Upside Down Facebook:
Raising Awareness of Behavioral Advertising
Through Artistic Provocation

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Abstract

Opaque corporate data disclosures, limited privacy controls, complex data flows, and cognitive limitations prevent people from understanding how their personal data is used for behavioral advertising. Privacy tools seek to make data flows transparent and actionable, but often fall short in clarifying systems and breaking through digital resignation. Using ideas from conceptual artwork investigating digital privacy issues, we propose an approach to raising awareness of behavioral advertising through artistic provocation. We developed Upside Down Facebook, a website that re-frames institutional privacy issues as social privacy issues by recasting an individual's Facebook data, using Facebook's "Information about you" data export, as deliberately "creepy" posts by a personified version of Facebook. Preliminary evaluation (n=7) of our functional prototype shows that most participants were provoked to learn more about how their data is used for behavioral advertising and formed an intent to change their Facebook privacy settings. Our work indicates the potential for artistic provocation to inform new perspectives on privacy tool design and research.

1. Introduction

People may be experiencing what Draper and Turow call digital resignation, a feeling that any action they take to protect their privacy is meaningless in the face of pervasive tracking and surveillance by corporations [5]. Privacy tools exist to help make data flows more transparent and actionable, however, they often fall short due to a lack of usability, clarity, and ability to motivate users to action [3]. In contrast, conceptual art investigating digital privacy topics engages viewers to think more deeply about privacy; for example, artists have brought data breaches into the open through printing stolen passwords out in books [18] and created browser extensions that show how speech recognition works [19].

In this research, we use conceptual art's design processes and strategies to provoke audiences, in conjunction with research on tool design and mental models from the privacy literature, to generate new approaches to engaging people in privacy issues related to behavioral advertising and inspire them to act.

Using user data available from Facebook's "Information About You" data export and usable privacy research and privacy art to motivate our design process, we designed a prototype for a website we call Upside Down Facebook. The website allows users to upload their data to an alternative version of the Facebook profile that casts institutional privacy issues, namely surveillance and profiling by corporations, as social privacy interactions. In this profile, Facebook as an entity speaks to the user, posts on their profile and cheerfully talks to them about how it collects and uses their data for advertising. Through appropriating the Facebook profile user interface, personifying Facebook as a "friend" posting on the user's profile, and creating deliberately "creepy" data disclosures, Upside Down Facebook puts data at the center of an uncomfortable relationship a person has with Facebook, with the goal of provoking them to reflect on corporate data tracking and profiling, and take protective measures.

Preliminary user testing with a prototype of Upside Down Facebook using an individual's "Information About You" data suggests the potential of this conceptual approach to engaging users in learning about behavioral advertising through visual metaphor, creating discomfort with their current level of privacy, and providing clear paths for action.

2. Related Work

We provide an overview of how people understand behavioral ads and disclosures to contextualize the ways Upside Down Facebook addresses privacy concerns. We also survey existing privacy tools and art, surfacing opportunities for tools to be enhanced by artistic approaches to visualization, transparency, and privacy intervention.

2.1. Mental Models of Behavioral Advertising and Disclosures

Perceptions of social media behavioral advertising are shaped by understandings of social media as private or public, as well as opinions about the usefulness of behavioral advertising [9,16]. Perceptions of whether unwanted data collection is taking place are also shaped by trust in the platform in question, the type of interaction (autocomplete, logging in, etc.), and sensitivity about collection and use of that particular type of data [4,9,14]. Individuals' opinions of the appropriateness of data collection and use are also shaped by their comfort with the specific data being collected, whether they believed they gave consent, and if they believe the data is being used within an appropriate context [4,9]. Less is known about how individuals react to seeing personal data profiles from social media platforms.

People often believe behavioral advertising disclosures are opaque and are mistrustful of whether changing settings will result in any outcome [15]. Though it may seem that people want more transparent disclosures, research by Eslami et al. suggests some individuals may feel that too much transparency is "creepy" and undesirable [6]. We investigate using "creepy" approaches to disclosure in our design.

2.2. Privacy Tools

Privacy tools help illustrate how behavioral advertising works and encourage action. Some tools like Lightbeam and the Facebook Data Valuation Tool focus on disclosing data, but do not provide suggestions for how to block or prevent the activity from occurring [8,13]. Browser extensions like Ghostery and Privacy Badger offer users ways to view third party trackers on websites and selectively block them [20,21]. Privacy browser extensions can help raise awareness of online tracking, but research has found that people often feel these tools use confusing language to explain who is tracking the users and why, often do not give a satisfying explanation of how actions will help, and overall, have basic usability problems [3].

Privacy nudges encourage people to reflect about their privacy in a variety of contexts across devices and platforms [2,12,17]. For instance, mobile nudges have shown to be effective in prompting individuals to review their permissions [2]. Our work nudges individuals to take action to limit Facebook's collection and use of their personal data for behavioral advertising.

