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Individualization, information asymmetry, and exploitation in the advertiser-driven digital era

David J Park, Florida International University

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Abstract

In response to the massive growth in online advertising and individualized content, this article analyzes the tactics and technologies of commercial surveillance, with particular attention to online price customization in the United States. It argues that these strategies exploit online users and erode consumer agency, while exacerbating pre-existing economic inequalities. It also details the astonishing growth in online data collection, advertising, overall consumption, and e-commerce revenue during the past few decades. The private sector collects and sells user data to businesses and advertisers, who in turn use the data to individualize content in order to more effectively advertise, set prices, and sell goods and services. These developments are based on the exploitation of online user labor, which extends into consumer exploitation during online price determination and purchase processes. The results of this exploitation tend to maximize the capital extraction employed by those who already possess the means of production, which in turn heightens their power and influence within society. The article concludes that this process exacerbates economic inequalities while doing little to enhance democratic governance, as those with more capital often have a disproportionate political influence.

The future belongs to marketers and media firms
Joseph Turow (2011: 5)

The 1996 U.S. Telecommunications Act helped govern telecommunications, internet access, and information services in the U.S., while serving as a model for liberalizing telecommunication markets worldwide (Winseck, 2016). The liberalization of the internet assisted in the development of online advertising, retail sales, and consumption, while solidifying an explosively profitable new industry in data mining, the purpose of which is to better persuade and influence individual online purchase decisions (Turow, 2011). As the digital era rapidly developed to a point where the extraction and sale of personal data for advertising purposes became standard; individualized content, advertisements, and prices were made possible by increased commercial surveillance. This individualized online content, based on the surveillance of online users through mobile phones, computers, and tablets can more effectively target and engage consumers than print and broadcast media.

This article examines online business surveillance and individualized pricing tactics in the advertising-driven digital era. It asks, what will their effect be on consumer sovereignty and general economic wellbeing in relation to overall socio-economic trends? While this article focuses primarily on the United States, the consumer ramifications for data mining and individualized targeting have global implications. Different online pricing schemas based on consumer surveillance are already established in Europe, with 40 % of online retailers and mail-order companies in Germany offering variable pricing (LBBW, 2017). Meanwhile, industry experts in the UK are predicting that fixed prices for consumer goods and services will be virtually non-existent within a few years (Morley, 2017).

The article initially examines scholarly debate on the potentially empowering and liberating aspects of digital technology. It looks at individualization and the internet's relationship to power, class and economic inequalities. Next, it describes the incredible growth in online advertising, overall consumption and e-commerce revenue during the past few decades. These trends illustrate the overall success of the sales effort within the digital era. The remaining sections constitute the main elements of analysis. They examine how commercial surveillance, tactics and technologies interact with online users, as well as how they influence consumer sovereignty and agency [1]. Particular attention is paid to price customization, which creates unique online prices for different people who view the same product. Such developments are seen to exploit online user labor and consumer agency, as well as exacerbate economic inequalities. The overall effect of these trends is then considered in relation to democratic governance. From the diversity of perspectives within the political economy of communication, this article falls within the critical strain of the field as described by Winseck (2016).

Theoretical perspectives on technologies, inequality and individualization

Few new technology theorists predicted the exploitative potential of the internet. Instead, most believed it would empower users and improve consumer welfare. For example, Negroponte (1996) saw online technology as enabling individuals to filter out what they wanted online, in order to receive information that was most important and relevant to them. Here, users became empowered and in charge of their online experiences, thanks to new technology. Benkler (2006), like Negroponte, also believed that individuals would hold power over their media destinies in the twenty-first century. Shapiro (1999) went further, predicting that the internet would allow individuals to take power away from media and other institutions. Rezabakhsh, Bornemann, Hansen and Schrader (2006) thought it would shift control from supplier to consumer, perhaps by giving voice to the powerless (Fisher, 1998). Similarly, Goldstein (1994) and Pavlik (1998) believed that the internet would allow greater freedom, while Danet (1998) and Clark (1998) saw it as liberating people from oppressive social norms.

Against these utopian theorists, Turow (2011) believed that the internet would not necessarily empower citizens and consumers. He noted that advertisements, information, and entertainment were increasingly customized to individuals, based on a vast amount of online social profile information collected without users' knowledge or consent. He argued that burgeoning information asymmetry would be unlikely to empower internet users. Other scholars saw individualization facilitating the creation of idea cocoons, or internet filter bubbles, where online users would be fragmented and largely stuck in their own information worlds (Pariser, 2012).

Nichols and McChesney (2013) have noted that Google search results for the same entry generate different responses for users depending on their extensive Google profile. Click on a major news site,

and different people get different headlines and stories depending upon their demographics. This highlights former Google CEO Eric Schmidt's observation that individual targeting is 'so good it will be very hard for people to watch or consume something that has not in some sense been tailored to them (231)". This 'me-oriented' system is thought to limit exposure to different world views while creating less empathy and understanding for people of different races, cultures or perspectives (Kolko and Reid, 1998; Sunstein, 2001; Turow, 1997). Such fragmentation would ultimately harm the creation of an online public sphere, an important underlying tenet of democracy (Splichal, 2009).

Other scholars have been interested in the internet's relationship to power, class and economic inequality. According to Dan Schiller (2014), "for decades we were told that ICTs (Information and Communication Technology) constitute a general source of economic uplift. From the theory of postindustrial society, first advanced during the 1960s, to 'new economy' boosters during the 1990s, to their successors today, public discourse has ordained the regenerative benefits of ICTs" (1). Additional theories during the 1960s and 1970s posited that growth in the information and technological sectors would also be able to transcend traditional inequalities and class-relations (Schiller, 1996).

