



DATA QUE/E/RIES

FRIDAY FEBRUARY 3, 2017

11:30-2:30PM

LEWIS & RUTH SHERMAN CENTRE FOR DIGITAL SCHOLARSHIP



BRIEF SUMMARY

Over the last ten years, we've witnessed an explosive growth in the volume, velocity and variety of data production, sharing, and management. Our daily lives and the environments we inhabit - our homes, work spaces, and public spaces - are captured as data and mediated through data-driven technologies: mobile and distributed devices and sensors, cloud computing, and social media. 'Big data' - the buzzword often used to describe this phenomenon - is an elusive term. The common assurances are that 'big data' will lead to better science and a more refined understanding of our world.

DATA QUE/E/RIES, is a public seminar focused on putting forward provocations for ways of thinking about 'big data'. In particular, we turn to queer perspectives to help us address and unravel some of the assumptions, biases, and limitations of a big data paradigm, and ultimately, envision relations outside of its governing logic.

Discussants: Osman Ahmed, Mike Beattie, Nina Cammalleri, Luc Cousineau, Arun Jacob, Jade Lalonde, Ian Miculan, Luis Navarro Del Angel, Paula Pimentel Daidone, Desai Spanos, Whitney Thompson, Kim Tindale

Respondents: Dr. Rena Bivens, School of Journalism and Communication, Carleton University; Dr. Mélanie Millette, Département de communication sociale et publique de l'UQAM; Dr. Andrea Zeffiro, Department of Communication Studies and Multimedia, McMaster University

DATA QUE/E/RIES is a public seminar organized as part of CSMM 708: Technocultural Politics and Practices of Big Data, and the Critical Methods in Technoculture Series, in collaboration with the Lewis & Ruth Sherman Centre for Digital Scholarship.



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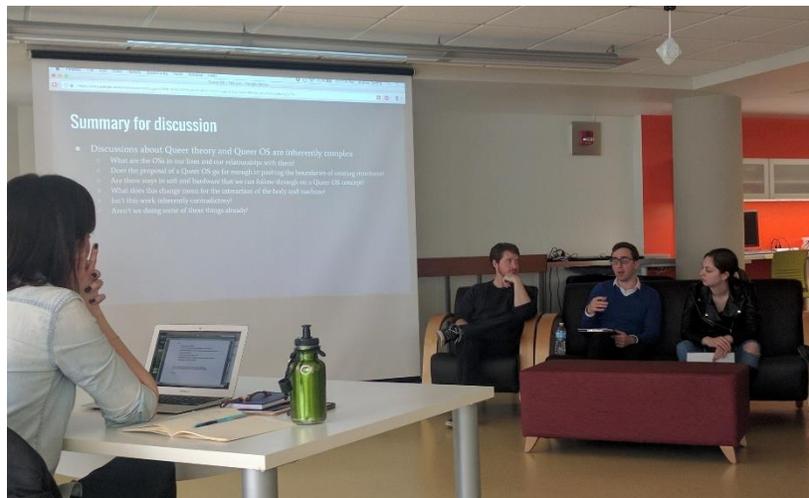
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SEMINAR SCHEDULE

- 11:30** **Welcome + Introductions**
Andrea Zeffiro
- 11:40** **Data as Companion Spec<ies>tacle?**
Arun Jacob, Desai Spanos, Luis Navarro Del Angel, Jade Lalonde,
- 12:20** **Que/e/rying Data Infrastructures: Whose Operating <this> System?**
Ian Miculan, Mike Beattie, Whitney Thompson, Luc Cousineau, I
- 1:00** **Feminist Data Que/e/ries and the Politics of Vis<ualizat>ion**
Paula Pimentel Daidone, Kim Tindale, Osman Ahmed, Nina Cammalleri,
- 1:40** **Open Mic**
- 2:30** **Reception**





DATA AS COMPANION SPEC<IES>TACLE?

ARUN JACOB

In this discussion panel we will be looking at a select few examples of popular media text representations of the Data-Companion Species. Through these examples I hope to illustrate the various discursive moves that the articles have put forward and articulate how popular media texts engage with the moral and ethical quagmires that data assemblages, machine learning algorithms, artificial intelligence, etc. raise.

