THE DYNAMICS OF DIGITAL CAPTURE:
HOW INDUSTRIES TIE AUDIENCES TO EMERGING TECHNOLOGIES

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Panel abstract

In recent years there has been much scholarly and journalistic work about surveillance and privacy (Greenwald, 2014; Lyon, 2015; Turow, 2017). Much too has been written about the consequences of surreptitious tracking, the consequences of unchecked data collection, and the non-transparent, often discriminatory, use of information (Einstein, 2016; Ferguson, 2017; Eubanks, 2018). But while research proliferates regarding how deeply our personal and social spaces are being exploited in the name of corporate and political profits, few studies examine the forces that have guided the "digital capture" that has led audiences to be ensnared in these activities: the ways industries in key sectors of public life get people to adopt new digital technologies that on balance benefit the organizations more than the publics. (For a rare exception, see Zuboff, 2019, Chapter 10). What is needed is an understanding of the dynamics through which sets of organizations turn new digital developments into habits of everyday life that make decoupling from them extremely difficult.

Using various perspectives on this topic, the panel will explore the ways four industries currently rolling out digital technologies have captured audiences into long-term relationships. The captures have happened before serious widespread discourse took place about the costs, benefits, and regulatory options facing individuals and society.

One paper will use a "digital colonialization" perspective (Ricaurte, 2019) that highlights the influence of capitalist imperialism within contemporary political economy. It will draw parallels with the dynamics of mapping and mapmaking during material colonial conquests, and it will illustrate how the digital mapping industry colonizes people around time and space. A second paper will demonstrate how network effects related to adoption of the Common Application created the conditions for this online product to become the primary method for entree into institutions of learning. In driving an exponential increase in applications, the common app laid the groundwork for a marketing engine that fetishizes customer relationship marketing (CRM) technologies to the point of not only constructing teenage college prospects as sales leads and "yields" but also then teaching them to act that way. A third presentation will explore how companies are seducing people to use smart devices that can infer information about the ways they talk and sound while the companies play down the surveillance aspects of the technologies. This "seductive surveillance" dynamic (Troullinou, 2013) helps marketers model ways to discriminate among consumers and erodes citizens' freedom to make choices under the guise of giving them new ways to choose. The fourth contribution presents the growing convergence between emerging technologies and the health sector, demonstrating through case studies how audiences are captured through ambiguous framings that highlight the advantages of health information sharing, but obscure the exploitative nature of pervasive data collection and its use for commercial purposes.

Each presentation approaches the dynamics of digital capture through different theoretical lenses. Taken together, they point to a fascinating form of research that is needed to understand the emergence of various surveillance regimes before they become taken-for-granted parts of the cultural landscape when changes to them can be made mainly at their margins. The papers also shed light on the ways publics lose agency without knowing it, and they point to ways that might be changed.

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DIGITAL MAPMAKING:
DIGITAL COLONIZATION AND THE EXPANSION OF CORPORATE TERRITORIES

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Digital maps have become ubiquitous. They are used to find the fastest route to work, explore new unknown places, plan a trip, and find nearby transit stops and restaurants. They are no longer merely a navigational tool but rather an everyday information utility - and more.

Underneath this utilitarian function, however, mapmaking is neither a value-neutral technical endeavor nor merely the spatial representation of a particular geography. This has been true for a long time. For colonial empires, map-making was an instrument of colonial rule to extract local knowledge by surveying geography and spying on local populations as a means to exercise, manage and control political and economic power over colonial territories (Edney,1997; Hornsby & Stege, 2011; Sutton, 2015) in the creation of a cartographic panopticon (Edney,1997; Harley, 2001)). When Britain marched into its new territories, cartographers were there alongside soldiers, together mapping the boundaries of conquest and exploitation (Laxton, 2001).

Britain's empire came to an end; however, the mapping continues. In the 1990s, the emergence of the Internet saw the rise of digital map-making, this time driven not by colonial empires but by transnational tech firms – Google, and its competitors Apple, Dutch company TomTom, Nokia's HERE – which is majority-owned by a consortium of German automotive companies – and Chinese search engine company Baidu etc. These transnational tech firms have been competing to map and remap the world and turning map-making into an everyday application. What is the nature of their digital-mapping today? How are transnational companies producing digital maps, and for what purposes? Why do they invest billions of dollars in mapping? To answer these questions, this paper will shed light on the political economy of digital mapmaking centered around Google and its competitors.