The irony of these perspectives, according to Robert Babe (1994), is that the mainstream economic premise that information should be treated as a commodity is ultimately flawed because information does little to fulfill the definitional requirements of a commodity. This internal inconsistency in turn raises doubts about the validity of mainstream economic approaches that conceptualize information as a commodity. Melody (2006) raised important questions about whether or not the information economy contributes to the maintenance of participatory democracy, especially for workers, consumers, and community participants.

Dyer-Witheford (1999), Ritzer and Jugensen (2010) and Schiller (2014) saw the capitalist mode of production as subsuming ICTs, a process which would shape existing class and social relations. Moreover, Andrejevic (2011; 2015) and Fuchs (2010; 2012a) viewed the internet and social media in such a way that Marxian interpretations of labor exploitation could be extended to the digital world. Here, the appropriation and commodification of digital labor produced economic growth and continued the general class divisions and asymmetrical power dynamics which had been rooted in capitalism. These scholars emphasized that commercialization, exploitation and economic division pre-date the digital era. Positioning the distinctiveness of digital developments within the historical trajectory of the capitalist mode of production informs the analyses presented in this article.

Online advertising and consumption

Capitalism, as a mode of production, has always influenced the types and goals of commercial endeavors, particularly advertising (Baran and Sweezy, 2013). Advertising quickly became deeply and formally subsumed within capitalism's development (Holm, 2017). In the pre-industrial era, advertising was used to support capitalist expansion through its involvement in imperial colonization processes and the slave trade (Rotzoll et al., 1976). During the industrial era, advertising became a necessary means of encouraging consumption by creating demand and new markets (Dyer, 1982; Faraone, 2011; McChesney, 2004). Its goal was to match consumption to production (Carey, 1960; Galbraith, 1969). Industries, through advertising, developed a number of scientific techniques to manipulate desires, tastes, purchases, and consumption decisions. The digital era significantly increased advertising and the use of data for sales purposes (Storey, 2017).

It is clear that advertisers are accumulating significant profits during the digital era. Online advertising is expanding at rates that would make any Wall Street investor jealous, and much of it is propelled by social media. As technology, software, and algorithms advance, the individualization of advertisements, content, and prices become more sophisticated and effective [2]. Price customization grew from these developments and should be viewed as an extension of contemporary advertising capabilities. Advertising in the digital age is a form of elevated corporate surveillance.

At this stage, with advertising growth rates through the roof, digital advertising is expected to become the world's dominant ad form. As the fastest growing global media segment, total spending on digital advertising grew from US$59,619 million in 2008 to $103,806 million by 2012 and is expected to reach $248,661 million by 2018. It grew by a 15.6% compound annual growth rate (CAGR) from 2008 to 2013 and is expected to grow 15.1%, compounded annually to 2018 and account for 65% of the total increase in global advertising up to that date (McKinsey and Company, 2014). In 2008, its share compared to advertising for television, newspapers and other media constituted only 14.6%, but by 2012 that figure had increased to 23.6% (it is expected to reach 38% by 2018). Global mobile advertising revenue rose 83.9% in 2013, and was expected to increase by a projected 34.5% compounded annually over the next several years. According to the World Federation of Advertisers (2015), U.S. digital advertising reached $51 billion (out of $700 billion globally) in 2014, which was more than that received by all print media. By 2018, the value of digital advertising is expected to reach $82 billion annually (eMarketer, 2014a). Total revenues for global advertising company owners were expected to reach $536 billion in 2015, while the U.S. market was expected to pull in $165 billion (IPG Mediabrands, 2014).

The growth of targeted, data-driven advertising in the digital era parallels a significant increase in consumption expenditures and e-commerce. According to the World Bank (2015), U.S. final consumption expenditure increased threefold from $4.5 trillion in 1990, to almost $15 trillion in 2015, while global final consumption expenditure more than tripled from $15 trillion in 1990, to $58 trillion by 2014. These figures consist of expenditures on the goods and services consumed by individuals and communities. As the world has more access to broadband, consumer spending, particularly in Latin America, Central and Western Europe and the Middle East/Africa is expected to increase dramatically (McKinsey and Company, 2014).

Revenue generated from e-commerce in the U.S. is growing at a rate of 16% per year, which is more than three times the 5% growth rate in overall U.S. retail sales (Borgie, 2014). Estimated U.S. retail e-commerce sales as a percentage of total retail sales increased from about 3.5% in 2008, to roughly 9% by 2017 (Census.gov, 2017). This placed U.S. retail e-commerce sales at about $111.5 billion by the second quarter of 2017 (Census.gov, 2017). Worldwide, global e-retail sales in 2016 grew by about 25% compared to 2015, while e-commerce makes up close to 9% of the total retail market. The U.S. accounted for 22.2% of total global e-commerce retail, but this figure is projected to decrease to about 17% by 2020 as more countries increase their e-commerce activities. For example, the UK, China, South Korea, Germany and Indonesia have some of the highest levels of online shopping in the world (Statista, 2017). These figures support the argument that digital information and communications have clearly created growth, akin to that of the nascent consumer industries of the 1930s (Schiller, 2014).

Commercial surveillance

Advertising and revenue increases are closely related to commercial surveillance. New technology mixed with the complete commercialization of the internet has created a massive online and offline surveillance function for private commercial sales efforts (McChesney, 2013). The surveillance of online consumers has become a rapidly growing businesses (Angwin, 2010), even while the world's leading technology companies fail to offer basic disclosures about privacy to their users (Thielman, 2015). As of 2012, the average visit to a webpage "triggered fifty-six instances of data collection" (Schiller, 2014: 129), and that number is likely to be significantly higher today. Significant sources of revenue come from marketing information about subscribers and customers to advertisers, who then decide how to advertise to these people and at what prices. Foster and McChesney (2014), as well as Mosco (2014) call this surveillance capitalism and it has its contradictions and hypocricies. According to Christian Fuchs (2012), "capitalism protects privacy for the rich and companies, but, at the same time, legitimates violations of consumers' and citizens' privacy" (141). Moreover, it can violate basic civil liberties (Schiller, 2014).