In the *Star Wars* Saga, there are various characters that fill this role. In *Star Wars: A New Hope* (1977) the plans to the technosphere, the Death Star and a video file containing a desperate plea for help is what the robot R2-D2 is carrying around. Along with being a robot companion, R2-D2 is also a data storage and data playback device. In *Star Wars: A Force Awakens* (2015) we are introduced to the robot BB-8. BB-8 once again services the role of a data storage device and a cute puppy dog like robot companion to the female protagonist Rey. The data assemblage that the two robots R2-D2 and BB-8 bring together is what reveals the hidden coordinates of the map. Thereby pointing to the other function that the data companions serve, as GPS devices as well.

Marvel Avengers Age of Ultron (2015) can be read as a critique of machine learning and fetishization of algorithms. The film imbues the idea that when the word is made flesh, the father has to take an active role in the creation process and inculcate into his progeny that ethic drive and point the moral compass in the creation. The film text makes it explicitly clear that the creator cannot afford to be an absentee landlord, and expect the resultant from the algorithmic processing of the primordial soup of raw data to be righteous and true. In the HBO series *Westworld* (2016) the digital data-human assemblages are endlessly tinkered with up until the point where some of them just snap. The plight of the various androids make us empathize the need to wanting to take up a multispecies ethnographic approach in our study data and data companions.

The genre of the action spy thriller is one in which data becomes mission critical. Texts in the *Mission Impossible* film/tv franchise series are a case in point example of how the spy, an offspring of the knowledge worker and the soldier, engages in activities that involve the obfuscation, obliteration, omission and execution of data, where it is understood as actionable intelligence. In order for the knowledge worker/spy to be 'the face', the front end of the mission to be successful, the technologist and the technocratic infrastructure must labour away in the shadows, only providing critical feedback to keep the operations running.

I would argue that in popular film history, there is no one who has essayed the role of the data companion for as long as Desmond Llewelyn has, playing the character Q in the James Bond franchise. Q, is the epitome of the gadgets and gizmos guru, the brains behind the operation, whose work remains to happen behind closed doors, in bunkers that house data centres, the infrastructure of spy operations is grounded in legacy, all though the face of Bond

would change over the years, the technocratic regime would remain steadfastly so. I would take this to suggest that we never stop becoming subjects of the colonial of Empire of Data.

DESAI SPANOS

Hardware as Companion Species: An Examination of My Relationships to Hardware from the mid-2000s to the Age of Big Data

The term “companion species”, as Haraway (2008) defines it, represents a queering of the human/non-human binary. This blurring of boundaries (Lupton, 2016) defies categorization and emphasizes relationships. My stopping point in the exploration of data as a companion species was materiality. The material presence of pets, for example, makes for a compelling argument regarding their designation as companion species. How, then, could I emphasize the relationship between humans and the data they create without some way to represent it apart from the often abstract concept of “raw”—or more fittingly, cooked—data?

The gap between human and data had to be filled by something that would mediate and make more explicit the relationship between the two companion species. I thought that hardware would be the most effective way of bridging this gap. In reference to hardware, Lupton (2016) explains that “[t]he devices that we carry with us literally are our companions: in the case of smartphones regularly touched, fiddled with and looked at throughout the day” (pg. 2). I chose to reflect on my relationships with my previous phones, elaborating on Lupton’s claim of smartphone-as-companion to include all cellphones, smart or otherwise.

Previous to the iPhone, my relationships to my phones were indicated by an affective attachment to the hardware. The clicking of buttons, folding and sliding of frames, and admiration of (or disappointment with) build quality are what My use of smartphones was accompanied by a shift in attachment from the hardware itself to the data it allowed me to create and access. Not unlike virtual pet handhelds such as Tamagotchi or Digivices, I often regarded the hardware as merely a vehicle for the content. Smartphones, then, enabled companionship between data and myself. Additionally, I hesitate to suggest that attachment to hardware and data constitute an either/or relationship; both of these affective attachments could occur in varying degrees. In consideration of The Internet of Things and the possibility of ubiquitous computing environments, attachment to both hardware and data could determine the sale of one product over another.

