Regulating Dark Patterns in the EU: A Behavioural Case for Counter-Architecture

14341166
Politics, Psychology, Law and Economics, University of Amsterdam
Major in Law
BSc Thesis
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Wordcount: 12786
18 June, 2025

Abstract

This thesis examines the regulation of dark patterns in digital consumer interfaces under European Union law. Dark patterns, manipulative design practices that exploit cognitive biases to steer user decisions, pose significant risks to consumer autonomy, market transparency, and data protection. Drawing on behavioural economics, the thesis shows that users frequently rely on intuitive, System 1 thinking in digital environments, leaving them vulnerable to default settings, visual salience, and design-based friction. However, current EU legislation, including the Unfair Commercial Practices Directive (UCPD), Consumer Rights Directive (CRD), General Data Protection Regulation (GDPR), and Digital Services Act (DSA), remains fragmented, overly reliant on transparency, and grounded in an unrealistic model of rational consumer behaviour. Through doctrinal analysis, the thesis identifies key regulatory gaps, such as the narrow definition of "transactional decision" and the over-demanding average consumer benchmark. It then develops legislative proposals based on the concept of counter-architecture, a regulatory approach that treats interface design as a structuring force subject to legal oversight. Recommendations include introducing fairness-by-design obligations, mandating choice symmetry, expanding blacklists of unfair practices, and recalibrating the average consumer standard. These reforms are proposed through targeted amendments to existing instruments and through the adoption of a new Digital Fairness Act.

Keywords: dark patterns, behavioural economics, digital consumer protection, interface design, EU regulation, counter-architecture

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Introduction

In recent years, digital platforms have increasingly relied on interface design strategies that manipulate user behaviour to boost engagement, profits, or data extraction (OECD, 2022, pp. 24-26). These techniques, often referred to as dark patterns, exploit users' cognitive biases and information asymmetries to steer them toward decisions they might not otherwise make, such as subscribing to paid services, sharing personal data, or consenting to invasive tracking (Martini & Drews, 2022, pp. 5-6). The concept of dark patterns was first coined by Harry Brignull (2010), who distinguished them from accidental design flaws by highlighting their intentional and deceptive nature. Unlike mere poor design, dark patterns are carefully engineered with psychological insight to mislead users into actions that serve the designer's goals, rather than the user's interests (Mathur et al., 2021, p. 9). While many of these design elements may appear minor when viewed in isolation, their combined effects on consumer welfare are substantial. Dark patterns erode agency, conceal real costs, and undermine public trust in digital services (Mathur, 2021, pp. 13-16, 18-19).

Empirical research has highlighted the scale of the problem. In an analysis of over 11,000 e-commerce websites, Mathur et al. (2019, pp. 2-3) found that more than 1,200 used dark patterns, which were especially common on the most popular sites. This points not only to the widespread nature of these practices, but also to the substantial harm they may cause due to their visibility and reach. A similar European study by Nouwens et al. (2020) showed that manipulative interfaces were commonplace, with only 11.8% of sites meeting the minimal legal standards at the time (pp. 5-6). The European Commission has also launched several inquiries into the prevalence of dark patterns and has reached comparable conclusions. In its 2022 sweep on dark patterns, it found that nearly 40% of online retail shops contained at least one such practice (European Commission, 2022). In a more detailed study, mystery shoppers detected practices perceived as dark patterns on 73 out of 75 websites explored (Lupiáñez-Villanueva, 2022, p. 45).

The rise of dark patterns has not gone unnoticed. The issue has drawn increasing public scrutiny and prompted widespread calls for regulatory intervention (Nguyen et al., 2019; Lima-

Strong, 2022). Major media outlets such as *The New York Times* have published editorials and opinion pieces condemning the use of manipulative design, calling for a stronger political response (Valentino-DeVries, 2019; Bensinger, 2021; Moreno, 2023).

Ironically, *The New York Times*, despite its frequent reporting on problematic digital practices, has itself appeared in Harry Brignull's (2023) "hall of shame," a public list documenting companies that deploy dark patterns. In 2022, a class action lawsuit *Perkins v. The New York Times Co.* was filed in the U.S. District Court for the Southern District of New York, alleging that the company operated an illegal automatic renewal scheme in violation of North Carolina's Auto Renewal Statute (N.C.G.S. § 75-41, 2016). The complaint accused the *Times* of failing to disclose key renewal terms „clearly and conspicuously," including how to cancel a subscription and whether terms would change upon renewal. It also cited the company's failure to notify consumers in advance of automatic renewals exceeding 60 days, as the law requires. The practices at issue mirrored what is commonly known as the „roach motel" dark pattern: easy to subscribe, but difficult to leave (Brignull, 2022). Users are often required to navigate multiple steps, including contacting customer service by phone or chat, just to cancel a service they had initially subscribed to online with a single click. While the company denied any wrongdoing, it ultimately agreed in July 2024 to pay $275,000 to settle the claims (Weld, 2024). Cases like this not only illustrate the normalisation and ubiquity of dark patterns but also highlight the conceptual uncertainty surrounding what constitutes a dark pattern as opposed to acceptable persuasive design. Without clearer legal criteria, even well-intentioned actors may inadvertently cross the line.

As is often the case in matters of digital governance, the European Union has taken a leading role (Kennis & Liu, 2024, pp. 1579–1581). Initially, it relied on broader provisions found in consumer and data protection law, but it has since introduced more targeted legislation addressing the deceptive design of user interfaces (Santos et al., 2025, pp. 2–3). However, the current regulatory response to dark patterns remains fragmented. Relevant protections are dispersed across several legal instruments, from the Unfair Commercial Practices Directive to the General Data Protection

Regulation and the Digital Services Act. While these frameworks address certain aspects of manipulative design, they fall short of offering a unified legal definition of dark patterns, and enforcement continues to be inconsistent (Graef, 2023). As Santos et al. note, there is a pressing need for greater cohesion in how the law addresses the harms caused by dark patterns (2025, p. 3).

This fragmentation has also been acknowledged by the European Commission in its recent Digital Fairness Fitness Check, which concluded that existing EU consumer law lacks the clarity and effectiveness required to address dark patterns comprehensively. The UCPD does not explicitly cover digital interface design, and its application is highly case-dependent. Moreover, the DSA's scope is restricted to online platforms and excludes practices already covered by the UCPD and GDPR (European Commission, 2024, pp. 150, 153).

Beyond these structural limitations, the Fitness Check further recognises that dark patterns cannot be adequately addressed by simply equipping consumers with more information. Consumers also often fail to engage meaningfully with disclosures in online environments (European Commission, 2024, pp. 86-87). The report further notes that current legal provisions lack the specificity needed to regulate the design of consumer-facing systems, offering little concrete guidance for governing the architecture of digital environments (European Commission, 2024, p. 87).

Taken together, these findings reveal that the EU's existing regulatory toolkit continues to face limitations in effectively addressing the risks associated with dark patterns. The regulatory landscape remains fragmented, the scope of protection uneven, and the available tools insufficiently tailored to the specific characteristics of digital architecture. These shortcomings highlight the need for a more coherent and effective legal response.

Research question

Against this backdrop, this thesis asks: How can the European Union improve its legal framework to more effectively regulate dark patterns in digital consumer interfaces?

To answer this question, the thesis proceeds in three steps. First, it explores how dark patterns influence consumer decision-making by asking: *In what ways do dark patterns shape user*

choices in digital environments? This part draws on empirical and theoretical insights from behavioural economics. Second, it undertakes a doctrinal analysis to address: *How are dark patterns currently regulated under existing EU law?* Particular attention is given to the UCPD, CRD, GDPR and DSA. Third, the thesis examines: *Which behavioural strategies can be effectively integrated into the EU legal framework to mitigate manipulative design techniques?* This final part develops legislative recommendations grounded in the concept of *counter-architecture*, a regulatory approach that targets the design of digital choice environments. It proposes measures such as default design rules, structural symmetry, and context-specific prohibitions to address behavioural vulnerabilities. These will be implemented through amendments to existing EU law or incorporated into the new Digital Fairness Act.

Methodology

Legal

This thesis uses the doctrinal legal methodology to examine the current state of EU law. As a standard approach in legal scholarship, it systematically presents and analyses the principles, rules, and concepts that govern the relevant legal framework. It also considers their coherence and normative structure to clarify uncertainties and identify gaps in the law (Smits, 2017, p. 210). Doctrinal analysis proceeds from within the legal system, interpreting norms according to their recognised sources and methods rather than through external frameworks. (Smits, 2017, pp. 210-211).

The analysis focuses on the relevant provisions in four key instruments: the Unfair Commercial Practices Directive (UCPD), the Consumer Rights Directive (CRD), the General Data Protection Regulation (GDPR), and the Digital Services Act (DSA). These are examined in detail through article-by-article interpretation, supported by relevant recitals, case law, Commission guidance, and academic commentary. The aim is to determine the extent to which these legal provisions address the use of dark patterns in digital consumer interfaces, and to identify areas where regulation remains incomplete or insufficient. The legal analysis is grounded in the structure

and internal logic of each instrument, with attention to how they relate to one another and how they operate within the digital context.

Economic

To complement the doctrinal analysis, the thesis adopts a behavioural economic approach to examine how interface design shapes consumer decision-making. Behavioural economics challenges the traditional assumption of rational actors by incorporating psychological insights into models of human behaviour (Reisch & Zhao, 2017, p. 191). It provides a structured framework for understanding how users often make predictable errors in judgment, particularly in environments marked by complexity and cognitive overload (Reisch & Zhao, 2017, pp. 192, 197).

The analysis draws on established theoretical models, including bounded rationality (Simon, 1955), dual-process theory (Kahneman, 2011), and nudge theory (Thaler & Sunstein, 2008). These explain how consumers may be steered toward suboptimal or involuntary choices through interface design that exploits heuristics, defaults, or informational asymmetries. Building on this theoretical foundation, the thesis then incorporates secondary empirical research to investigate how dark patterns operate in practice. Experimental and survey-based studies will demonstrate that specific interface features can influence user behaviour in ways that undermine autonomy and meaningful consent. Such findings help illuminate the behavioural mechanisms that make manipulative design effective.

This behavioural perspective then underpins the development of counter-architecture as a regulatory concept, supporting the normative claim that law should address not only content, but also the structural conditions of choice.

Literature Review

Understanding Dark Patterns as a Digital Phenomenon

Defining dark patterns presents significant conceptual challenges. The term encompasses a broad and evolving array of digital design practices, and there is no single, universally accepted definition across academic, technical, and regulatory domains. The difficulty stems from the diversity

of techniques used, their varying degrees of subtlety, and the often context-specific nature of their effects (Mathur, 2021, pp. 3-4). Nevertheless, existing literature identifies key features of dark patterns and provides tools to systematise their categorisation.

First, dark patterns are inherently linked to the user interface (UI), the digital layer through which users interact with online services (Kollmer & Eckhardt, 2023, p. 201). As Morales Díaz (2022, p. 6) defines it, the UI is “the artifact that connects a computational device and a human user.” It is within this "artifact“ that dark patterns are embedded and through which they exert influence.

Second, dark patterns are intentional design choices created to advance specific economic interests. Researchers argue that these patterns primarily pursue three commercial purposes: first, to prompt users to share more personal data (*privacy*); second, to increase the time users spend on a service (*engagement*) and third, to encourage users to spend more money *(shopping)* (Roșca, 2024, p. 63). The first two purposes are more common on platforms relying on advertising-based business models, while the third is the main objective in typical sales contexts (Roșca, 2024, p. 71).

