User Experience, Big Data, and Ethics

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When thinking of design, it's natural to first think only of the visual arts: graphic design, logos, sculptures, etc. but in actuality, these are only the tip of the iceberg. Holistically, design is about thinking. Thinking of solutions, thinking of alternatives, thinking creatively, and empathetically. Design thinking is omnipresent, found both within the most basic of daily tasks and in the solutions to the most difficult of large-scale problems. In his book *The Design of Everyday Things* (2013), American researcher, designer, professor, and author Don Norman writes:

> All artificial things are designed. Whether it is the layout of furniture in a room, the paths through a garden or forest, or the intricacies of an electronic device, some person or group of people had to decide upon the layout, operation, and mechanisms. (p. 4)

With it surrounding us in our everyday lives, the importance of good user experience design (UXD) cannot be understated. Norman's name has famously been associated with badly designed doors. Called "Norman doors," they refer to when a door is designed in a way that makes it difficult, if not impossible, to understand how it is operated just from looking at it. Is it a push door, or a pull door? Does it open to the left or the right? Bad UXD can make our lives worse by shaping the world we live in, our perceptions, and our thoughts (Norman, 2013).

UXD's pervasiveness within our everyday lives lends itself to being intrinsically intertwined with our psychology. We interact with the world through our five senses and through our perception of those senses we shape our realities. A practical UX designer doesn't just aim for beauty, they aim for a harmony of beauty and functionality. The consideration of consumers' intentions, motivations, and thought processes is just as important, if not more so, than the

designer's mechanical skills of creating. Thus, having an understanding of human psychology is crucial for UX designers to create things that are aesthetic, useful, and meaningful.

In an eCommerce context, our goal as designers is to create a website that is aesthetically pleasing, easy to use, lucrative, and produces high conversion numbers for a business. I am interested in the techniques and ways in which we meet this end. The usage of concepts such as visual hierarchy, while essential to a meaningful experience for users, comes with potential ethical caveats. Knowledge of foveal acuity and weak peripheral acuity allows UX designers to create attractive UIs that engage users, while also opening consumers up to potentially deceptive design tactics. Another tool UX designers use to better understand their users is data. Big Data is a term that refers to large data sets procured from businesses, organizations, consumer internet browsing, etc. that is analyzed for insight. This data is invaluable and used by UX designers to tap into large amounts of information. However, with access to large amounts of users' data comes a necessity for ethical considerations for its use. From these ethical concerns arises a notion that designers have a responsibility, as "shapers" of society, to create ethical and socially conscious designs; an ethical designer should not hide behind the wants and needs of the consumer at the expense of ethics (Tromp, Hekkert, & Verbeek, 2011). The argument in contrast is that consumers themselves are responsible for their buying choices and, due to their purchasing decisions, shape the metaphorical field on which designers play (Tammelleo & Lombardi, 2014).

The study of user behavior to create designs better suited to fit consumers' wants and needs is at times muddled by the objectives of driving sales, increasing profits, and raising conversion rates. A distinction needs to be made between good UXD and UXD that fulfills a purpose at the cost of ethics. Today's UX designers have a relatively new and uncharted world to

explore. In the wild, wild west era of UXD that we live in today, where do we draw the line between good design and unethical practices?

Visual Hierarchy

Understanding what consumers look at, the order of things they look at, which things their eyes are attracted to or unattracted to is important to consider when designing a user interface (UI) for a website. However, with this knowledge of consumer eye behavior, designers could potentially use this information to manipulate users. A major component of such usage is the concept of visual hierarchy, where different visual components command more or less attention from viewers through its size or positioning. 'Visual' referring to the visual elements on a webpage or advertisement, 'hierarchy' referring to the importance given to these elements. More specifically, in the context of UXD, it is the order that a user's eye follows as it recognizes what it is looking at on a webpage (Eldesouky, 2013). An example of visual hierarchy can be seen below in Figure 1. In an article by Djamasbi, Siegel, and Tullis (2011), the authors mentioned that while viewing a webpage, people tend to perform F-shaped patterns of reading with their eyes. Users tend to favor looking first at larger content at both the top-most and left-most portions of a webpage, which is then followed by scanning to the right, dropping lower, and scanning right again. Tracing the shape of an "F," people tend to scan less to the right as they scroll down a webpage, using less effort to read content further right the lower down they go (see Figure 2). These scanning behaviors can be influenced by characteristics such as size, proximity, and order of elements within a webpage. By modifying the size, shape, relative closeness, or location of a webpage element, UX designers can create UIs that guide consumers' eyes to view site content in the order in which designers want them to view it (Djamasbi et al., 2011).

