

POWER/ PERIL

POWERED /

on technology and society

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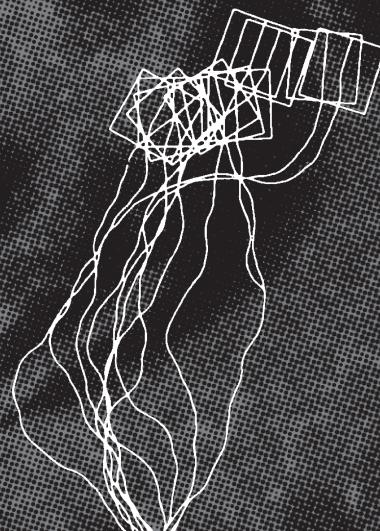
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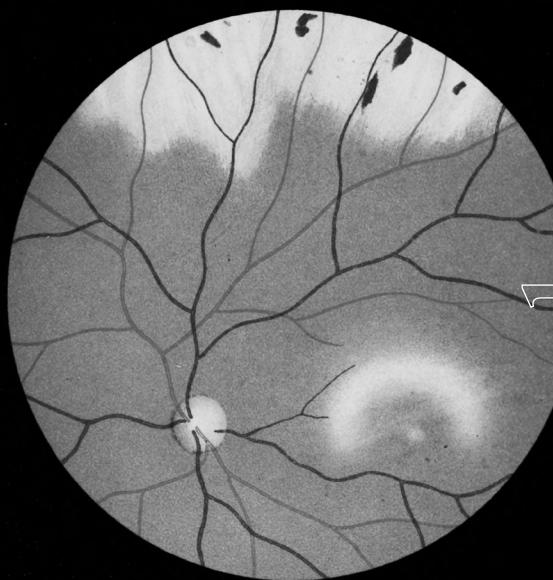
the 2019 experience
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blown
away
by
the
wind

Tell us who you are



Are Dating Applications All That Different?

by Christy Annatiur

I don't know about you, but as a woman in my early 20s (going on my mid-20s soon), sometimes I feel pressure on certain aspects of my life. This pressure could be from my family, people that I surround myself with, society, or even from myself. One of these pressures come in the form of the progress I'm making (or not making) in my dating life. At times I feel like there is an expectation for a woman my age to couple up, be with someone, or move on to the next step on life, whatever that means.

With recent developments in technology, it feels like we can do almost anything online. When one experiences a need or desire for something, the chance is one could obtain it somehow online. Today, we can even find partners or soul-mates online. In recent years, dating applications and dating websites have become wildly popular, with many being aimed at people my age, though some individuals my parents' age have begun to use these services as well. Although online dating has been around longer than it has been popular, only recently is it become more normalized.

In recent years, there are more and more dating applications or websites available in the market. With this rapid growth, comes competition. All of these applications and websites are trying to separate themselves from one another, and they are doing so in various ways. Some try to cater to a certain demographic. Examples of this would be websites like christianmingle.com or farmersonly.com, which clearly cater to a certain group of people based on their choice of name. Some other websites and applications are trying to cater to a different kind of outcome that the potential users are trying to achieve. Some websites clearly stated that they exist specifically for users that are strictly looking for a more casual encounter. Other, claimed that they are more than those other websites of applications. They go so far as to claim that they are “designed to be deleted.” What they are trying to say is that they exist to help you find someone that you could potentially have a more serious relationship with. One question that pops to my mind is that, are they really that different?

Most of the existing applications and websites will require you to upload a picture of yourself as a form of identification. With this initial interaction comes a certain level of vanity. In a society that privileges the visual, we sometimes can not help but judge things based on what appears to our eyes. This is also true when it comes to finding a potential partner. With dating websites and applications, you are clearly not meeting other people in person. You are basically judging their suitability to you based on the information presented to you. With the limitations on how you could express yourself and how much you can learn about a person based on their profile, the crucial deciding information is often pictures that are presented. This makes dating applications and websites seem shallow. Some websites and applications are trying their best to avoid this impression by doing things like encouraging you to answer some fun questions or to write more about yourself. They claim that by doing things this way, you are not, therefore, choosing your partner based on the thing that actually matters, their personality. How much will these attributes prevent people from judging someone just based on their look? Do they really make an impactful difference?

During my internship abroad in London, my roommate, who is from the US made a comment, “Do you know that here (in London) they actually use Tinder as a serious dating website? They actually take meeting people on it seriously, a lot of married couple in my work meet their significant other there.” I found her comment very interesting. I cannot decide if it is telling

of the difference in dating culture in the US and the UK or the difference in the social expectation and perception of these kinds of applications and websites.

A lot of people that I know, including me, have been on these applications or websites at one point. It has become quite a norm due to their popularity. What is interesting is that some people still feel embarrassed to admit that they are in these kinds of applications. Why is that? I mean people still find it somewhat socially awkward to access them in public. I don’t think getting caught looking at them is as socially acceptable as looking through other application such as Facebook or Instagram. What makes them different? I mean you could technically talk to strangers both in dating application or Instagram. In addition, a lot of people still lie about meeting their significant other on a dating website. Could the reason be because of how shallow these kinds of applications seems? Could it have to do with the fact that in most cases you judge your potential partner based on their look? Doesn’t that happen in real life anyway?

Will the existence of dating websites and applications change the way of dating? Will they skew people’s dating expectations? Will they ever become fully normalized and socially acceptable? There are so many questions that only time will tell.

Living a Docu— mented Life

by Bernie Belcher

In today's society everything about our personal lives is online and we are the ones putting it out there willingly and for free. This data is what fuels big companies. Hundreds of companies that many have never even heard of are accessing and gathering facts about you each and every day. Most of this data is getting sent to companies to better understand you to attack you with more effective advertisements but some of it goes to academic researchers, hackers, law enforcement, and foreign nations.

Sometimes it is somewhat obvious when you are giving your data up on the web. When you send saliva to try and find who your ancestors are you actually paying someone to take your DNA. What many people skip over and don't realize in the terms and services is that these companies don't actually promise not to resell it to someone else after they are done. In the terms and services they also state that you are licensing your DNA forever, meaning they keep a detailed record of it. They also afterwards send you DNA to other research companies, academic and/or commercial.

Other times the data that you are giving up is much less obvious to the user. Many phones now have a fingerprint scanner to allow you to unlock your phone. What most people don't know is that they way that they handle their phone, type on it, and tap is just as unique to you as your fingerprint is. Companies are now starting to pick up on this technology and use it to identify you without you knowing. Banks and retailers are using this technology and claiming it is for fraud protection, so only you can access the information that is linked to your account. However many believe this is what is being said so that they are allowed to create a database for every individual so that they may be more easily identified. This would mean that even when using a public device you may still be able to be identified by how you interact with it. This would allow for targeted ads even when a user is not signed. With how much money is involved with marketing it would not be surprising if something like this began to pick up more in our near future.

Some of the newest data guzzling pieces of technology that are beginning to pop up more and more are wearables and home assistants. These devices track everything even when you are not online actively giving data. Fitbits and other health trackers gather huge amounts of data on location and health. While they have a nice-looking interface and help you track your sleep and heart rate to be healthier, they also store this information in their database. This data has even been accessed in legal cases already in Canada. If this becomes a common practice, investigators could access individuals who had an elevated heart rate in a location of a crime to try and locate more suspects. Apple is even in the process of filing a patent for their watches to be able to identify a person in the same way that their fingerprint scanners work. This could be used to work together with the technology identifying individuals from how they handle their devices to get an accurate reading on who you are without telling them. Some fear that with these personal health trackers becoming more and more popular the data will begin being sent to employers and insurance companies. This would mean that companies would be able to see if you have any signs of medical conditions or poor health and potentially be able to refuse employment or raise your insurance cost. Some auto insurance companies are already looking into being able to access these heart rate data files to be able to measure health issues that would relate to driving. This can be looked at similarly to Allstate's "drivewise" meters which would plug into your car and measure how well you drove which directly affect your rates. While wearable devices monitor and collect data on your personal health,

Google homes and Amazon Alexas are constantly listening to you and storing personal conversations in their database showing who you truly are, blending the line between digital and personal identity.

Nobody truly lives an undocumented life anymore. There is no way to fully get away from technology in the world that we have developed and more and more companies are able to take our data to create digital identities of us with or without our permission. Soon companies will be using this data for a lot more than just targeted ads and it will be up to us if we allow them to keep collecting our data or if we want to fight back and limit the amount of data that is collected on us by boycotting big companies and using more open source third party programs with better privacy policies.

Are We More in Love with Our Creations than with Ensuring the Ethical Efficacy of that which We Create?

by Erin Marie Campbell

Whether we like it or not, the world we live in is steeped in oppressive algorithms. Take one look at the homogenous pool of developers and designers in Silicon Valley and the reason for algorithmic oppression should become clear. In his book Radical Technologies: The design of everyday life author Adam Greenfield says, “the choices we make in designing an algorithm have profound consequences for the things that

are sorted by it" (Greenfield, 2018, p. 233). And if algorithm creators have no empathy for the things being sorted by their algorithm, they are not going to blink an eye when oppressive patterns arise. As user experience designers, we should be acutely aware of these algorithms and deeply bothered when we come across them.

In Algorithms of Oppression author Safiya Noble discusses Google's oppressive algorithms. These algorithms "coincidentally" generate pornographic results when one searches images of minority women. In response to the Federal Trade Investigation of Google in 2011, reporter Matthew Ingram (who is white and male... surprise!), said, "It would be hard for anyone to prove that the company's free services have injured consumers." I'm guessing Ingram didn't try speaking with psychologists about this. They would have assured him that there are very real psychological effects associated with being incorrectly labeled as "porn" on the world's largest search engine. I'd like to dive deeper into the world of oppressive algorithms. Instead of looking at Google, however, I am going to focus on a site that was only recently shut down: backpage.com.

Backpage, an advertising website much like Ebay or Craigslist, was created in 2004. By 2012, Backpage was the second largest online classified site in the United States. On Backpage, one could purchase a plethora of sorts: cars, appliances, technology, adult services, and more. Backpage's adult services page is where the controversy began.

In 1996, the Communications Decency Act (CDA) was passed, giving immunity to internet service providers (ISPs) by not holding them accountable for content posted to their site by third parties. In a paper, Rebecca Tushnet, Professor of Law at Georgetown University, writes about "power without responsibility" (Tushnet, 2008). Thanks to the CDA, a powerful site was deemed irresponsible for third party content and human trafficking was perpetuated. In April of 2018, 7 years after the first accusation against it, Backpage was finally seized by the Federal Bureau of Investigation. If we assume the adult services page was created when the site was created, that means women and children were sexually abused and/or trafficked on Backpage's watch for 14 years. Let that sink in.

Words cannot come close to describing the horrific implications of this on the lives of so many women and children. If you're interested in learning more, I highly recommend watching *I Am Jane Doe*, a documentary about the legal battles associated with backpage.com.

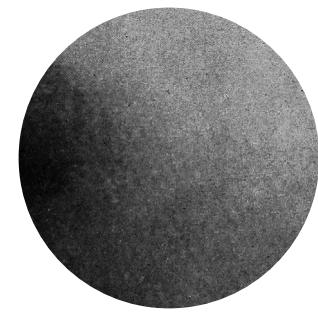
What I want to make clear is this: we live in a world where people cannot be trusted to use our creations for good. I'm sure Backpage's owners and founders Michael Lacey and James Larkin did not intend to create their site for the explicit purpose of perpetuating human trafficking. However, their seemingly innocent advertising website managed to manifest itself (with the help of its users) into an internet brothel. Knowing this was taking place, Backpage personnel decided to value their creation over the wellbeing of those who were being impacted by it. During the investigation of Backpage in 2016, Senator Rob Portman said, "Backpage's editing procedures, far from being an effective anti-trafficking measure, only served to sanitize the ads of illegal content to an outside viewer," (Volz, 2018). As if doing nothing wasn't enough, Backpage intentionally aided traffickers by ensuring their ads remained on the site despite their illegal content.

My question for developers and designers alike is this: are we more in love with our creations than with ensuring the ethical efficacy of that which we create? And how do user experience designers play a part in the security of not only their users but those under the influence and power of their users?

what
is love



baby don't
hurt me



DNA Tes— ting: Fab, Fraud, or Something Scarier?

by Brock Delebreau

In recent years, at-home DNA test kits have grown in popularity. This has been particularly accelerated by their sale in stores rather than simply online. Kits like 23andMe have been popular gifts for any and every occasion. And why shouldn't they, as so many people want to learn more about both their familial history and their health prospects.

While the ancestral information can be interesting and the health risks useful to know, how much do we really need to have this information? And how much are we giving up in the process?

First, how much do we need to know about our ancestry that we can't learn from those around us? While some people may not know the exact details, for many the basics can be picked up just by asking our relatives. Do I care that I am exactly 37.5% French and German? Not really, and it wasn't even a big revelation to me. Even as this simply confirmed information I already knew, it hasn't proved useful to me in any way since.

Another common service provided through these kits are lists of DNA relatives, quite simply people with certain percentages of common DNA to you that can be labeled as relatives of some distance. Outside of those you already know though, they don't elevate your experience. Many people are never going to contact that random person they share 15% of their DNA with that is maybe, just maybe, a third or fourth cousin.

Additionally, we can learn what our DNA has to say about our individual health risks and personal wellness. These results can be part fun, part scary, but utterly pointless. For some people with long familial history of certain genetic diseases, the information these tests provide can actually prove very useful. Of course the caveat here is that the information alone is never good enough, as meeting with a licensed professional to interpret the results is equally important.

For many others though, this information can simply be revealing things that may never come to pass. For instance, your DNA results can show that you carry the gene for disease A. This in no way means you will actually have disease A at some point in your life, nor should you necessarily change your lifestyle to prevent it. Again, seeing a professional will help determine what is right for you. But as the popularity of online diagnoses is today, many people will take it upon themselves to choose the best course of action.

And wellness and habit information from your DNA is not really useful either. Does it matter if your DNA says you're likely to dislike the taste of cilantro if you already know you don't mind it? This is largely just useless trivia that, like the ancestry data before, you might look at a few times and never look at again.

Now, one of the first things people have to do when registering one of these kits is sign a waiver. This waiver, part of the terms of use, is related risks of using a DNA testing service. Let me pull in a snippet from 23andMe, in a section titled "Risks and Considerations Regarding 23andMe Services" (emphasis theirs):

Once you obtain your Genetic Information, the knowledge is irrevocable. You should not assume that any information we may be able to provide to you, whether now or as genetic research advances, will be welcome

or positive. You should also understand that as research advances, in order for you to assess the meaning of your DNA in the context of such advances, you may need to obtain further services from 23andMe, your physician, a genetic counselor, or other health care provider.

DNA testing via kits like these sounds like a relatively fun exercise in ancestry, with the potential for some other health and wellness data sprinkled in too. But the potential exists for this data, as stated in the paragraph above, to not be "welcome or positive." Families have struggled through children discovering one of their parents is not actually their parent. Lives have changed over learning of a potential health risk that might not even come to affect them in their lifetime.

This 12 paragraph section of 23andMe's Terms of Service, and those like it from other services, acts as the true warning of what these services do. They are maybe a little too revealing. And it does not help that this is the fifth section of the entire document, rather than right at the top.