Third, dark patterns share common functional characteristics. Mathur et al. (2021, pp. 7-9) group them by their effects on decision-making. Some alter the structure of the decision space by making some options more visible or accessible than others (*asymmetric DP)*, steering users subtly toward certain outcomes (*covert DP*), or removing options altogether (*restrictive DP*). Others manipulate the information flow by inducing false beliefs (*deceptive DP*) or obscuring and delaying the presentation of information (*information-hiding DP*). All thus aim to affect the choice architecture presented to users (Thaler et al., 2014). We will return to this point as it is crucial to understanding the mechanisms of influence at play. Complementing this, Gray et al. (2023, p. 3) propose a hierarchical model that organises the terminology around dark patterns by levels of abstraction. High-level patterns describe general strategies applicable across contexts; meso-level patterns capture specific approaches to limiting user autonomy; and low-level patterns refer to concrete design choices found in real-world interfaces. Together, these frameworks enable analysis

at the appropriate level and help identify the principles behind a pattern's functioning, linking specific interface techniques to the broader strategies they serve.

In summary, dark patterns are deliberate design techniques embedded in user interfaces that manipulate the decision environment by altering choice structures or controlling information to achieve economic gains.

The Consequences of Manipulating User Autonomy

Dark patterns have drawn growing public concern due to the wide range of harms they inflict on consumers and society at large. Understanding these harms is essential to identifying the regulatory challenges they pose. Broadly, they can be conceptualised along two axes, material versus non-material, and individual versus collective (Santos et al., 2025, p. 5). Yet at the core of each category lies a common thread: the violation of user autonomy. By manipulating or subverting the capacity of individuals to make informed, voluntary decisions, dark patterns erode the normative foundations of consumer choice (Susser et al., 2019, p. 8). The specific harms that follow, from diminished consumer trust to distorted market functioning, can all be traced back to this fundamental interference with autonomous decision-making.

One of the most important non-material consequences of dark patterns is the violation of user privacy. Practices such as preselected options, confirmshaming, or repetitive prompts often lead users to share more personal data than they intended. This has been described as imposing a higher "data price" on users than they would otherwise freely choose in exchange for a service (Morton & Dinielli, 2020, p. 34).

Emotional and cognitive impacts are also significant. Research shows that users subjected to manipulative designs often feel frustrated, deceived, or even ashamed. Experimental and survey-based studies have confirmed that dark patterns frequently provoke distress, annoyance, or feelings of being tricked (Luguri & Strahilevitz, 2021, p. 67; CPRC, 2022, p. 27). In parallel, cognitive overload has become an increasing focus of empirical research on digital design (Mathur et al., 2021, p. 10). Interfaces that make cancellation difficult or that repeatedly prompt users to agree to certain

settings place excessive demands on their attention and mental resources (Monge Roffarello et al., 2023, pp. 11–12). A common example is cookie consent banners, which often lack clear rejection options and require users to expend time and mental effort to avoid the default choice (Soe et al., 2022, p. 8).

The most easily identifiable material harm to individuals is financial loss. Dark patterns like drip pricing or subscription traps lead users to spend more than they would have if the interface had been transparent. Blake et al. (2021, p. 625) found that drip pricing increased consumer expenditure by 21 percent. In France, the national consumer authority found in an experiment involving more than 2,500 consumers that ads employing dark patterns led to over €150,000 in losses in less than a month (DITP & DGCCRF, p. 4).

The damage caused by dark patterns is not limited to individual users. On a societal level, their widespread use erodes trust in digital markets. Users who feel tricked are less likely to return to a platform and more likely to disengage from online services entirely (Luguri & Strahilevitz, 2021, pp. 69-70). Research shows that manipulative designs lower brand trust, reduce perceived credibility, and damage long-term user relationships (Maier & Harr, 2020, p. 188; Voigt et al., 2021, p. 152).

More tangibly, dark patterns distort competition by interfering with market signals. They obscure actual prices, inhibit comparison shopping, and create switching costs that trap users in suboptimal choices (Day & Stemler, 2020, p. 35; Mathur et al., 2021, p. 11). Interfaces that preselect options, hide cancellation paths, or require account creation make it harder for users to explore alternatives (OECD, 2022, p. 26). Firms may also conceal costs until late in the transaction or structure product bundles in ways that complicate comparison, which reduces price transparency (Mathur et al., 2021, p. 11). These practices ultimately weaken competition by making it harder to identify better or cheaper options. The resulting market equilibrium is one in which firms compete not through better products or lower prices, but by perfecting manipulative design (OECD, 2022, p. 27).

Taken together, these harms suggest that dark patterns can have significant effects on individuals and markets, both materially and non-materially. Understanding these consequences provides a foundation for evaluating whether and how regulatory responses might be appropriate.

Regulatory Approaches to the Governance of Dark Patterns

As the scope and harms of dark patterns have become clearer, scholarly and policy discussions have increasingly focused on how they should be addressed. Some proposals advocate broad regulation across online platforms, while others call for targeted bans on specific manipulative practices (OECD, 2022, p. 33-35). While doctrinal studies have focused on whether existing rules are adequate to address interface manipulation, regulatory organisations have focused on practical enforcement challenges and proposed targeted improvements.

There is a growing consensus that traditional regulatory tools, especially disclosure-based and consent-driven approaches, are often ill-suited to address the manipulative power of digital choice architecture (Persson, 2018; Faure & Luth, 2011, p. 346). They place a heavy cognitive burden on users to process complex information under time pressure and are shown to be only variably effective depending on how they are implemented (Lupiáñez-Villanueva et al., 2020, p. 106) In some cases, poorly designed disclosures may even backfire, reinforcing the very behaviours they seek to prevent (Seizov et al., 2019, p. 39).

In light of these shortcomings, the literature has explored alternative forms of regulation that do not rely primarily on transparency and individual consent. One approach that has gained traction is a hybrid regulatory model that combines rule-based and principle-based elements (OECD, 2022, p. 40; Leiser & Caruana, 2021, p. 13). Unlike disclosure-based approaches, which rely on users to interpret information and make rational choices, this model seeks to actively limit the use of dark patterns (Corones et al., 2016, p.18). Principle-based prohibitions offer the flexibility needed to capture novel or borderline cases (European Commission, 2017, pp. 31-33). However, they may lack clarity in enforcement. Rule-based instruments, in contrast, such as bans on specific manipulative

tactics, can provide much-needed legal certainty and facilitate swift regulatory intervention (OECD, 2022, p. 40; Chugh & Jain, 2021, pp. 19-20).

The hybrid regulatory model offers flexibility and legal certainty, but it may still be too reactive and primarily prohibitive. Regulation could go further by positively shaping user interface design to promote user autonomy and reduce manipulative practices (OECD, 2022, pp. 37-38). This includes, for example, defaults that prioritise privacy or cancellation mechanisms that are as simple as sign-up flows. Some authors have proposed the use of „bright patterns“ that nudge users toward beneficial outcomes (Graßl et al., 2021, p. 5; King & Stephan, 2021, p. 272), or „consumertarian“ defaults that align with the preferences of most users (Strahilevitz & Luguri, 2019, p. 1). Where preferences are ambiguous, a neutral design requiring active choice may be more appropriate (Hurwitz, 2020, p. 98). Realising these visions also depends on the availability of empirical tools to provide evidence-based guidance for regulators (Chugh & Jain, 2021, p. 19).

Academic and Societal Relevance

Together, these contributions support the ambition of this thesis: to advance legal reform that implements behavioural protections and constraints. Yet despite this shared direction, the underlying proposals remain largely fragmented and lack a unifying legal-theoretical framework. Furthermore, academic work on dark patterns has remained confined to either doctrinal analysis (Leiser, 2022; Di Porto & Egberts, 2023; Graef, 2023) or policy-oriented reports that draw on behavioural research to highlight regulatory concerns, without integrating these insights into the law (OECD, 2022; Lupiáñez-Villanueva, 2022). Few attempts have been made to bring these perspectives together in concrete legislative proposals that address how interface design should be regulated. This thesis aims to bridge that gap by advancing the concept of counter-architecture, which simultaneously offers a coherent framework for infrastructural governance and employs behavioural insights to develop legal recommendations.

The Digital Fairness Act, proposed in September 2024 to implement the findings of the Fitness Check (Armangau, 2025), presents a timely opportunity to reconsider and strengthen the EU’s

legal framework. With public consultations about to begin, there is a window of opportunity to shape how this legislation should be construed. Moreover, as the DSA and DMA reached full applicability approximately a year ago, this is a crucial moment to assess their practical impact and clarify how they interact with broader consumer and data protection law. At stake is not only legal coherence, but the everyday experience of users exposed to increasingly sophisticated interface manipulation. As dark patterns continue to erode user autonomy, distort market signals, and undermine trust in digital services, regulatory responses must go beyond fragmented prohibitions. Concrete, evidence-based legal recommendations grounded in both doctrinal and behavioural analysis are therefore necessary.

Theoretical Framework

These recommendations are grounded in three interrelated theoretical pillars. The first frames dark patterns within the liberal foundations of contract law, arguing that they undermine the conditions necessary for meaningful consent and autonomous decision-making, thereby raising a doctrinal challenge. The second draws on regulatory theory to justify legal intervention, contending that behavioural manipulation creates a structural market failure that individual consumer choice cannot remedy. The third introduces behavioural economics as both an explanatory lens for how dark patterns influence user behaviour and a normative framework for legal design that protects autonomy within digital choice environments.

Autonomy and the Liberal Foundations of Contract Law

The starting point for understanding the legal problem posed by dark patterns lies in the concept of autonomy, which underpins the normative foundations of modern contract law (Dagan & Heller, 2017, pp. 1-2; Catterwell, 2022, pp. 1069-1070). It rests on the recognition of individuals as autonomous agents capable of structuring their legal relationships through informed and deliberate commitments. This reflects a broadly liberal conception of private law, which sees the legal system as a framework for facilitating individual freedom. Thomas Gutmann (2020) argues that “the normative structure underlying the concept of contract is basically and essentially a liberal one – autonomy”

(p.3). In his view, alternative approaches may identify the outer limits of the domain of contract, but they “fail to grasp its meaning” and “cannot explain what contracts are.” According to this view, developed most prominently by Joseph Raz, the legitimacy of contractual obligations does not stem from the need to enforce promises as such. Rather, it lies in the law’s role in protecting the practice of voluntarily assuming obligations and the individuals who rely on that practice (Dagan, 2013, p.3). Guaranteeing this space of self-determination is not only a matter of private ordering, but, as Weber and others have argued, a structural feature of liberal societies – the “public dimension of contract” (as cited in Gutmann, 2020, p. 3). The legal importance of autonomy in digital contexts has also been increasingly recognised in EU legislation. As Gartner (2022) observes, recent regulatory instruments, such as the Digital Services Act, the Digital Markets Act, the proposed Data Act, and the Artificial Intelligence Act, have moved personal autonomy from the position of a background ideal to that of an explicitly protected legal value (pp. 467, 470).