A theory of hardware and affect may be useful in explaining why data is considered a companion species. However, the use of affective attachment in place of relationships may pose a problem to companion species as a concept. If a companion species is validated as such through human attachment, does that not reinscribe the human/non-human binary through another categorization? How could this problematic be navigated while using affective attachment as a tool for rethinking these relationships?

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- Haraway, Donna J. (2008). Foreword: Companion species, mis-recognition, and queer worlding. In Noreen Giffney and Myra Hird (Eds.), *Queering the Non/Human* (pp. xxiii-xxvi). New York: Routledge. PDF
- Lupton, Deborah. (2016). Digital companion species and eating data: Implications for theorizing digital data-human assemblages. *Big Data & Society*, 3(1), 1-5. PDF

LUIS NAVARRO DEL ANGEL

My contribution to this panel will be to reflect on the article “Soon We Won’t Program Computers. We’ll Train Them Like Dogs” written by the editor Jason Tanz of the magazine *Wired* published in May 2016. It talks about the displacement that computer programming will have, as Artificial Intelligence and Machine learning advance. One of the statements of this article is that in the future there won’t be need to program machines in the traditional way, that to say, with programming languages. Instead, people will train them by giving examples of how to perform. The article also envisions a new elite of professionals, who will be in charge of training or “educating” machines. These people, as the article states, need to have a “high-level grasp of mathematics and an intuition for pedagogical give-and-take”. Further in the reading, a contradiction to the latter ideas appears. One of the interviewees from the article says that “In the long run ... machine learning will have a democratizing influence. In the same way that you don’t need to know HTML to build a website these days, you eventually won’t need a PhD to tap into the insane power of deep learning” (Tanz, 2016).

A companion, as Haraway (2008) defines, is someone (or something) to share with, a comrade. But also a companion could take the form of a military or lucrative entity. In the article from *Wired* magazine, these two definitions take effect at the same time. On one hand, in the future, everyone will be able to train machines to perform tasks for industry or for personal use. On the other hand, the way we will train them will be constrained by the pre-programmed decisions from the “elite educators”. These companion machines, then, will be delivered to end-users with a predisposition to learn and behave according to preconceived ideas, stereotypes, and prejudices imposed by corporations. In that sense, machines as companion species will be trained by humans, but at the same time, they will conditioning us on what and how to do it. Data will be absorbed by the machine but, data will structure our behavior as well (Lupton, 2016).

Interesting questions arise in my mind about how are we, common people, training machines, for instance, can we be able to train them in other languages rather than English? Are these companions able to adapt to traditions of specific communities or should they have to adapt and modify their culture and behavior?

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JADE LALONDE

When thinking about my personal experience with data companions, I am drawn to the GPS system my family had when I was a child, the TomTom. My dad had downloaded an extension for the GPS that allowed the system to give instructions with a Jamaican accent. My family made a connection with this machine, largely because we viewed it as a companion. To further explore this relationship, I sought clarity in the definition of companion. A companion can be defined as two beings who keep each other company, which does not reflect the relationship we had. However, the definition that states a companion is one being employed to serve another is aligned with the dialogue about data as companion species. Data, and the technologies that are used to access data, are seen as a companion as they are employed to serve the user. It is through this definition and understanding of data as a companion species that this queering of data will be further explored.

To resolve this queer companionship with data, the technology people interact with must have human-like characteristics. This can be done by personifying the way these technologies look, the language the technology speaks, and the way that technology sounds. Arguably, the most common way that the data companion interacts with people is through verbal communication. According to Justine Cassell, a professor at Carnegie Mellon's Human-Computer Interaction Institute, "we don't just need that computerized voice to meet our expectations, we have to know that the other is enough like us that it will run our program correctly" (Hardy, 2016). This explanation can lead to further provocations about why and how the computerized voice is constructed to meet expectations, and what stereotypes or problematic notions are perpetuated and reinforced.