There are several companies that surveil citizens, individualize online content, and customize online prices. For example, Acxiom's InfoBase®, the nation's largest repository of customer intelligence, also has the world's largest commercial consumer database containing information on 500 million active consumers worldwide. It includes a majority of U.S. adults and processes more than 50 trillion data transactions a year with about 1,500 data points per person (Singer, 2012). Acxiom helps clients decide the value of people in terms of want or taste, and then determines the sales approach, which can cluster consumers based on an income spectrum to help determine product pricing. Their website notes "Acxiom's data and technology have transformed marketing – giving our clients the power to successfully manage audiences, personalize customer experiences and create profitable customer relationships" (Acxiom.com, 2015: para. 1).

Another company called Next Jump gathers credit-card transaction data from American Express and MasterCard to infer what a person would be likely to purchase, and at what price. Next Jump's network includes 28,000 retailers that specify customer age, location, and income, while its software creates specific offerings to segmented consumers (Lohr, 2009). Another company called RapLeaf, which was purchased by Towerdata in 2013, builds databases on people by tapping voter-registration files, shopping histories, social-networking activities and real estate records (Hubbard, 2010). It has data on over 400 million consumers, over 900 million records and information on 52 billion friend connections.

There are several other companies that work to surveil online users, examine creditworthiness, access public records, census data, tax assessments, telephone directories and county records. They also have the ability to find individual zip codes and to map age, race, income, gender, degree of education, television and internet viewing habits, geographical information, social information and other statistics, Put simply, immense data is gathered on citizens in order to create individualized marketing messages and customized prices. Some of these companies include: BlueKai, TowerData, Invidi, eXelate, Next Jump, Acxiom, Media6Degrees, Mindset Marketing, Experian, Equifax, TransUnion, Reed Elsevier, [24]7.ai, RichRelevance and Omniture. Additional platforms such as AppNexus, Microsoft Ad Exchange, AOL's Marketplace, OpenX, Rubicon Project Exchange, and Smaato, use sophisticated pricing algorithms where prices depend not only on volumes but on advertisers' and publishers' profiles (Gomes and Pavan, 2017).

Technologies and tactics

This section describes additional technologies and tactics that many of the previously mentioned corporations use for surveillance. Some of the most important mechanisms include various forms of price customization, face recognition and tracking software.

Price customization software (PCS)

In 2013, U.S. retail sales topped $4.53 trillion, led economic growth and represented 27% of nominal U.S. Gross Domestic Product (GDP) (eMarketer, 2014). However, advertisers, marketers and new technology companies realized there was still more money to be made by expanding advertising capacity and increasing the online sales effort. Perhaps the most efficient way of doing this is by collecting data through surveillance and online price customization, which are major growth areas for corporate profits (Angwin, 2010). Data mining can increase operating margins by 60% (Manyika et al., 2011), while the overall financial benefits of exploiting data, especially personal data within existing databases, is estimated to be around $600 billion (Mosco, 2014). The use of all kinds of consumer data, from personal income, to the brands of phones and computers people use, are used to individuate prices for numerous online commodities and services.

With the advent of new information technologies, price customization (the charging of different online prices for different people), became regarded as a growth area (Office of Fair Trading 2010). This falls within privacy regulations, and is becoming the evolving norm in the business (Turow, 2011). It can also be defined as "the charging of different prices to end consumers based on a discriminatory variable" (Reinartz, 2002: 55). More simply, it is the ability to charge different prices to different consumers (Ghose and Huang, 2009; Obermiller et al., 2012). As a concept, price customization is analogous with price discrimination (Ghose and Huang, 2009). According to Turow et al. (2005), there are three types:

> First-degree price discrimination occurs when a different charge is tailored to a specific buyer based on what the seller knows about the customer. With the second-degree type, sellers openly offer a variety of fee options—for example, grocery discounts for buying large quantities or lowered bank fees for keeping large account balances—to induce consumers to choose the one that matches their interests or abilities to pay. In third-degree price discrimination, the seller decides what segments of the market have different levels of price sensitivity and charges the groups accordingly. Examples of third degree price discrimination are senior-citizen and student discounts (10).

Price discrimination is similar to dynamic pricing, or behavior-based price discrimination (BBPD), which Caillaud and De Nijs (2014) define as the offering of different prices to different customers based on their pervious purchase history. Dynamic prices can also be based around factors such as geography, time, temperature and other variables. *Perfect price discrimination* is a pricing strategy where each consumer is charged the maximum amount that they are willing to pay per item (Shapiro and Varian, 1999). This is also commonly called the 'pain point', and in an ideal sales world, companies would price products in this way to every consumer. In theory, price discrimination allows the firm to extract full surplus (Shiller, 2013).

Price customization works by performing 'algorithmic profiling' which is a broad aggregation of data that allows companies to discriminate against consumers by putting them into specific marketing categories (Newman, 2015). These profiling techniques can use credit checks and other mechanisms to customize rates and prices. As one commentator notes, "[b]uilding up profiles over time allows

firms to assess consumers' price sensitivity and then to start marketing campaigns either to individuals, or more likely, to segments that have varying degrees of willingness-to-pay" (Reinartz, 2002: 58). Some of the variables that algorithms analyze to create customized prices include: the kind of operating system/browser, the account on the site, and the history of clicked and purchased products (Hannak et al., 2014). Clicks, mouseovers, swipes, voice commands, cookies and beacons are also used to track people in order to further gather data. And, online ad networks, data exchanges and data providers help boost advertising revenues by providing even more information about individuals (Turow, 2011).