Contracts are thus considered legal tools that enable individuals to exercise their autonomy in structuring private relationships. But this presupposes more than the mere formal act of agreement. As Susser et al. (2019a) suggest, autonomy depends not only on the availability of choices, but also on the conditions under which those choices are presented (pp. 36-37). A person acts autonomously when they are able to reflect meaningfully on the options before them, when they have a general awareness of their own beliefs and desires, and when they can act based on the reasons they find most compelling (Susser et al., 2019b, pp. 8-9). From this view, two essential aspects of autonomy emerge: *competency*, the ability to decide independently on the basis of one’s own reasoning, and *authenticity*, the idea that a person’s decision genuinely reflects their own values, goals, and preferences (Christman, 2009, pp. 155-156).

It is precisely these elements of autonomy that dark patterns call into question. While they often lead consumers to accept seemingly valid agreements, they do so by manipulating the decision environment in ways that undermine the user’s ability to choose freely (Roșca, 2024, p. 157; Mathur, 2021, p. 9). Interfaces that obscure alternatives or nudge users toward preselected options

compromise competency by undermining the user's independent reasoning (Ahuja & Kumar, 2022, pp. 8-10). At the same time, they interfere with authenticity by encouraging outcomes that may not align with the user's actual preferences (Westin & Chiasson, 2021, p. 10). As a result, the appearance of consent can mask a deeper failure of autonomy.

Dark patterns, then, violate one of the principal values that contract law is meant to protect: the individual's ability to act autonomously and assume binding obligations according to their own preferences and goals (Dagan, 2013, p.3). However, this observation alone is not sufficient to justify regulatory intervention. Autonomy is often imperfect in everyday decision-making. People may act out of habit, under emotional strain, or with limited attention, and the law does not intervene in all such cases (Sunstein, 2016, p. 7). For example, the state does not typically regulate poor dietary choices, impulse purchases, or decisions made under social pressure (Sunstein, 2016, pp. 187-190). Therefore, to determine when legal protection is warranted, it is necessary to move beyond the internal logic of contract law and examine broader normative justifications for state intervention.

Market Failure and the Soft Paternalist Justification for Legal Intervention

There is broad consensus in the literature that market mechanisms alone are insufficient to address the harms posed by dark patterns (Leiser, 2021, p. 2; OECD, 2022, p. 30). In theory, rational consumers should punish firms that deploy manipulative interfaces by taking their business elsewhere (Section IIB). However, behavioural research has consistently shown that consumers are not well-positioned to avoid or penalise such practices (Bar-Gill, 2014, pp. 469-471; Bongard-Blanchy et al., 2021, pp. 6-9; Kugler et al., 2025, p. 48). The Stigler Committee Report (2019, pp. 211–212) notes that aggressive dark patterns may sometimes provoke consumer backlash. Yet milder forms, which subtly nudge rather than overtly deceive, are often effective without triggering resistance. Luguri and Strahilevitz (2021, pp. 67-70) show that users exposed to such designs show no significant decline in mood or engagement compared to control groups. This lack of negative response reduces the risk to firms, making dark patterns attractive tools for increasing conversion rates without jeopardising customer loyalty, at least in the short term.

In fact, competitive pressure may reinforce the use of dark patterns. Where manipulative designs are not clearly prohibited, firms that abstain may risk losing out to rivals that exploit them more freely. Gabaix and Laibson's (2006) model of behavioural market failure demonstrates how, under conditions of bounded rationality, firms in a competitive market can benefit from drip pricing, where additional charges are disclosed only late in the purchasing process (pp. 507, 531). Dark patterns thus emerge not as a failure of competition but as a consequence of it. In digital markets, where switching costs are low, attention is scarce, and interfaces are infinitely malleable, this can result in a race to the bottom (Leiser, 2021, p. 2). Firms increasingly compete not on transparency or value but on their ability to manipulate user decisions (Egberts, 2021, pp. 15-16).

Given that market mechanisms not only fail to prevent the use of dark patterns but may actively incentivise them, the question arises whether and how the state should intervene. The theory of soft paternalism offers a compelling justification, as it links the legitimacy of regulatory intervention to the very concerns about autonomy discussed in the previous section. Unlike hard paternalism, which allows the state to interfere even with informed and voluntary decisions, soft paternalism justifies interference only in cases where a person's decision-making is not fully voluntary or informed (Grill & Hanna, 2018, p. 24). As the Stanford Encyclopedia of Philosophy explains, soft paternalism permits intervention "only to establish whether a person's choices are informed and voluntary" (Dworkin, 2020). On this view, the state does not override the individual's values but ensures that those values are genuinely reflected in the decision-making process.

This logic maps directly onto the problem of dark patterns. While users may formally agree to terms or actions, they often do so in environments that obscure relevant information and preclude meaningful reflection (Mathur, 2021, pp. 7-9). As a result, the autonomy that contract law aims to protect is compromised. Where market dynamics fail to uphold the conditions for meaningful self-determination, legal intervention may be necessary to restore them.

Behavioural Economics: The Analytical and Normative Engine

The following pages introduce behavioural economics as a framework for understanding how interface design can influence user choices in ways that advance commercial interests. Unlike traditional economic models, which assume that individuals act as rational agents with stable preferences, behavioural economics offers a more realistic account of decision-making under conditions of cognitive and contextual constraint (Balawi & Ayoub, 2023, pp. 19-21). These theories underpin the economic analysis presented in the main part of this thesis.

The concept of bounded rationality, developed by Herbert Simon (1957), is foundational in this regard (p. 198). He argued that individuals do not optimise decisions in the way classical economics predicts (Jones, 1999, p. 299). Instead, they satisfice by settling for good-enough outcomes and rely on cognitive shortcuts known as heuristics (Simon, 1956, pp. 129, 136; Wu & Ding, 2021, pp. 1-2). These tendencies reflect a practical response to limited time, information, and mental processing power during decision-making (Jones, 1999, p. 301).

Building on Simon's notion of bounded rationality and earlier dual-process theories, Kahneman (2003) advanced a highly influential psychological model of decision-making by distinguishing between two modes of thinking. His dual-process theory differentiates between System 1, which is fast, intuitive, and automatic, and System 2, which is slower, deliberative, and effortful (pp. 698–699). Most everyday decisions (including online ones) rely on the former, which draws heavily on heuristics (Kannengiesser & Gero, 2019, p. 1; Pherson et al., 2024, pp. 10-12). While often portrayed as less optimal than System 2, System 1 is not inherently flawed. Its speed and efficiency make it highly adaptive in many situations (Evans & Stanovich, 2013, p. 229). Still, its effectiveness depends on the environment. In familiar settings, where cues align with patterns that System 1 has learned to interpret, decisions are usually reliable. By contrast, hostile environments can impair its performance. When the heuristic used does not closely match the task at hand, or when cues are deliberately manipulated by external actors to trigger intuitive responses, this frugality of heuristics can leave decision-makers vulnerable to systematic errors and biases (Kitkowska, 2023, pp. 176-177).

The potential to instrumentalise System 1 thinking has given rise to a field of applied research with direct regulatory relevance. The interlinked theories of choice architecture and nudging, as developed by Thaler and Sunstein (2008), provide a framework for understanding how environments influence decision-making and how they can be deliberately shaped.

Choice architecture refers to the way in which the context of decision-making is structured (Taylor, 2023, p. 201). It emphasises that choices are never made in a vacuum; rather, every decision is shaped by the environment in which it is presented (Thaler & Sunstein, 2008, p. 3). Because of this, even subtle features of this environment can significantly influence outcomes. For instance, defaults tend to be selected more often because they require no active effort and follow the path of least resistance (Thaler et al., 2014, p. 430). Similarly, design elements that highlight certain options while downplaying others can guide users toward particular outcomes (p. 428). Neither of these features eliminates choice, but they affect the conditions under which it occurs.

Nudge theory emerges from this understanding. It refers to the deliberate use of choice architecture to steer people toward decisions that promote their welfare, while keeping all options available and avoiding major changes in economic incentives (Thaler & Sunstein, 2008, p. 6). This logic ties directly back to soft paternalism: when individuals are likely to err, it can be legitimate to guide their decisions in a way that supports their interests, so long as their freedom to choose remains intact (pp. 4-5). Nudges offer a minimalistic way of doing so.

However, beyond this normative account of nudge theory, the same techniques can be used to pursue any objective set by the choice architect (Thaler et al., 2014, p. 430). Some interventions may be designed to encourage poorly informed or impulsive decisions that are not in the decision-maker's best interest. These are commonly referred to as dark nudges. Others may introduce friction or delays that make it harder to follow through on one's intentions, a tactic known as sludging (Kollmer & Eckhardt, 2023, pp. 203-204). Such practices are especially troubling in digital environments, where firms control the entire interface through which users perceive and navigate

their options. In these settings, choice architecture lies almost perfectly within their control (Willis, 2020, p. 126).

This brings us to a broader point: there is no such thing as neutral design (Thaler & Sunstein, 2008, p. 3). In any situation where someone has to decide how to organise a decision-making environment, some degree of influence on the outcome is inevitable (pp. 10-11). The only responsible approach is to recognise this and use that understanding consciously when designing the choice architecture (Hansen & Jespersen, 2013, p. 8).

The relevance of choice architecture to digital consumer protection is twofold. First, it demonstrates that influence is unavoidable: every interface contains design choices that shape user outcomes, whether through helpful nudges or their darker counterparts. Second, it underscores what is at stake from a normative perspective. In digital environments, where firms exercise near-total control over the structure of the choice environment, behavioural insights are already being used to steer decisions toward commercial gains. Given this imbalance, regulatory intervention is justified to counterbalance such power. Behavioural economics therefore reframes the challenge posed by dark patterns. It shifts the focus away from the formal presence of consent or information disclosure and toward whether the decision environment itself is effective and fair.

Dark Patterns and Behavioural Economics

Choice, as shown by behavioural economics, is shaped by design. Dark patterns, then, represent a systematic effort to exploit that design power for commercial gain (Gray et al. 2018, p. 1). Rather than promoting consumer autonomy and well-being, dark patterns subtly steer users toward outcomes they might not have chosen under a different choice architecture (OECD, 2022, p. 16). Their manipulative force lies in the ability to influence behaviour through structure, through the architecture of the digital interface itself (Roșca, 2024, pp. 60-61). This section examines how dark patterns function in practice by drawing on the analytical tools of behavioural economics and develops the concept of counter-architecture as a regulatory response.

Architecture of Influence: Structure and Fast Thinking Online

Understanding the functioning of dark patterns begins with recognising the kind of cognitive processes they are designed to target. When consumers browse websites, they often do not make careful, deliberate choices. Instead, they respond quickly and intuitively, guided by the structure of the environment but fast – that is, by System 1 thinking (Metzger et al., 2010, p. 416)**.** In such contexts, users rely on heuristics and cognitive shortcuts, making them more prone to systematic errors in judgment (Pherson et al., 2024, p. 11). Bösch et al. (2016, p. 245) describe these as "low opportunity and low motivation" settings, where the influence of interface design is particularly pronounced. Dark patterns function as elements of choice architecture that exploit these very conditions.

Empirical studies demonstrate how interface design can activate this type of automatic, intuitive processing. In a large field experiment, Nouwens et al. (2020) found that removing the "reject all" button from the first page of a cookie banner increased consent rates by over 20 percentage points, while presenting granular options upfront reduced consent by 8-20 percentage points (pp. 8-9). Most participants interacted only with the first layer of the interface and often accepted all without exploring further options. When later asked to reflect on their choices, many reported that their behaviour did not match their privacy preferences, citing design fatigue and a desire to quickly access the website (pp. 9-10). This pattern is consistent with the concept of bounded rationality: instead of carefully evaluating their options, users relied on simplified strategies to conserve cognitive resources in an environment that demanded attention and effort.