Today's tech companies don't accompany soldiers across continents; yet they still are exploring and occupying digital territories for political-economic purposes. To understand contemporary digital map-making, historian Ellen Wood's concept of capitalist imperialism (2003) is helpful because it emphasizes that today power operates mostly through the market rather than through military force. This doesn't mean that

capitalist imperialism doesn't need the military, rather, that today's capitalism is sustained through political-economic and military power.

While the everyday utility function obfuscates these power relations, the core technologies of today's digital mapping – Global Positioning Systems (GPS) and remote sensing via satellites and GIS which processes GPS data – are deeply rooted in US military operations. GPS, built during the cold war by the United States Air Force and the Department of Defense, provides geolocation and time information globally which are vital to global military and the building of digital mapping systems. GPS was exclusively used for the military until 2000, when the Clinton Administration commercialized GPS use to boost the US information industry. The US government continues to invest billions of dollars on GPS, spending $1.7 billion in 2020. The US global political economic rivals – Russia, China and European Union – have launched their own GPS to reduce their dependence on the US.

Bolstered by the US military and state subsidies, US tech companies have been mapping both indoors and out, from buildings to streets, commercial districts to transportation networks to power grids – even wild fires – around the globe as they increasingly try to control both the visualization of commercial territories, potential profitable territories, and the digital data and mapping technologies needed for these purposes.

Google Maps and Waze are the most popular navigation tools, heading toward market domination. Camouflaging profit motives with utility, the company marches into digital territories not with armies but with engineers, AI technology, machine learning, cars, drones, camels, and feet. Google extracts information from its own car-collected street images and then layers that with data from 1000 third party sources ranging from national governments' and military satellite imaging data to local municipalities' GIS data to commercial data from developers and other sources from around the world. Beside 7000 paid workers, Google taps into millions of users to update lane closures and construction, crashes, and traffic slowdowns to make the precision of its "real-time map." Concomitantly the company tracks users and where they are, how long they spend in a particular place, and which routes they take.

And when it comes to places where Google doesn't see immediate economic rewards, the company uses persuasive approaches tuned to its geographic targets to recruit volunteer "trekkers" to carry Google's 360-degree cameras and walk around collecting data and images in the remotest parts of the world from Khumbu, Nepal to Petra, Jordan. Google's stunning 3D imagery makes one forget the world of Google and yearn to explore the world.

The company has already mapped out over 200 countries (Google, 2020). While Google intentionally tries to avoid "disrupting utility aspects," the company has never hid its ambition to build a world where every piece of space has Google's digital address. This effort hasn't generated significant revenue yet; but, with deep cash reserves, the

company can afford to take the long view in preemptively occupying its future territorial profits.

Google is charting out its global commercial routes and integrating its maps into self-driving cars, delivery services, tourism and logistics, ushering people and businesses into Google's map of the world. Meanwhile, Google's competitors are trying to map out their own digital territories using their own resources and persuasive techniques.

These transnational tech firm competitors are in hot pursuit to create the perfect map – a digital cartographic panopticon – based on science and data to control, manage and exploit every bit of profitable opportunity over what Gary Field termed their "territory of profit" (Field, G. 2004). Uncovering contemporary dynamics of digital mapmaking illustrates how capitalist imperialism operates and our complicity in political economic power relations which increasingly subjugates us into the marketplace.

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**DIGITIZING THE COLLEGE APPLICANT:
HOW THE COMMON APP PAVED THE WAY FOR ADMISSIONS MARKETING AND
SURVEILLANCE**

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Technology has crept insidiously onto college campuses, from online teaching to digital gradebooks to tracking student movements via their ID cards and the Amazon Dots in their dorms. Less evident is the use of technology for promoting to prospective students and tracking them throughout the admissions process using the same tools as sophisticated consumer marketing companies.

