

From intrusive to supportive: recommendations for pervasive advertising

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Abstract. Here, we discuss the evolution of advertising in other mediums from a user’s perspective, with a particular focus on web advertising. By charting advertisements through their advancement from novelty to sophistication, we can see that technical advances often arrive in conjunction with intrusion and consumer irritation. We compare this to the early trials of non-traditional advertising techniques that have been attempted, and show that many of the same mistakes are being made now as we move towards a new era of pervasive advertising.

1 Introduction

Advertisements have been with us as a society for thousands of years. As manufacturing and printing technologies became more advanced, ever more forms of advertising have proliferated. Large static display-based adverts pervade our environment, with examples including the Goodyear blimp, billboard advertising, conference posters, product information signs and advertising displays.

If we take a historical look at advertising in any medium—be it in television, radio, magazines or the web—we can see similar patterns emerge. Over time, ads become larger, more prevalent, more vibrant, louder and often more obnoxious. In magazines, multiple contiguous pages made up purely of advertisements are not uncommon. On radio, commercial content and normal content can be difficult to distinguish. In movies, prominent product placement is increasingly commonplace. On television, TV shows have been shortened in length to accommodate longer ad-breaks, during which the volume of the broadcast is surreptitiously increased.

Advertising on the web in particular has been degenerating for years into obtrusive, attention-getting, gimmicky ads which are increasingly loathed by users. Advertisements on the web transitioned from modest graphical ads and banners to related websites, to new windows that would “pop-up” unexpectedly from the page you were visiting. More recently, rich media ads have begun serving up video (and sound) to unsuspecting visitors.

These aggressive advertising methods were disliked by users¹, but website owners, without any other viable way to make money from their content, are seemingly forced to use ever-more intrusive forms of advertising to get the user’s

¹ Jakob Nielsen: “The Most Hated Advertising Techniques”
<http://www.useit.com/alertbox/20041206.html>

attention; or in the language of web advertising, to have access to a user’s “eyeballs.” A single page can have multiple ads from different sources, leaving each advertising element to compete against the others for a user’s limited attention. Users began to ignore some ads: for example, “banner blindness” describes the ability of users to selectively close off their attention to certain page elements that have the dimensions of a typical banner ad.

When Google launched their AdWords/AdSense products in 2001 they were hailed as the company that had saved online advertising, because the ads that they favoured were non-boisterous and somewhat contextual. Google AdWords were simple text links that were added to Google search results. The AdSense programme that followed allowed webmasters to embed relevant ads from Google into their own websites. Since the content of the ad was based on the page that a user had visited of their own volition, the content of the ad could be thought of as being personalised to some degree. This respect for the user coupled with the contextualisation of the ad resulted in clickthrough ratios that were superior to what had come before [1].

The key lesson from this is that users have a higher tolerance for ads that support them in or relate to their current task. A webpage with a single contextual ad unit might outperform the same page with multifarious more intrusive techniques, simply because the user is more likely to look at it.

2 Ads in the environment

The earliest examples of “pervasive” advertising using non-traditional techniques in the environment have been poor exemplars. They have used non-traditional technologies which in many cases are not yet mature and leave the user with little recourse when an ad that they do not want is shown to them.

Bus shelters have been fitted with Bluetooth transmitters and readers of advertisements have been recommended to “Set your Bluetooth device to be discoverable”. We suggest this request is incomprehensible to most users. Regardless, when a phone with Bluetooth enabled is within range, a text message or video content is pushed to the user’s phone. Unfortunately, the bus shelter indiscriminately pushes this content to the phones of all users who are within the range of the system. Advertisements such as this needlessly harass users who may not have even been looking at advertisement as they passed by. This kind of advertisement can deliver a negative experience, and further attempts in this style will result in user frustration and, we expect, the eventual abandonment of having Bluetooth enabled on ones phone.

Ads like this represent a violation of a user’s trust in how their personal devices can be used. Early attempts at personalised ads in the environment have also been contentious, like the ad campaign run by Mini Cooper which would display personalised billboards to the user on the side of the road². These

² The New York Times: “Billboards That Know You by Name”
<http://www.nytimes.com/2007/01/29/business/media/29cooper.html>

were criticised for being a safety hazard, as they distracted drivers from their task (driving their car safely).