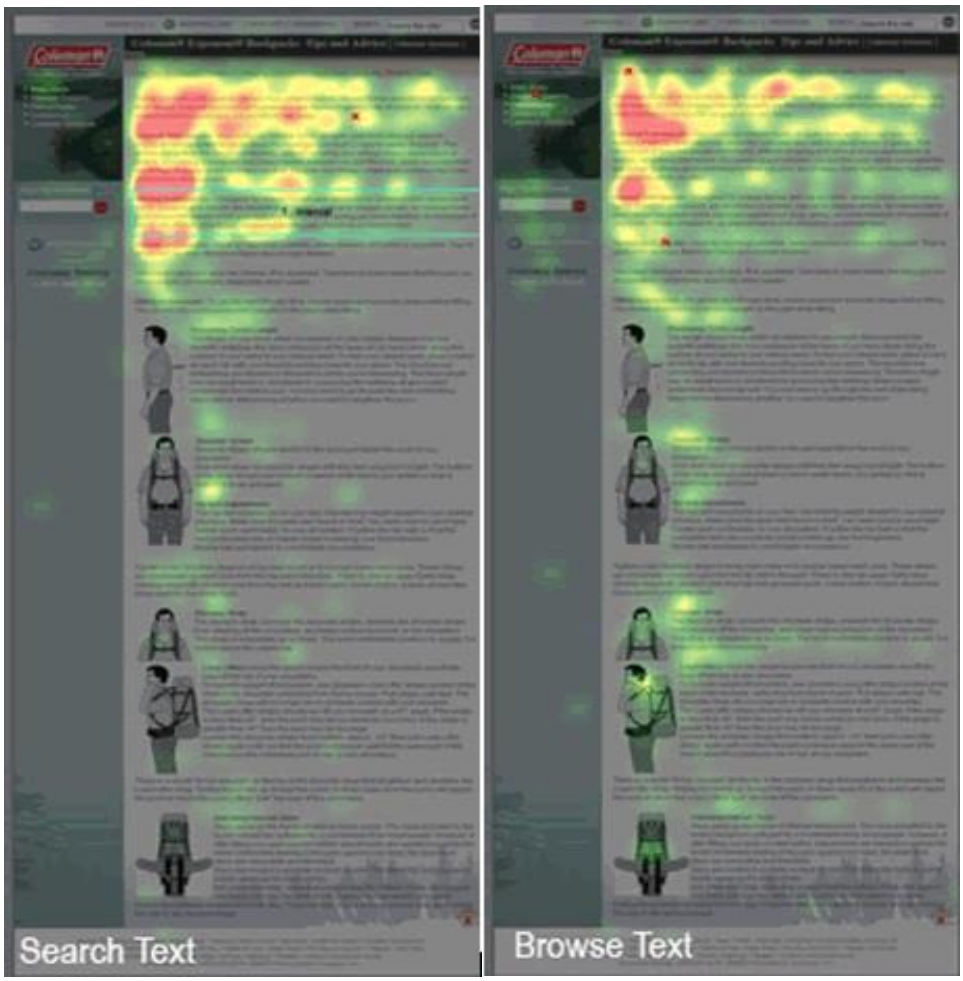
Figure 1

Visual Hierarchy Example

Note: this figure demonstrates the importance of utilizing visual hierarchy by a UX designer to guide the user through an interface in the desired order. Due to the size and contrast of the large black letters on a white background, most users' eyes are drawn to the "You will read this first" element, reading the lines below afterward, and finally reading the smallest text at the top left of the figure.

Figure 2

F-Shaped Patterns



Note: These are the actual heatmap results of participants' eye behavior from a study by Djamasbi et al. The colors, scaling from green (less looked at) to red (more looked at), show the eye behavior of the participants of this study. Areas without color are areas of the page that are not looked at directly by participants. This is an example of the f-shaped pattern where most users' eyes focus on information at the top left of a webpage and scan down and right. As users look down the page less information is looked at towards the right side of the page.