The proliferation of student surveillance technology in the application process and the invasion of marketing onto college campuses is fundamentally tied to the widespread use of the Common Application (Common App). Started from humble beginnings as a mimeographed form to save students time, the Common App has become the 900-pound gorilla of the admission process. It began in 1975 with only fifteen elite schools and was still at only 150 participating institutions two decades later. Applications increased considerably in 2004, however, when the first public schools (SUNY) came on board, and again in 2008 when the "next generation" of the app was launched. These two changes led to a tipping point such that the number of schools using the application rose from 300 in 2007 to over 800 today, evidence that network effects have come into play (Katz & Shapiro, 1985; Farrell & Klemperer, 2005). As more schools joined, the value of membership increased on the system overall because it provided students with the convenience to apply to multiple and different types of schools through a single form, and conversely, this hurt schools who were not on the platform because they became less likely to be part of a student's college consideration set.

This widespread adoption of the Common App changed the relationship between schools and students. Instead of applying to three to five schools, students apply to 10 to 15 schools. College admissions officers can no longer discern if students are actually interested in their institution or if they applied because it was convenient to do so. And while the volume of applications has increased, the size of the admissions offices has stayed virtually unchanged. In just one example, New York University went from receiving 42,800 applications to over 75,000 applications in a 6-years span. To manage this onslaught, admissions personnel look at test scores and high school GPAs (often via computer) to weed out the vast majority of applicants. The Wall Street Journal

confirmed the streamlined review process when they noted that top schools are spending merely 8 minutes on an application.

Students, on the other hand, are led to believe that the college application process entails a "holistic review" and that something as simple as a brilliantly written essay—the cornerstone of the Common App—can overcome mediocre grades and ho-hum test scores. Not likely. These tortured writings are "window dressing," according to a former admissions director (AD) who asked not to be identified. They are a thin ray of hope held out to students who don't have the slightest chance of getting into a top-tier school, while enable colleges to keep their acceptance rates low.

The Common App is just one touchpoint through which colleges interact with an applicant. It begins with standardized testing. The ACT and the College Board, the purveyor of the SAT and the PSAT, ask high schoolers to fill out surveys before they take the tests. This questionnaire is presented to students as helping the companies connect them to the right schools. Maybe, and maybe not. These companies sell their student email lists (and survey data) to colleges. The best estimate is that the College Board makes between $40 and $50 million a year doing this, so there is no motivation to streamline the number of names being sold. From this, the best students get thousands—not one or two thousand, but five or six thousand—emails during their junior and senior years of high school.

These emails are only the beginning of the promotional push. Over the last decade, marketing has become integrated into college campuses like never before. Chief marketing officers (CMOs) are being hired with experience from companies like Pottery Barn and General Mills. These top executives bring their expertise with them. Prospective students—some as young as 15 ad 16 years old—are seen as sales leads, and they are treated as such. Customer Relationship Management (CRM) tools are used to track teens throughout the application process—assessing points for how quickly an email is opened, how much time is spent on the college website, if the student attended a webinar with the financial aid officer, and if they did an overnight on campus.

In this paper I will answer the question: how did network effects lead to the widespread adoption of the Common Application in the American college application process and how was this instrumental in creating the conditions for the commoditization of higher education and a concomitant marketing mentality that turned admissions directors into hardcore pitchmen and teenagers into sales leads and personal branding machines to get their attention?

The paper is based on research for a larger book project that I have been working on for 7 years. For that work, I used a multi-pronged methodological approach. I conducted one-on-one interviews with admissions directors, college marketing personnel, and edtech executives. I attended college marketing conferences targeted to practitioners, participated in dozens of webinars also targeted to this group, and attended college fairs targeted to students. I have analyzed marketing materials—both on- and offline—and

used auto-ethnology, as not only am I a professor but also the mother of a college student.

The fallout from the application digital capture cannot be overstated. Today, the choice of where one goes to college has garnered so much importance as appear to be the make-or-break point of one's life. So much so that the pressure on students has been linked to unprecedented rates of anxiety and depression. These kids are aware that they need to sell themselves to schools as much as the other way around. Regulation exists to protect children against hardcore marketing tactics and yet higher ed marketing occurs unabated, and even with the blessing of parents and administrators. Moreover, high schoolers are pushing themselves even when the possibility of getting into some of these schools is about as good as winning the lottery. That's because the process is particularly stacked against the middle class, something that has come increasingly to light in the wake of Operation Varsity Blues and the Harvard discrimination lawsuit.