Knijnenburg et al. (2013) reached a similar conclusion. In their experiment on form auto-completion, users were more likely to disclose personal data when certain fields, such as age or location, were pre-filled by default. This happened even when sharing that information was not in their best interest (p. 15). When users were instead asked to fill in the fields themselves, the level of data disclosure decreased (p.16). This again suggests that defaults act as behavioural heuristics, prompting intuitive compliance rather than reflective choice.

The more an interface nudges users toward default options, the more System 1 thinking dominates, especially when attention, energy, or understanding are limited. This also helps explain the repeated failure of traditional regulatory tools like information disclosures and consent forms. Ben-Shahar and Schneider (2014) demonstrate that users rarely read or comprehend disclosures, especially when overburdened or fatigued (pp. 42-43, 46). The core problem, then, is not a lack of information, but the interface's structural design, which renders that information functionally irrelevant to actual user behaviour.

Beyond Defaults: Framing, Emotion and Visual Cues

While defaults are key tools in digital choice architecture, they are far from the only means through which user behaviour is channelled. Many dark patterns shape decisions not through positional features, but through the framing, presentation and emotional resonance of choices.

One such technique is confirmshaming, where opt-out options are phrased to elicit guilt or social disapproval. In their experiment, Luguri and Strahilevitz (2021) found that participants were more likely to accept an identity theft protection plan when declining it required clicking a button labelled "I don't care about protecting my data or credit history" (p. 75). Similarly, a behavioural study commissioned by the European Commission observed that emotional appeals, referred to as "toying with emotions", led participants to choose options inconsistent with their previously stated preferences (Lupiáñez-Villanueva et al., 2022, pp. 105-106).

Scarcity-based prompts represent another common way of evoking System 1 cognition. In an experimental study on e-commerce, Ray Sin et al. (2025) tested three types of dark patterns: limited-quantity scarcity, high demand, and positive testimonials. All three significantly increased impulsive purchasing compared to a control condition (p. 68). Scarcity cues such as "Only 2 left!" exploit the well-documented cognitive bias that limited availability signals higher value, prompting faster and less reflective decisions (Mittone & Savadori, 2009, p. 462.) Similarly, high-demand messages and testimonial cues leverage social proof, triggering the bandwagon effect, where individuals are more likely to act when they believe others are doing the same (Mathur et al., 2019, p. 81:6).

Beyond emotional language and urgency cues, visual architecture can also have a strong behavioural impact. Machuletz and Böhme (2020) found that aesthetic manipulations, such as altering button colour and visibility, boosted consent in laboratory settings(pp. 490-491). These effects were accompanied by lower recall accuracy and greater post-hoc regret, suggesting that users were less aware of or satisfied with their choices (p. 492). Field experiments by Utz et al. (2019) confirmed that subtle visual manipulations, particularly on mobile interfaces, led to higher rates of cookie acceptance (p. 9). Their findings also showed that the position of the notice on the screen affected interaction rates, with lower and more accessible placements resulting in greater engagement (pp. 8-9).

Angst and Agarwal (2009) further demonstrate that even users with strong privacy concerns are more likely to opt in for electronic record sharing when nudged accordingly. Drawing on the elaboration likelihood model, they argue that such framing influences users through the peripheral route of persuasion. In this mode, people are driven not by careful deliberation, but by affective or heuristic cues (p. 341). Their experiment demonstrated that positively framed arguments increased acceptance, especially among users with lower issue involvement. This suggests that framing can override resistance when cognitive engagement is low (pp. 353, 357). The study highlights how subtle shifts in message presentation can alter behavioural intentions, not by changing core preferences, but by changing the mode of cognitive processing.

The alteration of the interface should therefore be understood more broadly: it is not only the layout, but also the content that prompts and constraints. What is said, how it is said, and how it is visually emphasised all contribute to shaping choice. The multi-layered and hostile environment nudges users into impulsivity and suppresses reflection, securing compliance with the intentions of the digital architect.

Obstructive Design and User Fatigue

Some dark patterns nudge users toward impulsive acceptance; others are designed to exhaust them into submission. These techniques do not rely on attraction or salience, but on

attrition. Sunstein (2021) refers to such practices as “sludge”: design barriers that separate people from what they want to get by imposing procedural burdens and delays (pp. 4-5, Kollmer & Eckhardt, 2023, pp. 203-204). Multi-step opt-outs, unclear unsubscribe paths, and buried privacy settings all deplete cognitive energy and activate the low-effort, automatic processing characteristic of System 1 thinking (Mathur et al., 2021, pp. 81:21–81:22).

This mechanism was tested by Luguri and Strahilevitz (2021), who exposed participants to varying levels of friction in a simulated decision interface. In the most obstructive condition, users encountered multiple screens, time delays, and forced reading before being allowed to decline a free trial (p. 74). Acceptance rates in this condition were significantly higher than in the control group, demonstrating that procedural barriers can effectively suppress user agency (p. 76). When resistance requires effort, many users relent.

Kugler and Strahilevitz (2024) further confirmed this dynamic in a study of privacy interfaces employing obstruction, confusion, and nagging. Even when participants were clearly told to maximise their privacy protections, many still accepted settings that undermined their goals. This demonstrates that motivation and awareness alone are not sufficient when cognitive processing is shaped by design. A similar finding emerges from Bogliacino et al. (2023), who conducted a cross-national experiment involving over 6,000 users. Despite being instructed to protect their privacy, many still disclosed significant personal information when alternatives were obscured and required additional action to access (pp. 4, 24). As Bösch et al. (2016) observe, users may recognise manipulative patterns, yet still comply because of the way digital environments engage fast, intuitive modes of reasoning (p. 244).

This design logic also exploits present bias, the tendency to prioritise immediate ease or reward over long-term goals. Acquisti (2004) demonstrated that users are more willing to trade privacy for small, immediate benefits. Many dark patterns capitalise on this by offering free trials, one-click signups, or personalised discounts that provide short-term convenience but ultimately lead to data concessions or other welfare losses (Bongard-Blanchy et al., 2021, p. 763). When the

alternative requires navigating tedious or confusing processes, users are even more likely to choose the effortless, pre-structured path.

Friction may equally function as a tool of compulsive engagement. Design features like infinite scroll, autoplay, and variable rewards have been shown to increase time-on-platform by manipulating users' cognitive impulses (Flayelle et al., 2023, pp. 141–143). As Leiser (2023) observes, such systems exploit the very same vulnerabilities that drive other dark patterns: fatigue, heuristic thinking, and instant gratification (p. 19).

Counter-Architecture as a Regulatory Response

The previous sections have shown that dark patterns function as elements of digital choice architecture that nudge users by exploiting various cognitive biases and heuristics. They rely on the fact that consumers in digital environments often operate under System 1 thinking. As the CMA (2022) explains, these patterns are designed to influence behaviour by structuring the interface itself (p. 15). Even seemingly minor features can significantly affect user choices (Thaler & Sunstein, 2008, p. 25), especially in contexts where users tend to skim rather than read (CMA, 2022, p. 4). Awareness alone does little to counter these effects, as decisions remain driven by intuitive processing rather than reflective evaluation (Bösch et al., 2016, p. 244).

This understanding exposes a core limitation in current regulatory approaches, which tend to focus on transactional indicators such as informed consent, misleading conduct, or the validity of user choice (as discussed in the literature review). These frameworks often fail to account for the structural nature of influence embedded in interface design. As demonstrated in this section, such approaches are insufficient. By contrast, well-designed digital architectures can measurably improve user outcomes. Regular privacy reminders, for instance, have been shown to raise awareness and prompt users to reassess app permissions (Utz et al., 2019, pp. 794–795). A growing body of evidence confirms that choice architecture can be leveraged to promote welfare without restricting freedom (CLJ, 2023, pp. 139–140; Mertens et al., 2022, pp. 6–7).

This is the premise of *counter-architecture*, a concept developed in this thesis to reframe how legal systems respond to manipulation by design. It treats interface architecture not merely as a conduit for violations, but as a regulatory object in its own right. Interface design can and should be structured to enable user autonomy. Where market incentives fail and one party controls the entire digital interface, regulation must intervene to set the terms of that control.

As established in liberal contract theory, autonomy is not merely the ability to say "yes" or "no" to a given offer (Susser et al., 2019a, pp- 36-37). It presupposes the capacity to reflect, evaluate alternatives, and make authentic and competent decisions. The key concern is not whether users made a choice, but whether the conditions under which that choice was made allowed for genuine reflection and autonomy. Counter-architecture builds on this insight. It shifts the regulatory focus from reactive enforcement toward the proactive creation of legal rules that govern digital design.

Doctrinal Analysis

To provide specific recommendations based on counter-architecture, it is first necessary to understand how existing EU law regulates dark patterns and where its limits lie. This doctrinal analysis focuses on four key instruments: the Unfair Commercial Practices Directive (UCPD) and the Consumer Rights Directive (CRD), which govern transactional practices and contractual information duties; the General Data Protection Regulation (GDPR), which addresses consent and data-driven manipulation; and the Digital Services Act (DSA), which introduces a direct prohibition on certain interface designs. Other acts such as the AI Act, Data Act, and Digital Markets Act (DMA) are excluded here to preserve focus and depth, with detail analysis provided elsewhere (Graef, 2023, pp. 11–12; Leiser & Santos, 2023, pp. 25–29; Santos, Morozovaite, & De Conca, 2025, pp. 33–36).

UCPD: Unfair Practices and Average Consumer Standard

The Unfair Commercial Practices Directive (UCPD) sets out rules governing unfair business-to-consumer commercial practices. It is a maximum harmonisation instrument (Recital 11), meaning that Member States may not diverge from its provision in areas it harmonises. The Directive also has broad horizontal scope, applying across all sectors and types of goods and services, both online and

offline (Commission, 2021, pp. 5-6). It governs any act or omission directly connected to the promotion, sale or supply of a product to consumers, whether before, during, or after a commercial transaction (Article 2(d) UCPD).

Dark patterns may fall within the material scope of the Directive where their design qualifies as an unfair commercial practice under Article 5, or more specifically as a misleading or aggressive practice under Articles 6–9. Across these provisons, the average consumer standard functions as a recurring benchmark for assessing unfairness. Importantly**,** the UCPD does not require intention for the deployment of the dark pattern (European Commission, 2021, p. 27). This sets it apart from many academic definitions of dark patterns, which often assume an element of strategic manipulation.

However, the Directive's scope is limited to commercial practices linked to a transactional relationship. Recital 25 clarifies that it does not apply to situations in which users are exposed to advertising in exchange for access to digital content, or where only metadata is collected, unless such a situation qualifies as a contract under national law. While Member States remain free to regulate these contexts, the limitation reveals a structural gap in the current framework.

General Clause: Article 5 of the UCPD

Article 5(1) establishes a general ban on unfair commercial practices, stating that traders shall not engage in unfair business-to-consumer commercial practices. This general clause functions as a residual control mechanism. According to the CJEU in *CHS Tour Services v Team4 Travel* (2013) where a practice already breaches a more specific provision of the Directive, such as Articles 6–9, it is not necessary to demonstrate a breach of professional diligence under Article 5 (para. 45).