When a voice is involved in technology, that voiced will be gendered. The question then arises, how is the gendering of technology decided? I believe the answer to this is: by the technology's function. We can look to the example of Siri to further examine the gendered data companion. Siri's voice is that of a woman, specifically the voice of Susan Bennett, a voice actor from the United States (Hill, 2016). Siri serves the user of the iPhone by answering their questions or completing their commands so long as it is within her pre-programmed capabilities. The reason why Siri's original voice is that of a woman could date back to the job of telephone operator that many women had during the second world war. Perhaps it is because of this familiarity that people have with woman serving them on the phone that Apple decided to use a

female voice. Since the original release of Siri, a male voice has been added and can be chosen over the original female one. Male voiced technologies typically function much differently from female voiced technologies, such as Siri. When a male voice is heard it is often commanding the listener, with no option for the listener to negotiate. For example, the 'mind the gap' voice, one of the most famous in the world, is that of a male. The listener must follow his command and has no room to talk back, unlike with Siri.

Throughout a range popular culture examples, we have seen the data as a spectacle, could spectacular data be data that takes a human form? We may have already seen this in the Bionic Woman and the 6 Million Dollar Man. The Bionic Woman has hearing powers, which are associated with motherly and nurturing connotations. While the 6 Million Dollar Man's power is in his eyesight, which is more primal for hunting and associated with nature connotations. These two gendered technology-enhanced spectacles have very different functions, and it is arguably their gender that defined their function. Could our queering of data by associating different interfaces with different genders ultimately change the way we interact with data? What does the spectacular data companion look like? How can the provocations provided in relation to data as a species assist in furthering the discussion by asking 'why does spectacular data look that way?'

References:

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QUE/E/RIVING DATA INFRASTRUCTURES: WHOSE OPERATING <THIS> SYSTEM?

IAN MICULAN

The Keeling and Barnett et al. articles take several provocative stances in their discussions of technology and QueerOS. In particular, the Barnett et al. article, which draws on Keeling, proposes a theoretical user guide to QueerOS that aims to replace many of the dominant and potentially problematic components of current operating systems with ones that align themselves with queer theory. The article takes a rather drastic stance against the current standards of operating systems (OSs), exposing issues with seemingly unnecessary and potentially harmful aspects of computer technology while also taking issue with components that seem necessary to its very functionality. This all-encompassing critique of the necessary and unnecessary aspects of computers and OSs raise two interesting branches of questions.

The first branch of questions address how we should define computers and OSs, and by extension any number of digital systems. The process of finding a satisfactory definition would allow queer theorists to examine how we think of technology and the potential values we place in it. A clear definition, once found, would also allow theorists to reach a thorough determination of what aspects of computers and OSs are necessary. For instance, if we define a computer as a machine that can receive, recall, and process information, certain components such as memory and interface would be considered necessary in its functionality while other functions such as coding syntax may not.

The other branch of questions, stemming from this issue of definition, address how people should navigate and challenge the necessary and unnecessary aspects of computers and OSs. For example, there is an extensive potential for debate over how individuals should engage with the potentially problematic, yet necessary, components of computers and operating systems. Questions that could be raised could include whether we should use these components despite their undertones and whether we need to use them cautiously. Similar debates could also arise in determining how to engage or disengage with the unnecessary elements of computers/OSs. For example, one could raise questions over the social structures informing these unnecessary components, how people should engage with them, and whether they could be redesigned to align with queer theory principles.

A comprehensive amount of academic work on these two branches of questions would continue to expand queer theory's understanding of computer technology and could serve as the basis for practical applications.

MIKE BEATTIE

Complicating the Metaphorical QueerOS

The metaphorical operating system, dubbed the "Queer OS," as suggested by Kara Keeling in her article by the same name, was a theoretical conception of a computer operating system that has been "queered." Using queer theory as its foundation, the metaphor of the Queer OS stands in opposition to the current paradigms of computer programming and data management, paradigms that have been created within institutional systems of power. As Keeling (2014) notes, "Because Queer OS ideally functions to transform material relations, it is at odds with logics embedded in the [Unix] operating systems" (p. 154).