A form of technology that has helped guide the fundamentals of visual hierarchy is called eye-tracking. Computer hardware fitted to study participants used in conjunction with special software detects the eye movements and focus of users when performing certain tasks. Djamasbi et al. performed an eye-tracking study that showed that the aesthetics of a webpage has a significant effect on consumer's perception of its usability and their willingness to return. Analyzing eye-tracking heatmaps made by participants, they found that users' eye behavior differed when users were given different tasks. These researchers found that users who were told to simply browse a site focused their attention towards the center of the page, while those who were given the task of finding information looked mainly at the left side of the page. Also, interestingly, the addition of images of faces drew users' attention away from other parts of the page and towards the face and surrounding text (Djamasbi et al., 2011). This analysis of eye behavior is invaluable to UX designers as information about the behavior of consumers based on visual stimuli can help them create webpages that foster the type of interaction designers are looking for.

In addition to what consumers' eyes see, what consumers' eyes omit or cannot see is just as important for the creation of UIs. Our eyes are incredibly accurate receptors of light and information. Dr. David C. Evans, Senior Manager of Customer Relations at Microsoft with a Ph.D. in Social Psychology, wrote a chapter about foveal acuity where he talks about how our fovea, the area opposite of our pupils that is packed with color and detail sensing cone-shaped neurons, are incredibly sensitive when pointed directly at an object. However, he elaborates, when looking just off to the right or left, our acuity drops significantly. In a book written by Evans (2017) titled *Bottlenecks: Aligning UX Design with User Psychology*, he writes: "At the typical distance to a screen, we're blind to symbolic information a mere five characters away

from where we are focused" (p. 5). Our weak peripheral foveal acuity has many implications for UX designers. This means the heatmaps from the above eye-tracking study showed nearly exactly what users were capable of seeing while viewing webpages; areas without hotspots that went unlooked at by participants were effectively invisible. This means the utilization of ad space on a website can be rendered useless to marketing companies depending on the attention given to their location. Companies in the U.S. alone spent over $30 billion on internet advertising by 2016. Of those ads, half didn't show up on consumers' screens long enough to be viewed. The half that was 'viewed' likely ended up in consumers' peripheral vision. Suddenly, the accuracy of ad reach statistics come into question as they only measure if a user's web browser queries the ad from the website's servers, failing to acknowledge it likely could have been entirely invisible to the user due to weak foveal acuity (Evans, 2017). This enormous waste of money and resources by ad companies should serve as a lesson for UX designers when creating a UI for a website. UX designers should ask themselves: What information do I want the user to see? How do I ensure important information doesn't go unseen?

Based on the eye-tracking patterns and weak foveal acuity of consumers while scanning webpages, how much can a user be manipulated? While the knowledge of both of these concepts makes it easier for UX designers to create relevant webpages for consumers, the capacity for certain elements to be hidden by changing their size and location on a website opens the door to unethical potentialities. In a world full of ignored fine print and a plethora of unread end-user agreements, companies are more than capable of using consumer ignorance against them. In a study conducted by Yannis Bakos, Florencia Marotta-Wurgler, and David R. Trossen (2009), researchers tracked the behavior of 45,091 households connected to 66 online companies to understand how many users access the end-user license agreement (EULA). They found that

visitors of said websites who ended up accessing the EULA was ~0.1%. This article and study challenges "The Informed Minority Hypothesis" in this context which refers to the argument that, "[e]ven when many uninformed consumers exist, a market can yield a competitive equilibrium if enough informed consumers do shop for the competitive price" (p. 6). The idea is that just because most consumers are uninformed about an aspect of a product, service, platform, etc. the minority that are informed keeps companies honest. This study casts doubt onto the informed minority hypothesis in at least this context, and the article argues that the hypothesis isn't as valid as previously thought (Bakos et al., 2009). If people aren't paying attention to formal contracts for software purchases, what are they ignoring in their day-to-day web browsing? Companies not only have an audience who are either unaware or too apathetic to check for things websites ask them to sign, but they also have the competitive impetus to use it to their advantage.

Big Data: Useful or Problematic?