And, like many technologies, DNA testing is still relatively new and relatively unregulated. Many people are used to simply clicking "I agree" on terms of use for every new service we sign up for, but what happens when our own personal data reveals something we can never change and never take back?

There also exists a much larger risk when handing over the most simple, yet most personal information about ourselves. When sending in your DNA, if you don't choose the correct privacy settings, the potential exists for your genetic information to land in a database. Where that database ends up is out of your control. This doesn't seem like a very large risk, considering most testing companies anonymize the data after sharing your results with you, but there is still a chance that it can end up in the wrong hands and negatively impact your life.

And, as of now, there are protections for users of these at-home DNA testing kits from being adversely affected by insurance companies being too cautious about the results and the risk that may face their customers. But with the lobbying systems in place, particularly in the United States, that can change at moments notice and your premiums may rise as insurance companies look at existing results or request that you take a

test. Like I stated before, just carrying the gene for a disease or having increased risk based on heritage factors never actually means you are going to contract those conditions. Insurance companies are just looking for ways to deny you coverage (or make you pay a pretty penny to get it) that you might not even need.

In the end, DNA testing can be a fun activity to do with your friends and family. See which parts of your family contribute to who you are at the most basic level and learn something that you might not already know. Or waste your time retreading information that has been handed down to you by your parents or theirs and risk learning things you may not want to know or have your information end up in the wrong hands. DNA testing in this form is still very new and the future is bright. We just need to make sure systems are in place to protect consumers and their interests first.

Ques— tioning / auto— mation

by Brian Westbrook Flynn

In the United States today, transportation is a \$1.4 Trillion industry, accounting for 7.5% of GDP in the 2016 census. The transportation and warehousing industry employs over 4,898,000 people every year – it is by all metrics a massive industry. Transportation is also an industry that is at risk of automation completely redefining the field. In the long-haul trucking space, there are a few competitors that are blazing ahead with fully automated solutions. Most notably is TuSimple, a Bay area startup that has just passed a valuation of \$1.1B. TuSimple claims that their modified Peterbilt and Navistar semi-trucks can complete across country shipping routes with minimal human intervention. The current software allows the trucks to be operated with an engineer on board for any potential problems as well as a driver just in case. TuSimple anticipates the start of driverless commercial routes to begin by the end of the year. This will have massive impacts on the future of ecommerce. I believe that being able to lower the cost of shipping by the amount full automation will be an industry shifting event on the scale of Amazon Prime. Due in no small part to the Prime program, nowadays if you buy

something online and have to pay for shipping, many consumers will reconsider buying it at all. These advances in technology could put thousands of people out of work, with no foreseeable replacement jobs being created.

In addition, self-driving cars are also breaking into the consumer ride hailing market at ever increasing rates. Waymo, a spinoff of a Project X discovery at Google, is already operating a ride hailing service with fully automated vehicles in Phoenix, AZ. These services are going to make getting from point A to point B easier than ever. I believe this will raise questions about the impact on the environment as well as the economy. Because hailing a cab could soon be cheaper than ever before, more and more people will choose to get a ride places than to walk or bike. In addition, these cheaper rides will have the same problems as the cheaper long-haul trucking industry will. Just as Uber and Lyft have made the traditional cab company model unsustainable, soon too will Uber and Lyft be made unsustainable by self-driving car companies. I think this is a continuation of a scary trend where technology continually automates itself to not include human intervention. It reminds me of the classic horror movie plot about the dangers of Artificial Intelligence. If you were to ask a sentient AI to fix climate change, for example, the AI would likely come to the realization (and unfortunately the accurate realization) that humans are the main cause of global warming. The AI would then set out on a path to destroy all humans in the greater pursuit of its goal. I think a conceivable version of this is possible but in the labor market. If we are constantly searching for cheaper, faster, or better methods of doing things, maybe there soon those methods won't include humans.

One of the classic counter arguments to this fear is the advent of the mobile telephone. When the mobile phone was first invented, it was speculated that there would be a labor crisis due to all the switchboard operators that would go out of work. To their credit, there are not many (if any at all) switchboard operators still operating today. However, due to the convenience and success of the phone, manufacturers started putting stronger and stronger processors in the devices and out came an entire industry of app development. From this we have companies like Shipt, who deliver groceries for you, Airbnb which is allowing millions of people worldwide to make extra income or travel for cheaper, and the hundreds of mobile game apps that keep us entertained on a

daily basis. None of these industries or the thousands of people that are employed by them existed when the switchboard operators were being put out of work. Yet the industries I just named have replaced those jobs tenfold. Therefore, we cannot possibly predict the jobs that further automation could provide. I however, am skeptical of this argument. I think a more accurate example to compare the human vs automated worker would be the horse and the car. Right when the car was invented, it was unclear if it would become the dominate mode of transport in the world. They were still clunky, loud, unsafe, and required a lot of training to be able to operate them. People also worried that they would miss the "bond" they had created with their animal and would not be able to replicate it with a piece of machinery. Over time, though, cars became better and better and eventually almost nobody used horses. Sure, there are still horses in sporting events, county fairs, and other specialized use cases, but as a whole, horses hold nowhere near the usefulness that they once held. I believe that in the future, humans will become the horses in this story. Computers are just better at so many things than us humans. Even creative endeavors, such as music and painting, are being mastered by AI learning algorithms that can analyze decades of previous work and mimic it to a nearly undetectable degree.

While it is hard to imagine a world in which some career paths, such as politics or nursing, becoming fully automated, I think the impact of a massive unemployment rate could be realized with just the "low hanging fruit". Jobs such as transportation, food service, and manufacturing take up gigantic sectors of the economy and we would be completely lost if all those people went out of work. Overall, I believe that the potential impact of the automation of everything is not considered seriously enough. We as a society should question whether or not we want everything in our lives to be done by computers, even if it does make it cheaper or faster.

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Technology: A Tool, Method, or Distraction to Children's Education?

by Anna Gamelo

Over the past 20 years, technology has evolved exponentially; from simple phones for only voice calls to handheld devices that can look up an endless amount of information shared across the globe. With this advancement, we only need one simple portable device that can do everything we want in seconds compared to making several trips to several different libraries to do research on one specific thing. Technology is clearly beneficial and more efficient for people on a daily basis, now it has come to the decision of implementing these technologies in the classroom.

With all great things, there some risks and downfalls, especially technology. Before the conversation of introducing it to the classroom, there have been significant “side effects” of using one of the greatest technologies of all time, the smartphone. Back in the early 2000’s, young students would have to wait several minutes for a computer to boot up and then another few to get properly connected to their dial-up internet. Then, you would have to hope that the person you’ve been waiting all day to talk to has logged into the chatroom or messenger for the evening and that you could start online chatting with them. Of course, that’s given that they had

given you the correct email for you to send a request to add them on the messenger and they accepted that request. From there, it evolved to text messaging on your phone and social media remained on the computer; students began to spend hours outside normal school and hangout times of the day on their phone or computer. Once social media had moved to smartphones to become more easily accessible, it became an addiction to some. Spending hours and hours looking at people's profiles and messaging one another without needing to leave the house. People are so glued to their phones these days that they walk with their eyes distracted on their phones to look at someone's profile and send an insignificant message like, "lol." This type of behavior carries into the classroom as well, where students are hiding their phones under their desk to message another student in another classroom, distracting themselves from learning the lesson the teacher is teaching.

Schools and teachers, however, believe that this access to the internet can assist and improve with teaching their students. Using online resources to supplement teaching materials can help students better understand what is happening in the classroom. While these technological applications may be helpful, along with it comes devices that have access to several different activities such as games, video searching, and social media. There's bound to be even more distractions as this medium of learning becomes a requirement.

It could be argued that using technology can enhance teamwork amongst students and assist teachers with keeping track of each students' progress and attendance in class. Although students are able to collaborate online and get projects completed without needing to arrange a time to meet up, that is also an issue when it comes to collaboration. Students need to learn how to organize and set up meeting times and work with each other's personalities face-to-face versus through a text-filled screen. Relying on online collaboration tools has its benefit of detail work between students but it lacks the social interaction that students need as they get older and have to deal with future endeavors such as job interviews, volunteering and working with customers or clients.

Technology can also be viewed to save time and resources by not requiring pen and paper to complete essays such as this one, but due

to the autocorrect and copy-paste tools automated into computerized documentation, students are becoming lazier in their spelling and grammar. It is at the point where if there is no autofill, students don't recognize what is the correct spelling or proper grammar to input when all they have is pen and paper. Are students really learning more efficiently if they are skipping basic skills such as those?

There are also students who have somehow gone through school without ever having to read or write by using speech recognition alone on their smartphones to get through the years. As innovative as that may seem, lacking those basic skills will prevent them from adapting to all types materials and will close their minds to other possible methods to finding valuable information. In addition, they will lack the ability to distinguish which information they are searching is reliable or not.

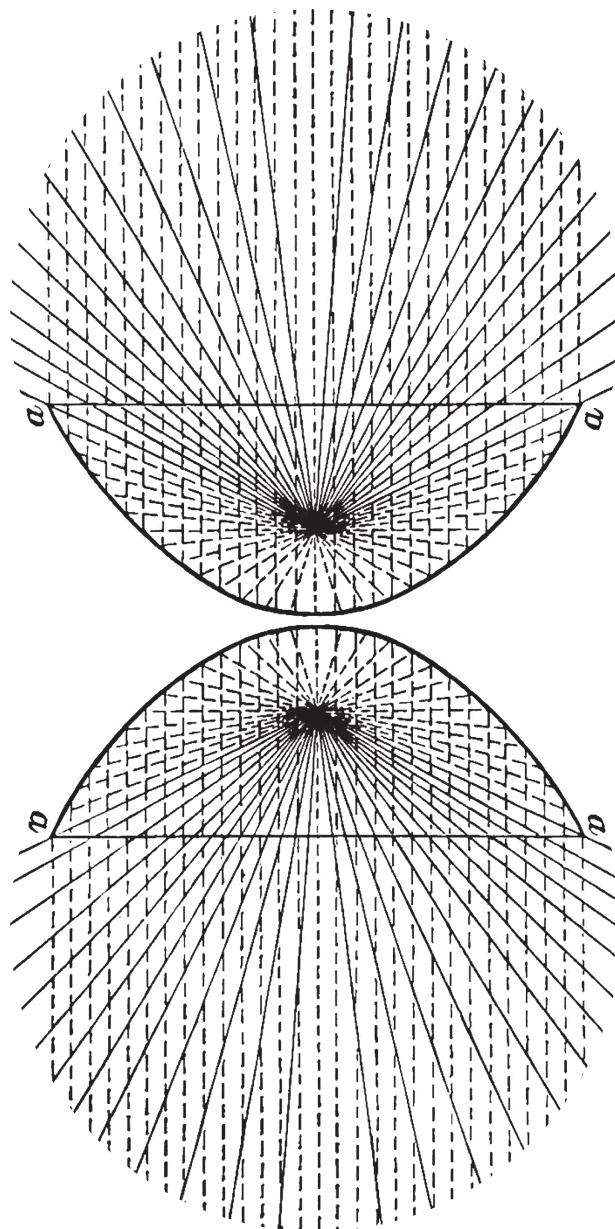
Not only does bringing technology into the classroom partially hinder the students, but it also slows down the teaching process. Incorporating technology, especially tools that students are not familiar with, requires time dedicated to learning how to not only use the device itself but then also to use whatever software or tool used for the lesson. If a student has issues working with the machine and the teacher does not know how to solve the issue, then it would require another more technical person to attempt to fix it, requiring more time and slowing down the learning process. At the same time, technology can be useful to adapt to the various types of learning styles for different students. Incorporating various technologies into the classroom requires a delicate balance in the design and planning of lessons.

As grand as it would be to have fully technological classrooms, it should still take into consideration that bringing technology into the classroom can lead to forgetting about the little important skills that everyone needs when growing up. As an experience architect who recently graduated from college, I am sensitive to the need for research on what the skills, not only the ones learned from textbooks, need to be developed during this critical learning age for students. Will the technology be used as a tool, a method or will it become a burden to a child's education, not only in the classroom, but in life altogether?

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**WHAT ARE
YOU LEARNING
WHAT IS
IT LEARNING
WHAT ARE
THEY LEARNING
?**



What's Next? A Brief Look into the Evolution of Dating.

by Bailey Gates

Dating online can be exhausting, disappointing and even boring. There are numbers of dating apps that people can download to replenish their dating pool, to swipe and browse, continuously. Although, people all over the world waste their time talking on dates with people that they are in no way compatible with. Generations and centuries ago before the modern era, the idea of romance was an unemotional affair with private courtships based off of financial and social statuses which began with marriage proposals arranged by family members in exchange for benefits, rewards, etc. Now, “personal” matchmaking through online materials has become the norm. Today, there are numerous mobile dating apps and matchmaking websites that give people the opportunity to find “the one”, and it’s never been easier. The evolution of dating has gone through many stages, which have all let it become less and less traditional. But what does that mean for what is to come?

THE PAST

Although there was no such thing as “going on a date”, young women were required to see men exclusively at family gatherings and were never to be found alone, even though the end goal was marriage. Courtships became common, having a highly structured set of rules and rituals to follow, while also getting to know one another in a setting that was most likely provided for them. Each set of rules and rituals for courtship are different, each courtship is unique based on different circumstances. During courtship, the couple focuses on developing a deep friendship that could possibly lead to marriage. Until the movement of couples going out in public unsupervised became what was typical to do. Women went from choosing where and when they wanted the man to visit, to then men having the duty to plan it, as well as the duty of paying for dates. Rather than finding a society-approved match, love wasn’t seen as being a big importance to marriage, and if it was, it wouldn’t be something that would be seen until after the wedding. Then there became a cultural shift, where young men and women started attending institutions, colleges, and workplaces. Individuals were opened to a world with very large pools of people looking for the same thing, dating partners. It became much easier to find what you were looking for, much easier to decide what you wanted and meet someone you had potential to be compatible with. At that time, dating had gone from focusing on personal relationships, to just having fun. Courtship went from something that everyone was doing, to something that no one knew about.

THE PRESENT

Mobile apps have the tendency to match you based on your physical attraction towards one another. They have preferences that filter the amount of distance between you and your match and other filters where you can specify what gender and age you want them to be. They alert you when there are new users to your area. Users who fall within your specified age range and gender and are within a certain distance of your location can become your match, even when you could have nothing in common. If you both like the look of each other, you “swipe right”, you become a match and the messaging function between the both of you opens, so you are able to talk and get to know each other better. Bumble, Hinge, OkCupid, Coffee Meets Bagel are just a few of the other

popular apps out there that are pretty much the same, with just a few different preference features and capabilities. Some say that the world of dating online has “killed romance.” It is said to have people feeling discriminated against based on their appearance, or just even lied to.