Article 5(2) provides the main test of unfairness, stating that a commercial practice is unfair if it is contrary to the requirements of professional diligence and likely to materially distort the economic behaviour of the average consumer. The latter condition is met where a practice appreciably impairs the consumer's ability to make an informed decision, thereby causing a transactional decision they would not have taken otherwise, as clarified in Article 2(e) UCPD. This encompasses not only decisions to purchase, but also pre-contractual and post-contractual decisions.

Traders who design interfaces that mislead or steer consumers toward particular outcomes may fail to meet the standard of professional diligence, defined in Article 2(h) as “the standard of special skill and care which a trader may reasonably be expected to exercise towards consumers, commensurate with honest market practice and/or the general principle of good faith in the trader's field of activity.” According to the CJEU in *Deroo-Blanquart* (2016)a breach of this standard is to be assessed in light of the legitimate expectations of the average consumer (para. 34).

Misleading Practices: Articles 6–7 of the UCPD

Article 6(1) prohibits misleading actions, which include the provision of false information or a deceptive overall presentation that is likely to cause the consumer to take a transactional decision they would not have taken otherwise. This includes how the information is presented. Dark patterns involving visual manipulation (e.g., disproportionate emphasis on one option) or ambiguous language (e.g., double negatives) may fall under Article 6 if they result in the consumer being misled (European Commission, 2021, p. 101).

Article 7(1) prohibits misleading omissions. A commercial practice is misleading if it omits material information that the average consumer needs to make an informed decision, or if it hides or presents that information in an unclear, unintelligible, ambiguous or untimely manner. The test is again whether the consumer is likely to take a different transactional decision. Interface designs that delay or obscure relevant contractual or pricing information (e.g. cost traps, hidden unsubscribe conditions, or unclear duration of offers) may constitute misleading omissions under Article 7 (European Commission, 2021, p. 102).

Aggressive Practices: Articles 8–9 of the UCPD

Article 8 prohibits commercial practices that, in their factual context, by harassment, coercion or undue influence, significantly impair or are likely to significantly impair the consumer’s freedom of choice or conduct, and cause a transactional decision they would not otherwise have taken. Article 9 lists relevant factors to determine whether a practice is aggressive, including the use of emotional pressure, exploiting a position of power, and placing excessive non-contractual barriers

on cancelling or claiming contractual rights. Dark patterns such as confirmshaming, nagging, and obstructive unsubscribe flows may meet the criteria for aggressive practices if they interfere with the consumer's ability to act freely.

Annex I (Blacklist)

Article 5(5) UCPD provides that "Annex I contains the list of those commercial practices which shall in all circumstances be regarded as unfair." This blacklist applies uniformly across all Member States and may be amended only by revision of the Directive itself. Annex I thus established a set of *per se* prohibitions: the listed practices are considered unfair irrespective of any case-by-case assessment of professional diligence or actual consumer impact.

Several of the banned practices closely mirror recognised dark pattern strategies, particularly those that rely on deception, coercion, or persistent nudging. For instance, items No. 5 and 6 prohibit bait-and-switch tactics, where a trader advertises a product at an attractive price without intending to sell it as presented, or attempts to steer the consumer toward a different product once interest has been shown.

Other items target the artificial creation of urgency and scarcity. Item No. 7 prohibits falsely stating that a product will only be available for a very limited time. In practice, this captures false urgency patterns, such as countdown timers, limited-stock messages, or pop-ups suggesting high demand. All of these are designed to trigger hurried decision-making.

Similarly, item No. 18 addresses the provision of inaccurate information about market conditions or the trader's ability to supply. This is particularly relevant to dark patterns that mislead users into believing that a product is in short supply or unusually popular, thereby prompting premature or unnecessary purchases.

Item No. 19 prohibits deceptive reward mechanisms, such as falsely claiming that a consumer has won a prize or can obtain one by taking further action. These tactics are often embedded in gamified or interactive interfaces that attract attention and encourage engagement, while hiding significant conditions or obligations behind the promised reward.

Finally, item No. 26 bans persistent and unwanted solicitations, aligning closely with so-called nagging patterns. These involve repetitive prompts, modal interruptions, or interface loops that wear down user resistance and pressure them into compliance, even after they have clearly expressed a different preference.

Average Consumer Standard

The Directive adopts the average consumer standard (Recital 18 UCPD), which refers to a consumer who is reasonably well-informed, observant, and circumspect (Gut Springenheide, 1998, para. 31). This benchmark plays a central role in assessing whether a practice is misleading, aggressive, or materially distortive.

However, this standard has been subject to criticism in the context of dark patterns (BEUC, 2022, p. 9). It is a normative rather than a realistic test**:** as Sibony and Mocanu (2023) observe, it reflects “an abstract sketch of a super-shopper,” leaving “no room for empirical evidence about how real consumers behave”. The model presumes a level of rationality and attentiveness that does not reflect how consumers typically behave in complex or fast-paced digital environments (Brenncke, 2024, p. 9). Many dark patterns are designed to exploit common cognitive biases, time scarcity, or attention limitations, which are factors that affect even well-informed consumers. The average consumer benchmark does not account for these vulnerabilities and may therefore limit the Directive’s effectiveness in addressing dark patterns.

CRD: Information Duties and Consent Defaults

The Consumer Rights Directive (CRD) complements the UCPD by regulating the conclusion and performance of consumer contracts, particularly in the context of distance and online transactions. It is a horizontal instrument that applies to all non-sectoral consumer contracts and operates as a maximum harmonisation measure (Article 4 CRD). Importantly, the scope of the CRD includes contracts where the consumer pays with personal data rather than money (Article 3(1)(a) CRD). This extension is essential for regulating dark patterns in nominally free digital services, where

the contractual counter-performance consists of user data. It also aligns the CRD more closely with the GDPR.

While the Directive does not explicitly regulate dark patterns, several of its provisions are materially relevant where manipulative design affects the presentation of pre-contractual information, the structure of user consent, or the conclusion of contracts in online environments.

Pre-contractual Information and Presentation: Articles 6 and 8 of the CRD

Articles 6(1) and 8 CRD impose broad information obligations on traders. They must provide consumers with key contractual details, including the total price, cancellation rights, and contract duration, “in a clear and comprehensible manner” and “in plain and intelligible language” suited to the means of distance communication used. These provisions imply more than the mere presence of information; they require that users be able to perceive and process it in a meaningful way.

This includes Article 6(1)(e)**,** which requires disclosure of the total price and any additional charges. Under Article 6(6)**,** this information must be made salient before the contract becomes binding. Together, these provisions target practices such as hidden subscription patterns and information hiding, where key terms or recurring costs are concealed or downplayed in the interface. Articles 7 and 8 reinforce this by requiring that all information be presented in plain and intelligible language.

Although the CRD does not explicitly refer to a standard of consumer attention, the CJEU has interpreted these requirements in line with the average consumer benchmark established under the UCPD. In *EIS GmbH v TO (2020, para. 40)*, the Court confirmed that Article 6 must be assessed from this perspective.

Prohibition of Default Consent: Article 22 of the CRD

Article 22 CRD establishes that a trader must obtain the consumer’s express consent for any payment in addition to the remuneration agreed upon for the trader’s main contractual obligation. Consent cannot be inferred by means of pre-ticked boxes or default options that the consumer must deselect to avoid charges. Where such defaults are used, the consumer is entitled to reimbursement.

This provision directly prohibits practices such as “sneak into basket” techniques, pre-selected add-ons, and other forms of passive opt-in. It reflects the same standard found in 4(11) GDPR, which requires that consent be freely given, specific, informed and unambiguous.

Withdrawal as a Corrective Mechanism: Articles 9-16 of the CRD

The CRD also provides a right of withdrawal from distance contracts, allowing consumers to cancel within 14 days without giving any reason (Article 9 CRD). This acts as a partial safeguard against dark patterns, particularly those involving pressure tactics, deceptive urgency, or information obfuscation at the point of contract formation. Under Article 10, if the trader fails to inform the consumer of this right as required under Article 6(1)(h), the withdrawal period is extended by 12 months from the end of the initial period. While this mechanism reinforces transparency and information disclosure, its effectiveness still depends on the salience and accessibility of that information. These qualities can be undermined by the very dark patterns the Directive seeks to address.

GDPR: Transparency, Fairness and Design

The General Data Protection Regulation (GDPR) establishes a comprehensive framework for the protection of personal data within the European Union. Although it does not explicitly refer to dark patterns, it applies to any commercial practice that involves the processing of personal data. The Regulation imposes specific requirements regarding fairness, transparency, consent, and interface design. These standards are frequently implicated when dark patterns are used to influence data subjects’ decisions.

Fairness and Transparency: Article 5(1)(a) and Article 12(1) of the GDPR

Article 5(1)(a) provides that personal data must be processed lawfully, fairly, and in a transparent manner in relation to the data subject. This principle is central to the GDPR’s normative framework and can independently ground enforcement even in the absence of a consent violation (Orange Romania, 2020, para. 42). According to the EDPB (2023, pp. 8-9), dark patterns that result in

detrimental, discriminatory, or misleading processing fall within the scope of this provision and may be found to infringe it.

Transparency obligations are further elaborated in Article 12(1), which requires that any information addressed to the data subject be provided in a concise, transparent, intelligible, and easily accessible form, using clear and plain language. Dark patterns that exploit cognitive overload or ambiguous phrasing, or fragmented disclosures, such as privacy mazes or hidden consents, may render information inaccessible or unintelligible and thus violate this requirement. The Irish DPC's enforcement against WhatsApp, upheld by the EDPB, confirmed that splitting critical data across multiple documents and failing to explain legal bases with sufficient granularity can amount to a breach of Article 12, even where formal disclosure is present (Herbiet, 2025, p. 19)

Purpose Limitation and Data Minimisation: Articles 5(1)(b)-(c) of the GDPR

Articles 5(1)(b) and 5(1)(c) set out the principles of purpose limitation and data minimisation. The former requires that personal data be collected for specified, explicit, and legitimate purposes and not further processed in a manner incompatible with those purposes. The latter mandates that only data necessary for those purposes be collected. Dark patterns that obscure the actual purpose of data collection, such as through misleading consent prompts or bundled permissions, may violate the requirement of specificity. Likewise, patterns that pressure users into disclosing more data than needed, for instance by presenting optional fields as mandatory, may breach the minimisation principle.

Consent: Articles 4(11), 7 and Recitals 42-43

Under the GDPR, consent constitutes a central legal basis for data processing. Articles 4(11) and 7 specify the requirements: it must be freely given, specific, informed, and unambiguous. Recitals 42 and 43 add that consent is not valid if obtained through deception, coercion, or a clear imbalance of power.

The CJEU has confirmed and elaborated on these criteria in key judgments. In *Planet49* (2019) the court held that pre-ticked boxes do not constitute valid consent, emphasising that users must take an

affirmative action that reflects genuine intent (para. 57). In *Orange Romania* (2020), it found that requiring users to complete an additional form to object to data processing undermines the freedom of choice (para. 52). In both cases, the Court made clear that interface design must not bias users toward agreement or create unnecessary friction to opt out.

Regulatory guidance reinforces this interpretation. According to the EDPB (2023), dark patterns such as overloading, skipping, stirring, hindering, or leaving users in the dark—may infringe the GDPR's consent requirements under Articles 4(11) and 7 (p. 2). These patterns interfere with the data subject's ability to make choices that are genuinely informed, specific and freely made.

