



Online Manipulation and Deception of Internet users

Nataliia Bielova

joint work with **Cristiana Santos** and **Colin M. Gray**

Towards the emergence of a neuro-etic law as a counterpoint to rights revisited by digital technology? A reflection based on consumer law

9th November 2023



LAW

HCI

DARK PATTERNS

POLICY

DESIGN

PSYCHOLOGY

Tous les vols sélectionnés ?

Continuer

Aller

Nice à destination de **Bruxelles intl**

Dernière réservation à ce tarif effectuée il y a 6 heures



[Afficher le calendrier des meilleurs tarifs >](#)

	lun. 13 nov.	mar. 14 nov.	mer. 15 nov.
Dép.	14:35	Dép. 14:25	Dép. 14:40
Arr.	16:15	Arr. 16:05	Arr. 16:20
		Prix le + bas	
	78,00 € +	43,50 € ✓	48,00 €
		4 sièges disponibles à	

Retour

Bruxelles intl à destination de Nice

Dernière réservation à ce tarif effectuée il y a 7 heures



[Afficher le calendrier des meilleurs tarifs >](#)

	mar. 14 nov.	mer. 15 nov.	jeu. 16 nov.
Dép.	16:35	Dép. 16:50	Dép. 16:40
Arr.	18:20	Arr. 18:35	Arr. 18:25
	Prix le + bas		
	43,99 € +	59,49 € ✓	56,99 € +
			3 sièges disponibles à

Panier 225,96 €

[Changer la devise >](#)

Adulte	1 x 43,50 €
Enfant	1 x 43,50 €

Compris dans votre tarif	
Petit bagage à main	2 x Inclus

Vos options de vol supplémentaires

Standard siège 29A	9,99 € ✎
Standard siège 29B	9,99 € ✎

de Bruxelles intl à destination de Nice

Numéro de vol EJU1746

Départ	16:50 mer. 15 nov.
Arrivée	18:35

Sélectionnez des sièges pour votre famille afin d'être assis ensemble

NCE à BRU, mar. 14 nov.

Pour chaque passager, veuillez faire votre choix parmi les sièges disponibles.



Adulte 1



Enfant 1

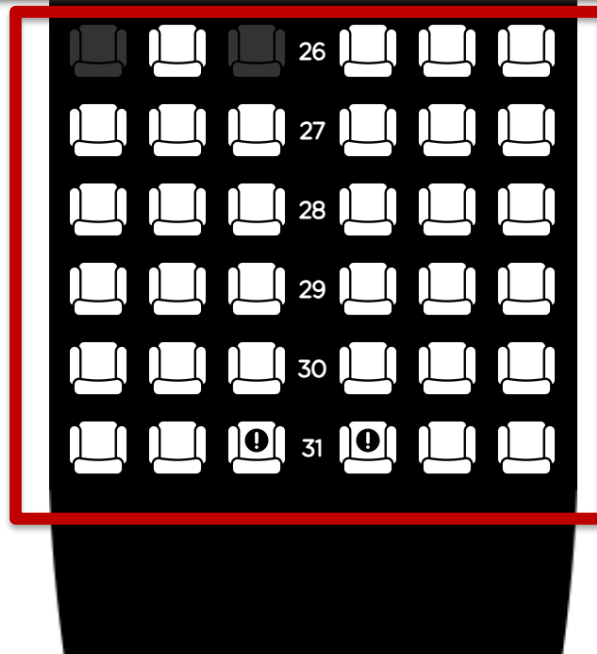
Si vous ne réservez pas vos sièges, nous vous attribuerons automatiquement des sièges sans frais au moment de votre check in.

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Panier 205,98 €

Vos tarifs

Adulte

1 x 59,49 €

Enfant

1 x 59,49 €

Compris dans votre tarif

Petit bagage à main

2 x Inclus

[Passer les sièges >](#)

Non remboursable. Modifiable sous réserve de **frais**.

Le prix inclut tous les **frais et taxes** applicables.

