Modern technologies have transformed our communities, our lives as well as our planet from fake news to mass surveillance to social media addictions –usually, in a manner we hadn't anticipated at first.

Hailed one time as the forerunners of a new enlightenment, the internet as well as other significant tools of our networked universe looked to have stimulated new kinds of social and political division, misinformation and conspiracy theory, violence, and abuse. In the middle of lots of information, we appear to be falling into a new dark era: an age where we are capable to acquire more and more data on our complicated world, and still appear to know less and less of it.

We have to know how to think critically through all the doubt more than ever now. We have to consider the technologies that form our universe as well as our thinking and investigate where they originated from, how they work, and who they work for. These book chapters will reveal some of the huge and unanticipated manners that modern technologies impact us — and the reason why and how they came to do that.

Chapter 1 - Contemporary computation began in military trials to control the weather.

How are computers related to the weather, and how is weather-related to the military?

Everything. For several decades, creating strategies to predict and navigate the weather was the main issue for Western armies — also, in that project lies the source of contemporary computation.

The mathematician Lewis Fry Richardson was the first person to make calculations on atmospheric conditions so as to predict the weather. He did this during the first World War while he was volunteering on the Western Front as a first responder.

Also, Richardson devised a thought experiment that could be regarded as the first depiction of a 'computer': he imagined a pantheon that consisted of thousands of human mathematicians, with each mathematicians calculating the weather conditions for a certain square of the world, and

discussing the findings between each other to make more calculations. Richardson imagined that kind of machine would be able to precisely predict the weather anyplace, at any point in time.

His innovative idea didn't emerge again until the Second World War II when huge military research spending prompted the introduction of machine computation. A US military research project known as The Manhattan Project that brought about the making of the atomic bomb is closely related to the growth of the first computers. A lot of these first computers, like the Electronic Numerical Integrator and Computer (ENIAC) from the year of 1946, were utilized to do automated calculations to mimic the effect of various bombs and missiles under specific weather circumstances.

But, usually, the military roots and functions of the computers were hidden.

For instance, in 1948, in New York, IBM put in its Selective Sequence Electronic Calculator (SSEC) in a complete view of the public in a shop window. However, although the public was informed that the computer was calculating astronomical locations for NASA flights, it was really working for Hippo a secret program—doing calculations to reproduce hydrogen bomb explosions.

From the start, the complicated, concealed workings of computers gave a suitable cloak for obscuring their real purposes.

Although, mostly, they didn't even do their real work really well. The history of computation has lots of stories that show how computers' oversimplified view of the world, their failure to differentiate between reality and simulation, and poor data can have extreme repercussions for the humans using them. For instance, during the Cold War, SAGE the US computer network, that was used to incorporate atmospheric and military data is notorious for its near-fatal errors, like confusing a flock of moving birds for an approaching Soviet bomber fleet.

Chapter 2 - Climate change, as well as modern technologies, are inextricably connected.

Climate change is what it is referred to as hyperobject by Timothy Morton the philosopher: just like the internet, it's really huge and pervasive something that we basically cannot consider in a meaningful manner. Rather, we only see its marks on the world that surrounds us.

An example of those kinds of intense mark is the Syrian conflict of current years, explained by a lot of observers as the first climate war in history. As a result of the increasing universal temperatures, between the years 2006 and 2011, the Syrian countryside experienced huge, unusual droughts. Large swathes of farmland got unusable, and approximately 85% of livestock died. The consequential demographic pressure of farmers running to the cities, and built-up hatred about President Bashar al-Assad's dealing with the issue, eventually brought about the armed conflict that turned out to be intense to the West as the refugee crisis.

However, it's not only olden technologies such as agriculture that are impacted by fluctuating weather conditions. Also, modern technologies such as the internet are impacted by climate change. Although we have a tendency to consider the World Wide Web as a non-physical "cloud," data transmission and storage depends on a wide physical network of fiber-optic antennas, cables as well as servers — an infrastructure extremely susceptible to severe weather conditions. For instance, the power and effectiveness of WiFi are believed to reduce with higher temperature; also, a lot of computational devices totally fails in severe heat.

