would likely be to allow firms to use contemporaneous documentation—that is, documentation supporting design decisions at the time those decisions were made—to demonstrate that design decisions were made with the interest of consumers and users in mind. Such a factor could be influential both for the development of standardized industry practices as well as for firms that deviate from those practices, by placing an expressly consumer-focused research and

[117] *See* Thaler, *supra* note 2; *see also* Luguri & Strahievitz, *supra* note 31, at 37–38.

development element at the heart of the design practice. Such documentation would tend to suggest that pro-consumer justifications exist for design decisions. Moreover, to the extent that designers are not concerned with consumer experience today—such as if they are focused more narrowly on designs that are appealing on technological or aesthetic grounds but that may, in fact, be detrimental to the user experience of products—it would create a strong incentive for designers and industry groups to focus expressly on the effects of design decisions on consumers.

If it proves to be the case that the FTC is unable to act against specific design practices that it believes to be harmful to consumers, it still has multiple paths of response. First, it could engage in a rulemaking proceeding to develop rules to proscribe specific practices. Its authority in this area is broad, if not often used. Alternatively, it could report to Congress on these issues to seek statutory authorization to address specific practices. Indeed, dark patterns may be an area well-suited to the development of an expedited review and rulemaking process, such as that developed in the Digital Millennium Copyright Act ("DMCA") for the review of circumvention technologies.[118] For instance, the FTC could be tasked with periodically reporting to Congress on practices that it sees that have the potential to harm consumers but fall outside of its existing statutory authority. Or it could be tasked by Congress with producing a periodic study on specific problematic practices, including the establishment of a mechanism for reporting practices to be investigated. This could be used to support injunctive or other enforcement actions against firms engaging in those practices.

Ideas such as these would bolster the FTC's authority in this area without need for the enactment of a substantial new regulatory regime or enactment of ossifying laws. In general, the FTC should be encouraged to explore the limits of its authority to address these concerns, including through narrow legislative interventions such as discussed above, or through FTC-generated reports on these issues, before implementing new, congressionally-crafted, regulatory regimes. Importantly, administrative remedies should be limited to injunctions, with civil penalties only available through the federal

[118] *See* 17 U.S.C. § 1201(a)(1)(C).

courts. And, except in a case of clearly intentional fraudulent behavior—such as what would already be covered under existing Section 5 authority—the preferred initial remedy should be for firms to forego the problematic conduct in order to improve the overall standard of conduct of the industry in a non-adversarial manner.

More generally, regulators should focus greater attention on the causes of problematic practices rather than on the reasons that those practices are concerning. Understanding why certain practices are harmful may allow for the identification of new ways to mitigate that harm. It may often be the case that it is preferable to enable new forms of conduct that allow consumers and users to mitigate harm than to try to prohibit the existing, potentially harmful, conduct directly. Where the effects of design decisions may be ambiguous, benefiting some users while potentially harming others, regulations that focus on allowing users to mitigate harm, rather than prohibiting that harm outright may be more suitable.

To the extent the law proscribes certain designs, it must do so carefully, including thinking about what alternative designs may be adopted—both legitimate and illegitimate ones. As discussed above, design is hard[119] —these are complex systems—and any regulation puts regulators in the shoes of the designers. What is more, it ossifies design.

Finally, given that many dark patterns are used both online and offline, and more generally that the concerns created by dark patterns are not unique to the online setting, Congress should consider whether the scope of its interest in this area should be limited to the online setting. For instance, many firms engage in practices that make it difficult to cancel service or return products. To the extent that concern is justified about analogous online practices, it does not make sense to cabin that concern—or any exploration of it through reports or regulation—to the online setting. If new rules are adopted, regulators should consider whether any proscribed practices should be limited to online actors or whether there should be rules of more general applicability.

[119] *See supra* Part IV.C.

VI. CONCLUSION

Concern about "dark patterns" is old wine in new bottles. However, it is a good vintage of concern: many practices decried as dark patterns are easy analogs of long proscribed business practices. Moreover, even those that are not clearly the online equivalents of already-proscribed offline conduct are, if harmful to consumers, very likely to fall within the FTC's existing statutory authority to act against Unfair and Deceptive Acts or Practices. Congress should push the FTC to use its existing authority to protect consumers against these harms before undertaking any novel legislative experiments. Should the FTC's authority prove insufficient, its efforts in discovering this will provide valuable information for any subsequent legislative efforts—and those efforts will, in all likelihood, be best focused on augmenting the FTC's existing authority to cover this area of concern.

This cautious approach is advisable on simple prudential grounds. Congress should turn first to existing statutory authority before overlying new, potentially conflicting or confusing, layers to the regulatory fabric. But it is especially advisable in the context of dark patterns because there is nothing inherently "dark" about these practices. As discussed throughout this Article, the reality of design is that it is hard to do well and the effects of simple design decisions can be complex and difficult to predict. Patterns that are "dark" for some users may be beneficial for others. Patterns that appear "dark" to casual observers may actually have few or no adverse effects at all. And mandating alternative designs may, in fact, yield substantially worse effects for many users.

It is undeniably the case that many firms are using interface design for questionable or harmful purposes. It has been empirically demonstrated both that firms are engaging in these practices and that these practices can affect user decision-making. But, this reality alone does not demand legislative or regulatory innovation in response. On one hand, almost all of the documented practices that are clearly problematic can also clearly be addressed by the FTC using its existing authority. And on the other hand, there is reason to believe that the market is an effective check on these practices. Design is one of the chief margins along which firms compete

online, and design professionals clearly view the sort of practices animating concern about dark patterns with disdain and disapprobation.

The design of Congress leads to patterns in how it approaches and responds to concerns such as those raised by dark patterns—and those patterns of Congressional response can themselves be dark, having adverse effects for consumers. Just as Congress should be concerned about circumstances where information or choices are presented to users in ways that influence them into adverse decisions, so too should Congress be concerned that it also may be influenced into insufficiently considered regulatory decisions. There is no lack of attention to the concern of dark patterns today. It is a topic of active academic research, regulatory scrutiny, and legislative appeal. It is an area of uncertain harm to consumers and where regulatory intervention may have adverse consequences for consumers. Lastly, it is an area where substantial, yet unexplored, regulatory authority already exists.