Tous les vols sélectionnés ?

ville afin

Passer les sièges >

Aller

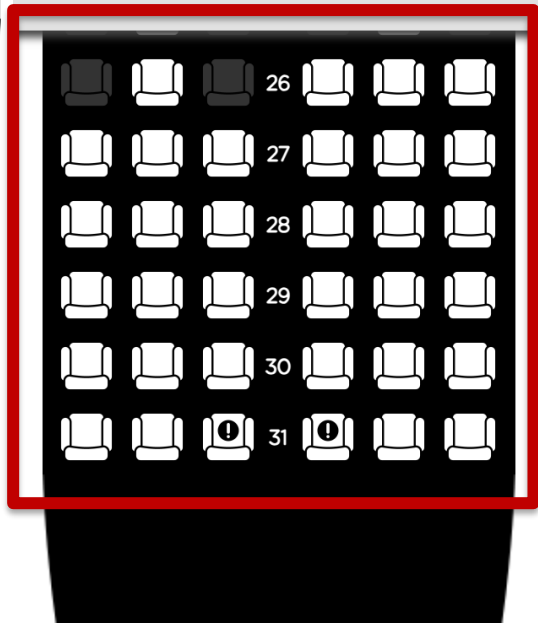
Nice à destination de Bruxelles intl

Dernière réservation à ce tarif effectuée il y a 6 heures



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What dark patterns?

- **High demand message**
[Mathur et al. 2019]
[Luguri & Strahilevitz, 2021]
- **Low stock/high demand message**
[EU COM 2022]
[OECD 2022]
- **False high demand message**
[US FTC 2022]

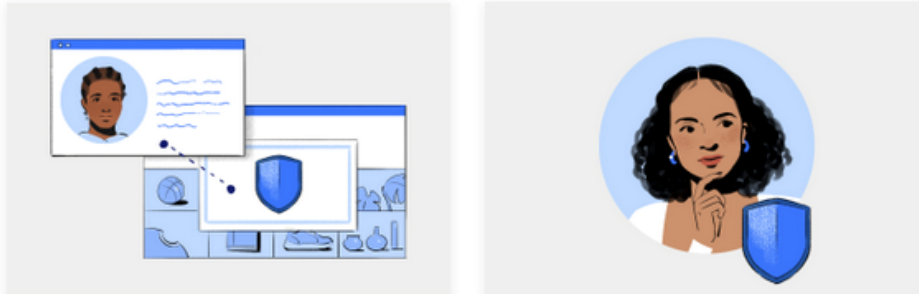
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What dark patterns?

- **False hierarchy**
[Gray et al., 2018]
[OECD 2022]
- **False Hierarchy or Pressured Upselling**
[US FTC 2022]
- **Ranking**
[UK CMA 2022]
- **Look over here**
[EU EDPB 2023]

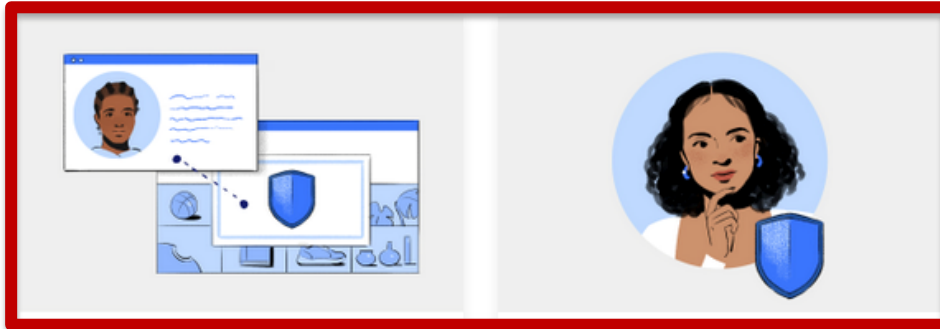
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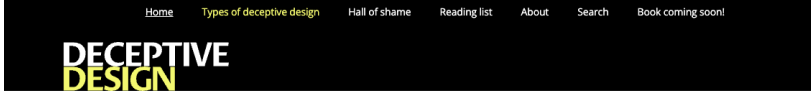







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What dark patterns?

- **Aesthetic Manipulation** [Gray et al., 2018]
- **Hidden information / aesthetic manipulation** [Luguri & Strahilevitz, 2021]
- **Framing** [UK CMA 2022]
- **Emotional Steering** [EU EDPB 2023]



 <p>NAGGING</p> <p>Redirection of expected functionality that persists beyond one or more interactions.</p>	 <p>OBSTRUCTION</p> <p>Making a process more difficult than it needs to be, with the intent of dissuading certain action(s).</p> <p>INCLUDES: Brignull "Roach Motel" "Price Comparison Prevention" and Intermediate Currency</p>	 <p>SNEAKING</p> <p>Attempting to hide, disguise, or delay the divulging of information that is</p>	 <p>INTERFACE INTERFERENCE</p> <p>Manipulation of the user interface that privileges certain actions over others.</p>	 <p>FORCED ACTION</p> <p>Requiring the user to perform a certain action to access (or continue to access) certain functionality.</p>
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Types of deceptive pattern