Barnett et al. (2015) have taken up the challenge of detailing such a metaphorical operating system, in their article "QueerOS: A User's Manual." Their imagined "QueerOS" challenges specific areas of dominant systems. QueerOS complicates everything from a Terms of Service that actually demands to be read and agreed upon, to the Kernel that is open to user

interaction, to the applications that run on the OS.

Though QueerOS takes queer theory and its application to technology to new and unexplored terrain, it yet maintains certain aspects of the institutional technological paradigm it professes to escape. Its conception of a software “Commons contra an ‘app-store’ ethos” hints at an open hardware architecture that would further QueerOS’s cause alongside its software component (Barnett et al., 2015, p. 7). Increasing accessibility (i.e. knowledge and computer hardware) are key steps to implementing a more open hardware architecture. A real-life parallel is seen in the Raspberry Pi, a low cost development computer that runs variants of Linux or other operating systems, aimed at bringing more people (especially youths) into the realm of computer programming and hardware engineering. Whereas power is consolidated in technical knowledge, development boards such as this aim to push the boundaries further, encouraging crowd-sourced imagination instead of stifling creativity from exclusivity.

Despite its community-based learning paradigm, the Raspberry Pi still relies on certain standards and thus cannot be said to be a true representation of a QueerOS. However, it helps us imagine a QueerOS that is also concerned with accessibility barriers. A true QueerOS would require a Queer hardware community of knowledge sharing, supported through a network of accessibility to the technology and data itself.

References:

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Keeling, Kara. (2014). Queer OS. *Cinema Journal* 53 (2): 152-157.

WHITNEY THOMPSON

While Keeling merely sketches the outlines of and suggests possibilities/potentialities for her vision of Queer OS, Barnett et al. take Keeling’s concepts and with them create a full-fledged user manual, a much more specifically realized version of the original Queer OS. One particular way in which Barnett et al. expand on Keeling’s work is in the area of interfaces, the point at which user and machine meet. Keeling’s focus is mainly on the titular OS, and to some degree the history behind Oses, but Barnett and her co-authors examine in quite a lot of detail the ways in which a user could interact with a Queer OS.

In the section of their QueerOS user manual titled “Interface,” Barnett and the co-authors first delineate and then queer the normative model of a computer interface. Rather than deconstructing the “black box” they describe, in Derridean fashion, they instead propose a way of queering solely the point at which user and machine interact, because as they point out, it is ultimately the interface that defines what inputs a user can and cannot input. The interface is the first part of a computer to standardize data, to box it in. The solution they put forth is to dissolve the boundaries that define user and machine in order to allow for all possible inputs and interactions, somehow without losing the essence of either user or machine.

However, the next section, titled “User,” focuses on precisely those boundaries between user and machine, sometimes in a weirdly physical way. The very first sentence in the section reads, “To allow for proper functioning, the user offers their flesh to QueerOS.” Even setting aside the *Little Shop of Horrors* overtones, this phrasing reflects an *exchange* rather than a *melding*. The rest of the section bears out this idea of exchange; though its resemblance to a

Terms of Service agreement is undoubtedly intentional and meant to be subversive, it still undermines the work the authors have already done to queer interfaces.

Barnett et al.'s overall message is still reasonably unified despite these contradictions; it is a message of embracing mess and uncertainty and stuff that doesn't fit, in all its manifestations. Their queer ideas of the interface and the user may clash, but queer theory as a whole is about leaning into clashes and weirdness rather than categorization and resolution.

LUC COUSINEAU

Have we already begun to queer our OS?

Building on the works of Kara Keeling (2014) and Fiona Barnett and colleagues (2015) I continue our group's discussion about the concept of a queer operating system (QOS) by exploring the idea that we may have already begun to make the changes proposed by these authors. Predicated on the idea that the QOS must be measured relative to a traditional binary-based OS, and understanding that incremental change is as noteworthy as rapid, widespread change, using Barnett et al.'s hallmarks for queering the OS we have already begun to queer these systems in some ways.

