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3 Manipulation of users Through GUI

3.2 Dark Patterns

A Dark Pattern is a user interface that has been carefully crafted to trick users to take certain actions against their benefits, such as buying insurance with their purchase or signing up for recurring bills.⁹

Mainly developers who use these patterns depend on people who don't read every word on every page, they take advantage of people by making a page looks like it say something but it means a whole different thing [1], and the best defense for these patterns is learning about them.

Normally when you think of "bad design", you think of the creator as being sloppy or lazy but with no ill intent. This type of bad design is known as a "UI anti-pattern". Dark Patterns are different – they are not mistakes, they are carefully crafted with a solid understanding of human psychology, and they do not have the user's interests in mind. [1]

A dark pattern is an element of a manipulative interface designed to trick the user into taking actions that they might not have done freely. [3]

A comparison between dark pattern and honest design [6.2]

Honest design	Dark Patterns
Benefits the User	Benefits the Business
Show all the feedbacks	Hide the negative feedbacks
Puts key information in Headings and subheading so it's visible to all users	Hide the key information (because users don't usually read all)
Avoids user's mistakes, default settings to benefit the user	Benefits from user's mistakes, always put default settings to benefit the business
Always gives users a warning, let them know what/where they are going to	No warnings, waiting for users to do mistakes

Table 1. Dark patterns and honest design

Difference between dark patterns and bad designs

Bad design	Dark patterns
Unqualified Designer	Smart Designers
No bad intension	Takes advantage of the user
Incompetent interface	Manipulative interface
Doesn't influence user's choice	User's choices are influenced heavily by design

Table 2. Dark patterns and Bad design

3.3 Types of Dark Patterns

There are many types but in this section, we will talk in detail about the most famous three types of dark patterns Trick questions, Forced continuity, and Misdirection.

3.3.1 Trick Questions

In Tricky questions there are two examples of how companies gets advantage of the users who don't carefully read the questions, if we take a look at figure 3.1 in Example A there is a No selection the user has to choose how often he/she gets the mails, in Example B the yes and no selection are exchanged with each other while everyone is used to have yes up and no Down the website changed, so if the user didn't read carefully he/she will just go to choose what they are trained on, yes is up and no is down. [6.2]

Example A

I would like to receive the latest special offers, promotions and product information from AcmeCorp.

I would like to receive carefully selected partner offers, competitions and messages.

Example B

Please tick here if you would prefer not to receive the latest special offers, promotions and product information from AcmeCorp

I would like to receive carefully selected partner offers, competitions and messages.

Figure 3.1. Tricky questions

3.3.2 Forced continuity

Developers take advantage of how most of users naturally think or react, companies who use this tactic are relying on the fact that users normally forget to cancel their membership before the free trial ends and without any kind of notice they start to charge their credit cards, so at least they take an advantage of one month payment from the user, until he/she notice and cancel the membership figure 3.2[6] or in some other websites they inform users that credit card information is just for verification for the free trial and then they start to charge money in figure 3.3, in other cases the user go to buy something from a website and thinks it's a onetime payment, but the website starts to charge the credit card monthly without any notification, the website depend on the users who don't read till the end, as soon as they see that the credit card details is just for verification they are going to proceed.[6.2]

The screenshot shows a payment form titled "Payment Details:". It contains several input fields: "First Name", "Last Name", "Credit Card Number", "Expiration Month" (set to 2016), and "United States" (with a "ZIP" field). Below the form, it states "Total charge today = \$0 Subscription renews on October 6, 2015 for \$79". Underneath, it says "Your Free Trial includes: • 35 free images". At the bottom, there is a blue button labeled "Start Downloading".

Figure 3.2. Forced continuity

The screenshot shows a form titled "Card Details". It asks "Why do we need your card details?". A red box highlights the text: "Your card is used to verify your identity. Don't worry, your card will NOT be charged for membership during your free 30 day trial and there is no obligation to continue with the service after the trial period." Below this, it says "If you choose to stay as a member after your free 30 day trial your card will be charged a monthly membership fee of £14.99." At the bottom, there is a "Card type" field with a "Select" dropdown menu.

Figure 3.3. Card details

3.3.3 Misdirection

Misdirection is when the developers convince the user that the answer or the next step is in a certain direction to drive the user into a certain way against his/her well, while the truth is in a whole different place, there are two real life examples.