- Trick questions**
While filling in a form you respond to a question that tricks you into giving an answer you didn't intend. When glanced upon quickly the question appears to ask one thing, but when read carefully asks another thing entirely.
- Sneak into basket**
You attempt to purchase something and an additional item is added to your cart without your knowledge.

which... conditions of using the service...
Description: Terms and conditions are often long and they are often long and jargon. This legal jargon obscures the clarity, but the inability of the user puts him in a vulnerable binding. If this vulnerability turns into an instance where service providers can hijack the privacy notice this, not realizing they are unable to understand the notice without further assistance from learning what the provider is doing.
Effect: Usage of the service is easier for the provider being the user with the **Countermeasures:** One solution is to use a...
 One solution is to use a...

81:12

Table 1. Categories of Dark Patterns
 Legend: ● = Always

Category	Type	Frequency
Sneaking	Sneak into Basket	●
	Hidden Costs	●
	Hidden Subscription	●
Urgency	Countdown Timer	●
	Limited-time Message	●
Misdirection	Confirmshaming	●
	Visual Interference	●

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Table 1. Summary of existing dark pattern taxonomies

Category	Variant	Description	Source
Nagging	Repeated requests to do something the user does not want to do	Repeated requests to do something the user does not want to do	Gray et al. (2018)
	False/misleading Notice that others are purchasing, contributing to social proof	False/misleading Notice that others are purchasing, contributing to social proof	Mathur et al. (2019)
Social proof	Activity messages	Activity messages	Mathur et al. (2019)
	Testimonials	Testimonials	Mathur et al. (2019)
Obstruction	Roach motel	Roach motel	Gray et al. (2018), Mathur et al. (2019), Brignull (2020), Gray et al. (2018), Mathur et al. (2019), Brignull (2020)
	Price comparison prevention	Price comparison prevention	Gray et al. (2018), Mathur et al. (2019), Brignull (2020)
	Intermediate currency	Intermediate currency	Gray et al. (2018), Mathur et al. (2019), Brignull (2020)
Misdirection	Immortal accounts	Immortal accounts	Bösch et al. (2016)
	Purchases in virtual currency to obscure cost	Purchases in virtual currency to obscure cost	Brignull (2020), Gray et al. (2018), Mathur et al. (2019)
Obstruction	Account and consumer info cannot be deleted	Account and consumer info cannot be deleted	Brignull (2020), Gray et al. (2018), Mathur et al. (2019)
	Items added to cart without user's knowledge	Items added to cart without user's knowledge	Brignull (2020), Gray et al. (2018), Mathur et al. (2019)

Downloaded from <https://academic.oup.com/jla/advance-article-abstract/doi/10.1093/jla/lzab001/6288881>

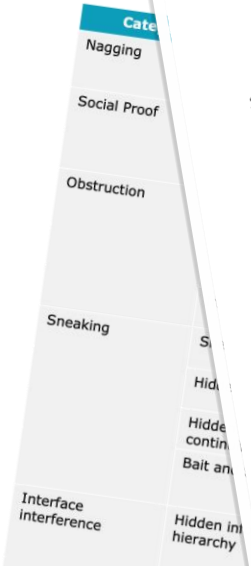
4 ANNEX: LIST

The following list provides examples for each category. It also lists the numbers of examples used in each case that do not fit into any of the categories.

4.1 Overload

Burying users from going further

4.1.1 Confirmation bias



- 3.11. There is strong evidence that ranking algorithms exert a strong influence on search results. Forcing outcomes through 'bait and switch' dark patterns can mislead consumers and reduce their choice already banned in the EU.
- 3.12. Other potential risks are that consumers are not misled by dark patterns.