THE FUTURE

Seeing as people are glued to their phones, the future of dating is just an endless amount of ideas, where anything can happen. Some are starting to think, why waste your time scrolling and swiping through people that are randomly displayed for you? Again, wasting time online for people that just aren’t that into you or compatible with. People are starting to wonder why millennials are complaining that dating online is too hard and complicated, when it was intended to make everything so much easy and quicker. As technology advances, people are looking to things other than online dating apps and matchmaking websites to pair them together. Professionals are creating ideas that they hope to one day reach the surface, such as a DNA matching system. A DNA matching system, they say, will be able to engineer the perfect relationship. It is said to be “the perfect combination of art and science” by CEO Dr. James Canton from the Institute for Global Futures. People will be able to use their DNA to create their perfect dates with supposedly maximum compatibility. This process might be accompanied by human-like avatars that will make sure that your matched date is not a psychopath and an intimacy check to assess your level of intimacy towards each other. Another option professionals are examining is dating virtually. They see the gap between images of people on their dating accounts and then they see how people meet in real-life and feel it’s necessary to fill that gap. This could be because of filtered pictures, or just flat out lies. Virtual reality dating would give people the opportunity to connect, and be able to see what this person is like without having to wonder what it would be like to see them and meet them. I believe virtual reality is a step in between online dating now and meeting in person. You are able to see the person online and get a gauge of whether you like what you see and hear or not. It is a way to actually find if you’re compatible, without actually being in the same room as the other person. Nothing is impossible. Daters aren’t ready for what’s to come.

“Social Media Mack” vs. Me

by Mack George

Alongside the permission my parents gave me to create my first social media account back in the days of Myspace, came the condition: “Don’t post anything that’ll make you look bad.” I’m sure every pre-teen gets this in some way or another, a necessary safety measure to keep new users from alienating their peers or employers.

Nowadays, as a soon-to-be-graduate searching for employment, the social media platform I find myself most often on LinkedIn. There, I boil down my professional experiences and skills into a neat little bulleted list, to ensuring my strengths are highlighted to visitors. My portfolio site is linked, highlighting my role and approach to producing deliverables. I court recruiters and employers, arguing why I’m the right fit for a position.

When interviews come, with employers asking about information found from my profile, I don’t talk about me. I talk about LinkedIn Mack. He’s had all these great professional experiences, and an array of skills that make him perfect for this opportunity, while the real me has knowledge gaps and shortcomings that employers are not interested in. He’s the product they want.

On the occasions I represent myself, rather than my LinkedIn self, I feel guilty in a way. My profile should better represent me, admitting what I'm uncomfortable with and what I'm looking to learn to help build myself up. But that's not what people do. People don't "post anything that'll make you look bad".

This mantra carries over to any social media platform where people are supposed to be connecting to other people. Weddings and pregnancy announcements can be found on anyone's Facebook feed, but you won't see mentions of the financial concerns that often accompany these life events. "Candid" Instagram selfies, with perfect makeup, angles, lighting, and/or Photoshop filters are shared to thousands of followers, and you won't see a mention of a personal insecurity on a dating platform's profile.

It's not even a case of "not posting bad things" anymore. Today, the norm for social media is closer to - "Only share things that make you look good" – as people only allow themselves to share an idealized version of themselves, and of their lives.

Why do we, as people, choose to digitally represent ourselves as these eternally happy Übermensch who haven't had a human problem?

I believe we choose to do this to "win". We see social media as a competition, one where the profiles of other people are the contenders. In my LinkedIn example, I am undoubtedly put up against dozens of other applicants for each individual job. If John Doe has an idealized version of himself on his profile, listing all of his skills as strengths regardless of his actual comfort with them, and I make a profile for the real me, including areas I'm working on – who is more likely to win an interview for the position?

As a human being, complete with self-doubt, I'd think the idealized John Doe would beat out "me". In response, I edit my profile, mitigating weaknesses and further highlighting strengths. After a few rounds of "improvements", I'm left with the final product – an idealized version of Mack George, catered for the LinkedIn audience.

In this way, the social media environment trains its new users to make these idealized profiles. Dating platform users are more likely to get

matches and dates if they talk about how spontaneous or ambitious they are, rather than risk being seen as negative or high maintenance if they voice personal concerns or needs. An Instagram model that's "prettier" than another will undoubtedly get more followers and sponsors, socially and financially motivating users to show their good side through camera tricks and photo editing software. Even on Facebook, where we're only exposed to "Friends", people compete to appear happier than other users, with about 50% of people in relationships admitting that they try to make their relationship look better than it actually is [1].

This makes social media a game that can never be won. Even after making my own idealized profile that measures up and may even "beat" the profiles of others, it can never feel that way. I know the person behind Mack's LinkedIn profile, but I don't know the person behind John Doe's profile. With no evidence given to the contrary, I'll always take John Doe's idealized self as a standard that I won't ever feel like I can live up to. Even worse, it leaves me with the feeling that I can't live up to my own, idealized, digital presence.

This environment of constant comparison and competition may be why people who use frequently use social media are more likely to feel depressed or lonely than those who don't [2]. Ironically, using social media decreases our social satisfaction, as we jump through the hoops of shallow interaction, rather than engaging in real, human interactions. Building up this interpretation of myself for social competition has exhausted me and has left me with a reinvigorated appreciation for the people around me. People with whom I can share things that make me, instead of catering myself around them.

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The Transformation of Transportation

by Ross Preston Klimoski

This world offers virtually endless sights and spectacles for us to witness. As someone who is fortunate enough to have traveled to many different places, I must say there is no experience quite like immersing yourself into another culture and exploring the history and beauty that place has to offer. However, we use transportation for more than just leisurely travel. Over 80% of US workers commute to work, the majority of whom drive alone. Public transportation is prevalent in most places and is designed to be more accessible, yet a vast majority of commuters tend to avoid it. What does the future of transportation look like? Will we reach a point of technological advancement in which commutes become unnecessary? With new crazes such as self-driving cars and scooters rentals controlled via mobile apps, its hard to say which methods of transport hold a place in our future. I do not have answers to these questions, but I wish to speculate on the possibilities and outline the more substantial concerns to consider.

For years the airline industry has utilized planes equipped with autopilot and, on the whole, the industry seems to have reached a bit of a technological standstill. Of course, one must not only consider the mode of transportation itself but also the infrastructure that must be in place to make that method operate smoothly. Cars, planes, boats, and trains have all been around for quite some time and yet we continue to find ways to improve them while failing to come up with entirely new and innovative systems of transport. That's not to say that I am disappointed with where we've ended up as a society, simply that we should not prioritize ease over ingenuity. Sure, it might be easier to just continue paving roads and producing cars but what happens when the innovation reaches a point of standstill similar to what we see in the airline industry? While I can picture a future with self-driving cars, that vision does not extend much past my lifetime.

The overarching conundrum with technological innovations seems to be that, due to the rapid rate of innovation, new technologies are being invented just as older technologies are starting to be implemented. Lots of people, myself included, are looking forward to the day when cars can completely drive themselves, but what good are self-driving cars if we still have overcrowded and deteriorating roadways? For the same reasons that airlines started implementing autopilot, the automotive industry hopes to do the same in order to improve on safety and convenience. One aspect of convenience in self-driving cars is the potential reduction of traffic delays but, despite the autonomy of airplanes, people still experience frequent airport delays. Until we can start focusing our innovations on the surrounding infrastructure rather than the particular vehicle, I don't foresee any drastic improvements to travel.

Something else to consider, however, is whether transportation will even be needed in the future. I still think we are a long way away from teleportation but already we are seeing a variety of technologies that are reducing our needs to leave the house. With the invention of the internet came much simpler forms of communication, allowing people to accomplish things that would otherwise require a face-to-face meeting. Anything from emails to ecommerce all work to make our lives simpler and improve convenience. The internet has helped us be more productive in our lives, but this idea goes even further with technologies like virtual and augmented reality that allow us to explore an almost limitless

variety of experiences. Will I ever need to physically travel to Paris if I can just strap on a headset or walk into my Star Trek Holodeck (a room that augments realities) and explore everything the city has to offer? If these technologies can replicate realities with utmost fidelity, then I can certainly foresee a massive reduction in tourism and leisure travel in general. I mean, why leave the house if I can accomplish everything from home?

Until now, all of these ideas have been from the perspective of a consumer. If all daily tasks can be accomplished from home, then perhaps the only use of transportation will be by producers who ship us essential goods. If what we're transporting is strictly products and not humans, then all of our current methods of transport could suddenly become irrelevant and humans could become even more dependent on large corporations. There are many considerations to be made for a world of mostly stationary humans, but we must also consider a sort of hybridized future. While most people may be content with virtual or augmented travel, I predict that there will still be substantial desire for physical travel. Even if technology becomes so advanced that there are no perceivable differences between a virtual/augmented reality and the real thing, I personally still feel that nothing will compare to true interactions with the natural world. Furthermore, I would even go as far as to say that innovating upon human transportation, to a certain extent, would allow us to mostly replace virtual/augmented travel with full-on space travel. I certainly know for a fact that I'd immediately put down my VR headset if it meant I was able to explore other planets and possibly even other lifeforms. Maybe I've been watching too much Star Trek but, regardless, my excitement for the future of exploring is difficult to contain and I gladly await a career that allows me to design for the future.



**WHO
IS
IN
THE
DRIVER'S
SEAT
NOW**

?

Futurist to Traditionalist

by Ryan Connelly Lewis

Throughout the spring semester of 2019, various critical perspectives on technology made me rethink the way that I have looked at technology over my entire life. Ever since I was a child I have had access to computers, my father being involved in technology for his entire life had allowed me to access to and learn about technology from a young age. This has been an interest of mine throughout this entire time. I have built my own computers for more than the past decade and have been working on programming and web development for the same amount of time. Technology has always been a positive force in my life until recently.

With the media's concern on smartphone addiction and the class texts about the possibilities of surveillance states and the monopolistic corporations that will be helping governments create them, I felt an immediate desire to push back on these sentiments. I had the firm belief that in most of these cases these outcomes had been the results of private companies and the public willingly going along with their practices, getting addicted to one's phone is a personal choice that shouldn't involve the

government. I had this perspective for the majority of the semester and it was seemingly working well for me.

However, doing more research on how civilization has developed, human nature, and history, I noticed my entire perspective shift. I began to see technology as an enemy, something that was interfering with the nature of humans and the world that we had built. The conveniences that we have been developing since the Industrial Revolution weren't simply a positive, in fact there is a large list of flaws that we have given to ourselves due to the material well-being that has characterized the period of time since the Industrial Revolution. Reading more information about the prevalence of depression, divorce, and other symptoms of modernity, the flaws of technology and society at large are overwhelmingly visible. I have recently begun to emotionally invest in a new philosophy of traditionalism, something that I have largely rejected over the rest of my life. I had always had the firm belief that me and the future generations would always be the beneficiaries of knowledge but with this change in view, my entire philosophy has been disrupted. At first it seemed as if this change in philosophy was for the worse, and that I would be sacrificing my previous worldview only to be left behind as the inevitable technology marches on. This however was a mistake.

Becoming aware of the shortcomings of technology at the very least will not encourage my fetishization of the endeavor. Previously I was resistant to values-based technology simply because I did not believe that we needed to think about technology in a way that aligns with values, I believed that values were a problem and they were holding us back. This is of course a very unhelpful way of looking at the world. If you view the world as simply the inevitable march of technology and progress you lose memory of what is important and things that make us human. There ought to be a moral argument against the further automation and endless consumption of technology into our lives and the most effective one may come from our basis as living creatures with a history of thousands of years rather than a collection of flawed meat computers.

This realization comes with the rejection of another of my previously held beliefs, "scientism." This idea of science being the ultimate goal of humanity has been the backbone behind my idolization of technology. It is easy to see where scientism comes from, looking at the facts of

dampening poverty and increased healthcare but these are surface areas that do nothing to help the underlying causes of the largest amount of pain and suffering present in the western world today.

This struggle, I believe, is the lack of meaning. With the death of tradition we have lost our connection to the past and that has left us striving for a future that we are not moving fast enough towards. Burn-out at technology companies, journalism, and various other disciplines that are a part of our online economy is one clear example of this. The picture becomes more clear when you look to the Opioid Crisis, addiction is only one of the symptoms of weakening social bonds and lack of meaning. When living one's life is too painful one will numb the pain with substances, or end it with suicide. These problems are only beginning to be discussed at large in society and neither of the two major political factions have anything to offer the people who have been left behind. The status quo is breaking due to the pressure from the people who feel as if they have been left behind.

All of these realizations have come about due to my blissful ignorance of problems with technology. Being so involved with the development and perpetuation of "Big Tech" I had no reason to think ill of it, in fact I had thought ill of people who thought ill of it, possibly due to self-preservation. This however doesn't diminish the effects of the technology and the effects that it has had on our society and culture. Most of these consequences have not been acknowledged by the mainstream techno-journalist class and likely will not be for some time.

While the other critics of tech are coming at it from a vastly different perspective than I am, I still think there are places where critics of technology can come together for positive changes in our environment. If we focus on political goals these might be attainable with both of these critical perspectives taken into consideration. If these critiques are coming from a place of a human-centered future they will likely make a large political impact. Our goals may be different and our motivations are different as well but more and more people are waking up to the dangerous techno-political monopolists in the Bay Area.

How “Personalized” Products Are Impersonal

by Taylor Lynch

Over the past few years, it has become a trend for companies to create user interfaces that employ a pre-purchase data gathering quiz. From skincare to shampoo to meal preparation services. The notion that taking an online quiz to give more information about yourself, as a consumer, will increase the user experience related to the product in question is common. This is kind of a strange concept to think about, though. The idea that entering information into a system, while avoiding human interaction all together to produce a personalized experience is strange.

I think that this idea is so common nowadays because it plays into people's egos. Seeing a product with your slight specifications and your name on the label is satisfying. This may even satisfy the consumer so much so that the effectiveness of the product becomes less relevant. This could have to do with the current state of social media. Platforms like Instagram allow users to cultivate a virtual world displaying the best elements of their own life. The obsession with self image may play into

the inflation of ego and carry over into the weight of the satisfaction associated with personalized products.

This coincides with the trend of data mining in general. The belief that gathering the most information about a particular user will produce a more effective result has become a common thought process. Companies are trying harder and harder every day to gain a better understanding of their user base so they can effectively market their products to appropriate audiences effectively. It's important to understand that the motive behind collecting all this information pertains to generating sales. This is a point that most users don't often think about. The users, and their subsequent data, are viewed as assets to big companies because the users are also consumers.

Similarly, consumers are willing to give up more personal information in the hopes of a personalized experience. People rarely pay attention to privacy agreements when it comes to their technologies, so for more trivial interactions such as these personalized experiences, It is safe to assume that most wouldn't think twice to let their data be collected. This conversation turns into an issue of ethics because if such detailed and personal information is being collected, it is odd to think about what companies might want to use this data for.

Design within the scope of technology is mainly concentrated on concealing processes that are automated by applications and websites. This is heavily contrasted by the work of UX professionals because in order to make more ethical designs, some of these processes must be uncovered and presented in an easy-to-digest way. Finding a good balance that will appeal to both the users and the stakeholders invested in the product is the challenge that we face in our work.

The data-gathering quiz is the way that companies can very transparently collect aspects of a user profile. This is the uncovering of back-end processes related to the creation of the final product. Users are willingly inputting the information that the companies require from them, making the terms of interaction very clear because if they were uncomfortable with sharing their data, they would simply opt out of purchasing that particular product.