First example is a website forces the users to subscribe in order to get an answer they are searching for but what happens after they subscribe, the user discovers that what he/she is searching for is not inside the website, they just tricked them for a subscription, a real life example someone is searching for a solution to empty his/her clip board, then the user was asked to do a subscription in order to see the answer as in figure 3.4 [6]

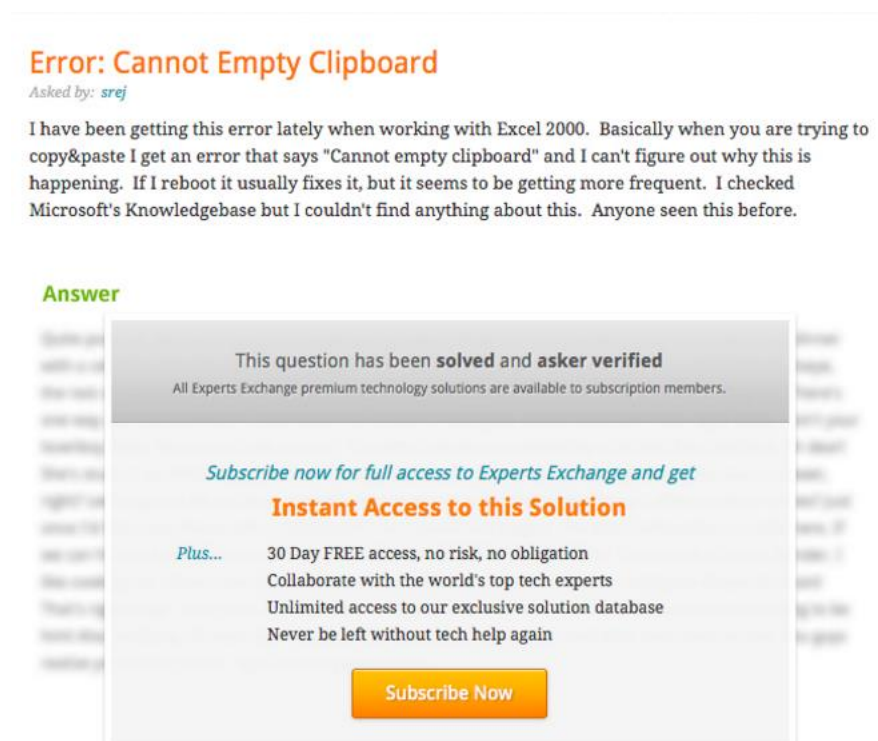


Figure 3.4. Misdirection subscription

And after the user hit subscribe now just to see the answer of his/her question they find that there is no answer behind the subscription or the answer is not right behind the subscription wall its way down at the end of the website and you didn't need to subscribe to get it [6].

Second example of Misdirection is used in an application called two dots where Players are trained to associate the green buttons with gameplay. Every time the users need to go forward in the application they press the green button so physiologically users are trained to press green

button to move forward, but when the user has no more moves they put buy moves in the green button instead of any other colour so they try to push the user to buy moves not to try again.

figure 3.5[6.1]

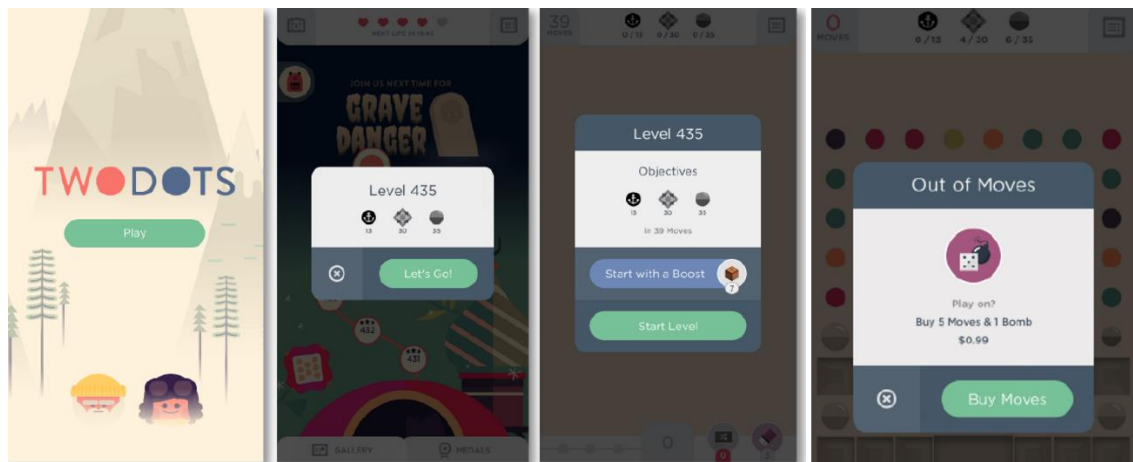


Figure 3.5. Misdirection in applications

3.4 Honest Designs

To make an honest design, the website or the developers should put the interest of the users in mind to trick them, not the benefits of the business first, so this section will show how to change dark patterns designs to honest ones.