On the other hand, digital technologies add to the climate disaster as well. Only the world's physical data centers make use of nearly 3% of the globe's electricity, causing nearly 2% of worldwide carbon emissions.

As our digital culture gets faster, it will need extra resources still to sustain them. If we think of the energy prices for the transmission and storage of streaming data for an hour of Netflix in one week, it used more electricity yearly than two new refrigerators. Then, it is not a surprise that the quantity of energy utilized to store and transmit our data is predicted to triple in the following four years.

Also, although modern technologies let us gather massive amounts of measurements and data on the crisis, climate change itself might make us completely unable to incorporate these entire data in a meaningful manner. In the year 2015, atmospheric carbon exceeded 400 ppm, or

'parts per million,' of the atmospheric constituent. At 1000 ppm of CO_2 — a proportion of some indoor regions in urban centers frequently surpass — human cognitive skill reduced by 21%.

Chapter 3 - The scientific research has been dived into disaster by vast data fallacy

If you know a bit about the world of computation, you'll probably have heard of Moore's law: the notion that the raw computing ability of our devices increases by two-fold every two years. Since the time of its first invention in 1965, this law has existed nearly correct. However, as you can possibly confirm from casual observation, the reality that technology is becoming ever smaller and faster doesn't essentially signify that it's making our lives become easier.

Tech optimists who quote Moore's law regularly do that in the spirit of computational optimism. They assume that more computation is usually better and also, the more data we gather and process the world, the more our knowledge of it grows.

In science, this idea has brought about a research system that values automated testing that produces lots of data over more disordered human empiricism. For instance, in drug research, the duty of human scientists is now usually minimized to programming and supervising the work of machines involved in a process known as High-Throughput Screening. The computer checks the impacts and communications of thousands of chemical compounds per day, in the belief that it will ultimately come across a combination that is beneficial in treating a certain disease.

The issue is, this method doesn't appear to work. Every nine years since the year 60s, the quantity of new drugs permitted for human use for each billion US dollars in spending on research and growth has reduced by halved. Commentators have skeptically begun referring to this effect as Eroom's law — Moore's law backward.

The huge data fallacy that promotes quantity over quality is obvious in all of science. Although the number of scientific studies, papers and journals have been rising gradually over the last decades, as well as the number of errors, plagiarism, and deception in scientific research. Experts are progressively discussing the replication disaster of contemporary science. This talks

about the reality that when a lot of scientific studies are done for a second time by another group of researchers, they cannot reproduce the actual findings.

For example, in the year 2011, the University of Virginia repeated five landmark cancer studies of current years. Just two experiments could be effectively copied; the other two studies were indecisive, and another one failed totally.

While scientific research is collecting more and more data about the universe, the speed of scientific innovation is really decelerating. Rather than showering us with a good understanding of the universe, the present overflow of data is impacting our ability to process what's happening around us negatively.

Chapter 4 - Technology pushes inequality as a tool of capitalism.

Apparently, Slough is a very unexceptional, small-town few 25 miles outside of London. But, unknown to the majority, the numerous huge and secret warehouses that line its key road form the physical base of part of the most significant aspects of our digital world. For instance, one of them, called the unassuming name LD4, stores the data servers of the London Stock Exchange.

The fiber optic cables that connect to and from LD4 transmit financial data of nearly unbelievable value, carrying and getting it to and from other financial information centers across the globe at the speed of light. This very-speedy network between firms, markets as well as investors has brought about a new kind of financial exchange: high-frequency trading.

Currently, financial traders can respond virtually immediately to drops and increases in the market. In order to do that within milliseconds, they recruit the assistance of algorithms and bots that observe prices, make simulated proposals and shadow transactions to mislead other traders, and also scan as well as read news headlines to predict the economic impacts of key occasions across the globe.