As a UX designer, it is important to do everything you can to make sure that users understand what their interactions entail, so when creating the quizzes for these products, we have to understand what the data will be used for and why. People essentially trade in their privacy for the convenience of access to products, apps, websites, etc. Data is constantly being collected and as a UX professional you should make the user aware of what is going on and the motives behind it. I think that crafting experiences that are realistic and give the user undeniable access to important information is somewhat important.

Reflecting on this trend of personalized products as it relates to data gathering, I think it is so strange that people seek out items that are more "personal", but the process associated with obtaining the item are highly impersonal. Entering data into a form field is hardly a "personal" experience.

External Memory: How Our Digital Lives Change How We Encode and Recall the Events of Real Life

by Katie Musial

My best friend Ella texted me the other day about something that happened in pre-school, and expected me to remember it as well. I call Ella my “external memory” on occasion because of her ability to pull out even the most peripheral details from a day that I have long forgotten, and sometimes I text her if I’m struggling to remember something that happened when we were attached at the hip all through our pre-K through 12 schooling. I had always assumed that my memory was just worse than Ella’s, that others people’s ability to remember events from years ago in great detail was beyond me because of the way my brain was wired, but a couple years ago I started to wonder if my (admittedly excessive) use of social media and my need to always be the “documenter” with the camera snapping during fun outings with friends or family was actually what was affecting my memory. My interest in this has only grown over time, as my memory has seemingly gotten worse and worse, and I’m not the only one

experiencing this. Fears of (and jokes about) early onset Alzheimer's are common among young adults who grew up with and alongside the internet and social media, as it seems like it's harder to remember small things than it was before (Prendergast). Often when telling a story my friends and I will pull out our phones because we need to find a detail on our social feeds to finish their thought. Concerns around social media use and memory have grown in recent years, and I've started to see more and more articles come out examining the "outsourcing of memory" to social media and how posting about an event or taking a picture of it can affect recall of said event. I explored some of those articles for this piece.

HOW WE REMEMBER

A Google search for "social media and memory" yields millions of results, and the articles found on the first page of that search follow a fairly consistent theme: social media can be used to "outsource" our memory encoding and processing, to a detrimental effect. Studies from as early as 2011 began to show interesting connections with the quality of memories, and the types of memory we were using because of social media. One study in particular spread quickly, written about in an article by Ryan Wittigslow:

"In a study published in Science in 2011, US scientists claimed the internet has become a form of "external or transactive memory", with information being stored outside ourselves. In the face of this transition, the imperative to remember information has instead been replaced with the imperative to remember where information is located. This is what is commonly known as "the Google effect"... (Wittigslow)

I found more on the Google effect and how our memory has shifted as a cause of the way we consume digital media nowadays in this article by By Elena Molokotos. She writes "media not only affects our ability to recall events clearly; it also impacts our memory capacity by removing the burden of remembering from our brains and serving as the brain's external hard drive. With the advent of Wikipedia, internal memories for events are no longer necessary. Thus, we only need to recall where and how to find information about an event, rather than the event itself" (Molokotos).

The fact that we have changed the ways we encode and retrieve memory due to our increased and constant access to media is very real, but only part of how social media has changed the way we remember. There are many studies on whether taking photos improves memory and enjoyment of an event or reduces it. These connections between taking pictures and memory interested me, considering my position as "documenter" of my friend group. I love being able to share pictures and videos of good times with my friends, but are my actions damaging the way I encode those memories first? A 2013 photo taking impairment effect study discussed in this article by Amy Fries showed that the intent behind taking the picture changed the way people remembered the event. If you were taking a picture for pleasure, versus taking a picture for the sole purpose of remembering, you were likely to remember more about the event. In regards to "people taking pictures for the sake of taking pictures — almost like trophies," Linda Henkel, author of the study, said "It's just like writing a to-do note. People think, 'then I don't have to remember it because I wrote it down'" (Fries). Concerns about how the context in which a photo is taken extend beyond whether it is taken for pleasure or solely to remember. Whether a photo is taken with the explicit purpose of being put on social media later can also affect how we encode memory.

The shift from encoding memory organically to encoding memory with the aid of pictures and posts may change the quality of our memories, and also how we interact with memory. Memories filtered through social media are more about remembering where a memory is located digitally rather than what a memory was like when it happened, an example of the Google effect. I've seen this effect in action in my own life when I go searching through my Instagram posts to show someone a life event, rather than explaining it from memory. We are now able to look to a specific part of our social media feeds for a memory instead of pull from a certain part of our brains. But maybe we don't need to worry as much about how our memory has changed, because the brain has always adapted to new technology, its plasticity allowing us to create different pathways for tasks we did differently before. What we may want to turn our concerns and efforts towards is examining how the ease of rooting through our memories affect our views of the present.

WHAT WE REMEMBER

As I mentioned earlier, I'm often the resident documenter for my friends, phone out and running Snapchat or snapping pictures. These pictures and videos are invaluable to me years on. I treat them as a prompt for my own memory, a guide to help me remember everything else about that moment. I appreciate videos of friends I'm far away from now, from easier times that made me laugh. Sometimes my phone or an app would show me pictures or videos from a year ago and prompt me to share them. I would send these digital artifacts of these memories to the friends I made them with, and our inevitable response would be "I miss that day", or "I miss you guys". We reminisce briefly, and then move on to the next post.

However, after experiencing a traumatic event last year, I found that these constant flashbacks were more and more damaging. Scrolling through my year for pictures of projects that I worked on for my website became more and more painful as I got closer to the event, and almost worse as I got further away. It was hard to see a version of myself that didn't exist anymore captured so clearly on a screen. The ability to forget became something I fixated on, the ability to remove myself from past versions of me and focus on where I am now. It was nearly impossible. From Snapchat to Google Photos to Facebook flashbacks, it felt like Past Me was omnipresent. Some days I would find myself scrolling endlessly through my year before the event, longing to step back to a time where I was a more innocent version of me that I could no longer be, a version of me that didn't know the hurt I feel now. It could sometimes feel like literally scrolling through an "external memory", a separate life that I no longer lived, something outside of myself any my experiences.

My own relationship with my online behavior is complicated. I cherished the ability to look back on past versions of myself before, but now it feels masochistic: look at what you were, imagine what you could have been if that thing didn't happen, where you would be, what you'd be doing, how happy you'd be. It's hard to live in the past. Focusing on the past instead of the present can be a major cause of depression, and many social media sites are gearing themselves towards being places where we can archive our pasts and look back on them whenever we want, or whenever we are prompted by them to look. Are these sites facilitating detrimental behavior? Do they force us to focus on the past, and in this way pushing us all towards depression, anxiety, and/or PTSD?

In the article [Instant Recall](#), Molly Sauter explores a number of ways that different technologies remember for us, the most relevant to this conversation being 13-16. 13 explores the inability to control what and when you remember and how this can cause emotional distress and PTSD, 14 how Facebook and other apps prompt you to remember with throwback memory features, 15 how Facebook now gives you the option to black out painful dates or undesirable people from appearing in these memories, and 16, how deleting the painful parts (a la *Eternal Sunshine of the Spotless Mind*) can prevent us from confronting them and moving on.

I would recommend reading the article in full, especially 13-16, but 16 was especially interesting to me in the context of my own experiences, so I wanted to repeat it here:

16. In the film *Eternal Sunshine of the Spotless Mind*, we saw a version of the personal amnesia future taken to a logical extreme. If we delete these digital memory objects, we no longer run the risk of being assaulted by them, but we also destroy the potential to helpfully re-encounter them, perhaps serendipitously, when the sting of the original event has faded. Digital memory objects and digital reminiscence systems have left us in a catch-22: They are poor but convenient substitutes for the physical objects and mementos we have previously relied on as containers of memory. If we destroy the evocative electronic madeleine, we are left more and more floating in a self-replenishing sea of presentness and recency.

But if we don't, if we leave the madeleine in safe stasis in memory storage, we may be accepting a different type of tyranny, of memories that refuse to be altered, of constant confrontation with all of you at once, everything algorithmically legible you've ever done, existing simultaneously, clamoring for influence and attention." (Sauter)

There are two problems here: the constant ability to look back, and the fuzziness of our memories when we do. It's dramatic to say that we should delete all our social media and throw our cameras into the ocean in response. Social media, like every other technology, has given us new abilities but also new challenges. The ubiquity of social media in my own life is a reality that I've accepted, but I've also accepted that learning about and recognizing the things it may be doing to me, recognizing

changes in my own behavior, and evaluating whether I need to change my interaction with social media is something I must continue to do as I use it.

I'm not sure what I need to do now after examining my own behavior while writing this. Should I hire my own personal photographer to follow me around so I don't taint my own memories? Do I need a bot that tells me to stop going so far down the rabbit hole when I can't stop scrolling through my own feeds? Do I need a friend like Ella to text when I feel like I can't quite remember something instead of going digging through Instagram posts? As we explore these issues around our digital lives and the ways they impact our brains, I'm sure I'll find real answers to less hypothetical questions, but for now I'll just keep pointing and clicking.

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Further explorations into how taking pictures can affect memory, as well as the effect of memory-curation applications like Timehop: <https://www.theatlantic.com/technology/archive/2015/02/using-technology-to-outsource-human-memory/385955/>

More on social media, group memory, and the avatars we create for ourselves and our communities online: <https://reallifemag.com/post-memory/>

A piece referenced in Ryan Wittingslow's article on how the way we consume media is changing the way we read and think, and also some scary things Google wants to do: <https://www.theatlantic.com/magazine/archive/2008/07/is-google-making-us-stupid/306868/>

An article on a Cornell study showing a connection between posting on social media and greater recall of an event later: <https://www.businessinsider.com/posting-on-social-media-helps-improve-memory-study-2016-9>

Another article on that same Cornell study: <https://www.sciencefocus.com/the-human-body/posting-on-social-media-improves-your-memory/>

Procedurally Generated Entertainment

by Andrew Ng

Artists and people like us go ‘aw robot could never replace our jo...oh shit! Oh shit!’ [...] and then Kizuna Ai shows up!” – Patrick Boivin, Super Best Friends Play Detroit: Become Human (Part 12)

For as long as people have created machines to do work for them, we've struggled to compete and prove that they cannot wholly replace us. For some, it was cautionary tales such as John Henry and the Steam Drill or Paul Bunyan and the Chainsaw. For others it was the reinforcement of the idea that machines were and always would be tools, as seen in the work of Isaac Asimov and his Three Laws of Robotics. And yet more would make the argument that machines, lacking soul or emotion, would never be able to create art the way a human could. A robot, a being of cold metal and logic, lacks a vital element of the human experience that makes us who we are and therefore cannot create what we think of as art.

On January 15, 2004, Vocaloid was released in Japan. It is a voice synthesizer, allowing users to create “singing” through typed lyrics and melody with specially recorded vocals of humans. However, what

Vocaloid is most famous for is not the tools it provides nor the creations it inspires. Instead, Vocaloid has an avatar that serves as its face: Hatsune Miku. There exist other avatars for users to sing through, but Miku is by far the most recognizable and popular. Even those who aren't fans of Vocaloid, who have never even touched the software, know who Miku is and what she looks like. She has been brought to life using the hologram technology that projected world famous musicians Tupac Shakur and Michael Jackson onto the stage long after their deaths. She's toured around the world to the screams of adoring fans and shows no signs of stopping or slowing down. Due to her nature as a digital persona, she has no need to rest, take breaks from her music, or even tour in a single location at a time. However, what's important about Miku isn't her music or the technology that created her; it's the fact that she is no longer alone in being a digital persona that is recognized as an individual, if only by popular opinion than legality.

Kizuna Ai is a similar anime-styled content creator who is most famous for playing video games in a Let's Play format with commentary. She took the internet by storm shortly after her appearance in 2016 with the novelty of being promoted as an "A.I. content creator" coupled with her art style evoking the "cute anime girl" aesthetic. These factors, combined with the people involved in animating, voicing, and playing video games for her being kept a secret, allows her to sell herself as an independent A.I. For all intents and purposes towards her audience, Kizuna Ai is a real "person" who just happens to be digital.

This trend continues with Instagram and digital models such as lilmiquela, blawko22, bermudaisbae, and others serving as influencers despite not being able to physically interact with any of the things they promote. Instead, a company writes their words for them, creates a digital image of them doing whatever they need to do, and sell it the same way they would a real human being. With modern technology being so capable of creating lifelike images and videos, it's almost impossible to tell these digital influencers from their flesh and blood contemporaries.

Why is this important? Why should anyone care if people or companies are using digital avatars to promote or create content?

Aren't the real creators behind these personae human beings anyway? Well, yes, but who creates the content is second to who the public associates with it. The people behind the content are ultimately replaceable so long as the persona's public image can continue to be used because to the audience, the persona is a real person. This allows companies that own these personae the luxury of having immortal puppets who do and say whatever the company needs without contracts, negotiation, personal disagreements, or even pay while still being perceived as a person.

The universal utility of these personae prompts an unsettling question: why should companies bother with human stars and faces when they can create one that they legally own? These personae have no rights, no needs, and no wants beyond what the company that owns them decides. They will never be involved in scandals or be poached by competing companies. They will never die or become sick. The popularity of existing digital personae is proof enough that being human isn't a prerequisite to being a famous person and why wouldn't companies exploit that?

The digital persona acting as a face for whomever is creating content for it bring the question of whether they can completely replace humans. Computer-generated scripts and art already exists and is advanced enough that some of it is indistinguishable from human effort. As our technology progresses, the gap between the art and expression of humans vs. A.I. can only grow smaller.

But as our understanding of computers and A.I. progresses, at what point can we consider these creations people with rights? Can we ever consider these digital personae to be people even if they're promoted and presented as such? Can legal action be taken against the persona and not the company that owns it? Could A.I. generated content ever truly replace human creations in the mainstream consciousness? Who owns the content, the A.I. or the people who created it? These are important questions to ask as A.I. and robots continue to overcome hurdles such as the Turing test and become more humanlike. We're facing a future where content no longer needs to be made by people. A.I. generated art, music, writing, movies, and more feel like they're right around the corner. Who's to say that won't eventually replace human-made content and leave us with nothing but corporation-created and approved entertainment?

Enchantment of/with Enhancement

by Valeria Obando

INTRODUCTION

With globalization spreading over the world the average college graduate student is expected to be fully proficient in a wide range of skills, mastering at least two languages, and having at least two years of experience practicing such skills in order to get an entry-level job. As technology advances, there has been a focus on researching and developing efforts towards the improvement of knowledge, and how such skills can be acquired, so that the way that we learn and the rate that we do so can be improved in the near future.