Table 2: Choice architecture



Annex B. Example of consolidated taxonomy of dark patterns

Category	Name of dark pattern	Description	Source
Forced action	Forced registration	Consumer forced to register or tricked into thinking registration necessary	Bösch et al. (2016 ^[21])
	Forced disclosure / Privacy zuckering	Consumer tricked or forced into sharing more personal information than desired	Bösch et al. (2016 ^[21]); Gray et al. (2018 ^[23]); Brignull (n.d. ^[11])
	Friend spam / Social pyramid / Address book leeching	Manipulative extraction of information about other users	Bösch et al. (2016 ^[21]); Gray et al. (2018 ^[23]); Brignull (n.d. ^[11])
	Gamification	Important information visually obscured	Gray et al. (2018 ^[23])
Interface interference	Hidden information	Visual prominence given to firm's preferred setting or version of a product	Gray et al. (2018 ^[23])
	False hierarchy	Firm-friendly default is preselected (e.g. more expensive or less privacy-protecting option)	Gray et al. (2018 ^[23]); Mathur et al. (2019 ^[24])
	Preselection	Price shown as a discount from a misleading or false reference price	Bösch et al. (2016 ^[21]); Gray et al. (2018 ^[23])
	Misleading reference pricing	Intentional or obvious ambiguity (e.g. double negatives)	OECD (2019 ^[9]); CMA (2022 ^[31]); EC (2022 ^[29])
	Trick questions	Consumer induced to click on something that isn't apparent advertisement	Gray et al. (2018 ^[23]); Mathur et al. (2019 ^[24]); Brignull (n.d. ^[11])
	Disguised ads	Emotionally manipulative framing to make consumer select a particular option	Gray et al. (2018 ^[23]); Brignull (n.d. ^[11])
Nagging	Confirmshaming / Toying with emotion	Repeated requests to do something firm prefers	Brignull (n.d. ^[11]); Gray et al. (2018 ^[23]); Mathur et al. (2019 ^[24])
	Nagging	Asymmetry in ease of signing up/opting in to a product or firm-friendly choice versus cancelling/opting out	Gray et al. (2018 ^[23])
	Hard to cancel or opt out / Roach motel / Click fatigue / Comparison shopping regarding		Brignull (n.d. ^[11]); Dapde (n.d.); Gray et al. (2018 ^[23]); Forbrukerrådet (2018 ^[27]); Mathur et al. (2019 ^[24])

domain & context-agnostic

domain & context-specific

HIGH-LEVEL

—
strategy

MESO-LEVEL

—
angle of attack

LOW-LEVEL

—
means of execution

HIGH-LEVEL

—
strategy

*5 patterns
(1 new)*

MESO-LEVEL

—
angle of attack

*25 patterns
(12 new)*

LOW-LEVEL

—
means of execution

*35 patterns
(5 new)*

High-Level Pattern	Meso-Level Pattern	Low-Level Pattern
Obstruction D: Gr Lu Ma Br23 EUCOM FTC OECD I: EDPB CMA	Roach Motel (D: Br Gr Lu EUCOM I: Br23 Ma FTC OECD)	Immortal Accounts (D: Bö Lu FTC OECD) Dead End (D: EDPB)
	<i>Creating Barriers</i>	Price Comparison Prevention (D: Br Gr Lu FTC EUCOM OECD ; I: Br23) Intermediate Currency (D: Gr Lu FTC EUCOM OECD ; I: CMA)
	<i>Adding Steps</i> (I: EDPB)	Privacy Maze (D: EDPB)
	Bait and Switch (D: Br Gr Lu FTC EUCOM I: OECD)	Disguised Ad (D: Br Gr Lu FTC EUCOM OECD ; I: Br23)
Sneaking D: Gr Lu Ma EUCOM OECD I: EDPB CMA FTC	<i>Hiding Information</i>	Sneak into Basket (D: Br Gr Ma Lu FTC EUCOM OECD) Drip Pricing, Hidden Costs, or Partitioned Pricing (D: Br Br23 Gr Ma Lu CMA FTC EUCOM OECD) Reference Pricing (D: CMA OECD)
	<i>(De)contextualizing Cues</i>	Conflicting Information (D: EDPB) Information without Context (I: EDPB)
	<i>Manipulating Visual Choice Architecture</i> (I: CMA)	False Hierarchy (D: Gr OECD I: Lu EDPB FTC) Visual Prominence (I: EDPB) Bundling (D: CMA)

Tous les vols sélectionnés ?