The ability to conduct sound research is an essential skill for UX designers. Understanding the user: their demographics, how they got to your website, how long they spend there, etc. are all necessary data points for creating an optimized space where user effort is minimized, and user interest is maximized. Of course, identifying all of these characteristics requires a large amount of market research but, first, it requires a large amount of data. Luckily, today in the information age there is no shortage of data, in fact, the amount that is being accumulated necessitates the use of another essential skill for UX designers: empathy. While not classically thought of as a skill, empathy can be developed and strengthened through active effort, and its implementation by designers in pursuit of creating ethical designs is crucial. A

growing ethical concern within the field of internet marketing and UXD is the accumulation of massive amounts of user data by private corporations (Crawford, Miltner, & Gray, 2014). From this data, users are categorized, profiled, advertised to, and suggested content based on their search histories, frequented websites, and interests (Zwitter, 2014). Referred to as "Big Data," everyone with access to the internet, via smartphone, tablet, or computer has contributed their data, and through it their identities, to these giant commercial conglomerations of information. You might ask: who gets to see my information? How well is my information handled? What about access to my passwords and private information? Many ethical issues that arise as a result of this data accumulation are obvious, such as privacy and security. However other issues that I will elaborate on in the following sections, such as cookies, a marketing tactic called retargeting, google analytics, user privacy, and algorithm bias are more subtly problematic.

Cookies & Retargeting

Retargeting is a method of advertising by digitally following a consumer after they leave a website or product page. After exiting a website, they continue to encounter advertisements with either that same product/service or something else similar to their interests (Lambrecht & Tucker, 2013). Anthony Miyazaki (2008), Executive Director, Chairman, and Professor of Marketing and Analytics at Florida International University, wrote an article which explained that in order to achieve this, retargeting requires the collection and storage of tracking information referred to as cookies. His article elaborates that there are many different kinds of cookies, the two main kinds being: first-party cookies and third-party cookies. Cookies are small messages sent between websites and a user's web browser. First-party cookies are sent by websites that users visit and are used to remember things such as their login information,

preferred language, chosen country, etc. For the most part, these cookies aim to make a user's online experience more seamless, ensuring they do not have to refill their information into every website they visit, every time they visit. Third-party cookies, however, are sent by someone other than the owner of the website the user visited, such as a partnered advertising company. These third-party cookies effectively track people's behavior across the internet and can be used by advertisers to build psychological behavior profiles of users based on their search history, frequented websites, and demographics. These profiles can be aggregated and categorized into groups that reflect specific interests and used for advertisers to narrow their audience, guaranteeing relevancy, and increasing chances of conversion (Miyazaki, 2008).

Retargeting came as a solution to a problem nearly all eCommerce sites struggle with: abandoned carts. Every trafficked eCommerce website with a shopping cart function is sure to have abandoned carts. This refers to a user adding items to a shopping cart but not progressing through the checkout process, meaning the business never makes a sale. A lot of what UX designers and digital marketers do is to try and reduce the number of abandoned carts through enticement, simplifying the buying process, email marketing, and, more recently, through the tactic of retargeting. In a study by Lambrecht & Tucker (2013), they tested the efficacy of retargeted ads. The number of times a consumer can be retargeted ranges from once to several times, but theoretically they could be repeatedly hit indefinitely depending on the advertising budget of the business. This is particularly attractive to businesses who sell online as it is very common for people to select several products that they are interested in, only to abandon their cart and never return to purchase the products. Consumers may also benefit from an experience online that is catered to their interests. Behind us are the days where one must endure endless irrelevant ads. Now, that product you were interested in, and potentially forgot about, seamlessly

finds its way back into your social media feeds, website margins, and app banners (Lambrecht & Tucker, 2013).

