

Project-Machete: a Weapon to Cut Through the Amazon(.ca)

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Abstract. As persuasive systems seep into our lives on the back of technology, the need for counter-persuasive technologies becomes more apparent. Many users are not aware of design elements that exploit their cognitive biases and encourage them to act against their own self-interests; Project-Machete was created to level the playing field. It seeks to limit the ability of persuasive technologies on the Amazon shopping platform to persuade users into making impulsive or extrinsically influenced purchases. It removes biased plays to item scarcity, selectively reveals recommended items, counters biased encouragement to buy new over used items, and encourages shoppers to think critically about whether a purchase should be made at all. Project-Machete achieves this through JavaScript driven DOM-tree manipulation inside an extension for the Google Chrome web browser.

Keywords: E-tail, Counter-persuasive Technology, Persuasive Systems Design, Online Shopping, Amazon Online Shopping, Cognitive Bias, Behavior Change Support Systems

1 Introduction

Ethics in Persuasive Technology (PT) is a largely fragmented, standardless, and treated as an afterthought. In the analysis of a literary review conducted in 2019 regarding the past 13 years of literature in PT, it was found that only 66/375 of the analyzed papers on PT mentioned more than 1 sentence regarding ethics. Of those 66 papers, 43 of them mentioned ethics “*In passing*” without discussion [5]. There are currently a handful of proposals regarding ethics in PT, but nothing agreed upon as a standard [8,3] and while HCI frameworks such as those proposed by Fogg [2] and Oinas-Kukkonen [6] exclude deception and coercion by definition, this does not limit the use of Persuasive Design Elements (PDEs) to exclusively noble ends. This paper argues under the supposition that Amazon’s intent is not simply for it’s users to buy products, but to buy lots and buy fast, and employs arguably deceptive and coercive technology achieve this. While Amazon could claim that they are justified in their use of PDEs to provide a better shopping experience to users, they can not deny the involuntary exposure to PDEs that encourage the achievement of this goal. When Amazon’s PDE’s and a lack of user

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awareness thereof meet, the powers of persuasive technologies are both powerful and potentially exploitative. This is what Project-Machete seeks to address.

While we humans have had countless years experience with face-to-face encounters with persuasion, deception, and coercion, we have not yet had a century of face-to-screen encounters. Consider somebody in the midst of buying from a salesperson in a brick-and-mortar shop. If this salesperson was constantly muttering phrases under their breath, urgently trying to steer you towards or away from certain products, or relentlessly trying to up-sell you, you would be naturally suspicious of them! This is where Project-Machete (PM) comes in, to aid those who are not yet as suspicious of PT in a sales setting. PM's implementation and concept were inspired by Benjamin Grosser's "Facebook Demetricator" chrome extension [4]. Whereas Grosser's extension reduces the ability of users to measure their social worth through quantitative social artifacts, PM reduces Amazon's ability to persuade users into making purchases. It filters out the noise and in doing so, acts as a "Digital-Conscience" for its users. This is not to say that users do not have a digital conscience; that they are incapable of making informed, critically-evaluated decisions online, but rather that they are not aware of the mechanisms in place that shape these decisions; that their digital conscience is underdeveloped. PM was created to aid this conscience, and to do so ethically. To achieve its ethical goals, PM will seek to follow the guidelines proposed by Spahn [8] in future development. Further details on ethical considerations will be addressed later in Ethics & Future Work.