TODAY

In actuality, the use of drugs that can enhance cognitive skills for an extended amount of time is not uncommon nor illegal. In fact, most of them are prescribed by a doctor if the patient is considered to have some sort of condition that needs its aid to live a standard life. According to the Center for Disease Control and Prevention, in the US alone, around 6.1 million children were diagnosed with ADHD (Attention Deficit Disorder)

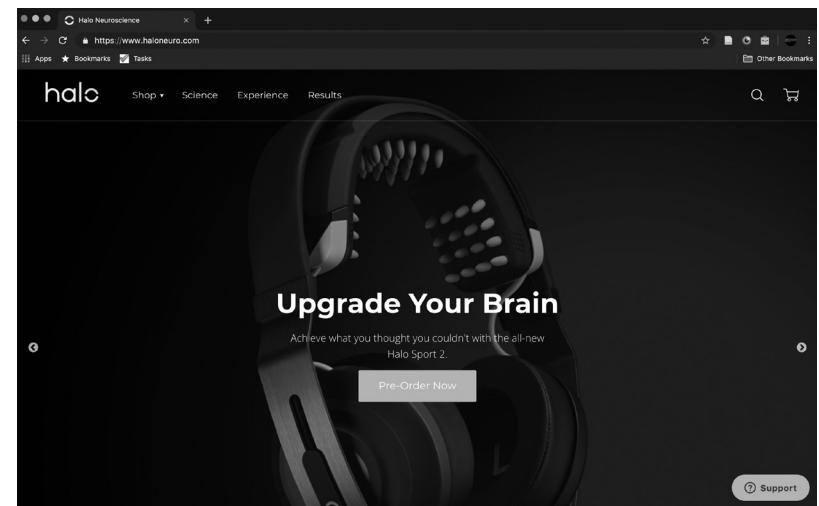
in 2016, from which 62% were taking some sort of medication. Among these medications, Ritalin and Adderall are the most commonly used, not only by these ADHD patients but by college students and professionals that look for ways to concentrate and work more effectively.

Moreover, Ritalin and Adderall are not the only drugs used to increase cognitive capabilities. Methylphenidate (used to treat ADHD and narcolepsy), Atomoxetine (used to treat ADHD), and Donepezil (used to treat Alzheimer and dementia), are among the drugs also used by individuals as cognitive enhancers. Nonetheless, some of these drugs have unwanted side effects, among them, we can find heart problems, instigation of suicidal thoughts, aggressiveness, psychotic symptoms, and addiction. These type of reactions have led scientists to look for alternatives that can unlock the same potential without the detrimental side effects.

TDCS AS AN ALTERNATIVE

With this in mind, there have been technological advancements that have developed mechanisms and different methods in which one can enhance and improve the way an individual learns and acquires new information; ranging from physical activities to educational purposes with the promise of no to lesser side effects which can be reduced to redness, tingling, or mild headaches (experimented by few individuals). This innovative technology is called tDCs or Transcranial Direct Current Stimulation which, as defined by John Hopkins Medicine, “is a non-invasive, painless brain stimulation treatment that uses direct electrical currents to stimulate specific parts of the brain. A constant, low intensity current is passed through two electrodes placed over the head which modulates neuronal activity. [...] Several studies suggest it may be a valuable tool for the treatment of neuropsychiatric conditions such as depression, anxiety, Parkinson’s disease, and chronic pain”. Further research has demonstrated that when used in healthy patients, tDCs can actually increase the cognitive abilities of the patient, depending on which area of the brain is stimulated. It is important to note that tDCs is not recommended for use in people 18 years old or younger as the effects in developing brains are still not clear. While this kind of technology sounds futuristic, products that use this technology have already made their way into the common market.

For instance, there is HALO, a company that has developed a headset that uses tDCs to stimulate the motor cortex which is the part of the brain that is in charge of learning movement. The process that involves this headset, starts 20 minutes prior to commencing any physical activity, sport, or even instrument practice in which the tDCs will leave the brain in a stage of hyperplasticity (learning stage) for the next 60-90 minutes after being used. After several repetitions, HALO has proved to lead to a “30% increase in speed and accuracy on a piano task”, it has also enhanced “cycling performance by 17%”, and has improved “running endurance by 15% over control” among other improvements. But HALO is not the only company that has launched technology based on tDCs to the market. In fact, multiple companies such as The Brain Stimulator, TransCranial Technologies Stimulator, or Foc.us promise to improve your memory, the way you learn in school, or at work, and give you a boost to learn more effectively by using similar methods and tools involving tDCs.



WHAT ABOUT IT

As of 2019, tDCs has proven to improve learning, yet still, several repetitions are needed to fasten your learning rate by ~30%. As technology progresses this number will probably increase exponentially in the upcoming years. At the prospect of this number, it brings up the question of how will the future look like, and what kind of society will house these products. Currently, the HALO headset can be acquired for \$299.00 USD and The Brain Stimulator headset can be acquired for

around \$167.00 USD, this means that not everyone has the economic resources to use this technology and only those who do, will be able to exploit its advantages. But, what happens to the rest who can't? Will they receive extra help when it takes them longer than those with the headset to complete college? Should the government provide these headsets to those having learning difficulties? If knowledge belongs only to those who can afford it, will our future society face even more inequality than the one seen today? an inequality that transcends over who has control over politics, health, or education?. For instance, according to HALO's website, the US Olympic ski jumpers are using the technology to improve themselves in the sport, but, what about other nations that can't afford this? Will they be left behind in the game because they didn't have access to it?.

These questions can pose socio-economical and cultural issues that need to be taken into account by those who produce and design these technologies. When doing so, having in mind the repercussions they will have in our society and whether they will positively or negatively impact the future.

CONCLUSION

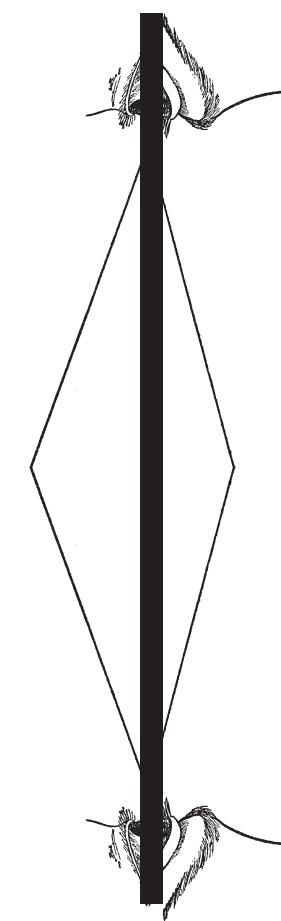
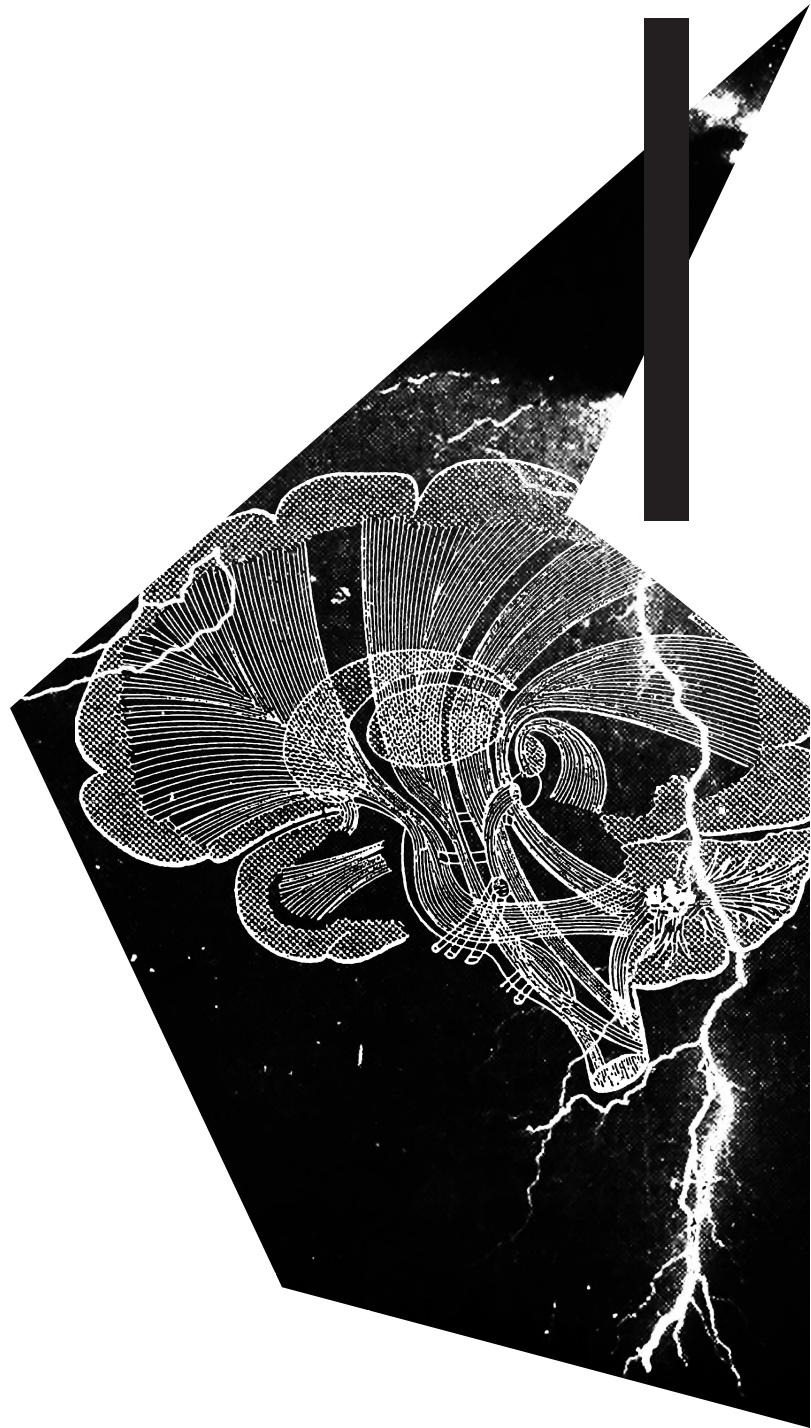
Having all this into account, tDCs is an innovative technology that promises it's users effectiveness and safety to learn almost anything at a faster rate than ever before. It is a technology that helps the individual keep up with the fast growing rate of globalization and attain the skills to thrive through it. While the future is uncertain, designers and companies have in their hands the possibility to create a better or worse future. Designing accessible tools in all aspects will potentially benefit the community as a whole and will open opportunities to those who need it, shaping in this way, how the future will look like.

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KNOW

Sidewalk Toronto: a Rhetorical Analysis

by Cindy Ochoa

Smart cities are either defined as human-centric or exploitative. Google's company known as Alphabet has created Sidewalk Toronto, a concept used to foster urban innovations within cities that have difficult urban challenges (Sidewalk Toronto). This idea brings communities together to assess distinct approaches to build a pleasant experience living in the city through a combination of urban planning and technology. At the heart of data-driven cities is the ethics involved with creating an urban system designed to benefit and advance communities at a large scale. Why aren't people aware of the way Sidewalk Labs is gaining access, control, and profit from the data being collected about individuals? After all, the data is being used to design these future streets, buildings, and transportation? Sidewalk Toronto establishes their authenticity and credibility within their promotional video, [Introducing Sidewalk Toronto](#). This video addresses professionals involved with the project while utilizing emotional appeals through the speech of locals in Toronto regarding the importance of building a community. I believe rhetoric goes beyond the use of words, and it is an important technique used to persuade an audience to feel, act, or behave a certain way. Sidewalk

Toronto's promotional video successfully uses emotionally-charged phrases and reputable professionals involved with Sidewalk Toronto to persuade its audience that people-centered neighborhoods will improve the quality of life for Toronto's residents.

I am going to define the rhetoric found within Sidewalk Toronto's promotional video for the urban living through the lens of the Neo-Aristotelian method of rhetorical criticism. The Neo-Aristotelian approach towards criticism references the analysis of breaking down the multiple forms of communication in order to understand an output (Foss). Through the use of this type of practice, I will review the context and structure of the Sidewalk Toronto's promotional video and the various approaches used to appeal to the intended audience. Through the use of rhetoric tools, Sidewalk Labs is able to mask the potential moral issue of their data collection which helps keep the company's mission from disseminating into a negative connotation.

Its primary audience is residents of Toronto that are urban growth advocates, and its secondary audience is individuals interested in the process of creating innovative communities. During the video, professionals and residents discuss the potential Sidewalk Toronto has on improving the city's quality of life and how Toronto can be the ideal city for urban innovation. Through the introduction of sustainable practices fostered through interdisciplinary techniques involving technology, Sidewalk Toronto is also catering to its secondary audience. It does so by defining opportunities for urban growth through combining aspects of technology and architecture to build solutions to urban challenges.

Using the Neo-Aristotelian method, I will identify the Sidewalk Toronto promotional video approach towards, "the public's perception of the speaker, the audience, the major ideas presented in the speech, the motives to which the speaker appealed, the nature of the speaker's proof and the manner of delivery" (Foss). The video embodies the support the Toronto residents have towards the solutions that Sidewalk Toronto can bring to urban communities such as efficient energy use, affordable housing, and accessible transportation services.

The introduction video of Sidewalk Toronto unfolds with Toronto residents describing their prideful experience of Toronto and the bountiful varieties of culture that make the city a desirable destination. Moving forward, Sidewalk Toronto presents its partnership with a revitalization advocate company known as Waterfront to introduce their initiative: to establish an urban community that serves as a model for how to, "build cities that can have the greatest impact on our future" (Sidewalk Toronto, 2017, 1:04-1:08). To establish solutions for an ideal urban city, Sidewalk Toronto iterates the impact that interdisciplinary thinking can have on enhancing communities, which involves collaboration with the goal of cultivating the current city environment. On the other hand, the video also appeals to its audience by giving reasons to advocate the approach toward tackling urban challenges and enhancing the quality of life for residents in cities through the use of planning, process, community, and technology (Sidewalk Toronto).

Throughout the video, Sidewalk Toronto inserts video titles introducing professionals involved with the project to strengthen their credibility as well as appeal to the ethos which gives the audience an opportunity to consider the possibilities of this initiative. As the audience is focused on the integrity of the process, it is critical to include highly reputable experts that will be directly engaging with Sidewalk Toronto to establish people-centered neighborhoods. Some individuals who appeared in the video include the Chairman and CEO of Sidewalk Lab and the Chief Development Office of Waterfront Toronto. Providing these officials' opinions helps the audience see that the leaders within the company are supportive and eager to make substantial changes to city living.

Sidewalk Toronto orchestrated an optimistic tone and atmosphere through the use of sound, music, color, lighting, and progression which relate to the overall audience experience. As aforementioned, the video starts by displaying residents candidly talking about their experience with living in Toronto. The genuine expressions on the individuals faces as they talk about Toronto enhances the optimistic and hopeful sentiment for the future of the city.

Aside from the resident's responses, the setting of the video directly affects how the viewer perceives the authenticity of the company. The visual appeal of the video starts with natural lighting which helps captivate the ambiance as natural light portrays cleanliness,

beginnings, and coolness (McKinnon). Before the video begins, the audience has an overview of the Toronto skyline and once you play the video, your attention is immediately brought to people speaking about their history with Toronto. The clips are short and precise, this build up of information gives the audience a sense of curiosity and the peaceful background music alludes to a hopeful outcome.

In addition to the music, the audio cues allow the audience to paint a picture of any missing context. For instance, the video takes place outside, but the camera gives us a limited view of their location. Once we hear noises such as birds chirping, waves splashing on the shore, or cars passing by, the audience can imagine the area they are in and relate their experiences associated with those noises. Aside from the sounds, cool color tones add another layer to the tone of the video. The overall blue tone displayed captures the cleanliness of the city, which makes the audience feel confident and secure which aligns with the optimistic tone of the video (McKinnon).

