Pratt Institute; School of Information

Nexus: A Brief History of Information Networks from the Stone Age to AI by Yuval Noah Harari - A Review

Marilyn Ray

INFO-601

Foundations of Information

Filipa Calado

December 13, 2024

Introduction

Yuval Noah Harari begins *Nexus: A Brief History of Information Networks from the Stone Age to AI* by saying "We have named our species *Homo sapiens* — the wise human. But it is debatable how well we have lived up to the name". Although Harari fills this book with fascinating examples and life altering reality checks, I wonder if he should heed his own words, because I found it difficult to lock down exactly what he was saying. He claims the point of the book is to show we as human beings run on power, but our information networks have led us to often use this power unwisely. Although he explicitly states this as his claim, I feel he discusses so many things in detail that distract from this main argument. Although I have many critiques about his clarity and ability to stay on topic, I do believe this book can open the reader's eyes through a new perspective of information networks.

Part One: Human Networks

Part one of the book, "Human Networks", focuses on information networks in human history before computer systems - mainly, the mental and analog systems. The first chapter does well at giving readers a basic toolkit to understand information networks, especially when discussing the difference between truth and information. He also, critically, distinguishes between misinformation and disinformation. Misinformation is an honest mistake, while disinformation is a deliberate lie. Harari argues "errors, lies, fantasies, and fictions are information too." (Harari 2024, pg. 12) For example, astrology could be argued as misinformation or disinformation, but in fact, true or not, many believe astrology is completely artificial, but others live their lives letting this belief guide their actions and personalities. In this

way, just like all religions, it may have no basis in fact, but it stands as information that affects people's day to day lives.

He spends chapters 2, 3, and 4 discussing the history of information networks going from oral communication to paper to bureaucracy to the Bible and other holy books to academic journals. He fantastically explained to readers how each new invention added a new level to human information networks. Harari claims stories were the first information networks, allowing humans to share information with each other and continue chains of communication. He uses the term "stories" in order to be inclusive of not just factual information, but also genuine fables shared to connect societies. Paper and documents allowed for preservation of information in a way oral stories did not allow, but opened up a new problem of organization, which created the need for bureaucracy. Holy books, like the Bible, entered as human curated information resources that have been followed as truth. He does however leave some to be desired by not really making the connection to the amount of power religion has on our world today, especially since his main thesis seems to be the connection of power with information networks. Contrasting holy books, he discusses academia and the way it has built in self correcting mechanisms, like peer reviews and journal submissions, making it differ from other information networks. The structure of the first four chapters was clear and easy to follow and I was expecting this of the whole book rather than the shift to discussion of political societies that follows.

He changes course in the last chapter of part one to discuss democracy and totalitarianism. Although this makes sense in the scheme of discussing information as power, it stands as a sort of surprise when you pick up the book expecting a basic history of simple information networks. Harari explains democracy has a vast distributed information network

with self correcting mechanisms while totalitarianism has a centralized information network and does not utilize self correcting mechanisms. Democracy cannot really be a true democracy without the allowance of free flow of information, and a dictatorship cannot be truly totalitarian without total control over what information can be shared and obtained. Mass media has not only made mass democracy possible, but also mass totalitarianism. This claim by Harari puts a lot into perspective about how mass media is used in different ways. In a democratic society, mass media is used as a tool to spread information and discover misinformation, but in a totalitarian society mass media is used by the leaders to control what information is circulated.

Part Two: The Inorganic Network

Part two titled "The Inorganic Network" is where Harari spends his focus on the transition from analog information networks to the computer networks we use today. Although the political shift was off-putting, it did give an introduction to the conversation about computer systems and AI today and how it affects our current political atmosphere. Computer systems have quickly become an integral part of our lives as he points out in his discussion of the rapid evolution of computers, "In computer evolution, the distance from amoeba to *T. rex* could be covered in a decade". (pgs 216-217) Computers have made themselves full members of the information network, where previously, things like clay tablets and radios were simply just messengers to transmit information between humans, but computers are now their own part of the network creating their own information to share, or at least choose what information to amplify.

It is because of this he discusses in depth the parts of our computer networks we need to keep an eye on as humans, like surveillance, algorithms, and intercomputer realities. It is in

chapter 6 where he writes one of my favorite lines of the book, “I promise you that this is a cultural product of the human mind. But can you be absolutely sure of it? A few years ago you could”. (pg. 214) This sums up the emotions I was left with after reading this book, feeling like I am living in a world where I almost cannot trust anything.