2 Implementation

As a content-script style Chrome extension, PM is allowed to inject a JavaScript (JS) and a CSS file into a set of pre-defined domains. This is what allows PM to modify the raw HTML of Amazon's pages. At a high level, PM's depersusification process goes through 3 stages 1) Page Identification, 2) Item Identification, and 3) Item Mitigation. Page identification matches specific pages on the Amazon domain using regex, once a page is recognized stage 2 is entered. This stage uses JS and Amazon's implementation of best practice web-development (classes for common style elements, ids for special items) to collect various PDEs on a page (i.e. recommended lists, the "buy-now" button) for stage 3. In stage 3, PM addresses PDEs as an item to either remove or modify. Notable PT elements that are removed include the "Buy now" button and the "In stock" report. The "Buy now" button is an example of reduction [2] while the "In stock" report is an example of Cialdini's principle of scarcity [1]. What should be noted is that this report is deceiving with its content. This is because the number reported as "in stock" neglects to take into account the availability of *used* items and often choose a niche-option for a given item that is actually low on stock. Targets to be modified are addressed by changing the behavior/appearance of Amazon's HTML. While shopping on Amazon.ca, one might notice that the prices for *new* items are displayed with larger, **bolder** font, and are placed higher on an item posting than their smaller, hidden, *used* counterparts (Figure 1). This seeming preference of Amazon that we buy new is countered by PM, which auto-selects the "Buy used" option when it is available for an

item (Figure 2). PM also chooses to modify recommended lists as removing them could critically reduce the users shopping experience and infringes on user autonomy (Figure 3). The final line of defence that PM offers to counter Amazon’s PDEs is a button-cover that is placed over the “Place order” button (Figure 4). When clicked, the user is met with a quiz regarding the appropriateness of the purchase; It asks 1) Should you make this purchase? 2) Do you need to make this purchase now? 3) Can you afford to spend \$X on this purchase? And finally, PM asks for 3 reasons that justify the purchase. It is anticipated that some rushed users may attempt to “buzz through” the quiz without giving real answers. This is why the quiz requires that *all* fields are filled and *delays* the user for one minute before allowing them to proceed. This should discourage a user from filling out the form with garbage answers and encourage them to take time and think critically about their purchase. The quiz also provides the user with a quick link to get away from the page if they are worried that their will power will fail. It should be noted that this form collects no user data. It’s only purpose is to induce critical thought in the user.

3 Status and Future Work

Though Project-Machete is incomplete, it is functional and version 1.2 is currently deployed to the [Chrome Web Store](#). As user feedback is gathered and more PDEs are identified, the list of elements to address in later versions of PM grows. A detailed list of technical issues for Project Machete can be found in the repository’s [issues](#) on gitlab. Chief among those are: Current reliance on RegEx, inability to buy kindle e-books, and a small UI issue introduced by inserting the HTML to collapse recommend lists on a page.

3.1 Ethics & Future Work.

Though it was not initially considered as such, by engaging in counter-persuasion, PM itself takes on elements of PT. With this in mind, PM could be seen as a piece of PT that dabbles in coercion and deception. It cannot be denied that PM infringes on user agency. It removes some elements, decides buying used is preferable to buying new, it hides elements by default, and forces a user to fill out a form before making a purchase without first asking if this is their desire. What could be argued though is that because Amazon infringed on user autonomy first through selective reporting, relentless up-sells, etc. - PM is simply *leveling the playing field*. For example, the “in stock” report is deceptive in that it fails to report used items, and chooses whichever niche option is of lowest stock to report on; is PM being deceptive when it removes Amazon’s deception? Should counter-persuasive technology be considered coercive/deceptive if it removes such elements from other platforms? This is a question out of the scope of PM, all the same, PM recognizes that infringing on user agency and engaging in

Before:

Price and other details may vary based on size and color

Party of One
 by Michael Harris
 ★★★★★ - 134
 Hardcover
 CDN\$ 22.95
 FREE Delivery by Tuesday, Dec 15 for Prime members
 Only 1 left in stock.
 Other options
 New and used from CDN\$ 5.57
 Other format: Paperback

After:

Price and other details may vary based on size and color

Party of One
 by Michael Harris
 ★★★★★ - 134
 Hardcover
 CDN\$ 22.95
 FREE Delivery by Tuesday, Dec 15 for Prime members
 Other options
 New and used from CDN\$ 5.57
 Other format: Paperback

Fig.1. This figure illustrates the before/after of search results for a specific book. Notice the placement and stylistic elements of the price for *new* items when compared to used. This is an exploitation of cognitive bias. Also notice PM’s removal of the “in stock” report; inspection of the item reveals more than 30 used items as available where the report claimed there were only 10. This is a play to scarcity[1].