Companies create assessments as to whether "an individual should be considered a desirable or an undesirable customer, whether a person would receive an ad for a particular product, what the ad should look like, how much the product should cost, and even what the copy should say" (Turow, 2011: 104). This process exploits as much customer data as possible while working to ensure customers are separated and unaware that the prices and deals differ. Price customization is often premised on the idea that a consumer's willingness to pay exceeds the market price. However, these markets are not necessarily competitive and consumer choice decreases under these conditions. Many items that are price customized also entail limited arbitrage, or the ability to resell a purchased item for a higher price. This is particularly relevant with items that have restrictions, like airplane tickets.

Price customization maximizes corporate profits (Elmaghraby and Keskinocak, 2003; Sahay, 2007; Ghose and Huang, 2009; Obermiller et al., 2012), and is considered superior to other forms of consumer capital extraction (Armstrong and Vickers, 1999). For example, according to Tanner (2014), big data and price customization have helped insurers sell at prices that have increased the maximum lifetime profit per customer by hundreds of millions of dollars. One study from Stanford University found that advertisements that could individually target on the basis of ad-viewing alone generated a 16% increase in total potential profits. If an advertiser targets specific consumers, "profits are higher under all ad and price targeting scenarios considered" (Tuchman et al., 2015: 6). Another study by an economics professor at Brandeis University found that Netflix could nominally increase its profits by using demographic data to adjust individualized prices based on income, as well as race, age, geographic location and family size. If it used another 5,000 web browsing variables, such as time on the internet (in particular during the day on Tuesdays and Thursdays) and whether or not consumers visit Wikipedia, Netflix could increase its profits by 12.2 % (Shiller, 2013). When these variables are implemented, the consumer estimated to have the "the highest value for Netflix would face prices about 40% higher when prices are tailored compared to when they are not" (Shiller, 2013: 16). Unfortunately, companies do not disclose working details about PCS easily and locating recent data on its overall economic impact is particularly difficult [3]. Nonetheless, one estimate by Jupiter Communications in 2004 placed the value of price customized e-commerce transactions at $7 billion dollars (Reinartz, 2002).

It is important to note that these trends are happening without public input, participation or consent. A recent survey noted that 68% of respondents did not like individually-targeted ads, while another poll indicated respondents did not want to be tracked online (Fuchs, 2015: 200). According to Turow (2011), 62% of respondents thought it was illegal for online stores to charge different prices for various people at the same time of the day. In fact, evidence suggests when people realize that price discrimination is legal, they become angry at the businesses and the government for allowing this. They simply do not approve (Obermiller et al., 2012).

This is interesting because consumers may accept spatial differences, where prices for the same item in an identical chain store may differ depending on the region and/or demand among other

influences. Consumers may also accept temporal differences, where prices may vary according to the time of day or year, or fluctuations in demand. However, with spatial differences there may be increased costs affiliated with the transportation of the items. With time-based price differences, customers may realize that prices can change depending on the season, available floor space, or demand. With eBay, for example, participants realize they are partially setting the prices among themselves by bidding.

But why should consumers reject different online prices for the same good or service? It is important to recognize that eBay and similar sites enable consumers to compete among themselves while having some say in the price. Price customization is completely different in that it treats individuals unequally and therefore discriminates based on personal information.

Industries using price customization software

An increasing number of industries are using price customization software. It occurs in the travel, textbook and pharmaceutical industries through the differential charging for tickets, books and drugs, particularly in the overdeveloped wealthier countries. Hannak et al. (2014) note that it frequently happens online among at least four general retailers and five travel sites. Another study that examined 200 stores, such as Amazon and Staples found that the difference between customized and non-customised prices can vary as much as 166% (Tanner, 2014). Andrew Fano, an Accenture consultant, notes that at least six of America's ten biggest web retailers customize, but it is very difficult for shoppers to spot when it happens (Personalizing, 2012). Cheaptickets, Orbitz, Expedia, Hotels.com, Home Depot, Staples and Travelocity have in the past, or continue to practice price customization.

For example, Staples utilizes online price customization by estimating consumer locations and distances from actual stores (Homa, 2015; Valentino-Devries et al., 2012). If there are competing stores close to the online consumer's location, the business would be less likely to increase online pricing. Lexis-Nexis, which provides data services and information, sells to nearly every user at a different price (Shapiro and Varian, 1999). Victoria's Secret and other firms create different catalog prices based on average income differences across zip codes (Obermiller et al., 2012).

Airlines and travel sites are also expanding their use of price customization. According to The International Air Transport Association (IATA), by mid-2015, a total of 24 airlines were participating in price customization, or had announced their intention to participate. The IATA prefers to call price customization New Distribution Capability (NDC) schemas (IATA, 2015). Travel sites are very likely to use price customization, and often ATM users are given higher prices than non-ATM users (Hannak et. al, 2014).

Face recognition

Besides price customization software, stores are also using facial recognition software to correlate customers with their spending records (Salinas, 2013). Often associated with behavioral marketing, the technology works by analyzing video of people's faces as they enter a business, taking measurements to create a numerical code known as a 'face template' before checking it against a database. This software is useful for identifying celebrities, wealthy customers, or other individuals that can afford high end products. If it is a match, the program sends a message with specific information, including purchase history, to one of the salespeople. These customers can receive special treatment and individualized prices.

Similarly, the NameTag app allows users to scan photographs of strangers and then see information about them, including their occupations or social-network profiles. This information can

then be used to determine the level at which prices should be set. With the FaceFirst Retail Facial Recognition software, one of the goals is to "keep repeat customers coming back and spending more" (FaceFirst, 2015, para. 1). This software, now used in eight countries around the world, was originally designed to aid law enforcement, but is now used to tell sales people exactly how much money customers in the database spend (Rocca, 2015). Facedeals is another example. It enables Facebook users to be offered special deals in retail stores that use the facial recognition software. Shoppers can be targeted with in-store individualized advertisements just as their behavior patterns are collected and integrated with loyalty programs. The purpose of this software is to increase bottom line business profits (Allevate, 2013).