Besides setting the tone through cinematography, the video uses engaging and emotionally-charged words and phrases that support the innovation that Sidewalk Toronto will bring to urban populations. For instance, Eric Schmidt, Executive Chairman of Alphabet states, “this will be a global draw for new ideas, economic growth, and development,” (Sidewalk Toronto, 2017, 02:29-02:34). This phrase attempts to convince the audience of the transition and upward mobility people will experience if Sidewalk Toronto is a success. This form of rhetoric is generally known to be used when trying to convince the audience of an opinion without addressing the opposing opinion. Other phrases such as “rethinking how we build cities in the 21st century”, translates to the audience that the interdisciplinary methods the company plans to execute will help establish urban growth (Sidewalk Toronto, 2017, 1:22-1:25). Lastly, the statement found at the end of the video, “the neighborhood of the future starts with your ideas” leaves an open message for the audience (Sidewalk Toronto, 2017, 3:39-3:45). This leaves the audience deep in thought, thinking of the ideas that could be transformed into reality if we partook in the movement towards change that will benefit communities way of living and increase in revenue.

Sidewalk Toronto effectively persuades its audience about the positive impact the Toronto community could have on future upbringings with urban cities. This company persuades the audience to be in favor of the urban-innovation model through the rhetorical appeals of pathos and ethos. Through the Neo-Aristotelian method of rhetorical criticism, I breakdown the different forms of communication used within Sidewalk Toronto’s promotional video to identify unique persuasive motives. The different forms of communication involve: emotional storytelling, addressing reputable professionals and setting the tone through cinematography. All of these different forms of communicating Sidewalk Toronto’s objective helps persuade the audience to feel and understand the opportunistic motives the company values.

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Self-Drivers

by Justin Pham

As a car enthusiast, the issue of self-driving cars is something I follow closely. The idea of autonomous vehicles has been around for many years, but wasn't brought into the national spotlight until Tesla unreleased the 7.0 software update in 2015. Since then Tesla along with several other car manufactures have been racing to develop a more capable and refined self-driving AI. As a student commuter having a self-driving car would be amazing as I could be using all those hours driving to catch up on homework or watch my favorite TV shows. While this dream could become a reality sooner than I expect, the real question that we all should be asking though is are we ready to have self-driving cars on the road?

The idea of self-driving vehicles has been are around for quite some time. Waymo, which started out as a Google project, is a company dedicated to creating fully self-driving vehicles. Waymo have been researching and developing on the idea since 2009. Waymo has been successful in creating their own software and sensors, and as of last year launched a fleet of self-driving minivans in Phoenix, AZ for road

testing. While Waymo is taking the lead in complete self-driving vehicles, other companies such as Uber, GM, and Tesla are slowly playing catch up. GM recently announced that they plan to invest over a billion dollars into more research and development in their autonomous vehicles. Tesla also recently announced on Autonomy Day that new Tesla vehicles will now have the option for full self-driving. It's important to note here that according to Tech Crunch this not "full self-driving driving".

Throughout the years, especially since the release of the 7.0 Tesla Autopilot, self-driving vehicles have also been in the spotlight over safety concerns. Time and time again self-driving cars are blamed for auto accidents around the country. The first fatal accident involving a self-driving car occurred last year in Tempe, Arizona where Uber was testing a fleet of their self-driving cars. A woman by the name Elaine Herzberg was walking her bike across the road before getting hit by an Uber SUV. According to Uber driving systems on the vehicle, the woman was first identified as an unidentified object, then as a car, and then finally as a bike. A report recently published by the Georgia Institute of Technology suggest that self-driving systems struggle to identify people on bikes and can even struggle to identify people of color. This accident has also brought to light the lack of laws and regulations revolving self-driving vehicles. Who is to blame if a self-driving vehicle were to break the law, just as in this case, and, should the company be charged with a crime?

While there is no doubt that there are some downsides to self-driving vehicles, they are a plethora of reasons why it's being pushed so much by automotive industry. The biggest reason is the money opportunity. With self-driving systems ready for use, Uber will be able to deploy additional self-driving taxis on the road alongside its regular drivers. These "robo-taxis" could be deployed in areas where more drivers are needed and even take on long, complicated routes that other human drivers don't want. Other companies such as Waymo and Tesla are following suit on this idea.

Having self-driving cars will also help make life a little easier people. Just like I mentioned earlier, people like me who have long commutes can use the extra time to get work done instead of sitting there and watching the road. Parents can use self-driving family cars to bring the

kids to school and bring them back. Disabled people who aren't able to drive cars on their own will now be able to get to anywhere they want without having to rely on other people to drive them around. Apart from driving, many people will save money on car insurance, since self-driving cars are considered safer driving.

According to the Department of Motor Vehicles 94% of crashes are caused by human error. Drunk driving, speeding, drugs, and falling asleep behind the wheel are some of the reasons why automotive accidents happen. Computers and sensors do none of this which means that percentage could drop dramatically and save many lives. Fewer crashes on the road means less traffic, which saves gas and costs for everyone.

All in all, I believe that autonomous self-driving cars are the future and can benefit society as a whole, but there is still a lot of work to be done. As of today, almost all self-driving systems still struggle to identify certain people, that is people on bikes, people of certain skin tones, people using a walker, and even people wearing certain types of clothing. The other issue is laws and regulation. Several states are open to letting companies test their self-driving vehicles on their roads for the capital gain but have yet to make any laws that are crucial to protecting drivers on the road. It will most likely take many years before any state or federal laws are put into place, but until then this gives companies a good opportunity for continuously testing and refining their systems.

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Smart Cities, Automation, and Faith

by Jonnie Rozin

As a kid, I always dreamed about what has come to be known as “smart cities” and the “internet of things” (IoT). I remember watching Michio Kaku in science class talk about smart homes and smart cities, and how even us as human beings could be smarter through the technology that we use in our daily lives. I was fascinated by the holograms that could help walk kids across the street, the smart windows that could show you whatever view you wanted to see out of your own window regardless of the actual view, and of the smart walls that could turn into televisions instantly. Michio Kaku always talked about both ends of the spectrum. About how technology in the future could be used for both the good and the bad. How bad people will still exist in the world, but how through the use of good technology built by good people, we could combat the evil in the world. It seemed to me that IoT technology could be useful in our lives, but that an overabundance of it could create some sort of dystopia.

I believe that the field of User Experience Design — a field of which I am now a part — as a whole could make or break future smart cities as well

as future smart homes and, as a field, we have a massive responsibility for the future of Internet of Things technology. Our job is to design with the user in mind. Unfortunately, when dealing with this type of technology, users get weary, worried, and even slightly fearful about their privacy. But we have the power to design in a way that makes potential users comfortable with IoT technology.

Something else I'd like to touch on is the privacy issue that exists when dealing with smart cities. Who has access to what information? Just because we "exist" in a smart city world, just because we walk around and live our daily lives, do bigger organizations, governments, or companies have access to our lives? Through access to that type of information, can these bigger organizations, governments, or companies mold the way that we live? Call me an optimist, but I believe that as humans that design this type of technology, the majority of us want it used for the greater good.

How can we build technology that reflects our values, or at least reflects the relative benevolence of those of us who are building the technology, especially when it comes to automated systems?

Automation is such an interesting topic, in all careers, but specifically in UX/UI Design, this is something that is always on my mind. Where will my job be in 2 years? What about 5 years? Since technology is something that changes on a daily basis at such a high level, 10 years feels like a universe away. Will my job even exist? Will people need UX/UI Designers to actually design stuff, or will there be AI designing software that "can do it better than us"? And realistically, how much preparing can we actually do for a future like that? Unfortunately, I don't think we can prepare for a future like that. Unless you make it your sole mission to go and help develop these futuristic AI designing softwares. Because if you can't beat 'em, you join 'em, right?

Wrong. I don't believe that software will ever do it better than humans. Automation isn't inherently bad, and it's made doing UX design work significantly easier over time. 5 years ago, it was hard to build a website. Now, I can have a custom website built for me in 10 seconds by putting in some quick information and clicking one button. Before we know it, app development will be at that point as well. However, these "custom" built websites are not unique in any way. They all follow the same

guidelines and metrics. Humans don't do that. As human designers, we perceive design in a way that a computer will never be able to fully understand. At the end of the day, it's what makes us human.

So do I think I'll ever be replaced by a machine? In some cases, yes. In fact, I think nowadays I'm already being replaced by machines. If you make it your goal to become a simple designer, you're already replaced, whether that's by another human or another machine. To be unique, you have to pour your heart and soul into the work that you produce. Your work must show your uniqueness. This isn't just a career, we are building what the future looks like in this field. Whether that's through technology, physical products, or the cross between them.

How does this tie back to smart cities? Designing for smart cities, and even creating design systems that automate that process would not only be a future I want to see, but a future that would accelerate the growth of smart cities. It would give us the opportunity to figure out how to design and create a world that is safer, smarter, and easier. Through automation of the design of smart cities, we would be able to build a world worth living in. A world that is strong in smarts, and good in ethics.

Similarly to Michio Kaku's point, as UXers, we could be the good people that build good technology, that then result in good smart cities.

How Tech Has Perpetuated Stereotypes

by Alexandria Rucker

As user experience designers, we have an obligation to our users to create systems that are inclusive, informative and easy to use. Our design choices affect how people perceive themselves and others. When teams creating these systems do not represent the end user, groups are left out of the fold and binding stereotypes are perpetuated. The lack of diversity in the industry has brought rise to technology that does not represent all groups. The gender and racial discrimination in technology, specifically AI and machine learning algorithms are ostracizing because the people who designed them do not represent all users.

In 2015, Google's photo app caused a stir when its machine learning algorithm started classifying images of black people as gorillas. Google came back with an apology stating that they were "appalled and genuinely sorry". This instance highlights the impact of having a homogeneous working team. Machine algorithms are programmed by humans and those algorithms inform the lens in which people view

themselves. A system that is not designed to recognize nonwhite faces is not a result of happenstance. It can be argued that there is a direct correlation between homogeneous design teams and the products they produce. People design for themselves and if underrepresented groups are not present in the design meeting or brainstorming session then these same minority users get left out of the finished product.

In the case with the Google Photo app, it is clear what group was not sitting behind the computer when the algorithm was being programmed. Since this incident, an article from WIRED revisited this topic in 2018 and found that Google's algorithm has still not been fixed. Instead, it appears that Google "solution" to the "bug" is simply erasing gorillas and other like search terms from the programs lexicon to avoid this error completely (Simonite).

Another, more serious example of discriminatory tech was uncovered by ProPublica who investigated the use of risk software used to determine a defendant's likelihood of committing a future crime. ProPublica launched their investigation after U.S Attorney General Eric Holder warned the U.S Sentencing Commission about the use of these scores and predicted that it could lead to bias in the courts. After the U.S Sentencing Commission failed to hear Holders warnings ProPublica obtained more than 7,000 risk scores from those arrested in Broward County, Florida, in 2013 and 2014.

ProPublica found that "only 20 percent of the people predicted to commit violent crimes actually went on to do so" (ProPublica). In fact, it found that African American defendants were twice as likely to be given a higher risk score for re-offending but did not go on to re-commit any crimes. It also made the opposite mistake for Caucasian defendants.

These scores have been cited for their sentencing decision. A Wisconsin judge sentenced defendant Eric Loomis, a black man, to eight years and six months to prison due to his high-risk score. Loomis was charged with "driving a stolen vehicle and fleeing from the police". His attorneys argued that "the score at sentencing (is) a violation of his due process rights" (ProPublica).

This case made it all the way to the Wisconsin Supreme Court and during the court arguments Wisconsin Assistant Attorney General

Christine Remington said, "The risk score alone should not determine the sentence of an offender".

Allowing tech to influence our everyday decisions is not uncommon. We use it when looking at products to buy on Amazon, but using it to decide peoples fates is another story. The unconscious bias programmed into technology can have a drastic impact on underrepresented groups.

Thinking about today's open office environment where craft beer kegs have replaced hard liquor and bring-your-dog-to-work day is now a reality, it might seem as if we have made extreme strides forward. As we all know, Silicon Valley has become the new epicenter for innovation and attracts the brightest and most ambitious recent college graduates who are ready to pad their resumes with top tech companies like Google, Facebook and Twitter.

Silicon Valley, the homeland of our industry where a group of college dropouts began to congregate. The lack of diversity in the pioneer group that originally colonized the Cali coast has trickled down to hiring within tech companies and has excluded people from the industry. In a major corporation such as Tesla, one former female employee said, "that woman made up less than ten percent of her working group; at one point, there were actually more men named Matt in the group than there were women" (Kolhatkar). This sad truth highlights the inequality within our industry as women have been outnumbered by not just men but by a prevailing singular name!

Carnegie Mellon University, a leader in cybersecurity and online privacy, found that targeted ads for help-seeking jobs paying \$200,000 or more, were more likely to be shown to men than women. CMU developed a tool called, AdFisher which uses hundreds of simulated profiles to run experiments. These profiles give researchers insight into what kinds of ad targeting is being used.

The experiment created 1,000 fake users half male and half female and had them all visit the top 100 employment sites. Afterward, the researchers found that the "male users were shown higher paying job ads about 1,800 times, compared to female users who saw those ads about 300 times" (CMU).

Anupam Datta, associate professor of computer science of electrical and computer engineering emphasized that it is unknown if these discrepancies are due to preferences of advertisers or “the unintended consequence of machine learning algorithms that drive online recommendation engines” (CMU). We need to be vigilant about how we design and train these machine-learning systems, or we will see ingrained forms of bias built into the artificial intelligence of the future.

The lack of diversity in the tech industry has caused stagnant innovation. If the industry continues to hire homogenous groups of people, the products these people create will only serve those similar to them and reinforce the current systems and structures in place to include or exclude others. It would be a disservice to our users to continue to perpetuate a community that is counter to our industry’s original goal — putting humans first.

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Intention vs. Innovation: A Comparison of Public and Private Interest in Smart City Implementation

by Levi Jacob Salmon

In the year 2019 the “smart” prefix seems to be stuck onto every available noun. Starting with the smart phone, the modifier has rapidly spread to an array of common technologies. Smart speakers emerged when we taught regular bluetooth speakers to turn on the lights and tell us the weather. Smart fridges not only keep your milk cold but will let you know its gone bad and save you from smelling it yourself. Collect enough of these pseudo-sentient appliances and your humble dwelling can be regarded as a “smart home”. Once the perils of flipping light switches and smelling milk have been eliminated from your life you may decide it’s time to pack up and move to a smart city where carefully placed sensors collect a variety of data to improve community services, and manage resources efficiently. The potential for smart cities is vast. With proper implementation the model help reduce poverty and lead to environmentally sustainable practices but the mass-collection of data raises issues of privacy and individual liberty and involvement of private interests potentially discredits the fundamental goals of the entire initiative.