This is a work in progress. Over the last five years, in particular, I have seen the number of companies and conferences devoted to the marketing of higher education grow exponentially. I have also seen that there is a huge disparity among colleges in terms of their facility with marketing, though that differential is beginning to close. As their skills increase, it is young, eager adolescents that will be caught in the crossfire.

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SEDUCTIVE SURVEILLANCE AND SOCIAL CHANGE:
THE RISE OF THE VOICE INTELLIGENCE INDUSTRY

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Not fully a decade old, the voice intelligence industry is an emerging internet sector that marketers are building to collect information about individuals from the ways they talk and sound. It is the leading edge of commerce-oriented personalization through bioprofiling. It involves inferring individuals' emotions, sentiments, and personality characteristics from their voices in order to persuade them, often in in real time. The possibility in the not-so-distant future may be to home in people's weight, height, age, ethnicity, and more—all things scientists believe leak through from your voice. The power marketers have to model ways to discriminate among consumers and citizens— and to erode their freedom to make choices under the guise of giving them new ways to choose—is unprecedented and troubling.

The emerging voice intelligence industry involves smart speakers, car information systems, customer service calls, "connected-home" devices such as thermostats and alarms as well as other tools. When you speak, their "intelligent assistants" can draw inferences about you using algorithms generated by artificial intelligence. In the United States and the European Union, the best-known vehicles for such activities are Amazon's Alexa, Google Assistant, and Apple's Siri. In China, Baidu is doing it with its DuerOS assistant, and Tencent has Xiaowei. According to industry observers, Google Assistant, accessed mostly through smartphones and Google Home cylinders, is available in more than a billion devices (Bohn, 2019b) and Amazon's Alexa personal assistant is present in more than 100 million devices (Bohn, 2019a). At the same time, a different though related ecosystem of firms is creating voice initiatives propelled by artificial intelligence in customer contact centers. Amazon and Google, the highest-profile forces in voice today, are not yet using these tools for their maximum marketing potential evidently because they are worried about inflaming social fears around the collection of people's voices. But contact centers, which are out of the public eye and thus more audacious about dealing deal differently with people based on how they talk, may represent the future.

Two key questions stand out about this new development in the United States: How has the voice intelligence industry been able to gain the kind of social traction that has tens of millions of people giving their up voiceprints to so-called "intelligent assistants"? And in the face of this widespread shift to voice bio-profiling, what social policies should concerned citizens advocate to slow the process and implement regulations regarding this new form of surveillance?

This paper addresses these questions based on interviews with 45 industry executives that averaged about 45 minutes; in-depth exploration of trade magazine articles and general news sources; analysis of dozens of voice-industry patents; attendance of a major industry multi-day meeting; and examination of major federal and state laws that apply to biometric surveillance. A key theme is that the rise of voice is the next step in what might be called the never-ending "spiral of personalization' in digital media. A secret worry of internet marketers is that current behavioral approaches to tracking, profiling, and targeting are fraught with challenges for the entire ecosystem. Data may not be up to date, profiles may be created based on multiple users of a computer or phone, names may be confused, and people may lie about their age, income, even gender in the hope of confusing digital marketers.

In response, a furious new industry cycle has begun where companies large and small are trying to shape this next frontier of personalization. Voice is, in the words of consultant Pete Erickson, a "value-added" to the current personalization regime, not a replacement (personal interview). But the industry does see the rise of voice as something of a new beginning where their data scientists can potentially implement methods of artificial intelligence to achieve unprecedented and near-immediate insights into shoppers' identities and inclinations without the fraud and ROI glitches of "traditional" personalization. To people at the leading edge of voice developments the public's pickup of smart speakers, intelligent car centers, and voice-friendly phones along with the rise of voice intelligence in call centers presents an intriguing arena that gets around the current difficulties of knowing the audience on the internet. Not only can individuals be profiled by what they say (their speech) and where they say it, but also by the physiology of their sounds (their voice) that, the belief is, cannot lie. This hope for a new chance at audience knowledge is where a furious next cycle of personalization begins.