Automated Decision-Making: Article 22 and the Schufa Ruling

Article 22 GDPR gives individuals the right not to be subject to decisions based solely on automated processing, including profiling, when such decisions produce legal or similarly significant effects. In *Schufa* (2023), the CJEU expanded the interpretation of automated decision-making to include profiling systems that substantially influence user behaviour (para. 73). This clarification suggests that certain dark patterns, particularly those involving personalised interface design based on profiling, may fall within the scope of Article 22 when they are used to manipulate decisions with significant consequences.

Data Protection by Design: Article 25

Beyond individual provisions, the GDPR also introduces structural safeguards. Article 25 requires controllers to implement data protection by design and by default, requiring that privacy and data protection be embedded into the architecture of systems and interfaces. This includes integrating privacy safeguards into the design of interfaces and ensuring that only necessary data is processed by default. According to EDPB, incorporating data protection into user interface design is essential to preventing dark patterns from the outset. The emphasis is not merely on compliance, but on proactive design that facilitates genuine user control.

DSA: A Behavioural Turn in Platform Regulation

The Digital Services Act (DSA) establishes a comprehensive regulatory framework for intermediary services, aiming to create a more transparent online environment. It applies specifically to online platforms, defined in Article 3(i) as hosting services that store and disseminate user-generated content to the public. This public-facing function distinguishes online platforms from other intermediary services. Platforms where dissemination is merely incidental, such as comment sections on news sites (Recital 13 DSA), are excluded, as are micro and small enterprises under Article 19 DSA.

Prohibition of Manipulative Interface Design: Article 25 of the DSA

Article 25 of the DSA is the first provision in EU law to directly target manipulative interface structures that interfere with user decision-making. It marks a shift from regulating information provision to regulating the environment in which choices are made.

The core obligation is set out in Article 25(1):

"Providers of online platforms shall not design, organise or operate their online interfaces in a way that deceives or manipulates the recipients of their service or in a way that otherwise materially distorts or impairs the ability of the recipients of their service to make free and informed decisions."

Although the term "dark patterns" is not used in the provision itself, Recital 67 makes clear that such practices fall within its material scope. It defines dark patterns as interface designs or practices that materially distort or impair, either by intention or effect, the ability of users to make autonomous and informed choices. Examples listed in the recital include presenting choices in a non-neutral manner, repeatedly prompting users to make the same decision, making cancellation procedures significantly more difficult than sign-up processes, or using default settings that are difficult to locate or modify. At the same time, the recital also stresses that legitimate advertising and user interaction are not prohibited, provided they comply with Union law.

What distinguishes Article 25 is its focus on interface architecture. While earlier instruments like the UCPD and CRD assess the fairness of transactions, and the GDPR governs the lawfulness of data processing, Article 25 scrutinises the design layer of the user experience. The reference to

“design, organisation or operation” indicates that liability may arise not only from visual elements, but also from functional, sequential, or interactive components of the interface. This includes how choices are grouped, how defaults are set, or how easily users can exit or decline options.

The legal standard introduced by Article 25 is whether the interface impairs a user’s ability to make a “free and informed decision.” This establishes a benchmark grounded in procedural autonomy: platforms are not merely prohibited from lying or concealing information, but from structuring the decision environment in ways that steer, constrain or fatigue user choice. Crucially, intent is not required. The prohibition applies wherever the effect of the design materially distorts or impairs decision-making.

Evaluation: Structural Gaps and the Need for Counter-Architecture

The current EU legal framework provides partial but insufficient protection against dark patterns. While the UCPD, CRD, GDPR, and DSA each address certain aspects of manipulative design, their combined approach remains fragmented and grounded in outdated assumptions about user rationality. Many dark patterns fall into legal grey zones, are inconsistently regulated, or are subject to vague and behaviourally uninformed standards.

Each instrument has important limitations. The UCPD applies only to commercial practices linked to transactional decisions, excluding non-contractual manipulations such as attention harvesting or interface-level nudging. The CRD assumes that clear information and active consent are sufficient to safeguard autonomy, an assumption strongly challenged by behavioural research. Both instruments rely on the average consumer standard, which presumes that users are reasonably well-informed and attentive. In practice, however, dark patterns exploit limited attention, cognitive biases, and time pressure, rendering such assumptions unrealistic. Legal tools based on transparency, intent, or rational decision-making consistently fail to address how manipulation operates in real digital environments.

The GDPR shows similar deficiencies. It applies only to practices involving personal data and focuses primarily on consent and disclosure. While Article 25 introduces the principle of data

protection by design and by default, this provision remains constrained by its controller-centric framing, lack of clear design standards, and narrow material scope. The DSA takes an important step toward counter-architectural regulation through Article 25, which prohibits interface designs that impair free and informed decision-making. However, this provision applies only to online platforms, and Article 25(2) explicitly defers to other legislation in cases of overlap. This carve-out significantly weakens its effectiveness, especially given that many dark patterns already fall, albeit imperfectly, within the scope of the GDPR or UCPD.

These structural and conceptual gaps reflect a deeper regulatory mismatch between the assumptions of EU consumer and data protection law and the actual mechanisms through which dark patterns exert influence. To address this, the next section proposes legislative reforms grounded in the principle of counter-architecture—a regulatory approach that targets the structure and presentation of digital choice environments. These proposals aim to establish enforceable standards for interface neutrality, fairness by design, and cognitive accessibility, aligning EU law with the behavioural realities of digital manipulation.

Designing for Autonomy: A Blueprint for Counter-Architectural Reform

This section sets out targeted legal reforms designed to embed counter-architectural principles into EU law. Building on behavioural insights, the proposals treat interface design as a structuring force that shapes user decisions and therefore as a legitimate focus of regulatory intervention.They draw on doctrinal analysis as well as existing regulatory and academic proposals. In turn, each measure is linked to a specific legal instrument, either through amendments to the UCPD, CRD, and GDPR, or through inclusion in the new Digital Fairness Act.

Introduce a General Duty of Fairness by Design

Given the power of commercial choice architecture and the dark nudging it enables, consumer law should impose a general duty not to exploit cognitive vulnerabilities through interface design. Just as data protection law requires “privacy by design” (GDPR, Article 25), consumer protection law should impose a parallel duty of “fairness by design,” requiring that products,

interfaces, and commercial communications be designed to support, not distort, autonomous decision-making. This builds on a proposal by BEUC (2022, p. 13), which calls for structural safeguards to prevent manipulation through digital environments.

This duty would go beyond the trader's behaviour in individual practices (currently regulated by Article 5(2) UCPD) and instead apply to the overall structure and presentation of user-facing systems. It should be introduced as a horizontal principle in the UCPD and formally established as a core provision in the proposed Digital Fairness Act.

Operationalise Fairness through Symmetry in Choice Architecture

Digital interfaces often present users with choices related to consent, personalisation, or subscriptions, but these are typically structured to steer decisions toward outcomes that favour business interests. Behavioural research shows that defaults, visual salience, and friction significantly shape user behaviour, especially when attention is limited or when decisions appear low stakes. Dark patterns exploit this by, for example, making opt-out paths less visible, less convenient, or more cognitively demanding than opt-in options. To restore meaningful autonomy, the law should require that all choices be equally accessible, visible, and easy to act upon.

A version of this requirement already exists in Californian privacy regulation, where symmetry in choice is mandatory (CCPA, 2024, § 7004(a)(2)). The path for a consumer to exercise a more privacy protective option must not be longer, more difficult or time-consuming than the path to exercise a less privacy-protective option. This behavioural design rule draws directly on choice architecture research and counters manipulative interface design by structurally levelling the presentation of options.

This principles can be implemented via amendments to the Consumer Rights Directive, for example by expanding the pre-contractual information provisions in Articles 6 and 8. It can also be supported by delegated acts under Article 25(3) of the DSA, which could specify detalied requirements for choice presentation on platforms. Most importantly, it should be embedded in the Digital Fairness Act as a core rule of fairness by design.

Expand the Concept of Transactional Decision

In online settings, consumers often rely on System 1 thinking, particularly during low-stakes interactions where nudging is most effective. Dark patterns take advantage of this by steering users through a series of micro-decisions, such as clicking “accept,” dismissing a banner, or continuing along a preselected path. These moments fall outside the scope of the UCPD’s current definition of a “transactional decision,” which focuses on purchasing, payment, or exercising contractual rights.

To reflect the cumulative behavioural impact of such interactions, Article 2(k) should be revised to explicitly include non-contractual interface-level decisions that affect consumer welfare, such as giving consent, enabling tracking, or continuing a subscription. This would help align the UCPD’s enforcement scope with the realities of interface-driven behaviour.

Blacklist Clearly Unfair Dark Patterns

While the current blacklist in Annex I of the UCPD targets traditional forms of deception, it does not yet capture the full range of dark patterns that exploit behavioural vulnerabilities. Certain designs such as hidden costs, hidden subscriptions, and hard-to-cancel processes should be prohibited outright as unfair commercial practices. This selection is supported by OECD findings, which highlight these patterns as causing substantial financial harm and being repeatedly flagged in behavioural research and enforcement actions (2022, p. 24). Such an approach would enhance legal certainty, improve interpretability, and empower authorities to act more swiftly.

The blacklist could either be expanded within Annex I of the UCPD, in light of the proposed revision of the concept of transactional decision, or established through delegated acts under Article 25(3) of the DSA. In either case, it should be complemented by a taxonomy of dark patterns developed, organised by the cognitive biases they exploit (for example status quo bias, scarcity effects or friction costs). This would link enforcement to evidence-based criteria and clarify how specific design features distort user decision-making.

Mandate a Contract Cancellation Button

As an alternative and complement to the symmetry principle, the CRD should require a clearly visible and easily usable cancellation mechanism for digital contracts, targeting sludge-based design that obstructs termination. Consumers should be able to cancel directly through the interface, without needing to contact customer support unless strictly necessary.

A similar requirement already exists in EU law in the form of the withdrawal button for distance contracts, recently introduced, but not yet in effect, as part of the Consumer Rights Directive reform (VRRL-E, 2023, Art. 11(a)). However, this provision is limited to the statutory 14-day withdrawal period. The current proposal would extend the same design logic to ongoing digital services, ensuring that subscription cancellation and other forms of contract termination remain accessible throughout the contractual relationship.

Behavioural research supports this measure. Studies show that consumers often abandon cancellation attempts when faced with procedural hurdles, time delays, or cognitive fatigue (Luguri & Strahilevitz, 2021, pp. 74–76). By removing these frictions, a mandatory cancellation button would counteract design-based attrition and reinforce meaningful user control.

Recalibrate the Average Consumer Benchmark

Behavioural research shows that the average consumer benchmark assumes a level of attentiveness and rationality that does not reflect how decisions are actually made in digital environments. Firms control the choice architecture and can exploit predictable biases such as inertia and decision fatigue. As Roșca (2024, pp. 244–245) notes, this creates a structural mismatch between legal standards and empirical consumer behaviour.

To improve regulatory accuracy, the benchmark should be recalibrated to reflect cognitive limitations in online settings. One option is to adopt a more realistic behavioural model, such as the passive or digitally vulnerable consumer, within the Digital Fairness Act or through coordinated reform across the consumer acquis.

Conclusion

This thesis has examined how dark patterns manipulate user decision-making in digital environments and how the European Union's current legal framework responds to these practices. Through a combination of doctrinal legal analysis and behavioural economic reasoning, it has identified structural shortcomings in the legal framework and advanced legislative reforms grounded in the concept of counter-architecture.