Anthony Miyazaki's (2008) article outlines the various ways in which cookies are used nefariously by marketing companies and the extent to which consumers can be exploited by their utilization. Cookies, despite their incredible usefulness to UX designers and digital marketers, "have been criticized by consumer advocates, policymakers, and even marketers themselves as a potential threat to consumer privacy," says Miyazaki (2008). The fact that even some of those who work within the industry that profits from cookies view them as dangerous to privacy exposes the shaky ethical ground on which they stand. It is common, when visiting a website, to have a notification pop up on your screen asking you to allow cookies. There are regulations and protocols websites need to follow in regard to how they acquire your consent, however many of these notifications are intentionally made to appear as harmless as possible, and certainly do not outline exactly what these cookies do. Websites with ad space are no longer simply lining their pages with ads, they are selling consumers' behavior to advertisers and marketing agencies who in turn create profiles from their data. If a consumer's profile shows them to be vulnerable to certain marketing tactics, there isn't much in the way of stopping an advertiser from exploiting that vulnerability. The lack of consumer knowledge about how cookies function only attributes to the risk to consumers' privacy. Research has shown that consumers are not only unaware of the advantages or disadvantages of enabling cookies, but a majority aren't able to explain what one is at all. Despite a general lack of knowledge about them, consumers are very concerned with their online privacy when it comes to their data collection through cookies. Miyazaki created three studies examining the use of cookies and consumer attitudes. The results of his studies found that the use of cookies by websites has been increasing, when consumers detect the

use of cookies by a website it leads to a decrease in their trust and support of the website, and he saw that this decrease effect was less significant for consumers that have more online experience or less desire for privacy. It is important to note that, since this study, regulations have forced website owners to ask the permission of the consumer first before they can use cookies, however, the data is still very much relevant in terms of consumer attitudes towards eCommerce websites and personal privacy. His data shows that consumers will lose trust in websites who utilize cookies and are less likely to frequent and recommend its usage to others because of their presence (Miyazaki, 2008).

Cookies, while problematic, make for useful tools at UX designers' disposal, one benefit being that they make retargeting possible. However, there is research that shows that for some products, retargeted ads are simply less effective than their generic counterparts. In a study conducted by Anna Lambrecht (2008), Assistant Professor of Marketing at London Business School, and Catherine Tucker, Associate Professor of Marketing at Massachusetts Institute of Technology, whether or not a consumer has narrowed down their search of what they are interested in has a large impact on if they will purchase a product that is advertised to them through retargeting. Consumers who had a broader idea of what they wanted showed significantly more interest in the generic ad than the dynamic ad, conversely, those who had a more narrowed set of preferences for a product were more responsive to dynamic ads than their generic counterparts. We can conclude from this that generally, unless a customer has a clear idea of what kind of product they are looking for, retargeting likely isn't more effective than using generic advertisements (Lambrecht & Tucker, 2013).

Google Analytics & User Privacy

There are two main perspectives of Big Data that seem to clash, one being that the accumulation of user data is an essential resource, beneficial to both businesses and consumers. One of the most well-known and proven forms of utilizing big data is through a tool called Google Analytics. From Google Analytics' "About" page, in a nutshell, "Analytics makes it easy to understand how your site and app users are engaging with your content, so you know what's working and what's not." This is a tool that allows UX designers, marketers, and website owners in general, to understand how users interact with their websites through the accumulation of data from their website and other websites, individual tracking data (cookies), and Google's mammoth machine learning algorithms (Google, n.d.). Analytics is an invaluable tool to UX designers and the businesses that employ them because it allows the designer to understand what users do while browsing a website to a degree not possible without its implementation. A UX designer would be interested in how a consumer reaches the site, who they are, which page they land on, their behavior while on the website, what they click, what they don't click, which pages do most users exit from, etc. Google Analytics allows UX designers to gain valuable insight into the user's behavior and through that behavior understand a typical user's experience. Through the analysis of this data, businesses can see the behavior of their customers, website visitors, and advertise directly to people who have shown an interest in their products or services (Google, n.d.).

The second perspective of Big Data comes from a concern for privacy. Google Analytics is an extremely powerful tool, but its strength lies in the scope of its data collection from everyday people, causing some unease from consumers about user privacy. While the enormous amounts of data collected today is a relatively new industry, the privacy and security of one's

personal information is not a new concern. In the United States, our very own Bill of Rights is embedded with privacy protections and, while the word ‘privacy’ isn’t explicitly mentioned in the Constitution, the right to privacy has been frequently expressed in its provisions. A little over a decade ago, concerns over private data collection were ramping up, wherein a search of one of the most comprehensive business databases, ABI/Inform Global, for the word “privacy” brought up over 520 scholarly journal articles, essentially all of them written about either the risk posed by the commercial collection of data or concerns about how peoples’ information is safeguarded (Langenderfer & Miyazaki, 2009). Today, in a world where data accumulation is considered by some to be the next frontier, these concerns are more relevant than ever.