At the most fundamental level, traditional computer hardware (and therefore its software) is built on a binary system where a circuit or pathway is either active or not active (Braun, 2014). It is so because systems with this simple construction are easy to build and in the infancy of computer design, were able to produce consistent, replicable results. This on/off, yes/no, right/wrong binary is both fundamental to the functioning of the system, and implicit in the way that the system can be used and applied to situations or power relations. Barnett et al. (2015) propose "architectures of possibility" where that hardware structure is fundamentally changed. We have recently come to see tangible challenges to this binary construction through breakthroughs in quantum computing where the computational elements can be both 0 and 1 simultaneously (Maveal, 2016; Prince, 2014). This creates a wide variety of possible states, and discards the fundamental binary operation of the current computational system (Prince, 2014).

Barnett et al. (2015) also call into question the interface with the system and the obfuscation of the underlying power of programming foundations created by a more interactive/"intuitive" interface (e.g. apple touch products). This type of interface has the appearance of Barnett et al.'s disappearing mediating skin (the disappearance of commands and command lines for the user), but is still embedded in current media logics. This powerfully simplified interface which maintains traditionally ordered foundations is mirrored in the availability of coding programs accessible to individuals at all levels (Tynker.com, 2016). They do not change the code, but simply overlay a simpler interface on the underlying complex and power-laden structures. Can the simpler interactive elements, over time, be translated downward in order to simplify and/or de-structure the complexity of the base elements of the code itself?

The idea of changed program foundations also leads to the suggestion of the deconfiguring of content (Barnett et al., 2015), into a state which is non-finite, open, accessible, changeable, and possibly decentralized. This is certainly already in action with the move and de-function of physical encyclopedias containing knowledge curated by an elite sub-class of the population, to collective knowledge bases, curated by the participant population as a whole, which is in constant flux of improvement and/or change (Messner & DiStaso, 2013). Not long ago this would have been unthinkable as a source of reliable knowledge.

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FEMINIST DATA QUE/E/RIES AND THE POLITICS OF VIS<UALIZAT>ION

PAULA PIMENTEL DAIDONE

For those who have never previously studied this subject before, big data can be very abstract and difficult to understand. However, relating big data back to issues that many people can relate to, such as discrimination and representation, is one useful way of furthering the discussion on big data. It allows us to move from questions of “what is big data” into more specific questions related to what effects does big data have on the lives of people and how can big data function as an oppressive mechanism that can further perpetuate hierarchies of power that are embedded in our society. Taking a feminist approach to big data can help undermine the ways in which those who do not conform into the binary gender divide that is so prominent in our society. Luciano and Chen (2015) suggest that traditional definitions of what it means to be human and to have a normal body pose constraints and result in the marginalization of those who do not fall into this normative definition of the normal body or the binary gender divide (p. 186). Giffney and Hirdi (2008) go further into arguing that these constraints imposed by hierarchies of power are a part of a large economy of discourse related to gender that is present in many everyday tools and mechanisms, including social media (p. 3).

The importance of a feminist approach in relation to big data research arises from this disconnect between what is being studied and documented and the data missing from those who are essentially excluded from this research simply because they do not conform to society’s notions of the binary gender divide. The discourse that is created in understanding the human body results in a marginalizing process for many individuals and require alternatives that can be implemented to make sure the conditions of those who are marginalized in data research can improve. A feminist approach to look at big data is also very useful because it helps addressing the ways in which the increasing presence of female identified and non binary people in technology research indicates an improvement on the way gender has been perceived in terms of data, while also considering how minorities still experience a systematic oppression in the field of data research and tech industries. Ultimately, in discussing feminist data research it becomes possible to further understand the ways in which systematic relations of power that oppress individuals through research should be challenged in order to break barriers that question the very definition of what it means to be human.