Tracking, advertisements and prices

Many stores are using other technologies and digital tactics to track, assess and create prices for consumers. The retail store Nordstrom at one point tracked its customers through Wi-Fi signals on their smartphones (Salinas, 2013). Food manufacturer Mondelez International is working on 'smart shelves' that can show targeted messages to specific people and demographics when they look at goods on display. If the system identifies a middle-aged man, it will offer a QR code discount voucher, while for a teenage girl who picks up a soft drink, it will display the message that the drink only contains one calorie (Rubens, 2014). Facebook also partnered with a company called Datalogix, which tracks what people purchase in off-line physical stores. Digital ads in physical spaces can also change with tracking information that automatically determine consumer likes and spending abilities.

These digital advertisements are created by the Microsoft Corporation. Their "sensors can include capability for image processing, audio processing, light sensing, velocity sensing, direction sensing, proximity sensing, face recognition, pose recognition, transaction recognition, and biometric sensing, for example. A customer component analyzes the information and generates a profile. Advertisements selected for presentation target the customers as they walk near a presentation system in the store" (Web-based targeting, 2008, para. 1). These sensors are also used by law enforcement, in sports stadiums, retail outlets and churches (in the latter case, regular attendees are identified and asked for financial donations) (Hill, 2015).

It is important to know that individualized content and advertisements are not limited to sensors, stores, Google or social media. Television ad markets also allow advertisers to target advertisements to specific consumers based on the corporate surveillance of their previous product purchase patterns and their ad viewing behavior (O'Connor, 2014; Perlberg, 2014). Digital streaming and set-top box technology now make television sets individually addressable through IP-addresses or unique set-top box identifiers (Tuchman et al., 2015). Companies, such as Nielson Catalina Solutions do this by merging credit card data from shopper loyalty cards with TV viewership data in order to provide advertisers and networks with more detailed behavior-based profiles so that viewers can purchase consumer packaged goods (Tuchman et al., 2015). In addition, many marketers examine emotional states closely and target people for monetary extraction when they are considered to be emotionally vulnerable, which is Monday mornings for women (Taylor, 2014).

Online labor and consumer exploitation

Exploitation is inherent to capitalism and occurs when those with the ownership of production exploit their workers by selling or trading the manufactured commodity at a price level higher than the workers' paid wage (Saad-Fihlo, 2003). There is little doubt that those who develop surveillance

technology are exploited, as are the laborers who use the surveillance technology to gather and sell online user data. However, scholars disagree as to whether online labor sold in the form of data is to be considered coerced, alienated or exploited (see Arvidsson, 2011; Arvidsson and Colleoni, 2012; Andrejevic, 2011, Fuchs, 2012a; and Hesmondhalgh, 2010). This article considers 'online free labor' to be exploited, and is therefore aligned with Fuchs' (2010; 2012a) and Andrejevic's (2011; 2015) efforts to explain how this occurs. While they largely focus on how online user labor is exploited, I will consider how exploited online user labor is used to determine individualized online prices, a process which can further exploit consumers at the point of purchase.

Digital exploitation occurs through the collection and commodification of online user data by corporations like Google and Facebook. The data is subsequently sold to advertisers or other businesses for profit. This means that the more users do online, the more revenue search engines and social media make as a result of this hidden system (Fuchs, 2012). In essence, the basic strategy of the social media economy is to 'crowdsource' value production to unpaid users (Fuchs, 2015). The user labor involved in establishing consumer data is not adequately compensated and is thus exploited. In this context, most profit-oriented social media, such as Facebook and YouTube, are almost entirely financed by advertising (Fuchs, 2015). Users seriously underestimate the economic value of the data they share with Google in exchange for accessing their services. In essence, Google exploits user ignorance to turn profit (Newman, 2014).

Exploitation can also be experienced by consumers who buy an online item or service at an individually customized price. Andrejevic (2015) suggested that value-generation processes should be expanded to consider the "role played by user data" (6). Now, value via pricing is determined through the exploitation of online user data generated through surveillance. This is essentially a digital version of Marx's 'transformation problem' [4], whereby values are converted into prices of production (Morishima, 1973). While Marx was interested in labor rather than pricing, the method and amount of capital extracted from online labor is unique within digital settings. Unpaid online labor can now determine customized pricing. It is a relatively new development, as Marx viewed the exploitation of labor as occurring "before the selling of the commodities" (Fuchs, 2012a: 634).

Digital price determination processes can be regarded as exploitative for at least three reasons. First, "exploitation is not simply about profit, but also about alienation" (Andrejevic, 2011: 283). In this sense, consumers relinquish and lose control of their own productive capacity and do not know the full value they have added to online commodity or service pricing. Exploitation of labor in this sense occurs when the surplus value created through labor is allocated without the consent of the workers. They do not get to choose who can purchase their data or what is done with it. Alienation ensues when their own participation has been turned against them. They become more dependent on technology that excludes them from the resources that enable consumer agency. Second, the digital transformation problem fits with Wright's (1997) understanding of exploitation because the online setting of individualized pricing is dependent on the appropriation of information which is extracted from online labor. This information is extracted under an online structure of private ownership that turns information into a commodity. Such information is held "captive to and conditioned by the perennially exploitative processes of capitalist exchange" (Burston et al., 2010: 219). Third, another development based on user exploitation that can determine pricing is value co-creation. Here, the online consumer unknowingly helps create commodity value by contributing to its production (Zwick et al., 2008). The seller enlists unpaid customers to channel their knowledge and taste preferences into product and marketing attributes, and then charges them for their own work. Commodity value becomes partially based on the consumer's exploited online labor (Zwick et al., 2008). Ultimately,

the result of the digitally-based price determination process founded on the exploitation of online user data through surveillance is seen to maximize surplus value (Armstrong and Vickers, 1999; Ghose and Huang, 2009; Obermiller et al., 2012).