The increasing adoption of voice technology devices shows that voice intelligence executives have developed a sophisticated scheme for spreading their technology that can be described as seductive surveillance. Pinelopi Troullinou (2017) coined the term to shed light on the reasons individuals "willingly" participate in activities that allow organizations such as cell phone companies to keep tabs on them. The argument here adapts her idea to suggest seductive surveillance is a corporate strategy that presents target audiences with devices so alluring they will pay less attention (and so less concern) than they otherwise would to the marketing scrutiny and personalization carried out through those devices despite gnawing worries about these activities.

Voice executives employ seductive surveillance to turn people's operation of voice assistant devices into a widely accepted habit. British sociologists Tony Bennett and Francis Dodsworth (2013), building on ideas from the 20th century French sociologist Pierre Bourdieu, contend that an understanding of "the processes through which habits are formed and reformed" must take into account the ways companies, governments and other "material agencies" in the society's field [for example media outlets] shape the mindset and the habits that flow from it. He uses the word habituation to refer to the process through which forces in the society cultivate the creation of habits.

It's not hard from this standpoint to see how habituation and seductive surveillance are linked in the voice intelligence universe. Seductive/surveillance is a dual approach through which companies cultivate people's habituation to using their voice across a range of devices. From the low-cost distribution of smart speakers on "Prime Day" to the spread of those devices in the connected existing home, among new-home builders, car manufacturers, hotels, stores, and even schools, the voice industry is creating a new sensibility that giving up your voice is fun, emotionally satisfying, and natural. Influenced by public relations, general news sources repeat much of this mantra even when they report incidents of privacy invasion and creepy surveillance related to the devices. The overarching press message is a thrill regarding smart speakers and connected homes along with a sense of resignation to the surveillance that come along with them.

"Seductive Surveillance and Social Change" brings together the theories and findings to present and interrogate the dynamics of the new voice-surveillance structures. It describes the policy challenges they present for current US approaches to privacy-andsurveillance regulation ranging from the California Consumer Privacy Act to the Illinois Biometric Information Privacy Act and beyond.

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CAPTURING 'LIFE':
THE CONVERGENCE OF HEALTH AND TECHNOLOGY FOR PROFIT

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Technological advances have brought many benefits to public health. Yet, the blurring boundaries between Silicon Valley and the medical sector are also a matter of concern. For one, the repurposing of non-medical data for health assessments by tech companies is poised to provide more capital benefits to companies than health benefits to consumers and citizens. Furthermore, the adoption of bio-digital technologies in non-medical fields is touted as "innovation," although it may simply be a way for companies to harvest the health data of their audience for questionable use purposes (Sadowski 2019).

This paper presents ongoing exploratory research into how companies push "data frontiers" (Beer 2019) by highlight problematic shifts in industry dynamics, where non-medical information is transformed into health data, and vice versa. Through case studies of Google and Facebook initiatives on the one hand and of online available direct-to-consumer genetic tests and some data use cases on the other I examine how the capturing and repurposing of particular types of data is framed as innovative by technology firms, but otherwise raises serious concerns about the very different stakes at play for corporations and citizens respectively.

Pushing the institutional frontier: from non-medical data to health assessments

The foray of big tech into the health domain has been constantly increasing, not least driven by the immense amount of data that companies such as Google or Facebook have been able to collect about their users' lives. Such data has been considered to be a valuable resource containing lucrative correlations simply waiting to be derived (Puschmann & Burgess, 2014; Couldry & Yu, 2018). Correlations not only justify tailoring content delivery to individuals, particularly for advertising purposes, but they also allow for recognizing trends on the level of populations.