However, it's getting increasingly obvious that even insiders can't continue with the sense of their computers in the hyper-accelerated globe of digital finance. For example, on the 10th of May, 2010, the Dow Jones went through a remarkable 600 point crash — a loss of

approximately six billion dollars— then all of a sudden recovered minutes after. Those kinds of flash crashes are rising more common, and no one is able to identify the actual reason behind them.

Although machines progressively confuse humans in some aspects, they substitute us absolutely in other areas. Consider behemoth Amazon, which is already making use of fleets of robots to keep, categorize, and select products. Where it still makes use of human 'pickers', Amazon does that out of financial incentive and basically uses those employees just as robots: The employees are directed and supervised through a handheld device, which transfers them to various places in the warehouse in a way that maxes out efficiency and reduces socializing with colleagues.

Disturbingly, firms, as well as politicians, are offering a small view on what social security system could substitute full-time work. Therefore, technology, unlike being the great equalizer that we've been assured, is only a different tool for putting a few in control.

Chapter 5 - Machine learning encodes our former bias and takes it into our future.

There's a folklore about an AI created by the US Army that shows the risks as well as boundaries of machine learning, by which is intended: training computers how to reason.

Supposedly, the army attempted to teach a computer to identify disguised tanks in a forest. In order to do that, they showed it an image after image of forests with tanks concealed in them, and image after image of forests that don't have a tank, till the AI had been taught to determine the test pictures apart well. However, in the field, the AI failed woefully. It wasn't more efficient than a human at predicting if there was a tank in a certain forest or not.

 A person detected only after, that the entire training images with tanks had been captured during a sunny day, whereas the entire images that didn't have tank had been captured during a cloudy day. The machine hadn't been taught how to differentiate between a forest with a tank,

and a forest that doesn't have a tank: it had been taught to differentiate between a sunny and a cloudy day.

This narrative illustrated to us that when we teach machines how to reason, we cannot imagine them to reason like humans. In a lot of situations, we might never be able to know how is it or the reason they got to their decision at all. Computers form their own multidimensional simulations of the universe that are completely different from the manner humans experience it.

However, more than only a notion worth thinking of, the strange nature of a machine's mind can as well be utilized to validate the deductions they come to, even when these are contentious or risky.

In the year 2016, two researchers from a University in Shanghai caused a commotion when they asserted to have made software that could differentiate between a criminal and a non-criminal face. When their test was condemned on the grounds that the software would certainly over-represent marginalized groups, they asserted that they had made it only for academic aims and that it, and machine learning as a whole, was inherently "free of bias."

The notion that computation, as well as algorithms, are free of bias is believed by a lot of AI supporters. Something they fail to recognize is that machines have a tendency to be taught with data, and we only have data from past time. Because our past is filled with racism, injustice, and violence, injustice, regardless of whether we mean to or not, the machines we teach with this data are going to imitate that racism, injustice, and violence, and project them into the future.

For instance, as currently as a few years ago, Asian-Americans unsuccessfully attempted to take family images with their Nikon Coolpix S630. Rather than taking an image, the "smart" camera constantly showed the error message "Did a person blink?"

Chapter 6 - Our technology, as well as data, is progressively dominated by intelligence agencies and governments.

In a former chapter, we considered the hydrogen bomb simulation computer, SSEC, which performed its top-secret calculations in complete sight of the public.

Since the Second World War, intelligence agencies like the CIA and NSA have used millions of dollars on creating secret technologies, the presence or real goal of which the universe just becomes privy to decades after the reality— if ever. For instance, it was the CIA and not the US Army neither the Air Force, that made the first drones, years before they turned into a staple in contemporary warfare.

But, it's not just futuristic technologies that are put away in a classified world. Vast amounts of our history are gradually vanishing into hidden vaults. Each year, the US government marks approximately 400,000 new documents as 'top secret;' an amount that's increasing gradually.