Exploitation can also occur in oligopolistic and monopoly industries, where a lack of competition creates a disproportionate economic and market advantage. In the digital industries, for example, Google, which is owned by Alphabet Inc., controls 70% of the search engine market and 97% of the mobile search market. Amazon sells between 70% and 80% of all online books, while Microsoft continues to be used on 90% of all computers (McChesney, 2013). In addition, iTunes and the iPad dominate their respective markets while eBay and Facebook enjoy monopolistic power as well. Of the big five technology companies, Alphabet, Inc. is described as an advertising company first and foremost and earns 88% of its revenue stream from advertising, while Facebook earns 97% (Dunn, 2017). Apple and Microsoft earn most of their revenue from selling items that capture data and advertisements, while Amazon is an e-commerce company that earns most of its revenue from selling products (Dunn, 2017). Microsoft earns about 9%, or $7.65 billion of its $85 billion revenue from advertising, while Amazon also earns about 9%, or $12.51 billion of its $136 billion revenue in "web services" (Desjardins, 2017).

The online surveillance, data collection and price discrimination practiced by these and other companies seem to function most efficiently under monopolistic and oligopolistic conditions. The monopoly status of social media firms, such as Facebook and search engines, such as Google means that consumers share their data at too low a price (Newman, 2014). One industry-oriented estimate placed the value of personal data to advertisers as up-to $5000 per person per year (Fottrell, 2012). This suggests that the trade-off for 'free' online services appears to favour the businesses. In many countries, Google and Facebook do not have serious competitors, so they can collect information on their users and sell their data at significant rates. Other companies have difficulties competing for potential advertisers because they have not been able to acquire as much consumer data. According to Robert Reich (2015), new technology firms, such as Google and Apple are spending more money acquiring patents from other companies, and also on litigation and lobbying than on research and development. Google is now the number one lobbyist in Washington and their goal is to prevent competition. According to McChesney "the internet monopolists sit at the commanding heights of U.S. and world capitalism" (2013: 131).

Acquiring consumer data from these online corporations can give other oligopolistic industries, especially in the retail and service industries, valuable marketing information and, potentially, more market power. According to NASDAQ: IAC Publishing's Investopedia (2017), which considers itself the world's leading source of financial content on the web, oligopolistic market structures also exist in the following industries: Cable Television Services, Entertainment Industries (Music and Film), Airlines, Oil and Gas, Pharmaceuticals, Computer & Software, Cellular Phone Services, Smart Phone and Computer Operating Systems, Aluminum and Steel, Mass Media and Auto manufacturing. The goal with these and other oligopolies is to maintain the profit benefits that price collusion offers. Indeed, oligopolistic market structures mean that Americans are spending more than needed on banking, health insurance, food and other services and items while innovation appears stifled (Reich, 2015).

Advertising can also enable manufacturers to gain market power, which allows them to raise prices and increase profits (Bagdikian, 1989; Borden, 1942; Shiller 2013). Ben Bagdikian (1989) notes that an increasing number of economists regard advertising as "a major instrument by which big firms keep prices artificially high… advertising is used by many industries to maintain their power

in the economy" (125). The increased prices within these monopolistic/oligopolistic industries have in the past cost society between $10 and $20 billion per year. In this sense, advertising "significantly affects both the allocation of resources and the distribution of wealth" (Norris, 1989: 111). These consolidated market structures, aided by advertising, efficiently extract surplus for those who own the means of production.

Clearly, private ownership, concentrated markets and the use of data extracted from exploited online labor harms consumer sovereignty and agency while redistributing consumer capital to online businesses. In the digital era, it is difficult to know when, how and why online data and price customization are being used for these purposes. Information is clearly the capitalist currency of the online information economy. When companies, through data mining and individual behavior profiling know more about consumers than those consumers know about their marketplace options, this rising information asymmetry contributes to overall socio-economic inequality (Newman, 2014, Stiglitz, 2002).

Price customization existed prior to the industrial revolution and mass production, although price was mostly determined by costs rather than the seller's perception of the buyer's capital, data or location (Oberviller et al, 2012). However, for centuries sellers in markets around the world have set, and continue to set different prices for products based on perceived buyer potential. Historically price discrimination could happen through bargaining between the buyer and seller. Even today in the non-digital world, when one purchases a car from a dealership, the price may vary depending on the seller's perception of the buyer. At the same time, the consumer also has some agency in terms of defining the terms of the sale. But within the new digital advertising and sales regime, consumers' historic ability to haggle is limited, and consumer agency is decreased.

This online elimination of the consumer ability to bargain for goods echoes other corporate developments that have sought to decrease consumer agency. For example, when the music industry invented mp3 music files, it also eliminated the consumer's ability to resell the product (Park, 2009). This was important to the music industry as it lost profits from second-hand sales of music. If there were no used mp3s for sale at cheaper rates than new mp3s, consumers would be forced to purchase new and more expensive mp3 files.

In essence, with a few exceptions, the system of online price customization means higher overall prices for consumers compared to any model where prices are competitive, openly displayed and advertised (Ellison and Fisher-Ellison, 2009). One study found that average prices in mass markets where price customization did not exist were lower than in markets with targeted online advertising (Newman, 2015).