A smart city can be designed and implemented on a spectrum from purely public to private involvement. On one side the creation of a smart city is careful and deliberate process which suffers from the roadblocks of bureaucracy and corruption but allows for public consideration and involvement. On the other side corporate involvement will mean rapid development at the sake of caution and consideration. Real-world implementation of a smart city will involve a mix of these interests as public institutions will rely on private companies for technical support and innovation while the private initiatives will be forced to work with government to navigate policy and pass new legislation. For the sake of analysis I will look at each end of the spectrum before delving into the best-case scenario for smart city implementation.

Smart city implementation as a purely governmental process would be a difficult if not impossible prospect in the United States. The criticisms of this method may not apply to nordic and other countries that tend to embrace more socialist values. To fund the initiative would require raising taxes and putting it in place would require the creation of new government institutions and expansion of power, concepts that surround the fundamental disagreement between the two dominant political ideologies of the country. Assuming funding could be obtained, then begins the process of planning and coordinating, determining which companies to partner with and what areas to involve. All of this must be achieved within the means of the budget and close adherence to the law. By the time hands have been shaken and papers have been signed the technologies agreed upon could be rendered useless by something cheaper or more capable. At the cost of rapid development and innovation we are granted a reassurance that the decisions made throughout this process have been carefully considered and challenged from all angles. There is no guarantee that the government will act in the best interest of every individual but there is a much higher likelihood that unique voices will be expressed and passionate civil servants will defend the public good. The criticisms of slow progress are nullified if the alternative does not benefit the majority at all.

Giving corporations free rein to implement their own smart city initiatives would likely result in a rapid appearance of futuristic technologies. We are living in the outcome of a government unable

to regulate technological innovation and the results have been mixed. Motivated by profit margins, these companies are more likely to operate in morally gray (or black) manner in exchange for a thin margin over a competitor. The “ask forgiveness, not permission” attitude of innovation has given us the infinite knowledge of Google and the instant delivery of Amazon alongside the re emergence of inhumane working conditions and unprecedeted corporate influence. Based on the tendency for these companies to expand and record data on any human action imaginable, the concept of a thoroughly monitored society which tracks the individual and society 24 hours a day is more than appealing to them. I have no doubt that these companies have the potential to produce spectacular innovations overnight but given the past and present behavior of tech companies I can only assume they will be designed to provide convenience to those already well-off and funnel profits back to shareholders. Although skeptical of corporate involvement I do not believe a purely public implementation of the smart city is the optimal solution.

One benefit that free market capitalism provides is competition. In an economy where data is commodified that means companies are competing for data and therefore it is split among them. A grave concern regarding the public approach to smart city implementation is how the data will be handled and processed. The volume and breadth of data provided by a smart city is an invaluable resource which will allow for new insights into human behavior. It will require new governmental institutions to organize and analyze the raw material into meaningful conclusions. Whatever entity possesses this massive amount of data is able to control the narrative it inspires. Given how easy it is to draw false conclusions from data, a source of it this size could be used to quantifiably support any concept imaginable, whether it be based in fact, belief, prejudice, or greed. While this may sound dramatic, the United States government is notorious leveraging fear and war to disregard individuals rights to privacy and expand power. If the NSA was able to survey entire populations using the data available in 2001, imagine what they would have done with access to a smart city database.

While there are serious concerns that must be addressed when considering the design and implementation of a smart city, this technology has the potential to improve society on an enormous

scale. The most important step in the process is coming together as a community and asking ourselves what we want to see improved. While efficiently orchestrating rush hour traffic and further personalizing services may improve the lives of the fortunate few, this technology could potentially be used to eradicate poverty and reverse climate change. If society can decide what challenges to prioritize, the implementation of the technology will be relatively unimportant as long the core values are considered at every step.

Decolonizing Google Glass

by Jordan Shelby

In a world where it may seem that technology is available to everybody, we sometimes fail to notice that its access and usage is driven by power dynamics centered by demographics and experiences. More than 60% of our world's population is offline, with internet access obviously higher in more advanced communities and the ability to speak English being a significant factor to whether someone may use the internet. Tech companies like Google have participated in what may seem like colonial efforts with the production of Google Glass. When this occurred, from a business aspect you may look at this as a failed business venture by Google. But in reality, they released this expensive beta form of the technology as a research mechanism to test how AR can be used in the world today.

Although It may not have worked before in terms of being a big seller, technologies like Google Glass is definitely meant for the near feature. When it was initially released, only people who had \$1,500 laying around were able to pick it up. But even then it was before it's time. The AR/VR world didn't really exist yet until it became popular when used on already

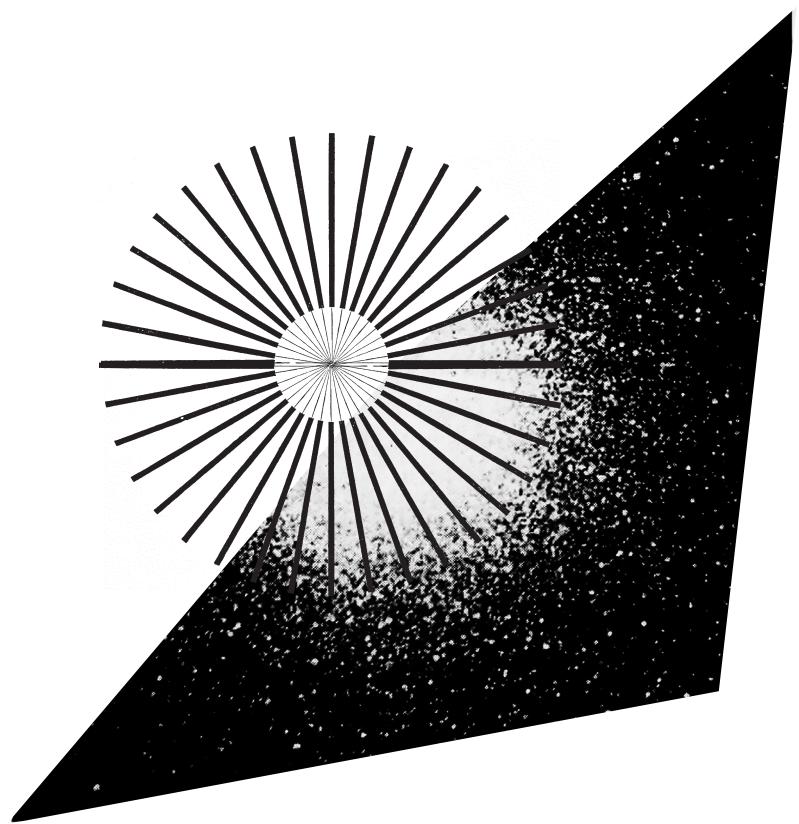
established devices like smartphones and in very popular apps. Most tech users first glance at what AR can do was through Snapchat Lenses, which brought digital elements to a live view that could be shared with friends. Another AR experience that took the world by storm was Pokemon GO that brought location awareness to augmented reality, and showed how virtual creatures could interact with actual surfaces. These allowed the world to see how powerful AR can be. Now that this has happened, Glass will make a comeback now that Google has developed ARCore; a developer toolkit to allow for making augmented reality apps more simple. Apple has also been in the works for producing its own AR products now that they have their own ARKit so I wouldn't be surprised if Apple releases smart glasses as well. For these smart glasses to be optimized to the fullest, companies whose servers are connected to the same as your phone must produce these glasses. A recent release on similar but more stylish smart glasses were produced by North. North Focals uses a similar yet more hidden laser like Google Glass to display menus and notifications received by your mobile device. However a huge problem with messaging on North Focals is that since they don't share the same server as the one's on your phone, they provide you a new number which can be confusing to you and your friends. However, Focals start at around \$500, which is close to some of the top name brands for normal frames so this would give more people the opportunity to own a pair of smart glasses.

Something interesting to think about when it comes to smart glasses from a user standpoint is what elements of society can be affected by the advancement of the technology and all things connected to it. For example, with Google Glass and related products, I believe that the user's time on their smartphones could decrease dramatically during work/school hours and productivity would increase. Since people average about a hundred push notifications a day, you can imagine how many times you get sidetracked when viewing a notification, then, opening another app. With smart glasses you can stay focused by choosing what notifications are important enough to read right through the lenses or deciding to take out your smartphone. But what about the hidden influences smart glasses can have on the society? Yes, almost every new application or hardware has something to offer users to simplify their life or add entertainment but with something that will definitely collect a lot of data about you, you'd want to know what can that data be possibly used for.

Think about on iOS devices currently. I've noticed how when my iPhone connects to the bluetooth in my car, the Maps app tells me about how long it would take for me to get to the destination they think I would be going at that time of the day and offers directions. I don't ever remember configuring my phone to do this, but I found it interesting to know that my iPhone automatically knows my daily schedule. You can imagine that if an iPhone user sticks to their routine religiously, all the location-based data Apple would have on this user and could possibly connect this data to other people because they have similar interests. Coming back to Google Glass, a device that would be in an active state more hours in a day than the smartphone, data can become more precise to what the user could actually see on the way to these destinations. Google Glass would know about all the stores, restaurants and other places they would be able to recommend to the user without them having to pick up their smartphone since they are still a company huge on advertising, right?

To decolonize this technology would be to make it accessible in more communities. More companies are already starting to make their own smart glasses which is great because they make them a little cheaper. When a new line of Glass becomes available, we would be able to tame our mobile alerts. People can't continue to always pull their smartphones out when receiving alerts. Glass users won't have to worry about coming off as disrespectful in meetings or in school lectures because they'd see what alerts are coming in right through their frames. Important conversations wouldn't have to be interrupted by incoming calls anymore. To also decolonize Glass, or smart glasses a whole would mean more data we would allow powerful companies to have about us. Google glass only didn't work because it wasn't really expected to yet. They knew too new, so they used it as a research mechanism for what was later to come. A few years later, smart watches were released and enjoyed because they looked similar to products that been around for over a century. As we continue to support these tech companies, Google Glass and whatever product Apple may produce in the future would eventually look like normal frames, and one day maybe contact lenses that don't look like anything.

UPDATING



Big Brother Lite, or, 1983: the Year Before

by Sarah Sherman

We have more access to information today than we ever have before. You can find what you're looking for literally wherever you are and whenever you want. You can find almost anything with your smartphone and Google. Want to watch the latest Taylor Swift music video? Watch it on Youtube. Need to know what time the big game is on tonight? Google it. Looking for some new shoes for your cousin's wedding this weekend? Amazon can get those shoes to you in two days. You can get information about anything, including information about you. Companies literally pay for information about you, where you go, what you look up online and what you buy so they can sell you more things. If you're not a little put off by this, you should be. We're one step in the wrong direction from living in Orwell's 1984, we're just at the point where it's not intrusive enough in our lives for people to ignore the convenience.

Capitalism is alive and well in America today. Companies are getting better and better at targeting their customers and selling them exactly what they're looking for. Our devices are listening to us and

tracking us constantly. Some of this data is ignorantly being given away by users. Have you ever actually read the terms and conditions of Instagram or Facebook? Probably not. Companies know this and use it to their advantage. Instagram knows that people hate to feel left out and they know people will willfully ignore the red flags to be apart of the latest trend or most popular community. Data brokers also collect this information on you and create profiles to sell to these companies. These companies target us with customized ads geared towards your past behaviors to provide you with exactly what you need. Recently my roommate helped one of her good friends plan her baby shower. This included making invitations, buying and making decorations, registering for gifts and so on. For months after the baby shower all of my roommate's ads she saw were for baby products. So what's the problem with this? This is a mild annoyance, but it does show that they have the data on us but they don't have the whole picture/person which is a small comfort. The fact that people are collecting information about you is not as big of a deal as what they do with the information once they have it.

Researchers from the University of Washington have created an AI tool that takes audio files and converts them into realistic mouth movements. From there it grafts those movements onto existing video. With enough recordings they are able to synthetically create their own recordings of someone saying things they've never said before. This is obviously horrifying. What are the consequences if this becomes popular? This video evidence can be used to accuse people of crimes they didn't commit. If you're competing for a promotion with someone, you can fabricate harmful "evidence" of your opponent to increase your chances for the promotion. The University of Washington researchers don't intend for their AI to be used this way, but if it does get into the wrong hands it could be catastrophic.

Many times you will hear people say "I have nothing to hide" in response to others bringing up privacy concerns. While a person may feel that they have no need for privacy due to their data being useless to the government or corporations, they fail to understand the greater impact that their data being stored may have on their life. The concern for privacy does not lie in the content, but in how that content is used. For example, a person's love of water parks is inconsequential data on its own. If that information is then used to show that person ads for vacation

spots that feature water parks, those ads then shape the choices that person makes in where they spend their free time. That further leads to where they spend their money. While this may seem harmless because the person is spending their free time doing something that they enjoy, the way in which they are using their assets is being shaped by the content that they are being exposed to. Personally targeted ads can be limiting, but the true danger lies in the control on the data that is being stored. Once an entity has access and control of a person's "private" data, they are at liberty to utilize it however they see fit. A person no longer has agency within society. At what point does data collection move from creating a personalized experience to dictating a person's freedoms?

It may seem ok now because they're just trying to sell us more stuff. But once someone gets the idea to do a little more, we're in trouble. Things will escalate to a point where we're unhappy and we may not be able to change things or we will have to make significant changes our way of life. All this technology is so embedded in our way of life, they've been listening to our conversations and collecting our data that we've become desensitized to it. There are movements to step away from this invasion of privacy. Ad Blockers and anti-tracking plugins help keep your data from being collected in the first place. People are deleting their social media accounts and "de-googling" their lives. This is a minority of people and might not be enough to make a significant impact on data collection. The main concerns with data collection is how it is happening slowly and under the radar and the technology used to this are becoming more and more ingrained in our lifestyles. People likely won't be upset about it until our privacy is completely gone. Right now we are satisfied enough with our quality of life, but once we get to the point of no privacy what else will we have lost? And more importantly will we take action before this happens.

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IA Design in the Digital Era

To build a mutually active relationship between individuals and their surrounding world

by Naomi Wang

Take a look around the space where this digital screen is located, we are now living in the midst of the rapid growth of digital devices and smart technologies - their existence has largely affected our society and lifestyles, specific to how things are getting done and how individuals are connected. The goal of IA design has shifted from making information more accessible/ more comfortable to perceive for people, to establish a mutual relationship between individuals and their surrounding environment.

LET INDIVIDUALS RECEIVE BETTER

IA design is now aiming at, first, granting individuals the enhanced ability to better receive and interact with their living environment. It is no longer restricted to information accessibility on traditional online platforms. Instead, it is now infiltrating into every corner of our daily lives.

1. The information carrier
2. Personalized information
3. Instant Information

THE INFORMATION “CARRIER”

“Make today’s weather ‘glanceable.’” (Kawamoto, 2015)

IA design is now bringing more joy to us than just fulfilling basic needs. This means, for example, with Tempescope, not only can one avoid getting wet in a rainy day through the information that the weather app provides, but one can also see the actual rain and weather change happening in a little transparent cube beforehand. Instead of receiving weather information from some vectors and texts on our phone, Tempescope started a group chat between us and the outer world nature.