In the UK, the condition is not that better. In the year 2011, when a group of Kenyan survivors eventually won the freedom to charge the British government for the torment they had suffered when the colonial authorities were in charge during the 1950s, it became known that in Kenya, approximately 1.2 million documents on the British concentration camps were stored away in a secret government department. Part of those documents, a lot were 'destruction certificates' of other documents, confirming to an even larger number of lost records and deleted history.

This illustration informs us that although now we have more allegedly unbiased data on the universe, what gets to us is still selected and regulated. In the situation of the Kenyan concentration camps, the concealment, as well as the destruction of significant historic documents by the British government have successfully hindered the country from properly reckoning with its colonial past.

Data collection is a different means intelligence agencies rule the world that surrounds us. In the year 2013, the NSA's widespread system of mass surveillance became clearly seen with the disclosures of whistleblower Edward Snowden. Also a few months after, related programs to spy on the communication of normal inhabitants were revealed in every other main nation in Europe and the Americas.

Although, the rage of the public died down immediately; also, in the year 2015, the Freedom Act enacted by the United States as a reply left the NSA's surveillance rights mainly untouched.

Much related to climate change, mass surveillance looks just too huge and complex a threat to ponder on.

Chapter 7 - Conspiracy theories offer the ease of simple stories in a complicated globe.

Since the start of history, humans had the tendency to change complicated situations into simple narratives to understand the world. Somehow, our idea of history is itself, an illustration of oversimplification.

Definitely, none of these stories can ever include the complete, multidimensional fact. However, in our connected, information-saturated present, a lot of narratives people say to themselves about the universe appear really far from the mark than ever.

Part of the ancient and most pervasive of conspiracy theories that appear in every area of the internet nowadays is Chemtrails. Supporters of this theory assume that there is a network of military planes or commercial sprinkling chemicals in the air so as to bring about diseases, mind-control people, or perform some other kind of diabolical strategy.

Definitely, man-made chemical clouds are really real. The chemtrails that humans notice in the sky are really exhausted fumes as well as condensation from the planes. However, far from being worried about the actual danger of the carbon emissions produced by the aviation field, chemtrails literalize their overall fear into a neat and debatably unhinged theory of governmental mind-control.

A different group of conspiracy theorists considers themselves to be controlled by "gang stalking," surveillance and mind control by evil objects. Thinking about what we now understand about the NSA's system of mass surveillance, this simple view is not really far detached from what's really happening. However, the conspiracy theorists' simplified form of the narrative— the narrative that depicts an obvious black-and-white image of the universe and involves them personally as well as directly — still looks very easy to understand than the existence of a huge global system of mass surveillance that has no obvious perpetrator or aim.

Definitely, the internet's echo chamber effect supports the spread of strange theories about the universe. Wanna-be conspiracy theorists are effortlessly drawn into self-confirming, supportive as well as interactive online groups that direct them to ever more extreme opinions.

Right-wing populists and religious fundamentalists make use of our yearning for simple stories in a difficult time. Even Donald Trump has tweeted about how climate change is a conspiracy against American business, created by the Chinese. Also, a lot of his campaign assurances, like the border wall to Mexico, were obviously stimulated by Alex Jones of the website Infowars, the well-known online conspiracy theorist.

Even though conspiracy theories offer the ease of minimizing our terrifying disordered universe into a simple story, these can become just as terrifying.

Chapter 8 - Paired with financial incentives, algorithms generate alarming cultural goods.

Have you for once been in a 'YouTube spiral'? Clicking from one recommended video to the other, you see yourself in the ever-weirder angles of the video platform that hardly rank as human entertainment.

One of the causes why there are a lot of self-made entertainers, vloggers, and progressively, bots competing for your concentration on YouTube, is that videos that are successful can make a huge amount of money from advertising. For instance, the viral music video of the Korean pop hit titled "Gangnam Style," made eight million dollars from just its first billion views.

Kid's entertainment has been showing an especially profitable area of the platform. Kids as young as age two are using more and more time being online. With colorful and loud videos, which they usually watch continuously, it is easy to target and engage them.