This means that consumer surplus is redistributed to those who own the means of production partially as a consequence of their surveillance and pricing capacities. Andrejevic (2011) sees surveillance as part of this exploitative process because it further extends the social relations that enable the few to profit from the actions of the many, which in turn further exacerbates class relations. He notes that, "given its importance to the commercial development of the online economy, surveillance has a central role to play in any account of its distinctive forms of exploitation" (281). Moreover, "a form of class stratification emerges in the distinction between those who control and operate the means of communication and sociality, and those who trade their personal information for access to them" (Andrejevic, 2015: 10).

This asymmetry of information means power is conferred by data mining corporations to online sellers at the expense of consumers. Asymmetry of online information means that the exploitative processes described earlier function best when consumers are unaware of what is happening to them.

In order to work well, price discrimination must be secretive and difficult for online consumers to detect (Hannak et al., 2014). Asymmetry occurs when consumers do not know that prices within multiple industries and online shopping sites differ for the same item, according to who is looking at it. It also happens when consumers do not know that they may be charged more for items than other people based on the data that corporations and advertising firms have about them. In addition, when individualized advertising techniques draw upon personal tastes, backgrounds and preferences to potentially manipulate consumers (in the absence of any legal compliance to inform them that this is occurring), an information asymmetry eventuates that is economically advantageous to capital.

Nonetheless, this asymmetry can only operate if algorithms function effectively, and if consumers do not decline the transaction. Some consumers may well be aware of how data collection and price customization work, others may not. Those that do, may resist the purchase or choose to buy the item for a number of reasons. Moreover, for active consumers with more time, websites that surveil online retailers and compare prices may also assist buyers by finding the best price, whether or not it is customized.

Exacerbating class and economic inequalities

Systemic economic inequalities existed in the offline world well before the internet, and the contemporary wealth gap should never be solely attributed to online activity. However, the evolution and expansion of online activity does not appear to narrow the widening of economic inequality. Consumer exploitation and the corporate ability to extract increasingly higher sums of money online, particularly from lower income groups, is troubling as the U.S. has one of the worst income and wealth distributions on the planet (Picketty, 2014).

Research on price discrimination in the advertiser-driven digital era shows that online users are exploited and that this contributes to the polarisation of societal wealth. Initial research indicates that lower socioeconomic status (SES) consumers are the most exploited, while those with the ability to consume the most can receive discounts. They are likely to pay less over time as a result of various loyalty, or other programs that enhance consumption. In these cases, price customization can benefit those who have more money. This is not surprising as 10% of U.S. households account for nearly half of all consumer spending (Hirschman, 2011). They are a valuable group to marketers.

At this stage, lower SES households appear to be paying more for online goods at some large retail chains compared to higher SES households. According to a study from the *Wall Street Journal*, price customization software tended to create lower prices for higher SES areas, while providing higher prices for lower SES areas. In the study, the weighted average income of ZIP Codes that mostly received discount prices was roughly $59,900, while the average income of ZIP Codes that saw generally high prices was $48,700 (Valentino-Devries et al., 2012). Moreover, Newman (2014) suggests that

> …online profiling based on user data allows seedier companies, from subprime mortgage lenders to payday lenders, to target the most naïve and vulnerable potential customers and facilitates new forms of price discrimination even by more legitimate firms that allows those companies to extract the highest potential price for goods and services from each customer. The result is harm to those victimized consumers and a more pervasive increase in economic inequality (857).

Price customization software has also enabled the insurance industry to extract immense profits per customer (Tanner, 2014). Consumer goods can often, but may not always follow the same pattern as these industries.

While PCS can also target the wealthy, by pricing online items much higher once the user data indicates the shopper has more money, this is not necessarily the case. According to an interview with Nathan Newman (2015, personal communication):

> There is no reason that data analysis should lead to the rich paying more… the wealthy usually have more buying options so they are often charged less… Look at credit for example; the wealthy are usually offered lower interest rates and better perks on their credit cards, since banks may make less on each transaction but make more profit given a higher volume of total transactions. The cheapest rooms in Vegas are available to the wealthiest gamblers who are usually given free rooms to encourage them to come and hopefully lose money at the tables.

Expanding on Newman's comments, Lewis (2013) notes, "once a redistributive philosophy became unfashionable, the machinery of consumer capitalism – which is not built for altruistic purposes - was set to push its productive energy towards the 'haves' rather than the 'have nots'. Its mechanisms were directed towards those with the most money, *not* towards those most in need" (59). Moreover, because there are few studies that have examined the role of gender, race and other variables with regard to online price customization, it is unclear whether or not price discrimination based upon the targeting of specific groups or classes is legal (Hannak et al., 2014).

While upper SES people seem to benefit from PCS, they also constitute the group that owns the means of production for the software that enables the surveillance of online consumers. Thus PCS and related advertising practices actively advance the transfer of wealth to upper SES groups (Newman, 2015), thereby increasing their power and influence in society. Wealthy elites and the comfortably off can lobby in support of policies to sustain this system. Consequently, the control over data collection and price customization exacerbates economic inequalities. The associated transfer of wealth to corporations is not limited to those in the digital sector, it also involves the non-digital manufacturing and service sectors. The latter use individualized data to better customize and advertise in the hope of increasing sales and profits.

Comparing recent lists of the wealthiest industries and people to the lists of thirty years ago reveals that major corporations in the digital industries have only recently emerged. Of the world's wealthiest 200 billionaires, based on their net worth, the number who have accumulated their wealth from Telecommunications, Media and Technology, otherwise known as the TMT sector, amounts to 46. Half of the world's wealthiest top-10 were involved in this sector. Of the 46 wealthiest people, the majority came from the technology industry (Information Observatory, 2016). Of the largest U.S. corporations from 2012, thirteen of the top thirty were from internet and digital-related industries that are largely considered either oligopolistic or monopolistic (McChesney, 2013).