2.5. Artistic Perspectives on Privacy and Technology

Conceptual art puts concepts at the center of art making. The concept drives the artistic process, dictating the form the work takes. The role of the artist is a thinker and conceptualizer, rather than as a craftsperson [10]. Artists have used conceptual approaches to urge people to examine the ideologies that underpin consumer-facing tech platforms and products. For example, the piece *Flopstarter* (2018) appropriates the Kickstarter interface and brand identity to create a platform for bad ideas, exposing how techno-solutionism and sleek presentation are used to persuade [7].

Conceptual artwork also explores how algorithms collect, analyze, and use behavioral data. By demystifying algorithms, art provokes audiences to think about how they may be impacted by algorithmic decision making. For example, *Levels of Confidence* (2015) by Raphael Lozano Hemmer shows viewers a live visualization of how facial recognition can be used to associate individuals with images in a database [22].

Art provides compelling ways to not just "visualize" data, but transform it to provide personal insight. In her piece "Pathways" (2015), Mimi Onuoha worked with a family to visualize their mobile location data, helping them understand how their habits changed after having a child [11].

Artists commenting on the privacy implications of technologies are often interested in intervening in surveillance or data collection activities, using a variety of strategies to resist tracking. *Go Rando* (2020), a Facebook browser extension created by Benjamin Grosser, automatically obfuscates a user's emotional reactions to Facebook posts and comments [23]. Upside Down Facebook adds resources to enhance personal privacy, like links to privacy settings as well as links to privacy enhancing tools.

3. Upside Down Facebook

3.1. Conceptual Design

Inspired by research in usable privacy and conceptual art, we designed a prototype website called Upside Down Facebook. This piece casts social privacy as institutional privacy to clarify how behavioral advertising works. Our approach was inspired by ideas from conceptual art, usable privacy research, and analysis of Facebook data available to users to create design concepts. The process began with

wireframing to quickly test multiple concepts. During this early conceptualization process, we sought feedback from colleagues, continued to read privacy research in HCI, and re-analyzed and re-combined the data to refine the goals of the work and improve ideas.

Research by Eslami et al. suggests some individuals may want more transparency in behavioral ads, but feel that too much transparency is "creepy" and undesirable [6]. Inspired by this research, we wanted to create not just honest disclosures, but deliberately "creepy" and highly specific explanations of data collection that make users second-guess their comfort level with using Facebook. Finally, we wanted to improve the privacy interventions available to people experiencing the piece, drawing upon best practices for encouraging action from the HCI privacy literature.

3.2. Use of Facebook's Information About You" Data

Facebook describes "Your Information" as "Information you've entered, uploaded, and shared" [24]. This data is available to view on an interactive webpage, and is downloadable in either .html or .json formats.

The "Information About You" category contains inferences Facebook has made about an individual's interests, information about the devices they use and when they login, voice recordings and transcriptions (if available), facial recognition data (if available), Facebook search history, locations associated with the account, information uploaded by advertisers, and inferences made about a person's advertising interests.

After reviewing .json files in each category from the download, we identified candidates for data disclosure based on whether the data would be surprising, informative, and actionable. To reframe this data provocatively and usefully, we use the strategies of appropriation, Facebook talking to the user, and data disclosures and actions.

3.3. Appropriation of the Facebook Interface

Upside Down Facebook appropriates the visual language of the Facebook interface (see Figure 1). Artistically, this approach was inspired in part by Oli Frost's *Flopstarter* (2018), which uses Kickstarter's user interface to present comically bad crowdfunding initiatives [15]. This strategy of appropriation, hyperbole, and satire causes a person to reflect about what an online service is, what it is trying to convince the user to do, and how it uses visual strategies to persuade them.
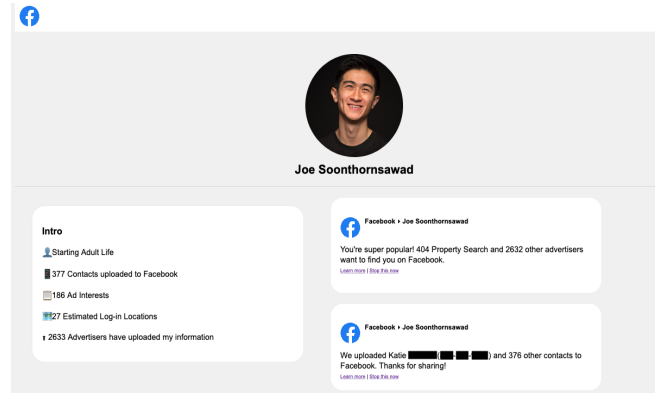

Figure 1. Upside Down Facebook Web Prototype.

Our goal was to estrange people from their experience of using Facebook every day, pushing them to see similarities between Upside Down Facebook's behavioral advertising-oriented social network and the Facebook they are familiar with. The interfaces people use to access behavioral advertising privacy information are often unfamiliar and hard to use. We reasoned that if data disclosures are presented with user interface design that looks and feels "like Facebook," it is hard to ignore evidence of unwanted data collection and use that would otherwise be out of sight.