The central argument is that traditional regulatory tools, which focus on transparency, consent, and rational choice, are inadequate to tackle manipulation by design. Dark patterns exploit cognitive shortcuts under conditions of fast, intuitive thinking, steering users through the structure of digital interfaces rather than through overt deception. Regulation should therefore engage with the design of the choice environment.

To address this, the thesis developed counter-architecture as a normative and legal framework for promoting autonomy in digital spaces. It proposed a range of legislative measures, including fairness-by-design obligations, symmetry in consent flows, and a broader definition of transactional decisions. These were linked to existing instruments (UCPD, CRD, GDPR, DSA) or were framed as elements of a future Digital Fairness Act.

Although the proposed reforms are necessarily normative, they seek to move EU regulation closer to a model that treats design not as a neutral medium but as a vector of influence and thus a legitimate site of legal intervention. In doing so, the thesis contributes to ongoing debates on how law can respond more effectively to the challenges of the digital age.

Limitations

First, the scope of the thesis was restricted to legislative and doctrinal analysis. Questions of enforcement, monitoring, and institutional implementation, while essential to the overall effectiveness of regulation, were deliberately excluded. These procedural dimensions often fall under national competences and are less central to counter-architectural reforms focused on substantive norms.

Second, while the recommendations are grounded in behavioural theory and supported by empirical literature no original experimental research was conducted to validate the proposed changes. Further studies would be needed to test, for instance, whether mandating that opt-out mechanisms match the visual salience and friction level of opt-ins actually improves user autonomy in practice.

Third, the proposed reforms introduce substantive design obligations that may entail additional compliance burdens for digital service providers. For example, mandating a "contract cancellation button" that is as accessible as the sign-up option requires interface restructuring, backend adjustments, and ongoing usability testing. While these measures play an important role in reducing manipulation by design, they may impose significant costs, particularly on small and medium-sized enterprises. Proportionality mechanisms such as company size thresholds, contextual flexibility, or phased implementation could help balance regulatory effectiveness with economic feasibility.

Bibliography

Acquisti, A. (2004, May). Privacy in electronic commerce and the economics of immediate gratification. In *Proceedings of the 5th ACM conference on Electronic commerce* (pp. 21-29).

Ahuja, S., & Kumar, J. (2022). Conceptualizations of user autonomy within the normative evaluation of dark patterns. *Ethics and Information Technology*, *24*(4), 52.

Armangau, R. (2025, April 11). EU Digital Fairness Act is for business as much as consumers, says justice commissioner. *Euronews*. https://www.euronews.com/next/2025/04/11/eu-digital-fairness-act-is-for-business-as-much-as-consumers-says-justice-commissioner

Balawi, A., & Ayoub, A. (2023). A review of the main differences between behavioral and traditional economics: a focus on the impact of nudge theory on public policies and its applications. *Modern Management Review*, *28*(4), 17-31.

Bar-Gill, O., Schkade, D., & Sunstein, C. R. (2019). Drawing false inferences from mandated disclosures. *Behavioural Public Policy*, *3*(2), 209-227.

Ben-Shahar, O., & Schneider, C. E. (2014). More than you wanted to know: The Failure of Mandated Disclosure.

Bensinger, G. (2021, April 30). Stopping the manipulation machines. *The New York Times*. https://www.nytimes.com/2021/04/30/opinion/dark-pattern-internet-ecommerce-regulation.html

BEUC (2022). *"Dark patterns" and the EU consumer law acquis: Recommendations for better enforcement and reform.* The European Consumer Organisation. https://www.beuc.eu/sites/default/files/publications/BEUC-X-2022-032_Dark_patterns_and_the_EU_consumer_law_acquis.pdf

Blake, T., Moshary, S., Sweeney, K., & Tadelis, S. (2021). Price salience and product choice. *Marketing Science*, *40*(4), 619-636.

Bogliacino, F., Pejsachowicz, L., Liva, G., & Lupiáñez-Villanueva, F. (2023). Testing for manipulation: Experimental evidence on dark patterns. *Available at SSRN 4755295*.

Bongard-Blanchy, K., Rossi, A., Rivas, S., Doublet, S., Koenig, V., & Lenzini, G. (2021). "I am Definitely Manipulated, Even When I am Aware of it. It's Ridiculous!"-Dark Patterns from the End-User Perspective. In *Proceedings of the 2021 ACM Designing Interactive Systems Conference* (pp. 763-776).

Bösch, C., Erb, B., Kargl, F., Kopp, H., & Pfattheicher, S. (2016). Tales from the dark side: Privacy dark strategies and privacy dark patterns. *Proceedings on Privacy Enhancing Technologies*.

Brenncke, M. (2024). Regulating dark patterns. *Notre Dame J. Int'l Comp. L.*, *14*, 39.

Brignull, H. (2010, July 8). Dark patterns: Dirty tricks designers use to make people do stuff. *90 Percent of Everything*. https://90percentofeverything.com/2010/07/08/dark-patterns-dirty-tricks-designers-use-to-make-people-do-stuff/

Brignull, H. (2022). *Dark patterns types. Deceptive Design*. https://www.deceptive.design/types

Brignull, H. (2023). *Deceptive patterns – Hall of Shame*. https://www.deceptive.design/hall-of-shame

California Consumer Privacy Act Regulations (CCPA)**,** Cal. Code Regs. tit. 11, div. 6, ch. 1 (2024).

Case C-210/96, Gut Springenheide GmbH and Rudolf Tusky v Oberkreisdirektor des Kreises Steinfurt – Amt für Lebensmittelüberwachung. 1998 ECLI:EU:C:1998:369

Case C-266/19, EIS GmbH v TO. 2020 ECLI:EU:C:2020:384

Case C-310/15, Vincent Deroo-Blanquart v Sony Europe Limited. 2016 ECLI:EU:C:2016:633

Case C-435/11, CHS Tour Services GmbH v Team4 Travel GmbH. 2013 ECLI:EU:C:2013:574

Case C-61/19, Orange Romania SA v ANSPDCP. 2020 ECLI:EU:C:2020:901

Case C-673/17, Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundersverband eV v Planet49 GmbH. 2019 ECLI:EU:C:2019:801

Catterwell, R. (2022). Autonomy and Institutionalism in the Law of Contract. *Oxford Journal of Legal Studies*, *42*(4), 1067-1092.

Christman, J. (2009). *The politics of persons: Individual autonomy and socio-historical selves*. Cambridge University Press.

Chugh, B., & Jain, P. (2021). Unpacking Dark Patterns: Understanding Dark Patterns and Their Implications for Consumer Protection in the Digital Economy. *RGNUL Student Research Review Journal*, *7*, 23.

CMA (2022). *Online Choice Architecture: How Digital Design Can Harm Competition and Consumers*.

Corones, S., Christensen, S., Malbon, J., Asher, A., & Paterson, J. (2016). *Comparative analysis of overseas consumer policy frameworks*. Commonwealth of Australia, Australia. https://eprints.qut.edu.au/95636/1/95636.pdf

CPRC (2022). *Duped by design: Manipulative online design—Dark patterns in Australia.* https://cprc.org.au/publication/duped-by-design/

Dagan, H. (2013). Autonomy, Pluralism, and Contract Law Theory. *Law & Contemp. Probs.*, *76*, 19.

Dagan, H., & Heller, M. (2017). *The choice theory of contracts*. Cambridge University Press.

Day, G., & Stemler, A. (2020). Are dark patterns anticompetitive?. *Ala. L. Rev.*, *72*, 1.

Di Porto, F., & Egberts, A. (2023). The collective welfare dimension of dark patterns regulation. *European Law Journal*, *29*(1-2), 114-141.

Directive 2005/29/EC. Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council (Unfair Commercial Practices Directive), 2005 O.J. (L 149), 22–39. https://eur-lex.europa.eu/eli/dir/2005/29/oj

Directive 2011/83/EU. Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council (Consumer Rights Directive), 2011 O.J. (L 304), 64–88. https://eur-lex.europa.eu/eli/dir/2011/83/oj

Directive 2023/267/EU. Directive 2023/267/EU of the European Parliament and of the Council of 22 November 2023 amending Directive 2011/83/EU as regards financial services contracts concluded at a distance and repealing Directive 2002/65/EC (VRRL-E), 2023 O.J. (L 2673), 4-21. https://eur-lex.europa.eu/eli/dir/2023/2673/oj

Directive 93/13/EEC. Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts (Unfair Contract Terms Directive), 1993 O.J. (L 95), 29–34. https://eur-lex.europa.eu/eli/dir/1993/13/oj

DITP & DGCCRF (2021). *Sciences comportementales appliquées: Mieux protéger le consommateur en ligne* [Final report]. https://www.modernisation.gouv.fr/files/2021-12/DGCCRF_%20rapport%20final_version%20finale_20.12.21_MC%20%28002%29.pdf

Dixit, A. K. (1990). *Optimization in economic theory*. OUP UK.

Egberts, A. (2021). Manipulation through Design: A Law and Economics Analysis of EU Dark Patterns Regulation.

European Commission (2017). *Study for the Fitness Check of EU consumer and marketing law : final report. Part 1, main report*. Publications Office.

European Commission (2021). Commission notice: Guidance on the interpretation and application of Directive 2005/29/EC of the European Parliament and of the Council concerning unfair business-to-consumer commercial practices in the internal market, 2021 O.J. (C 526), 1–129. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021XC1229(05)

European Commission (2022). *2022 sweep on dark patterns*. https://commission.europa.eu/live-work-travel-eu/consumer-rights-and-complaints/enforcement-consumer-protection/sweeps_en#ref-2022--sweep-on-dark-patterns

European Commission (2024). *Fitness check of EU consumer law on digital fairness*. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13413-Digital-fairness-fitness-check-on-EU-consumer-law_en

European Data Protection Board. (2023, February). *Guidelines 03/2022 on dark patterns (deceptive design) in social media platform interfaces.* https://www.edpb.europa.eu/system/files/2023-02/edpb_032022_guidelines_on_deceptive_design_patterns_in_social_media_platform_interfaces_v2_en_0.pdf

Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition: Advancing the debate. *Perspectives on psychological science*, *8*(3), 223-241.

Faure, M. G., & Luth, H. A. (2011). Behavioural economics in unfair contract terms: Cautions and considerations. *Journal of Consumer Policy*, *34*, 337-358.

Gabaix, X., & Laibson, D. (2006). Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics*, *121*(2), 505-540.

Graef, I. (2023). The EU regulatory patchwork for dark patterns: an illustration of an inframarginal revolution in European law?

Graßl, P. A. J., Schraffenberger, H. K., Zuiderveen Borgesius, F. J., & Buijzen, M. A. (2021). Dark and bright patterns in cookie consent requests.

Gray, C. M., Kou, Y., Battles, B., Hoggatt, J., & Toombs, A. L. (2018). The dark (patterns) side of UX design. In *Proceedings of the 2018 CHI conference on human factors in computing systems* (pp. 1-14).

Gray, C. M., Santos, C., & Bielova, N. (2023). Towards a preliminary ontology of dark patterns knowledge. In *Extended abstracts of the 2023 CHI conference on human factors in computing systems* (pp. 1-9).

Grill, K., & Hanna, J. (Eds.). (2018). *The Routledge handbook of the philosophy of paternalism* (p. 46). New York: Routledge.