Many of the people within these industries can be considered part of the newly minted population of global millionaires. This general population increased from 8.7 million in 2005 to 13 million in 2016. The total number of ultra-high-net- worth individuals (UHNWIs) grew by 61 % from 2005 to 2016 (this constitutes 187,500 people with $30 million or more in net assets, excluding their principal residence). These individuals hold net assets worth around U.S. $66 trillion, which is more than the value of all global equities (Knight Frank Research, 2016). By 2015, 80 individuals had the same net wealth as 3.5 billion people, or half of the entire global population (Milne, 2015).

Implications for democracy

The advertising-driven digital era enables capital to intensify surplus value extraction. This comports with Ritzer and Jugensen's (2010) analysis that capitalism's trajectory continues online as new spaces are created to exploit new sources of profit. In this sense, for developments in the digital realm, capitalism further subordinates activities under the law of value (Dyer-Witheford, 1999). Or, as Schiller (2014) points out, the role of information and communications needs to be squarely placed within the developmental processes of political economy.

This article also suggests that the exploitation of online user labor meshes with consumer exploitation during online price determination and purchase processes. The capitalist, digital mode of production exploits online users (Andrejevic, 2011, 2015; Fuchs 2010, 2012a), and harms consumer sovereignty and agency by undermining the user ability to know when, how and why online data and price customization are being used. It also limits the ability to counter or control how data is used and how prices are formulated. While most people are not forced or coerced to be online, being online is increasingly required of them in order to participate in society (especially in Western societies). According to Wyatt, (2013), without the internet people are cut off from jobs, government services, education and health care. Being cut off appears to exacerbate social, economic and racial disparities, at least in the U.S.

In terms of consumer interactions, the commercialized internet can empower some users as Negroponte (1996) and Benkler (2006) believed it would. But, there does not appear to be a shift of control toward consumers as suggested by Rezabakhsh et al. (2006). In certain respects, consumers have more freedom of choice, as suggested by Goldstein (1994) and Pavlik (1998). Yet at the same time, the commercialized internet's infrastructure creates environments where consumers have fewer choices due to non-competitive market structures and pricing scenarios. Turow (2011) and Schiller (1995, 2014) were correct to note that it would be unlikely for the internet to transcend traditional inequalities and class-relations. However, when Turow (2013) suggested that this new individualized advertising/sales system would reinforce preexisting inequalities, he was only partially correct. This article suggests that private ownership of the online information structure shapes the use of digital technologies in ways that enhance and extent prevailing power relations. To be more precise, the advertising-driven digital era highlights how the price discrimination and online exploitation reproduce and further exacerbate economic inequalities.

Thus, instead of trying to redress social and economic inequalities, advertising-driven digital era is exploiting them. Consumer data collection online, advertising, and in particular PCS further enable the upward redistribution of wealth. Even according to a White House (2015) report, price discrimination "transfers value from consumers to shareholders, which generally leads to an increase in inequality" (6). Exacerbations of these socio-economic inequalities create significant challenges for democratic governance.

Asymmetric consumer information enables those who own the means of production to more effectively extract surplus, which further entrenches class divisions. Societies with enhanced class divisions are less democratic because those with more capital often have an unequal share of power. Robert McChesney observes that "[i]nequity promotes a thoroughgoing corruption of the governing process as wealthy special interests come to dominate, forcing the system to maintain and even increase their privileges further" (McChesney, 2013: 14). These interests are quite pronounced and influential in the U.S. political system. A total of 158 families, along with the companies they own or control, contributed nearly half of the seed money to support Democratic and Republican presidential

candidates, with the vast majority of money going to the Republican Party (Confessore et al., 2015). This group receives significant political and media attention, even though the poor make up a much larger percentage of the U.S. population (Garces and Rendall, 2012).

According to Nichols and McChesney (2013), an important aspect of the democratic process concerns "the redistribution of power from elites to the great mass of people" (255-256). The mechanisms of the digital system that exacerbate inequalities become extremely important as the U.S. slips off the list of fully functioning democracies. The well-known Democracy Index from the conservative Economist (2015) magazine, ranks the U.S. last out of the 20 countries listed as being fully democratic. Once a country falls off the list, they are considered flawed democracies. To address the problem of economic inequalities, one possible solution would be to lobby the Federal Trade Commission to stop price customization as part of a wider strategy to break up monopolistic and oligopolistic markets. This may help decrease surplus extraction by ruling elites and address some nationwide democratic deficiencies.

Author Bio

David J. Park PhD is an Associate Professor in the Department of Communication at Florida International University. He is the author of Conglomerate Rock: The Music Industry's Quest to Divide Music and Conquer Wallets and has published in areas that include media technologies, critical political economy of communication, media and culture, environmental sustainability, consumerism, and international communication.

Endnotes

[1] Consumer sovereignty in the digital era implies an ability to know when, how and why online data and price customization are being used for or against consumers, while agency entails the level of empowerment, or ability to influence, counter or control how data is used and prices are formulated.

[2] While not all advertising is effective, there is a historical macro relationship between the amount spent on advertising and overall consumption, with the increase in consumption paralleling amounts spent on advertising (Park, 2017). For the digital world, a recent Comscore study described by Fuchs (2012) found people exposed to Facebook ads were more likely to purchase products online or in stores compared to those who are not exposed. The most viewed ads are those from the retail sector, which constitute 23% of all viewed Facebook ads.

[3] On numerous occasions the author contacted several corporations that use PCS for interviews but none returned the emails or phone calls.

[4] It is important to note there is a difference between the value and price of a commodity (Fuchs, 2012a). Value results from the production process (meaning working hours, prices of currency), while price is historically a measure of the circulation process, or selling of the commodities. The 'transformation problem' can be addressed by converting the rate of surplus value into the rate of profit and second, by converting the value of the commodity into the production price. The 'transformation problem' and Marx's efforts to accurately price items are much debated and critiqued (Morishima, 1973).

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