A counterargument by proponents of Big Data is that the data that is being collected from users is de-individualized and therefore should give consumers enough anonymity to feel that their data is safe, and their identities are protected. The process of de-individualization refers to the removal of details in a data set that connects said data to an individual person. Big Data, while de-individualized, writes Andrej Zwitter (2014), is far from anonymous. Data collected by analysts are used to find out our, “shopping preferences, health status, sleep cycles, moving patterns, online consumption, friendships, etc.” says Zwitter (p. 4), and with that information consumers can be targeted through their information to consume or behave in a particular way. When it comes to data, while de-individualized, there is cause for concern about one’s privacy (Zwitter, 2014).

Algorithm Bias

It is clear Big Data offers some serious firepower to the arsenals of UX designers through enormous amounts of data. In addition, it allows for companies to use retargeted advertisements

to help close sales. There's also an argument to be made for it in terms of its use in UXD as it provides a seamless and personalized ad experience for users. However, in an article written by Baruh & Popescu (2015), they discuss an opposing outlook that argues there is a significant amount of internet users that feel the loss of privacy they perceive after identifying items from their browsing history in unexpected places while browsing the internet actually detracts from their overall user experience. In the same way that someone might choose to buy from a business that is proven to be environmentally conscious, many consumers may be inclined to buy from companies who demonstrate that they value consumer privacy. Some users might completely quit using particular services on the internet or even internet-connected devices in general due to these same privacy concerns (Richterich, 2018). In addition to a drop in potential consumers, this withdrawal of privacy-concerned individuals from the digital marketplace can lead Big Data companies to develop and purport dangerous biases (Richterich, 2018).

Volunteer bias is defined as "Participants volunteering to take part in a study intrinsically have different characteristics from the general population of interest" (Brassey, Mahtani, Spencer, & Heneghan, 2017). In psychological research, investigators' awareness of volunteer bias is crucial to ensure the results can be externally valid. Similarly, algorithmic bias, as defined and elaborated on by Richterich (2018) in the chapter "Big Data: Ethical Debates" of her book *The Big Data Agenda*, refers to the idea that data collected from users of the internet, digital marketplace, social media, etc. through the use of computer algorithms doesn't always obtain results that provide an accurate representation of the general public. When it's considered that there is a portion of the population that does not use the internet or a choosing of its various services due to privacy concerns, users' expectations of privacy are likely skewed to appear as more indifferent than in reality (Baruh & Popescu, 2015). There are also a great number of

people with limited-to-no access to technology whose information and data, while limited, is still collected and whose say in the matter of data privacy is either not considered or purposefully ignored. If someone doesn't own a computer and relies on public computers at libraries or the computers of friends, then they have little say in the protection of their data as it's more difficult to install privacy programs or be more selective with their web browsers. The ethical issues of bias that arise due to the exit of privacy-concerned-consumers, absence of individuals who lack access to technology, and the development of systems based on those biases to collect, distribute, and profit from the data harvested from all internet users should not be taken lightly (Baruh & Popescu, 2015).

There are many benefits to the use of Big Data by UX designers such as increasing sales and conversion rates on a website. The massive amounts of data that is collected and finely categorized to optimize advertisement audiences is an incredible tool for UX designers and digital marketers alike. However, this collection of data, with users' profiled identities attached, is nothing short of problematic. The security and privacy of users need to be prioritized when it comes to the storage and use of this data. From a UX designer's perspective, cookies are a blessing. The ability to facilitate a smooth, enjoyable experience while surfing the web is something every UX designer wants for their users, however, the consequences of their use must be considered and the importance of making ethical decisions with this data cannot be understated.

Social Responsibility

With the understanding of different techniques and concepts of UXD, it would appear that a great deal of responsibility falls on the shoulders of UX designers to create ethical designs.

Using visual hierarchy, google analytics, cookies, and retargeting are all important tools that need to be used responsibly to create pragmatic user interfaces. However, how much responsibility also falls on the user as a consumer? In this section, I will explore the different ways in which both design shapes society and how society shapes design.