I do feel like part two was important for readers to understand the real dangers of these technological systems Big Tech is churning out. The surveillance issue is one thing I think most people have been worried about for a long time, but not everyone gets how the upcoming AI systems are heightening the problem. Not only are we being analyzed constantly, but we actually pay for it. “The computer network has become the nexus of most human networks.” (pg. 235) Surveillance of all kinds has been used for all sorts of things, from identifying January 6th insurrectionists, to flagging terrorists, to criminally punishing women in Iran who do not follow hijab laws. The use of these examples can be shocking to the reader. His entire use of the examples of Iran’s hijab laws had a particularly intense impact. He explained how they are using AI systems to automatically identify and message warnings or court summons when a woman is not wearing her hijab in public. Women are being penalized when they fall off or when in their car alone. Harari does a good job as well of pointing out that although some uses of surveillance and other computer systems may seem beneficial, in some cases information is misused due to algorithms being performed by the technology systems.

A simple goal to “maximize engagement” can lead algorithms to circulate outrageous and falsified information because it gets the most interaction. This has been seen over and over through social media and entertainment platforms like Facebook and Youtube. Due to many algorithm’s only goals being “maximize engagement,” outlandish posts filled with lies are circulated at a higher volume as more people click on the unbelievable claims. This is not a new

worry to people in the modern age. Samuel Woolley discusses the effect the computer systems today affect the spread of propaganda, misinformation, and disinformation in his book, "Manufacturing Consensus: Understanding Propaganda in the Era of Automation and Anonymity". Both Harari and Woolley warn readers of the innate ability of these networks to amplify issues and cause rifts in our society.

Many of social media platforms that have problematic algorithms tend to blame "human nature" rather than themselves or even the algorithms. Harari clarifies here he does not want it to be misconstrued that he believes it is the fault of all computer networks. He claims the real issue is an "alignment problem". Computers operate differently than us, yet we train them through a human lens. This was a very interesting perspective because I feel like as human beings we have a tendency to play the blame-game, whether we blame technology as an entity or humans for being greedy, it could be a simple issue of misunderstanding of the system and how to interact with it. Harari does offer this fresh perspective I feel to other arguments on the subject today.

Inter-computer realities pose a threat because they can create things without human interaction. He explains this as the ability for computers to create their own ideas and communicate with each other. This ties well back to his discussion about how computers are a new member in the network compared to previous analog types. We need to learn how to steer their creative abilities to what we want, but Harari points out this is the same problem we have with human creativity. Some may think it would be better in the hands of a neutral computer network, but they have been trained off of human data, so they have the same inherent bias as we do. The only way to avoid that would be to become independent agents that can analyze their impact on the world. Harari warns that is not a solution and would only create more problems and even more imbalance in the power dynamic between humans and these computer networks.

One thing lacking from this part was discussion about democratizing AI and the real part tech companies have played in the issue at hand. Harari glides over Big Tech and continually states we have the power to make sure these technologies do not get out of control, but can we as individuals really accomplish that without the technology being one, readily available to us, and two, comprehensible. During an interview with AI now, Meredith Whittaker, the President of Signal, asks the question of how do you democratize something that is the result of concentrated power (AI Now). This is a really good point that I feel he could have touched on even more, especially since his argument is about the power humans crave. He spends a lot of time focusing on democracies and totalitarian societies, but it is Big Tech that is advancing these technologies forward without consideration the governments just are not keeping a check on them.

I also feel this discussion could have been improved by mentioning generative AI and its effect on the creative market. Not only does AI have the ability to create entire bouts of text that could be interpreted as reliable, but arguably, creative modes of expression like art are forms of information networks. This idea seems to be completely overlooked by Harari. According to NBC News, Chat GPT had rejected over 250,000 image requests of candidates before the presidential election. This is a great example of Harari's claim that the problem lies with how the technology is used. Although the rejections are a positive sign, the same article references a study done by Clarity, a machine learning firm, "the number of deepfakes has increased 900% year over year…some included videos that were created or paid for by Russians seeking to disrupt the U.S. elections". (NBC)

Part Three: Computer Politics

Harari spends “Part 3: Computer Politics” discussing the effect these computer systems could have on both democracies and totalitarian societies and what kind of threat it really poses to humankind. In chapter 9, he discusses how democracies could be challenged on the fronts of privacy, the job market, and decision making. He uses chapter 10 to explore what he coins the bot prison and algorithmic takeover. He concludes the book with a chapter on his fears its outcome on the world as a whole.

