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## **DARK PATTERNS AND PEDAGOGY: EXPANDING SCHOLARSHIP AND CURRICULUM ON MANIPULATIVE MARKETING PRACTICES**

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This conference paper addresses gaps in scholarship and pedagogy surrounding the phenomenon of “dark patterns” in digital marketing and interface design by showcasing the findings of three ongoing curriculum-building projects. Originally coined by cognitive scientist Harry Brignull in 2010, dark patterns refer to a set of design strategies that co-opt the human-centered values advocated for in the fields of user experience (UX) design and human-computer interaction (HCI) for deceptive aims (Gray et al., 2018). Not to be confused with “bad” design, dark patterns are instances where designers intentionally apply their knowledge of human psychology and persuasive design practices to manipulate users into taking an action that is contrary to their personal interests (Gray et al., 2018). Common examples of dark patterns on the Internet include advertisements disguised as user-generated posts on a social media timeline and unfavorable default settings within an app that privilege the sharing of data over privacy.

Recent scholarship on dark patterns has clustered around their identification on websites and apps. This has predominantly included HCI work dedicated to codifying individual types of dark patterns (under headings such as “nagging” and “sneaking”) and quantifying their individual consequences for users on common e-commerce or social media platforms (Bösch et al., 2016; Chromik et al., 2019; Di Geronimo et al., 2020; Gray et al., 2018; Hannak et al., 2014; Luguri & Strahilevitz, 2021; Mathur et al., 2019; Mathur et al., 2021; Voigt et al., 2021). Within game studies and media studies, attention has been paid to the implementation of dark patterns in online gambling and games-as-service arrangements—often with a focus on micro-transactions, platform

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economies, and policy interventions (Brock & Johnson, 2021; Fitton & Read, 2019; Goodstein, 2021; Whitson & French, 2021; Zanesco et al., 2021).

The projects documented in this paper build on this existing research in two substantive ways. First, they place the existing HCI, game studies, and media studies discourses on dark patterns into conversation with pertinent scholarship drawn from the domains of business and marketing, science and technology studies, cognitive neuroscience, and disability studies to create a more holistic, inclusive, and longitudinal definition of dark patterns. Second, they implement this expanded definition of dark patterns into undergraduate and graduate course curricula as a teaching tool to help students critically engage with the media platforms they use on a daily basis, the collaborative design projects they undertake for credit, and their future roles in media creation. Each of these pedagogical projects has been institutionally approved and instructed during at least one term of study. The substance of this paper consequently focuses on describing divergent and interdisciplinary approaches towards studying dark patterns; noting successes and failures in implementing these approaches into curriculum; and mapping the future work of developing such curriculum into reusable modules and methodologies.

*Dark Patterns: Where Marketing Meets UX Design*, carried out at the University of Toronto with funding provided by a fellowship from the Critical Digital Humanities Initiative, was a one-year initiative led by principal investigators Dr. Dan Guadagnolo and Mathew Iantorno. This project challenged the assumption that dark patterns are a novel phenomenon tethered to the digital interfaces and forms of commercial exchange of Web 2.0. By exploring historical research on post-1945 market segmentation and merchandising strategies, the project evidenced how many contemporary dark patterns in fact preexist the advent of the Internet (Bargas-Avila & Hornbaek, 2011; Case, 2017; Lauer, 2017; Meyrowitz, 2009; Schwarzkopf, 2019; Taylor & Strutton, 2010; Turow, 2011; Valvi & Fragkos, 2012). Drawing together the fields of business history and critical marketing studies, this project considered how to best communicate the connections between contemporary dark patterns in e-commerce and these historical marketing and merchandising strategies to undergraduate students enrolled at the Institute of Communication, Culture, Information and Technology. To answer this question, the team developed an open-source website that visually illustrated how these analogue strategies have been transposed into digital interfaces. This website was then deployed as a pedagogical and teaching tool for Contemporary Communication Technologies, one of the largest undergraduate courses offered within the university.

The second project, *Dark Patterns: Manipulative UX Design*, involved parallel curriculum development at the University of Toronto's Faculty of Information. This initiative was carried out by Mathew Iantorno under the supervision of Velian Pandeliev as part of a broader pedagogy development strategy for User Interface Design, a master's level course within the professionally oriented User Experience Design concentration. A dark patterns module that included a lecture, online resource guide, and in-class activities was developed with two main intents. First, it introduced the broad concept of dark patterns to a cohort of UX design students, enabling critical engagement with the commercial interfaces they study and the marketing practices that shape them. Second, it synthesized science and technology studies and design justice

scholarship to broaden the definition of dark patterns to include non-screen interfaces. This expanded definition included the ambiance management used in casinos to motivate compulsive gambling (Lynch et al., 2020; Schüll, 2012); the construction of hostile architecture in city planning to deter loitering and protesting (Rosenberger, 2020; Smith & Walters, 2018); and the use of anthropomorphism in the design of robotics to provoke trust and empathy (Coeckelbergh, 2012; Lacey & Caudwell, 2019).

The third project, *Designing for Normal and Failing Ethically*, examined the interaction of dark patterns with the lived experience of disabled people. This project was carried out by Adrian Petterson in collaboration with Velian Pandeliev and focused primarily on individuals with cognitive disabilities such as anxiety, autism, depression, obsessive-compulsive disorder, and attention-deficit/hyperactivity disorder. The physical differences in brain activation patterns of those with disabilities were compared to the neural networks activated by the cognitive biases exploited by dark patterns. Significant overlap was identified, primarily in areas of the brain related to fear—such as the amygdala and anterior cingulate cortex (Cavedini et al., 2004; Hartley & Phelps, 2012; Lieberman & Eisenberger, 2009; Vassena et al., 2014)—indicating that dark patterns have a disproportionate effect on individuals with these cognitive disabilities. However, legislation and pedagogy alike rarely attend to the concept of dark patterns with disability in mind. Following the principles of inclusive design (Treviranus, 2018), the project developed pedagogy demonstrating how designing for those most marginalized by a design will not only protect these vulnerable individuals but also improve user experience for everyone. This research culminated in lectures at the University of Toronto, Sheridan College, and #a11yTO focused on educating design students and professionals on these “edge case” experiences of dark patterns.

Collectively, these projects aimed to grant a greater historicity and social context to the phenomenon of dark patterns and, in doing so, introduce dark patterns as a utilizable pedagogical concept within the disciplines of communications, technology, and design. The findings of these projects will be presented through the sharing of pedagogical materials; informal and formal feedback from students and associated faculty; and planned curriculum revisions for future iterations of the described initiatives. Throughout, the phenomenon of dark patterns will be posited as a complementary addition to existing methodologies in the critical analysis of design and marketing strategies, historical research and analysis, and design justice and ethical computing.

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