A classic example in the later domain is Google Flu Trends (GFT), a project which used multiple data points but, most importantly, search query data (of expressions describing flu symptoms, medication etc.) to "now-cast" regional extents of influenza epidemics

(Ginsberg et al., 2009). GFT seemed to accurately predict flu outbreaks for several years (2003-2009) when plotted against the numbers from the U.S. Centers for Disease Control and Prevention, before its predictions became less accurate and the error rates increased significantly. With hindsight, Lazer et al. (2014) were able to point out that GFT had been particularly accurate in predicting winter (p. 1203) and that its creators had failed to recognize that web search does not happen in a vacuum but is influenced by factors both external (e.g. media reporting) and internal (e.g. Google's algorithms). Using such a non-robust model in the context of public health decisions, where it is undeniable that lives are at stake, would have disastrous consequences.

Fast forward to 2019: a peer-reviewed study claims to prove that medical condition categories can be deduced from Facebook posts (Merchant et al. 2019). Among these conditions are diabetes, hypertension, depression, obesity and pregnancy. For instance, according to the study, "religious language" such as "god", "family", and "pray" are indicative of diabetes. The researchers acknowledge several important limitations and even mention the ethical challenges regarding potentially communicating health risks to patients. Nonetheless they recommend further research with more data, and confidently conclude that "[s]ocial media data are a quantifiable link into the otherwise elusive daily lives of patients," going so far as to call such data a "social mediome" akin to the human genome. But whereas medical research is at least in theory undertaken for the benefit of society, it is unclear who other than Facebook would benefit from Facebook inferring the medical conditions of their users and capturing even more data.

Despite being over ten years apart, both cases above have in common that they do not necessarily originate in an unsolved problem in the health sector. They stem from a belief that "innovative" data-driven technological solutions outperform already existing methods – an attitude Broussard (2018) termed "technochauvinism." Following Beer (2019), they can also be seen as an attempt to push the boundaries of what their own data analytics can be seen to achieve, thus legitimizing their collection ex post.

Pushing the consumer frontier: from biometric data to genealogy and music

A contrasting example of how emerging technologies and the health sector converge, this time by repurposing health data for "recreational" non-health related purposes, are direct-to-consumer (DTC) genetic tests. Available for purchase online, they offer a wide range of analyses based on someone's genome. A recent study of 246 such tests showed that many offer genealogy results, some paternity tests, others nutritional and even partnership advice (Phillips, 2016). In the field of genetic genealogy, a commercial platform advertised as follows: "Kelly found an Italian ancestor who made a living from making macaroni." Another one touted its benefits to customers as the opportunity of coming together as "a global genetic family" (Couldry and Yu, 2018). Although such claims "construct an 'empowering' participatory culture" they are always also a means to create value for the company behind them (Harris et al., 2013).

Genomic data being individual, this is sometimes marketed as an incentive to share it with companies. Here, audiences are promised an individual benefit in exchange for

valuable biometric data. For instance, Spotify offers music selections that are allegedly personalized based on people's DNA, thus encouraging users to provide their unique biometric data to a DTC genetic test company and share it with a streaming service.

However, the uniqueness of genomic data also makes the issues of privacy, data security, tracking and surveillance even more salient than for other types of personal data. Addresses, phone numbers, names etc. may change, but one's DNA remains the same. Therefore, even when aggregated, genetic data is potentially identifying because of its singularity and uniquely valuable: in 2018, 23andme, a major DTC genetic test company, announced a lucrative data sharing deal with a pharmaceutical giant, allowing the corporation to make profit from people's personal data without even having to return potential research results. Another illustrating use of genomic data is by law enforcement: recently, open murder cases have been resolved through the use of genetic genealogy data from the murderer's sibling. This example also acts as a powerful demonstration of how genomic data contains not only individual personal data but relational personal data, too. Collection of such data for "recreational" purposes via individual notice and consent agreements, as done by online services, is therefore highly questionable.

The medical domain is governed by stringent regulation and builds on a long tradition of reflexivity and ethical considerations, whereas big tech and online platforms may be more inspired by the Silicon Valley adage "move fast and break things." Yet it makes a fundamental difference whether data collection and use is done by health professionals, who have a duty towards their patients, or by non-regulated for-profit companies that aim above of all at expanding and legitimizing their own data analytics capacities. In the later case, it is likely that most benefits, contrary to the risks, will not be the customers'.

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