ville afin

Passer les sièges >

Aller

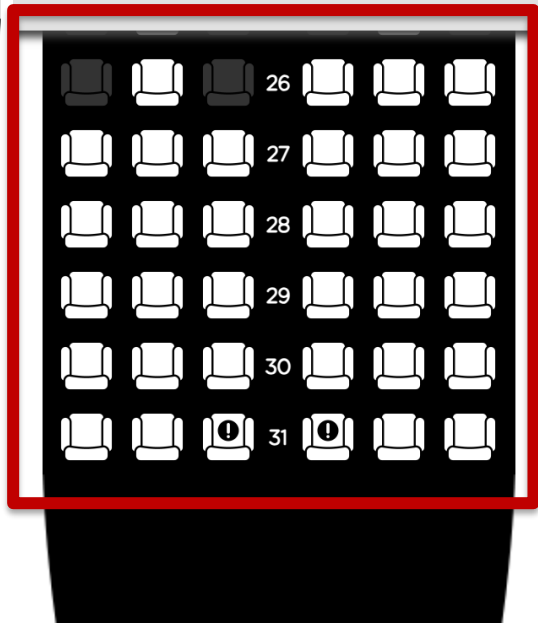
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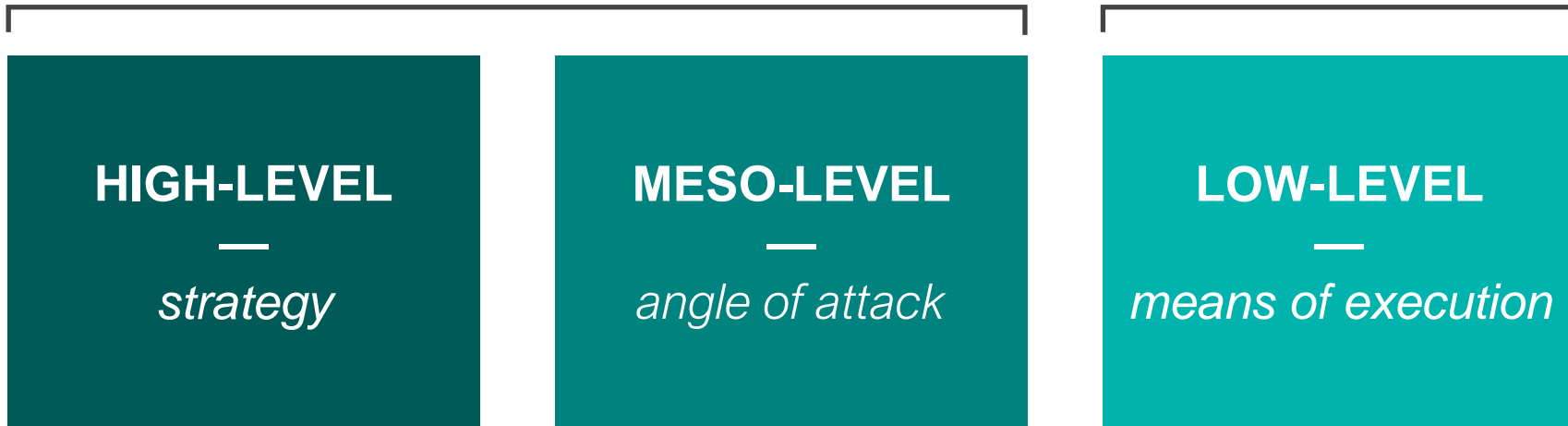


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domain & context-agnostic

domain & context-specific



HIGH-LEVEL
—
strategy

MESO-LEVEL
—
angle of attack

LOW-LEVEL
—
means of execution

*Social
Engineering*



*Scarcity or
Popularity Claims*



High Demand

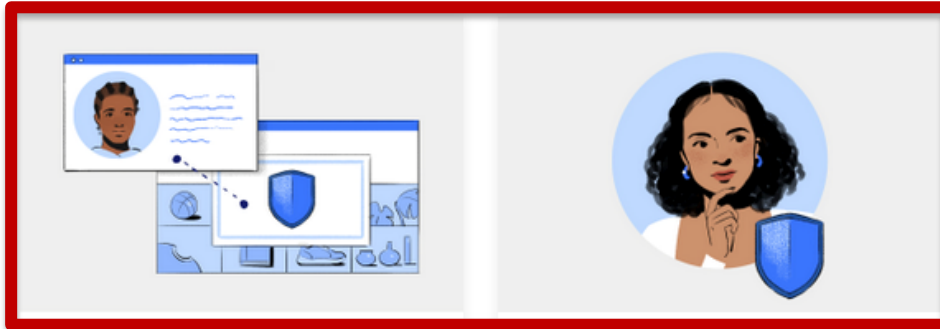
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domain & context-agnostic

domain & context-specific

HIGH-LEVEL

—
strategy

MESO-LEVEL

—
angle of attack

LOW-LEVEL

—
means of execution

*Interface
Interference*



*Emotional or
Sensory
Manipulation*



*Positive or
Negative Framing*

An Ontology of Dark Patterns Knowledge

- Enable a **shared vocabulary**
 - for regulators and #darkpatterns scholars
 - enabling more alignment in user studies, sanctions, and discussions of harm
- For academic: help to **trace the presence** and types of patterns over time
- For regulators: **anticipate the presence** of existing patterns in new contexts or domains
- For academics + regulators: **guide automated detection** across layers of the interface and user journey in the system