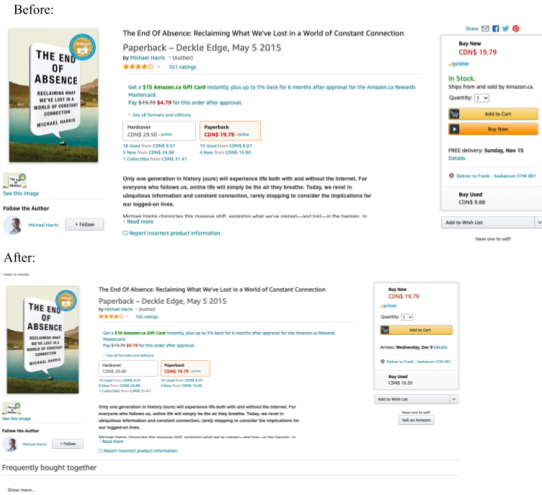


Fig.2. This figure illustrates the before/after of PM applied to the item page, which contains many different PDEs. PM’s targets include: The “Buy Now” button, which is an example of reduction[2], the “In Stock” report (an example of scarcity[1]), the social-media easy share links, and the “free-shipping” countdown clock. Aside from the share links, each of these examples are aimed at persuading the user to buy new, and buy fast.

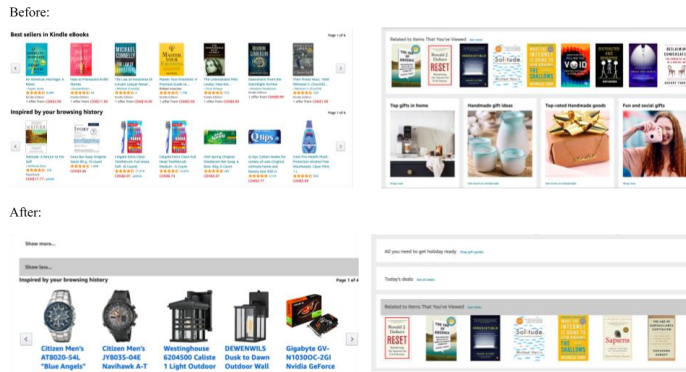


Fig.3. This figure illustrates the before/after of PM applied to recommended lists. Amazon.ca puts forth two different types of recommended lists. Some of which load dynamically on the page, others are page specific. PM collapses both by default but only one can be collapsed such that the original title of the list is preserved (i.e. “Frequently bought together”, “Top Cyber Monday Deals”). The other is collapsed into a section titled “show more/less”. Recommended lists appear on nearly every amazon page in their dynamically-loaded form and appear only once one has scrolled to the bottom of the page. This is part of the reason that PM is called on a timer.