The many systems for “digital graffiti” [2], which allow users to annotate multimedia content in their environment via a mobile device, are an improvement of a kind over traditional environmental billboards, because the information in the system is transmitted over a non-visual channel that you need to “tune in” to (i.e., opt in) to be able to view. But advertising throughout history has been designed to be positioned in the space *between* the user and something that they want to see. One possible future for this kind of technology is a world with multiple advertising channels overlaid on the world which can be turned on and off. A positive step in the right direction are those systems that track a user’s gaze, and report back to the advertising system, telling it which ads were most popular with viewers based on what they looked at [3].

3 Supportive advertising

What we are describing here is our model of “supportive advertising”; an advertising method through which the consumer and the system collaborate in a way. As the user offers up whatever limited information about themselves that they wish to make available, the advertising system can make improved recommendations to them.

Advertising in traditional media (television, radio and print) are all driven by demographics, and in many ways are thus wasteful, having successful campaigns decided by percentages and metrics. A “media buy” will be targeted towards certain demographics, and so the level of personalisation is low. Profile-driven advertising is not possible in these media. In the networked world of pervasive advertising however, we can improve the user’s experience using personal information with their consent.

When browsing the online shopping website amazon.com, a sophisticated recommender system tracks every action of the visitor, from the products that they view and rate to the searches they perform. Through this monitoring technique the website can increase the success of items that they recommend to a particular user, because they are able to personalise these recommendations. Throughout the site a user is given many opportunities to tell the site more about them, by making wishlists and rating products that they’ve already bought elsewhere. We imagine that many users are quite willing to offer up additional information about themselves, because they can clearly see that they are receiving a better service in return. Though they are effectively being advertised to, the incentive for them to engage with the system is clear and compelling.

What we have so far called “advertisements” could also be simply *information*, which we transmit to the user pervasively in support of their current tasks. For example, in a shopping centre, this information would pertain to related products, better deals, and so on. We see the balance between information that a user is asked to provide, and the personalisation achieved by the ad, as critical to the success of these new advertising technologies.

In the following matrix (Figure 1), we present the relationship between high-impact, useful personalised advertising with the level of data disclosure that is required of them. In the top left corner we have these traditional advertisements: banner ads, television commercials, magazine ads and so forth, which are limited to being positioned well by their agencies. Though the quality of these ads and their impact varies greatly, we consider these ads to be low utility. As we move further to the right, the advertisements become more personal, going from the keyword-based AdWords links, to ads on search results (which are more supportive of a task). These ads are more successful, and illustrate a critical feature: when the user is searching for information or products, they are much more willing to be advertised to.

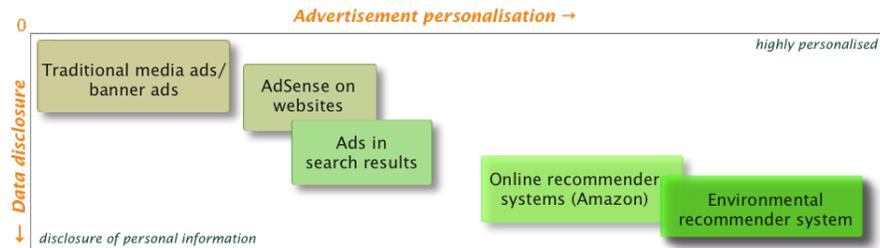


Fig. 1. As more personal data is disclosed, the advertising system’s ability to personalise content to the user increases. Both the utility and invisibility of the ads increases also as we move towards the bottom corner.

Ultimately, we foresee a type of *environmental recommender system*, which operates pervasively in a physical environment and is seen as a *positive* influence, because they are used to highlight information or products useful to individual customers, rather than used purely to serve better ads.

We would like to see some level of collaboration between the user and the environmental ads, to engender trust in these systems. Otherwise, will we see cluttered web advertising spaces give way to cluttered physical spaces where ads vie for control over any and all communication channels? It’s not hard to imagine that pervasive advertisements will follow a similar pattern to what we have seen before in other media, unless we choose to follow a more positive path.

References

1. J. Battelle. *The Search: How Google and Its Rivals Rewrote the Rules of Business and Transformed Our Culture*. Portfolio Hardcover, 2005.
2. S. Carter, E. Churchill, L. Denoue, J. Helfman, and L. Nelson. Digital graffiti: public annotation of multimedia content. In *CHI '04 extended abstracts on Human factors in computing systems*, pages 1207–1210, NY, USA, 2004. ACM.
3. J. Müller, J. Exeler, M. Buzeck, and A. Krüger. Reflectivesigns: Digital signs that adapt to audience attention. In *Proceedings of Pervasive 2009*, 2009. To appear.