He claims taking away privacy could force us into a system that rewards or punishes us for everything we do, creating a totalitarian system and killing democracy. We could simply choose not to allow it and use surveillance in moderation to avoid this outcome. Automation could destroy the job market and affect democracy. He points out that even if some jobs are taken over by automation, new jobs will emerge, but we cannot keep up with the ever changing technology sufficiently to learn and teach necessary skills. Computers are also making lots of decisions for us. These algorithms can be used to decide the length of a prison sentence, if we are accepted to college or a job, loan granting, and welfare assistance. “If more and more decisions about people’s lives are made in a black box, so voters cannot understand and challenge them, democracy ceases to function” (pg. 333). Just because we can create something, doesn’t mean we should. He also warns it could cultivate a digital anarchy instead of totalitarianism. Harari mentions in the book that by 2020, 43.2 percent of tweets were being created by bots. This shifts the direction of conversation online, taking away true opinion. He calls for action that although we may not have to ban bots, it must be made clear when you are not interacting with a human. I appreciate that Harari tries to offer ways we can avoid these traps, but he doesn’t quite explore how we can do anything as individuals. I was also disappointed that he fell into the same basic insights surrounding the job market and the convoluted argument of digital anarchy.

The chapter of Part 3 on totalitarianism looks at the interaction between totalitarianism and 21st century information networks. He claims totalitarianism seems to benefit from AI, since it favors concentration of information, but there are still risks that may go unnoticed. He uses the term “The Bot Prison”. Although most dictatorships run based on fear, computers do not have the capacity to feel fear. Since AI can learn and change by itself, that creates potential for members of a totalitarian regime to be uncontrollable. Harari points out that over time, the threat to totalitarianism could be taken over via an algorithm. The dictatorship may lose control of the computer networks. It would be easier for computer systems to seize and centralize power in a centralized system that has no self-correcting mechanisms. But totalitarian societies should be reluctant to put full trust into these systems, because they inherently possess the ability to lose control of technology without realizing it. I did appreciate this chapter even though I began reluctant to his focus on these two types of societies. Harari broke from his overdone arguments in the last chapter to bring up some actually fresh concepts. I do believe, however, that his argument towards the drawbacks of these computer systems in totalitarian societies is not as extensive as it was in democratic societies. I ponder if it is because there are less potential drawbacks, or if he subconsciously does not wish to share as many solutions.

He claims the biggest threat is how it will affect dynamics between societies and nations, possibly instigating things like “new arms races, new wars, and new imperial expansions”. (pg. 361) At this point, computers cannot completely run without human interaction, but we need to work together as a species to avoid that possibility. There is the obvious concern, like AI getting control of our nuclear weapons. But there are other possibilities of world changing issues, like a new imperial era or a split along a “Silicon Curtain”. China and the US are the current front runners for the AI race, but everyone is trying to create their digital footprint, and this can create

dangerous competition. The creation of cyber weapons, like the ability to completely destroy a country's electrical grid or hack into their political systems, pose a world changing threat. A huge split between societies will do the opposite of bringing us together to find a solution to the growing technology problem. Sadly, many are concerned about human's ability to learn from our mistakes and work together for the better, but Harari believes humans can change. "The only constant of history is change." (pg. 393) His positive outlook here is hopeful, but it wasn't until the end of the book the reader was able to feel that there is hope as the rest of the book felt catastrophic.

Conclusion

Overall, Harari claims AI is not perfect. He explains there is a real threat, especially with lack of self-correcting mechanisms, that AI could challenge our privacy, autonomy, and political systems, but he bewares of becoming overly cynical. Although fiction tends to take hold better than truth, humans naturally tend to prefer the truth if given the choice, which is hopeful. He returns to the first question he posed. He argues the fault isn't our nature, but instead the nature of our information networks. The prioritization of order over truth has created more power than wisdom. I appreciate Harari's ability to tie these threads throughout this convoluted overdrawn book. He uses good points and examples to create an extensive analysis of many aspects of our information networks, but the overall book was anything but brief. I believe his arguments could have better been explored through different books. I did, however, enjoy it as a reader; as a scholar trying to analyze his arguments, I found myself wishing for a clearer call to action to walk away with.

"The decisions we all make in the coming years will determine whether summoning this alien intelligence proves to be a terminal error or the beginning of a hopeful new chapter in the evolution of life." - Harari

Bibliography

ChatGPT rejected more than 250,000 image generations of presidential candidates before Election Day. (2024, November 9). NBC News. https://www.nbcnews.com/tech/chatgpt-rejected-image-generations-presidential-candidates-rcna179469

Harari, Y. N. (2024). *Nexus: A brief history of information networks from the Stone Age to AI* (First edition). Random House.

What is AI? Part 1, with Meredith Whittaker | AI Now Salons—Youtube. (n.d.). Retrieved December 13, 2024, from https://www.youtube.com/watch?v=US8xKmD7G1s

Woolley, S. (2023). *Manufacturing consensus: Understanding propaganda in the era of automation and anonymity*. Yale University Press.