Does design shape society? Don Norman's quote outlining the expansive influence of design in our everyday lives lends itself to the argument that designers have an ethical responsibility to consumers as shapers of society to consider the social impact of their designs. Design has an impact on lives, whether intentional or not, and effort on behalf of the designer should be made to ensure that the negative consequences of their designs are limited, if not eliminated. One example of intentionally unethical design comes from an article by Tromp, Hekkert, and Verbeek which mentioned overpasses over roads on Long Island, New York that were purposefully designed to be too low for public transit buses to make it through, effectively blocking access to those who rely on public transportation. These phony bridges were used as barriers to keep those from lower socioeconomic classes from entering the park by those in political power. Another example mentioned, this time about unintentional consequences of design, was how the popularity of microwaves made individual meals so much easier to cook that coming together for family dinners is less prevalent today. The authors mention that this is likely the case due to a large combination of variables, and just because a home has a microwave doesn't mean families will abandon dinner traditions. However, an important point they make is that "a product is not a neutral intermediary, but a mediator that actively mediates the relation between a user and his or her environment" (Tromp, Hekkert, & Verbeek, 2011). Design actively changes how we interact with the world around us, for better or worse, and it is incredibly important for designers to design with regard to empathy, ethics, and social wellbeing.

Does society shape design? Consumers, through their purchases, engagement, or lack thereof, are more than capable of shaping the world around them. While buying a single SUV over a more gas efficient vehicle will not single-handedly destroy the environment, the cumulative habits, concerns, and perceived expectations of consumers drive the decisions made by the corporations who sell to them. According to a chapter called “Electric Vehicles” from a book titled *Driving Change: Travel in the Twenty-First Century* by David Metz (2019), interest in electric vehicles, concerns about carbon emissions, and higher mpg expectations from consumers has begun an industry-wide shift to electric vehicles by auto companies. While progress is slow, consumer interest compels it forward. However, SUV sales have also skyrocketed in the past few years, and the market has responded accordingly by producing more SUVs and larger vehicles (Metz, 2019). It is also important to note that moral expectations change with the context, culture, and time in history. Seeing someone litter wasn’t considered socially unacceptable more than half a century ago, but after time, concerns for the environment, and the knowledge that individual decisions accumulate into large-scale consequences, has caused moral expectations about littering to change. The days of socially inconsequential purchases have come to an end (Tammelleo & Lombardi, 2014). Similarly, UXD is also shaped by what users chose to buy, look at, engage with, or not engage with. If it was discovered that users’ eye movements scanned web pages in a U-shape instead of an F-shape, designers would likely adjust their web content to suit consumer behaviors. In this way, consumers share credit for shaping the content, services, and products they encounter online.

Does design shape society? Or does society shape design? Does the responsibility of good, ethical design fall on consumers or the designers themselves? The answer to these questions seems to be somewhat of a combination of both. There is a clear intervention by

design, and therefore designers, that affects countless aspects of life for people across the world. Whether intentionally or not, there is a responsibility on behalf of the designer to consider the effects of their designs before putting them out into the world. Society, being made up of consumers, also plays a role in the development of design. Without demand, there's no supply. Consumers can actively shape what designers create through their purchases, expressed interest, and expectations. Through analysis of sales, market research, and accumulation of user data, companies are able to discover the wants and needs of consumers. With that information, designers attempt to align their creations with those wants and needs. However, the accumulation of data doesn't come without its own ethical issues.

Conclusions

User Experience Design as a field, being in its relative infancy, is undergoing a great deal of growth and change. The developments of new concepts, techniques, and methods for designing functional user interfaces is occurring in real-time, with their consequences being relatively unknown. In this time of excitement and uncertainty, it is important to remember age-old core concepts of design ethics in terms of our social responsibility as designers as well as consumers. It is also crucial that we think creatively and empathetically as we design to avoid creating new problems. UXD's recent marriage with Big Data has immense potential to create amazing catered experiences for users, however, the issues with privacy and data ethics need to be addressed. Focusing on the balance between good design and great ethics is paramount to ensure that users have the best experience possible.

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Visual Hierarchy Example. https://i.imgur.com/nvfdd0v.jpeg