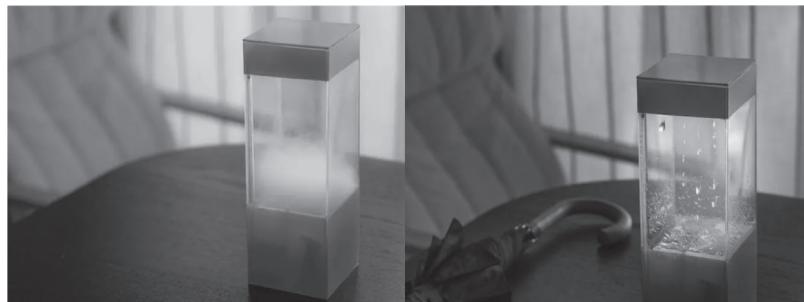


Figure 1.1, 1.2 “Tempescope - a box of rain in your living room.” The weather forecast in a beautiful responsive climate display: rain (left), clouds (right).

Making flat information fun to hang out with, the IA design in the digital era is selling the lifestyle. What I see from the product is the allure of IA design in this era - the ability to magically merge the technology and natural landscape that not only ensures the essential ease of getting the information, but also makes the carrier of the information aesthetic to view, and enjoyable to receive and utilize.

PERSONALIZED INFORMATION



Figure 1.3 L’Oréal’s UV Sense tracker, shown on the thumbnail, and app.

When it comes to self-tracking, specific to skincare apps, traditional IA enables users to build an overall image of their status, and the data source is based on general information of their big user data, such as skin type, age, diet and living condition, etc. While L’Oréal pushed skincare app data source to whole other level, they designed the personal UV sense tracker in partnership with Swiss designer Yves Behar. The waterproof “stickers” of sorts detects both UVA and UVB rays are easy to apply on to body parts like skin and nails, which are the optimal location for receiving sunlight, to give instant feedback based on the corresponding changing environment.

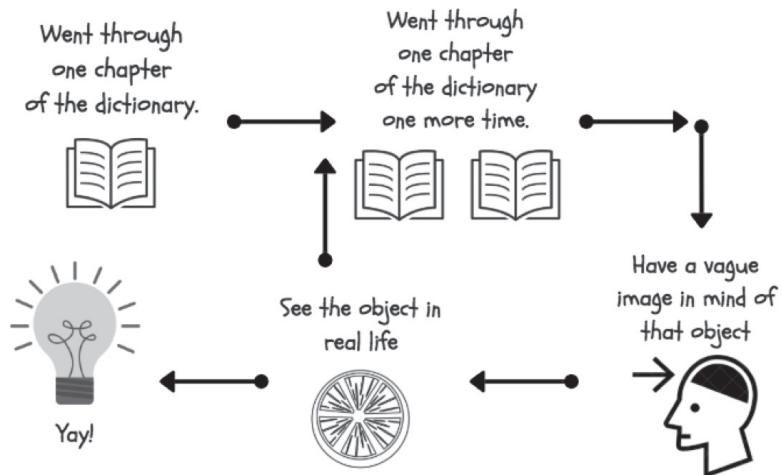
Information Architecture organizes information and content in a way that makes the most and best sense for everyone. For users, IA solves from the basic but essential problems of finding relevant information to users at any given point, in an intuitive way. (Aydin, 2018) To make this goal more specific in a long-term, IA design has been in line with the trend of personalization. The end result of good Information Architecture is the visible transparency between the product and the customer, where there is no visibility of obvious pain points, and the information is presented in an exciting and structured way.

"Point your camera at things to hear how to say them in a different language." (Motzenbecker, 2017)

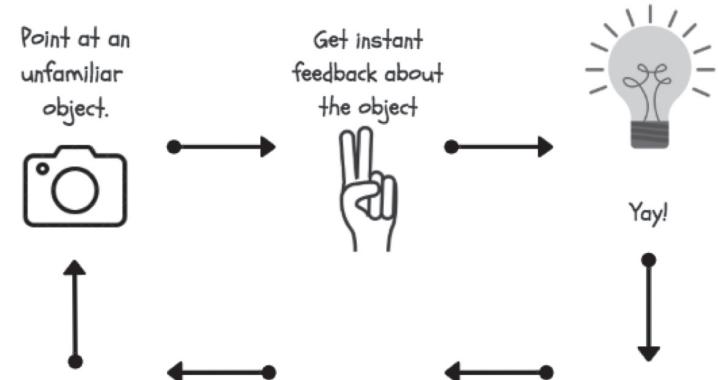


Figure 1.4 Google Thing Translator pointing at objects.

Thing Translator is the combination of computer vision and natural language translation that brings the digital screen and real-life scenarios together in the same picture plane. I have been an active language learner for 4 years and was completely reliant on physical vocabulary books the whole time. One of the frustrations I experienced was relating what I see with what I have in mind. The process of me learning about the names of life objects looks like something like this:



Thing Translator simplified the process. It ended up looking like this!



Information Architecture highlights a lot about immediacy. Making the information accessible for users through the least steps - simplifying the whole navigation process of looking through the dictionary (even digital dictionary), Thing Translator built the bridge between language learning and what we are learning from. Being able to get instant feedback or answer from the eye of a phone camera not only makes the learning process alive but also makes still objects alive, as to let them trigger the interactions with users.

CLOSING THOUGHTS

IA design has shifted from fulfilling our basic needs of accessing information to granting the information lives and personalities for us to interact, while at the same time it has also made us as different individuals easier to be noticed and perceived by the surroundings when desired. The developing IA technology is making us easier to contribute, engage, and initiate interactions from every aspect of our daily living. The future of information architecture will continue to be focusing on building a better mutual relationship between human society and the planet we live in.

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Every— where at Once

by Kate Whalen

Everyone wants to be everywhere at once, and the addictive smartphone device provides us with that irresistible power. With this dependency-causing device constantly at the tips of our fingers, we can be “here” and “there” at all the same time. When I go into the bar with my friends, it’s not enough for us to be experiencing things with each other, making memories together – I must be in “the know” about everyone else’s memories as well. Sure, I am geographically pinpointed at Fieldhouse in East Lansing, Michigan, but as soon as I place my thumb on my iPhone and open up Snapchat to watch the stories of people I probably haven’t spoken to in four years, I am suddenly somewhere else – I am where they are. I become a creepy fly on the wall aimlessly watching or judging or laughing at whatever someone from my hometown decided to post for the world to see. And then I keep going, clicking the next story, and then the next one again getting stuck into a trance. I am suddenly more consumed and focused on what other people are doing in their moment, as opposed to what I am doing in my moment. I am letting this moment, and my life, fly by while watching other people’s lives instead of putting my phone away and

living in my own.

While I watch from the sidelines, others do the same to me. I can go to view who watched my Snapchat story or Instagram story and swiftly scroll through 200ish names – most of which, I haven't communicated with in years. I see the names of boys I used to date, I see the names of girls I used to be friends with, I see the names of my overly-judgmental aunts. Why is this not considered “weird” to have them all updated on my life when we haven't talked in years? These people that I haven't communicated with in forever know what I ate for dinner yesterday because I posted a picture of it. This is something they would never know, unless they were with me eating dinner or I told them about it. Why should I and do I allow them access information on my personal life?

Sure, there are people I want to stay connected with over the years who I don't see often due to proximity. But, what about those who I don't care to stay in touch with? What if I don't want you to see what I'm up to? Of course, I can block you from seeing my story or just delete you overall, but why is this the culture of social media in the first place? Why do we feel the need to stay connected with people on social media from our past that can see just as much information about what our lives as our close friends on social media? And why is it frowned upon to remove these distant people from my media life? The idea of “unfollowing” someone is deemed to be so aggressive and rude, but it doesn't have to be. Removing people from your life that are toxic or are no longer beneficial shouldn't be considered rude or harsh. Privacy is a right that we have and should be able to exercise without disparagement. Unfortunately, digital communication blurs the lines when it comes to removing someone and people tend to be exaggeratedly sensitive about how we communicate through these channels.

As this “fly on the wall” phenomenon becomes the norm in our ever-growing digital culture, I fear for the future of interpersonal and intrapersonal communication between humans. I don't feel the need to call my aunts to see what their toddlers are up to, because they post at least five videos a day about what is going on. I don't feel the need to ask my friend how her weekend away was, because based on her glamorous Instagram posts, it looks like she had a delightful time. This is where the issue lies in our system of social media – we filter our lives to only show the very best about what is going on. Nothing can be flawed, we think, so we filter it all to only show the very best of what happens in our lives. Not

many people are going to post the bad stuff on social media, like how depressed they are, or how their boyfriend broke up with them yesterday. Understandable, of course, but at what point do we stop filtering. No one is perfect, and acting like we always are only hurts ourselves and others. This picture perfect desire only leads to an extremely assuming civilization. The assumption that everyone is doing great, based on how they portray themselves on social media is a farce. We're all constantly connected yet we've also never been further apart than in this time and age with instant technology at our fingertips.

As technology continues to vastly grow in all aspects of life, we must learn to cope with it and make an effort for better and more communication as our world will be eternally digital. No relationship can exist on this earth without communication, and when communication happens strictly through a phone screen, things get easily lost in translation. Considering established forms and habits of communication is essential to live a happier and mentally healthier life. There is a horizon of opportunities that can arise with our ability to contemplate what works for us and what doesn't work for us on social media. Understanding the power we have access to and how to control it can make this whole digital culture a bit easier on all of us.

Advanced Data Acquisition within Augmented Reality

by Noah Whitney

Augmented and virtual reality have ushered in a new era of technological growth and exploration. The capability of the medium has proven to foster innovation in fields that were previously stagnant, lacking in true innovation for years, even decades. Similar to the dawn of the computing era, there is a bleeding edge of rapidly developing technology that, once thoroughly experimented upon, will lead to highly advanced developments in individual lives and society. However, along with any innovation and improvement, there must be research on how the user operates within it. The methodologies currently established in our application driven society have proven to be incredibly useful in determining and designing great user experiences, all at the cost of user privacy. Comparable to essentially any other topic, there are fully subjective positives and negatives to

observe and account for. This chapter will look into both developing and feasible research technologies and practices that could become commonplace among virtual and augmented reality systems, and the consequences of utilizing them within a context of control and privacy.

First, I should note that both augmented reality and virtual reality lay on the same spectrum of technology. Because of this, I will refer to the entirety of both AR and VR as AR for simplicity.

AR has allowed for integration and immersion of a user into a system with far more detail than previously possible. The technology being developed and currently available enables developers to create experiences with varying complexity in the devices and technologies used. There are several readily available levels of these technologies that will increase immersion beyond the current headset and controller combination that is commonly sold by companies such as Oculus, HTC, Microsoft, and Valve. Some examples of technologies that could be / are being integrated into AR solutions include:

- Eye tracking
- Advanced movement tracking
- Heart monitoring
- Haptic feedback
- Odor production
- Brain-computer interfaces

These technologies have a far-reaching potential and are critical to furthering immersive user experiences.

The technologies listed will also provide developers with unimaginable levels of usage data. Previous methods of data collection will not compare to the feedback received from individuals using AR systems. The case for eye tracking is already made; it is a vital tool in software and web development research. Heart monitoring data can be substantial when correlated to other collected data. In-experience movement can also be tracked similarly to other positioning system methodologies, but with a much higher level of detail.

The most impressive and impactful of these technologies is, without a doubt, the brain-computer interfaces currently under research

and development by a multitude of companies, including Valve; a company that assisted with the creation of the HTC Vive, SteamVR (a VR software API), and now the Valve Index. When fully realized, Brain-computer interfaces, or BCIs, will provide users and developers with unprecedented control and sensory capabilities. The solutions will allow for intent to be translated into action through thought, and a user's cognitive state can be mapped, in real time, and turned into qualifiable and quantifiable data. This dual purpose will provide consumers with incentive to buy into these systems, which in turn will give developers incentive to create experiences utilizing it; both parties benefit from its integration into AR solutions, an incredibly important condition that must be met for a product to be viable in the market.

The most significant aspect of these sensory technologies will lie within their ability to correlate each other's data in a meaningful way. This will likely occur through an API that is capable of collecting data through any device designed to use it. This API will serve as an important tool in development, as it will allow interaction designers to develop the systems of control within an experience, but will also provide them with a large amount of statistics that will be key to further development of their experience. The API will also likely use pattern analysis to provide developers with the tools needed to interpret the complex data points collected. AI neural networks can greatly help with this, as much of the data will be far too complex for developers to interpret themselves. It is important to note that the creators of BCI systems and their APIs will not need to know the deep, inner working of the human brain. The why of a BCI's dataset is not as useful to developers as the what, how, and when. The analysis of these three data points within a set will allow neural networks to generate patterns that will then be used by developers.

For example: If a user is playing a horror game, and a part of the experience is particularly terrifying for them, it will provoke a response similar to others in that experience. Suddenly increased heart rate, eye tracking data, method of movement and BCI data collection, when inserted into the developer's API and analyzed, will give them data on what the user experienced at that moment. A developer will not need to know why the user responded in this way, only what made them respond, how they responded, and when they responded. This is not to diminish the understanding of the why; understanding why a dataset and derivative patterns happened will help lead to further development in

cognitive understanding, and subsequently influence the development of new and exciting experiences.

Beyond just pure experience creation and cognitive sciences, sponsorship and advertising fields will utilize the technologies as well. The data that will be collected from these experiences, while incredibly useful to developers and science, is also highly desired by advertising agencies. Advertisements are a vital part of the economy, and contribute heavily to both free and paid experiences. As seen in the digital age, data collection is essential to companies providing ads. Data is exchanged, much to the displeasure of the public. The collection of data must be the subject of exhaustive debate, and laws and regulations may have to be put in place to protect consumers' rights of privacy. Ad agencies will attempt to collect as much data as possible. API patterns and cognitive studies that stem from the AR technologies mentioned will be of great use to these ad platforms, which could lead to a much greater level of exploitation than what currently exists. Even more intrusive, ad agencies could also develop APIs in-house, which may be required by the agency for use in analytics in the AR experiences that incorporate ad use. A virtual billboard will know exactly how long a user looked at an ad for, along with how they felt while looking at it through use of the BCI technology. From there, the agency will be able to create a wayfinding analysis of the user, and provide conversion rates along with impression counts. Any and all details gathered through these systems will be exploited, often at the cost of consumers' well-being.

It is because of this that detailed AR sensory and control technology may not make it past the initial consumer market. The consumer market for these technologies would start with AR enthusiasts; these are typically users who are advocates for consumer privacy. Exploitation of any of these technologies could mean their downfall if the companies selling them cannot meet funding. Of course, ad agencies, as previously mentioned, are incredibly interested in technology such as this. These companies may fund the integration of these technologies into cheap, average-consumer-grade technologies that will have many features that tip the balance away from privacy concerns and toward entertainment. As long as the payoff for the consumer is greater than the concern for their own well-being, the mass market will purchase the product. This has been seen in every field with every product that is sold successfully.

The injection of these advancements into AR systems will clearly have both great and dire consequences. Minimizing the private information shared, along with a thorough de-personalization of all data that is presented to developers and researchers will be essential to ensuring that the technologies that have so much potential to improve immersive experiences will not also cause harm to consumers through intrusive and dangerous marketing tactics. The effects of the actions taken now will echo throughout the rest of AR development, and will provide the future with the best medium for experiences for decades to come.