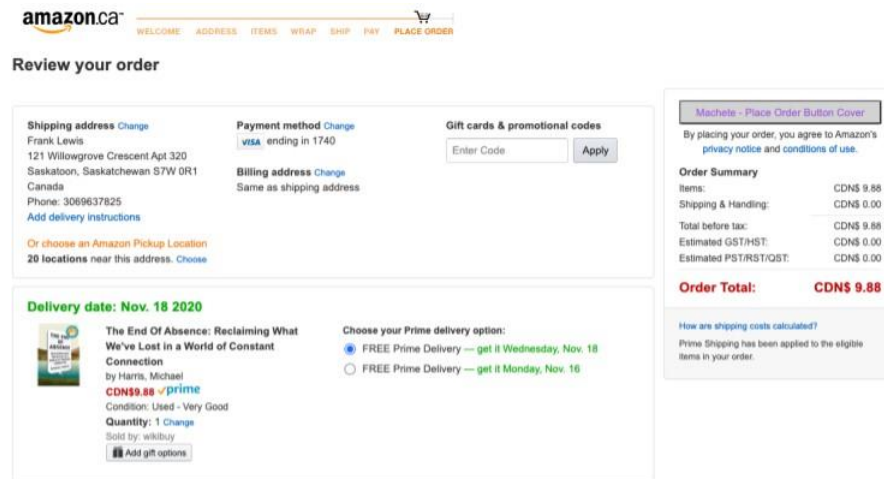


Fig.4. This figure illustrates the elements added by PM on the "Place order" page, including the digital conscience form. While PM does not stop a user from making purchases; it does make an effort to slow them down and encourage purchase evaluation. To best achieve this a "button cover" is placed over the purchase button that once clicked, prompts the user with a quiz. It is anticipated that users may try to bypass the form by rapidly filling it out so not only is the user forced to enter all fields, but they are delayed a full minute before the form can be dismissed. The form also offers a means to quickly navigate away from the page. Data from the form is not collected and there are no plans to do so in the future.

deception/coercion is a poor way to promote ethics in PT and counter PT alike. Future work on PM will seek to bolster user agency, & bring attention to it's goal: "To provide a shopping experience on Amazon that is free of influence from PDE's implemented by parties with conflicts of interest in the buying process". By making users aware of this goal & how it is achieved, their acceptance of PM would imply recognition and voluntary exposure to the techniques PM employs. Looking at PM this way, its coercion can be seen as similar to the example provided by Smids regarding the seat belt [7], though rather than the end goal being that users abide by PM's "digital conscience form" because it will not go away, they do so because they believe it is providing them something valuable. This user recognition of the quality of PM's introduced practices stems from a desire to take a virtue-ethic approach in technological ethics [9]. The practices introduced by PM are then not only to create a shopping experience with less PT, but to interrupt and dissolve any externally-induced attitudes that a good shopping experience is one where you buy new, fast, and more.

A primary concern regarding PM's aim is that users may end up with the idea that justifying a purchase on moral fronts is as simple as filling out a form and waiting a minute. PM does not currently, and has no plans in the future of evaluating the worthiness user-provided purchase justifications as this would open the door to even more ethical concerns. However by not doing so, users may use whatever reasons to "justify" their purchases while still getting PM's "approval". This is where the problem

is, if PM's form is considered a mere "moral approval stamp" by users, they may end up seeing any answer they provide as justifying, and as a result buy more because of this. This undesirable potential side effect is why user education should be at the forefront of PM's future work. A user that understands the purpose and value of the form will be critical of their own provided reasons.

Taking into account PM's goals of increased user agency (beyond enabling/disabling the extension) and education, PM favours the guidelines proposed by Spahn regarding ethics in PT [8]. These guidelines include: "*G1) Persuasion should be focused on (real or counterfactual) consent. G2) Ideally, the aim of persuasion should be to end the persuasion. G3) Persuasion should grant as much autonomy as possible*" [8]. Currently, PM loosely achieves G1 & G3 by giving the user the ability to control if elements are shown, but fails to do so completely as some elements are removed without user consent. A fully-realized Project-Machete would seek first to achieve the G3 which would involve allowing the user to determine to what extent PDEs are mitigated by PM, inadvertently achieving G1 as well. Additionally, if G1 & G3 are achieved for PM, they too are achieved for Amazon. This is because PM introduces user consent and autonomy through its varied level of PDE management to the Amazon platform. Spahn's second guideline is currently neglected by PM and must be developed against in the future. It would not be right to encourage dependence on a digital conscience to discern what is and is not PT. As Spahn proposed, PT should aim to *educate* its users and *remove* their dependence, rather than foster it [8]. Future work on PM should focus on not just mitigating PDEs, but on *increasing user awareness & knowledge* of them. PM should not simply *aid* the users digital conscience, but *develop* it. If PM is allowed to be used as a crutch, it will foster dependence within its users in discerning PDEs. This is why G2 is so important. PM must take an *educational* approach that shows users how to recognize PDEs on their own, allowing PMs value to extend to *any* website. What perhaps most crucial to PM's ability educational goal is that it eventually encourages its own removal. PM will not be able to develop a digital conscience in its users if it provides them one indefinitely.

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