- **For tricky questions**, instead of writing questions to trick like in section 3.4.1 or drive the user to take a certain action, the questions must be written in a clear and an understandable forum figure 3.6, so the user is able to choose what is best for him/her.

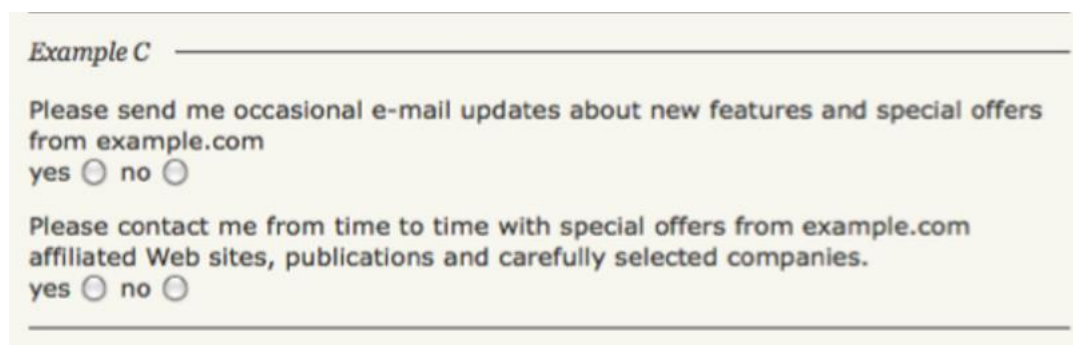


Figure 3.6. Honest questions

- **Forced continuity**, for forced continuity a user gives credit card details in two cases to verify his/her identity or to buy something for onetime payment, so the user should be notified in the two cases before the end of the trial period or before charging for any money with enough time so the user can decide if he/she wants to continue or give enough time to unsubscribe, and the un-subscription process should be easy and clear or we will enter another dark pattern type called Roach hotel where entering is easy but getting out is so hard, the unsubscribe should be easy and findable.
- **Misdirection**, referring to section 3.4.3 the two examples shown are one with no information related to question in the website or the answer is not behind the subscription wall, the answer that the user is looking for, should be inside the website right behind the subscription or the website must write a clear description that the answer the user is looking for is not inside the website even if he/she subscribed, and in the application game, if the user is trained in order to move forward in the game should press the green button then after losing the game, the buy moves button should be in another colour or cancel can be written instead of buy moves in green colour. so, to Design this button using HTML and CSS in figure 3.7

```

1  <!DOCTYPE html>
2  <html>
3  <body>
4  <style>
5  .button1 {
6      background-color: #f44336; /* Red */
7      color: white;
8      padding: 20px 60px;
9      font-size: 16px;
10     margin: 4px 2px;
11 }
12 .button2 {
13     background-color: #4CAF50; /* Green */
14     color: white;
15     padding: 20px 60px;
16     font-size: 16px;
17     margin: 4px 2px;
18 }
19 </style>
20 <button class="button button1">Buy moves</button>
21 <button class="button button2">Cancel</button>
22 </body>
23 </html>

```



Figure Design buttons. 3.7

3.5 Famous Dark patterns examples

3.5.1 Microsoft

During 2016 Microsoft wanted all windows 7 and 8 users to upgrade to windows 10, so they started with honest popups asking users to upgrade, but the results weren't enough and Microsoft wasn't happy with the outcome so they started to use dark patterns in their popups, the first example as it shown in figure 3.8 was the only two options the user has to choose between was upgrade tonight or upgrade now there were no third option, the other example as it shown in figure 3.9 was scheduling the upgrade to certain date in the popup and the user has to choose between accept the date or update now, but they went more far as if the user choose to press [X] which means close instead of closing the popup it will initiate the update immediately.[3]