Hansen, P. G., & Jespersen, A. M. (2013). Nudge and the manipulation of choice: A framework for the responsible use of the nudge approach to behaviour change in public policy. *European journal of risk regulation*, *4*(1), 3-28.

Herbiet, E. (2025). *Dark patterns and privacy rights in the digital age: Evaluating the GDPR and DSA's regulatory responses to deceptive designs*. Maastricht University. https://www.maastrichtuniversity.nl/sites/default/files/202506/WPS%20Estelle%20NEW.pdf?utm_source=chatgpt.com

Hurwitz, J. (2020), "Designing a Pattern, Darkly", North Carolina Journal of Law & Technology, Vol. 22/1, p. 57.

Jones, B. D. (1999). Bounded rationality. *Annual review of political science*, *2*(1), 297-321.

Kahneman, D. (2003). A Perspective on Judgment and Choice. *American Psychologist, 58* (9), 697-720.

Kannengiesser, U., & Gero, J. S. (2019). Design thinking, fast and slow: A framework for Kahneman's dual-system theory in design. *Design Science*, *5*, e10.

Kemp, K. (2020). Concealed data practices and competition law: why privacy matters. *European Competition Journal*, *16*(2–3), 628–672. https://doi.org/10.1080/17441056.2020.1839228

Kennis, A., & Liu, X. (2024). The European Union's Regulatory Power: Refining and Illustrating the Concept With the Case of the Transfer of EU Geographical Indication Rules to Japan. *JCMS: Journal of Common Market Studies*, *62*(6), 1578-1593.

King, J. and A. Stephan (2021), "Regulating Privacy Dark Patterns in Practice - Drawing Inspiration from California Privacy Rights Act", Georgetown Law Technology Review, Vol. 5/250.

Kitkowska, A. (2023). The hows and whys of dark patterns: Categorizations and privacy. *Human factors in privacy research*, 173-198.

Kollmer, T., & Eckhardt, A. (2023). Dark patterns: conceptualization and future research directions. *Business & information systems engineering*, *65*(2), 201-208.

Kugler, M. B., Strahilevitz, L., Chetty, M., & Mahapatra, C. (2025). Can Consumers Protect Themselves Against Privacy Dark Patterns?. *University of Chicago Coase-Sandor Institute for Law & Economics Research Paper*, (25-01).

Lima-Strong, C. (2022, December 20). *Regulators are zeroing in how 'dark patterns' can trick users. The Washington Post*. https://www.washingtonpost.com/politics/2022/12/20/regulators-are-zeroing-how-dark-patterns-can-trick-users/

Leiser, M. R. (2021). 'Dark Patterns': the case for regulatory pluralism.

Leiser, M. R., & Caruana, M. M. (2021). Dark Patterns: Light to be found in Europe's Consumer Protection Regime. *J. Eur. Consumer & Mkt. L.*, *10*, 237.

Leiser, M. R. (2022). Dark patterns: The case for regulatory pluralism between the European Union's consumer and data protection regimes. In *Research Handbook on EU Data Protection Law* (pp. 240-269). Edward Elgar Publishing.

Luguri, J., & Strahilevitz, L. J. (2022). Shining a light on dark patterns. *Journal of Legal Analysis*, *13*(1), 43-109.

Lupiáñez-Villanueva, F., Montealegre Olaya, A. F., Bogliacino, F., Lecland, I., Sokolyanskaya, A., Theben, A., Charris Dominguez, R. A., & George Gaskell, G. (2020). *Behavioural study on*

advertising and marketing practices in travel booking websites and apps : final report, Publications Office of the European Union. https://data.europa.eu/doi/10.2818/728775

Lupiáñez-Villanueva, F., Boluda, A., Bogliacino, F., Liva, G., Lechardoy, L., & Rodríguez de las Heras Ballell, T. (2022). *Behavioural study on unfair commercial practices in the digital environment : dark patterns and manipulative personalisation : final report*, Publications Office of the European Union. https://data.europa.eu/doi/10.2838/859030

Maier, M., & Harr, R. (2020). Dark design patterns: An end-user perspective. *Human Technology, 16*(2), 170–199. https://doi.org/10.17011/ht/urn.202008245641

Martini, M., & Drews, C. (2022). *Making choice meaningful: Tackling dark patterns in cookie and consent banners through European data privacy law*. *SSRN*. https://ssrn.com/abstract=4257979

Mathur, A., Acar, G., Friedman, M. J., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019). Dark patterns at scale: Findings from a crawl of 11K shopping websites. *Proceedings of the ACM on human-computer interaction*, *3*(CSCW), 1-32.

Mathur, A., Kshirsagar, M., & Mayer, J. (2021). What makes a dark pattern... dark? Design attributes, normative considerations, and measurement methods. In *Proceedings of the 2021 CHI conference on human factors in computing systems* (pp. 1-18).

Metzger, M. J., Flanagin, A. J., & Medders, R. B. (2010). Social and heuristic approaches to credibility evaluation online. *Journal of communication*, *60*(3), 413-439.

Mittone, L., & Savadori, L. (2009). The scarcity bias. *Applied Psychology*, *58*(3), 453-468.

Mocanu, D. I. A. N. A., & Sibony, A. L. (2023). EU consumer law meets digital twins. *Revue européenne de droit de la consommation*, *1*, 229-257.

Monge Roffarello, A., Lukoff, K., & De Russis, L. (2023). Defining and identifying attention capture deceptive designs in digital interfaces. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-19).

Morales Díaz, L. V. (2022). What is a user interface, again? A survey of definitions of user interface: Our shared and implicit understanding of the concept of user interface. In *Proceedings of the 9th Mexican International Conference on Human-Computer Interaction* (pp. 1-7).

Moreno, J. E. (2023, June 26). Publishers Clearing House pays $18.5 million in 'dark patterns' suit. *The New York Times*. https://www.nytimes.com/2023/06/26/business/publishers-clearing-house-dark-patterns-lawsuit.html

Morton, F. M. S., & Dinielli, D. C. (2020). Roadmap for a digital advertising monopolization case against google. *Omidyar Network*, 1-38.

N.C.G.S. § 75-41 (2016).

Nguyen, S. T. H., & Kissner, L. (2019, September 25). When politicians play web designers. *WIRED*. https://www.wired.com/story/when-politicians-play-web-designers/

Nouwens, M., Liccardi, I., Veale, M., Karger, D. R., & Kagal, L. (2020). Dark patterns after the GDPR: Scraping consent pop-ups and demonstrating their influence. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1–13). Association for Computing Machinery. https://doi.org/10.1145/3313831.3376321ACM Digital Library+7jdsr.se+7

OECD (2022). *Dark commercial patterns*. *OECD Digital Economy Papers, No. 336*, OECD Publishing, Paris. https://doi.org/10.1787/44f5e846-en.

Perkins v. The New York Times Co., No. 1:22-cv-05202 (S.D.N.Y. 2025).

Persson, P. (2018). Attention manipulation and information overload. *Behavioural Public Policy*, *2*(1), 78-106.

Pherson, R.H., Donner, O., Gnad, O. (2024). Understanding How We Think: System 1 and System 2. In: Clear Thinking. Professional Practice in Governance and Public Organizations . Springer, Cham. https://doi.org/10.1007/978-3-031-48766-8_2

Regulation 2016/679. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal

data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), 2016 O.J. (L 119). https://eur-lex.europa.eu/eli/reg/2016/679/oj

Regulation 2022/1925. Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act), 2022 O.J. (L 265). https://eur-lex.europa.eu/eli/reg/2022/1925/oj

Regulation 2022/2065. Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act), 2022 O.J. (L 277). https://eur-lex.europea.eu/eli/reg/2022/2065/oj

Reisch, L. A., & Zhao, M. (2017). Behavioural economics, consumer behaviour and consumer policy: state of the art. *Behavioural Public Policy*, *1*(2), 190-206.

Roșca, C. (2024). *Digital Arms for Digital Consumer Harms: Mapping Legal and Technical Solutions for Dark Patterns in EU Consumer Law*.

Santos, C., Morozovaite, V., & De Conca, S. (2025). No harm no foul: how harms caused by dark patterns are conceptualised and tackled under EU data protection, consumer and competition laws. *Information & Communications Technology Law*, 1-47.

Seizov, O., Wulf, A., & Luzak, J. (2019). The transparent trap: A multidisciplinary perspective on the design of transparent online disclosures in the EU. *Journal of Consumer Policy,* 1-57. https://doi.org/10.1007/s10603-018-9393-0

Simon, H. A. (1956). Rational choice and the structure of the environment. *Psychological review*, *63*(2), 129.

Simon, H. (1957). A behavioral model of rational choice. *Models of man, social and rational: Mathematical essays on rational human behavior in a social setting*, *6*(1), 241-260.

Sin, R., Harris, T., Nilsson, S., & Beck, T. (2025). Dark patterns in online shopping: do they work and can nudges help mitigate impulse buying?. *Behavioural Public Policy*, *9*(1), 61-87.

Smits, J. M. (2017). What is legal doctrine? On the aims and methods of legal-dogmatic research.

Soe, T. H., Nordberg, O. E., Guribye, F., & Slavkovik, M. (2020, October). Circumvention by design-dark patterns in cookie consent for online news outlets. In *Proceedings of the 11th nordic conference on human-computer interaction: Shaping experiences, shaping society* (pp. 1-12).

Sunstein, C. R. (2016). *The ethics of influence: Government in the age of behavioral science*. Cambridge University Press.

Sunstein, C. R. (2021). *Sludge: What stops us from getting things done and what to do about it*. MIT Press.

Susser, D., Roessler, B., & Nissenbaum, H. (2019a). Online manipulation: Hidden influences in a digital world. *Geo. L. Tech. Rev.*, *4*, 1.

Susser, D., Roessler, B., & Nissenbaum, H. (2019b). Technology, autonomy, and manipulation. *Internet policy review*, *8*(2), 1-22.

Taylor, J. (2023). Choice architecture, nudging, and the historic environment: the subtle influences of heritage through the lens of behavioural science. *International Journal of Heritage Studies*, *29*(3), 199-219.

Thaler, R., & Sunstein, C. (2008). Nudge: Improving decisions about health, wealth and happiness. In *Amsterdam Law Forum; HeinOnline: Online* (p. 89).

Thaler, R. H., Sunstein, C. R., & Balz, J. P. (2014). Choice architecture. *The behavioral foundations of public policy*.

Valentino-DeVries, J. (2019, June 24). How e-commerce sites manipulate you into buying things you may not want. *The New York Times*. https://www.nytimes.com/2019/06/24/technology/e-commerce-dark-patterns-psychology.html

Voigt, C., Schlögl, S., & Groth, A. (2021). Dark patterns in online shopping: Of sneaky tricks, perceived annoyance and respective brand trust. In International conference on human-computer interaction (pp. 143-155) Cham: Springer International Publsihing.

Weld, E. (2024, July 29). NYT to pay $275K to settle subscription renewal claims. *Law360*. https://www.law360.com/articles/1862821

Westin, F., & Chiasson, S. (2021). “It’s so difficult to sever that connection”: The role of FoMO in users’ reluctant privacy behaviours. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (pp. 1-15).

Willis, L. E. (2020). Deception by design. *Harv. JL & Tech.*, *34*, 115.

Wu, X., & Ding, D. (2021). A Satisficing Heuristic Decision-Making Model under Limited Attention and Incomplete Preferences. *Journal of Mathematics*, *2021*(1), 8951335.