3.4. Facebook Talks to the User

Upside Down Facebook creates a relationship between the user and Facebook through dialogue. We developed this strategy based on Kennedy et al.'s study on user perspectives on social media data mining that found that a user's comfort with data mining for behavioral advertising on social media is connected with whether they see social media as a personal private space [20]. Similarly, Rader's finding that users may conflate social privacy settings with institutional privacy settings motivated this design choice [28].

Upside Down Facebook makes Facebook, the institution, the user's most active "friend" who incessantly posts on the user's profile. Facebook is an unwanted friend that is ignoring the social privacy settings they have selected, making it difficult for a user to see their social media activity as private to Facebook. Facebook posts on the timeline, making actual Facebook data practices visible as social sharing done without consent. The approach to writing these posts takes inspiration from Lauren Lee McCarthy's parody of the language of tech start-up marketing in *pplkpr* (2020) [25]. Facebook uses cheerful and conversational language as it inappropriately accesses, comments on, and discloses data.

3.5. Use of Data Disclosures and Actions

Upside Down Facebook uses disclosure design and actions inspired by privacy nudges to encourage users to address specific data privacy violations. Privacy research on nudging finds that presenting privacy risks in a way that contextualizes them and increases saliency creates an opportunity to nudge users to act to protect their privacy [1]. Presenting Facebook behavioral advertising-related inferences and data collection in a way that looks and feels like Facebook is an ideal opportunity.

In order to maintain a balance between creating a convincingly "upside down" experience of Facebook and helping users act, opportunities to "learn more" and "stop this now" are hyperlinked. Within disclosures, we use an interface that looks like Facebook's modal pop-ups that provide additional ad information, but use simpler language and provide clear "call-to-action" buttons that make it clear what users can do. The use of disclosures helps tie the Upside Down Facebook experience to research, encouraging users to be curious about how their data is being used, and helping them realize they can do something to protect their privacy.

Preliminary Evaluation

We have conducted a preliminary evaluation to assess the basic concept of Upside Down Facebook, focused on understanding whether the experience provoked people to be more concerned about behavioral advertising, made them want to learn more about how their data is being used, and whether they took or planned to take privacy-protective actions suggested by the prototype. Additionally, to inform further development, the evaluation study was designed to uncover opportunities for further interface improvements. We conducted semi-structured interviews remotely using Zoom. We first asked participants about their understanding of and sentiments about Facebook's data collection and advertising, then asked participants to upload their "Information About You" data to Upside Down Facebook and "think aloud" as they used the prototype. At the end, we asked interviewees to reflect upon the experience and share how they see Facebook's data collection and advertising practices. We utilized a convenience sample (n=7), using our Facebook network to recruit participants. The study received IRB approval.

Upside Down Facebook led participants to become interested in how behavioral advertising works on Facebook, and explore disclosures on Facebook and the Upside Down Facebook interface about data use and collection. As one participant commented, *"In general they know so much, but I didn't know you could prevent so many things....that's really helpful for me and also the information that's shown here for each of these different examples."*

However, not all participants were offended or provoked by Upside Down Facebook as intended. As one person shared, *"I mean, it's not surprising, like 'Oh my God!' It's all stuff you expect if you understand businesses, you know, find any way to get your ads across."* A person's reaction to the experience may depend on multiple factors including their existing comfort with behavioral advertising, whether they view the data as a social or institutional privacy threat, and whether they felt they had explicitly provided the information to Facebook, to name a few.

In all cases, participants in the study were interested in changing their privacy preferences for advertising-related tracking and uploaded data on Facebook, but often found Facebook's descriptions of privacy settings confusing. Participants generally met actions that required installing a privacy browser or tool with skepticism, and saw them as undesirable. As one participant commented, *"Don't know what Mozilla VPN is. I'm afraid to click on lots of things on the computer. Open yourself up to more people."* Future work should further refine the concept, including improvements to the design of disclosures, better contextualizing Facebook privacy settings, and providing alternative privacy actions.

Discussion and Conclusion

Using Facebook as an example, this research offers new strategies for privacy researchers to (1) emotionally engage people in data privacy issues and the topic of behavioral advertising, (2) surface information in an engaging and accessible way, and (3) help people transcend limitations in processing complex data disclosures. We discovered that findings from privacy research, like differences in comprehension of social versus institutional privacy, can be transformed through conceptual artistic methods into provocative disclosures that elicit emotional responses and encourage action.

Our preliminary findings suggest that Upside Down Facebook can be further improved by better accommodating and educating users. Profile posts can provide more information about the data mentioned, rather than relying upon people to open the "more information" pop-up windows. Additionally, there is a need to provide users with more specific guidance about how they can change their settings on Facebook before they follow links to the Facebook website. Future work to improve the concept will involve increasing the stability of the prototype for a public release, and making user interface changes that further improve the explorability of the Facebook data.

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