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KIM TINDALE

As a whole, my group and I will be discussing and trying to navigate the human body as a marginalizing process and how we must challenge and break the barriers of the traditional definitions of what a “human” is especially in the technology realm. My contribution to the seminar will mainly focus on women who are already marginalized and how they relate to the world of data and information politics. This can be seen with the rise of the “sharing economy” and how “datafied connectivity overlooks the fact that online communication/production depends on physical economic activities – mining, microchip and rare earth production – that, as presently organised, are extremely destructive, socially and ecologically” (Gurumurthy, Chami pg 2). It is here that the privilege of the developed world is evident when compared to the women who are actually constructing the technological device i.e. a cellphone who are blatantly not.

Another point that Anita Gurumurthy and Nandini Chami pose in their article that I will discuss is the “loss of the authentic self”. I will examine how human subjects, specifically women, whether they are from welfare communities or not, are pushed into “grids of surveillance” (Gurumurthy, Nandini pg 3). It is how their online embodied counterpart may not be aware of how certain data subjects might not even resemble who they truly are. They go from an “I am” and “I like” to “you are” and “you will like” way of thinking (Gurumurthy, Nandini pg 3). Lastly, I will then touch upon how data can hold a powerful reconstruction of reality and how it can actually skew and alter democracy on social media.

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How gender is represented in large, extensive and broad datasets is a question that continues to raise interesting and complex question in the collection, storage and analysis of data. This presentation looks at how progressive gender options (58 options as well as a custom option for U.K. & U.S. Facebook users) on the user-end of social networking sites do not necessarily translate to the back-end data mining, collection, storage, analysis and transfer to advertising agencies. A user’s Facebook connections might see how they would like to represent themselves but advertisers can only purchase users to advertise to in traditional normative gender binaries.

Kaggle, a platform that runs competitions to find efficient ways of collecting, classifying and analyzing big computational data sets regularly attempt to find ways to predict gender.

These predictions are based on a user's handwriting, fingerprints, blog entries, Tweets and other data we seamlessly leave behind as we browse the Internet. Unfortunately, these predictive models that attempt to guess gender, routinely fail to think outside of traditional and normative gender binaries.

Trans and non-binary conforming people are statistical outliers in these large data sets but that does not exclude them from being afforded and treated with the same respect and representation as people who identify as male or female. On the other hand, we must be cognizant of potentially identifying one in these sizable data sets.

Non-binary identifying individuals present unique and complex questions for data researchers however there is "an ethical and empirical imperative to tackle this complexity" (D'Ignazio, 2016) rather than assuming the world is comprised of just female and males.

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Focusing on Catherine D'Ignazio's (2015) article that completes the body of text on data visualization, which does an excellent job of concluding our thesis to say that though there is increasingly levels of feminism within data, there is still more that needs to be done to solidify feminism within data, and it needs to be done in a holistic and total sense.

D'Ignazio is correct in saying that "feminist standpoint theory would say that the issue is that all knowledge is socially situated and that the perspectives of oppressed groups including women, minorities and others are systemically excluded from "general" knowledge" (D'Ignazio, 2015). I agree that there is a lacking in inclusivity of female-identified or non-binary people, but that there needs to be increased awareness and consideration with data and tech industries to really embrace feminism in the workplace.

A critique of this article found that there are furthered systemic limits to the ideas D'Ignazio (2015) puts forwards. D'Ignazio (2015) includes a quote about vision and the eyes from Donna Haraway, which limits access to data and tech to fully abled body individuals and excludes those whose bodies do not function normatively. This is further confirmed when D'Ignazio (2015) uses the term "concrete bodies", dismissing the fluidity of the ability of the body. Again, the term "real bodies" used to describe data sets, is problematic for individuals who credit their spirits more than their bodies. This is coupled with the afore mentioned issues within the articles, including the coding of binary genders even though a supplementary gender was selected.

The final questions in the article creates a call to action for more "collectivity and inclusivity". In line with anti-oppressive research, the inclusion of sample groups within the planning of research collection can optimize effectiveness. To do this, a greater inclusion of female-identified and non-binary people should be welcomed into the data and tech communities, to help change the vocabulary and stereotypes. By including minority groups within the discussion of feminist considerations with big data, the query can be understood through lived experience.

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