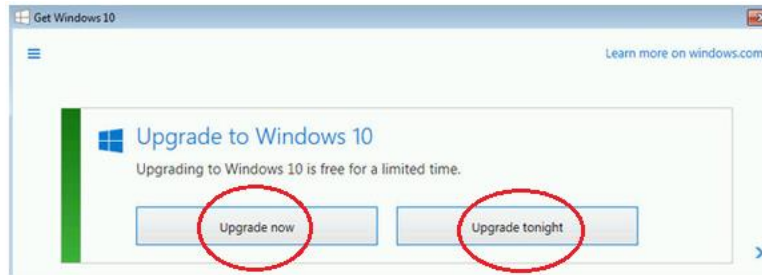


Figure 3.8. Microsoft update

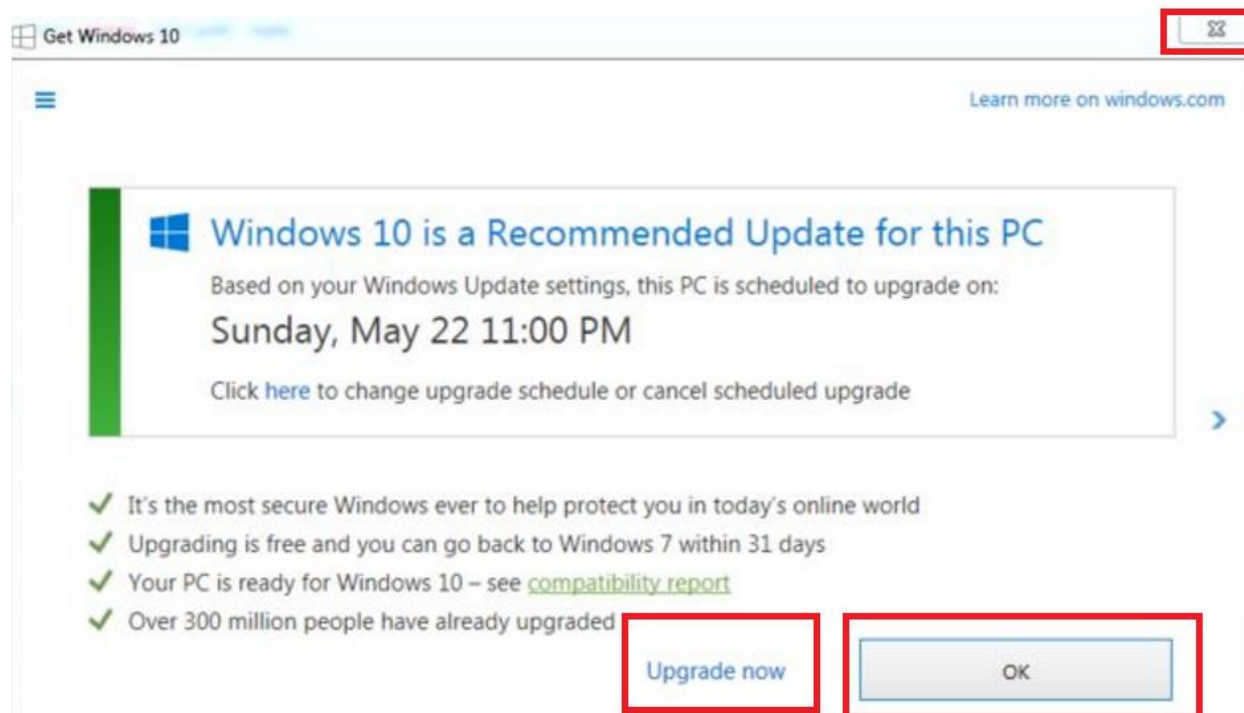


Figure 3.9. Microsoft update 2

3.5.2 Audible

Audible is website specialized in selling audio books to the users, this website used forced continuity dark pattern Type, the users who uses the website for a single time payment, were forced to a monthly paid membership without any kind of notification, so a customer go to but a single book but then find himself/herself in a monthly membership, and charging credit card every month, but later Audible.com replied they have found that their process wasn't clear enough and all the customer who were affected by that scheme will get a refund. [6.2]

3.5.3 Other real life examples

- Low cost airlines that put insurance in your basket without you asking.

- Email sending systems that require you to log-in (using a long-forgotten password) to unsubscribe.
- Systems that ask for your email credentials on the grounds of finding you friends, but then send messages as if they are directly from you, without your express consent.
- Supermarkets that prevent customers from comparing products on price.
- Paid purchases or subscriptions. An additional item may be added automatically by an e-cart during a purchase, putting the onus on the buyer to see and remove the item from the cart.
- The inclusion of additional programs along with a program a user is installing.
- Can't subscribe from certain websites unless you called certain number in an inconvenient hour during the day.

3.6 How to Detect Dark patterns

When you use the Web, users normally don't read every word written on every page, we skip reading and make assumptions all the time, and that's where the developers or the owners of the websites takes advantage of the users, by tricking the users into believe that the page is saying something while it means a whole different thing, and until now there are now law or a legalization that bans or criminalize using these tricks and patterns, so the best defense for these patterns is to learn about them, and raise the awareness of the users about it, in the past few years many developers and software testers took upon their shoulders searching, detecting and writing about these patterns on the web to help uncovering this kind of schemes and increase the awareness of the users.