A lot of these alleged children's videos are produced by bots make by companies trying to make fast money. For instance, Little Baby Bum which is one of YouTube's most successful channels

has produced thousands of bot-made animated sing-along videos, with all of them having the exact same simple melodies and patterns.

Usually, these firms make use of algorithms to make the most of YouTube's own ones. The outcome is ridiculous names like this: "150 Giant Surprise Eggs Kinder CARS StarWars Marvel Avengers LEGO Disney Pixar Nickelodeon Peppa."

However, asides from the obvious copyright violation of these videos, their content can be completely disturbing. One illustration, from a list of millions of other, related videos are given the name, "Wrong Heads Disney Wrong Ears Wrong Legs Kids Learn Colors Finger Family 2017 Nursery Rhymes." In the video, the removed heads of casts from Aladdin are moving around the screen. When a head joins itself to the correct body, the small girl from Despicable Me shows in a corner of the screen and cheers. If the head does not fit with the body, she does a short, automated wail.

Maybe even more disturbing is that Youtube's recommendation algorithms can't differentiate between actual children's shows and videos intended to parody them, the parody videos can be violent. For instance, in one, Peppa Pig, a favorite animated character is presented going to visit the dentist, and the dentist tortures her by removing her entire teeth.

The majority of these videos aren't aimed at children —however, with small to no content or age restriction by YouTube itself, they unavoidably do. Due to that, the significant mixture of predatory algorithms and capitalist incentives supported by technology has produced an entirely new type of systematic violence.

Chapter 9 - For us to live with purpose in a new dark era, we have to leave computational optimism and accept complexity.

During a Google Zeitgeist conference in the year 2013, a yearly meeting of tech aristocracies and politicians which talks about the state and future of technology, CEO Eric Schmidt made a surprising assertion. If camera phones had been in existence in the year1994, the alarming

Rwandan killing of that year would never have taken place, since people would have had the capacity to record and share information about the killings happening.

Schmidt's notion is fixed in a belief shared by a lot of his colleagues: that by making a thing visible, it automatically solves it, and also, that latest technologies are making the globe a safer, better, and easier-to-handle place. As we've understood in the former chapters, this couldn't be far from the fact.

Just give a closer inspection at Schmidt's illustration of the Rwandan killing. In the year 1994, during the course of 100 days, an approximated one million Rwandan population were killed in a cruel genocide prompted on by inter-ethnic tensions, whereas the remaining of the world stood by and didn't do anything— apparently due to the reason that they were not aware of it.

However, since that time, examinations have shown that various NGOs, international embassies, as well the UN were closely observing the matter. For instance, the government of the US was monitoring the growths through high-resolution satellite images. Different to what Schmidt proposes, the killing that happened in Rwanda was not backed by a lack of understanding; however, rather by a lack of doing.

Apathy, as well as inaction in the face of overwhelming data, is now a state known to every one of us. Hence, instead of assisting us to understand the universe; data, as well as computation, have only made situations more difficult.

Clive Humby, the British mathematician and architect were implying at the shortcomings of computation when he mentioned the word "data is the new oil" in the year 2006. In his actual word, he went further to clarify that just like oil, data cannot be utilized in its raw state. For it to be of value, it has to be divided and analyzed.

Rather than concentrating on gathering gradually more information so as to predict progressively complicated situations, we have to know how to reason consciously and critically about the origin of our data, its purpose, and the owner. We have to closely look at the worldwide technological networks that make and utilize this data, and the manners we can transform them for good. By doing this, that is the only means we can bring significance to this new dark era of our making.

New Dark Age: Technology and the End of the Future by James Bridle Book Review

Although new technologies of the digital era let us connect, gather and share data, they're leading us into a new dark era, where the universe looks more complicated and perplexing than ever before. The reason is that, as illustrations from ancient science, history, and computing, show, more data doesn't usually yield good outcomes. Furthermore, when recent technologies are utilized for capitalist purposes, they have a tendency to continue and deepen current power structures. This is the reason, if we wish to live significantly in the present, we have to begin asking questions about the root, purpose, and function of our technologies.

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