Synthetic Media and the Construction of Reality

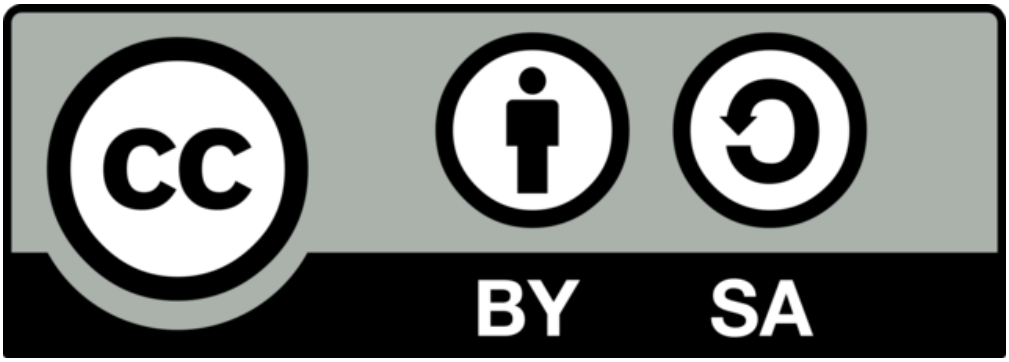
COM 743 Synthetic Media and the Construction of Reality

Curated and Edited by Steve Covello

Version 1 – Updated: December, 2021

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> boyd, d. m. and Ellison, N. B. (2007), Social Network Sites: Definition, History, and Scholarship. Journal of Computer-Mediated Communication, 13: 210–230. doi:10.1111/j.1083-6101.2007.00393.x

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What is the theme of this e-book?

The content that has been curated for this e-book has been selected based on the following criteria:

- Which topics pertain to our actual experience of mediated communication as we are engaged with it in the real world?
- Which authors and organizations present authoritative voices related to the topics?
- Which content offers well-supported, applicable, and varying viewpoints to a given topic?

The intent of this e-book is not to prescribe "the truth" about mediated communication according to the instructor's personal point of view. Rather, it is to help you to synthesize your own position on each topic which you will then apply appropriately to a final paper or presentation of your own choosing.

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Introduction and Course Narrative

Introduction

Whether out of desire or necessity, billions of people have immersed themselves in electronic media and algorithmically optimized communication networks. This trend has inspired a scholarly interest in the effects on people where their interface with their friends, family, community, commerce, religion, culture, race, nation, and the world is predominantly through mediated systems and devices.

Recent scholarly research has studied the influence of modern communication systems upon the human construction of social worlds, the perception of reality, and personal sense-making strategies.

Students, as agents of Communications in the American social fabric, need to examine this phenomenon and interrogate the potentially destabilizing effect of synthetically generated media and text driven by artificial intelligence (AI). The goal of this course is to develop advocates of caution in a society where advancements in technology far outpace our ability to comprehend their effects and where regulation and corporate accountability of any kind is typically lagging.

> **Your goal in this course is to envision the challenges of these issues as a problem (or set of problems) that can be addressed according to it being *a certain kind of problem*, which would be prerequisite to actually apprehending it as such.**

Ultimately, the educational outcome of COM 743 is that you will be able to speak intelligently about the topics we cover in this course under any situation: professional, academic, or personal.

Area of Interest and Thesis of the Course

All societies change over time.

However, it is fair to say that the speed and intensity of technological advancement in the past 25 years has surpassed any other 25 year period of advancement in human history. A thorough account of this journey is offered in Azeem Azhar's book, *The Exponential Age* (2021).

The thesis of this course is a call to study the effects of modern communication according to a recently developed communication theory that seeks to redefine our social landscape as *mediatized construction*.

The tenets of this theory begin with a simple proposition: The human construction of reality in contemporary society is influenced by increased engagement with mediated communication systems. In practice, this means less direct interaction with real people and proportionately more interaction with information through mobile devices, the Internet, and the software applications that operate *between* people.

The degree to which this transformation has occurred is evident in the ways in which we have accommodated our lives to meet their affordances:

- There is no need to memorize something that you can just look up on Google.
- There is no need to learn one's directional orientation while driving because a GPS-enabled smartphone application will tell us where to go.
- ChatGPT and other Large Language Models (LLM) eliminate the necessity to create, interpret, organize, and

summarize information through human intelligence alone.
- Many forms of learning no longer require an in-person instructor.
- Parents can track their children's whereabouts using tracking systems on mobile phones.
- We can select the form of entertainment we want, access it anytime we want, wherever we want.
- We can select as many channels of news information we want according to our particular interests and access that information at any time.
- There are no significant barriers to participation in a global network of information sharing and community building on any topic or interest.
- Creating media and sharing it to a global audience no longer requires specialized skills, equipment, or a cost to broadcast.
- The value of in-person expertise is diminished because expertise can be found through various online channels.
- All human events across the globe can be experienced in realtime, with pictures, sound, and video.
- Individuals can construct multiple separate identities within multiple virtual communities.
- Individuals can form emotionally connected relationships with virtual companions that do not exist in the real world.

These empowerments have become so commonplace as to feel like electronic extensions of our physical being. A metaphor for this is to imagine a pair of eyeglasses and how, at a certain point, you are no longer aware that you are wearing them. The eyeglass technology achieves a state of "transparency" where you are looking *through* them, not *at* them. A mediatized society, therefore, is one that is habituated to seeing itself and the rest of the world *through* technologies.

The next question then becomes, "What are we looking at and how did that content get there?"

The thesis of this course suggests that the communication systems in our society are not just benign tools or utilities, like a hammer or bicycle. Social media systems, virtual assistant/companion apps, LLMs, and commercial search engines are inherently designed according to business models intended to provide value to shareholders. They earn a profit through the extraction of user data for commercial purposes. The more personalized and subjectively optimized they make the user's experience, the more the user will remain engaged with them and continue to generate data. The decisions made by "Big Tech" are not driven by a concern for the social good; they are driven by market share, revenue, and growth. (And there is nothing inherently wrong with that).

So why are we studying this phenomenon?

If the systems we study in this course were relatively minor aspects of our lives and society, perhaps the collateral effects of it might not pose much of a risk. However, given that the entire world has become utterly immersed in these systems, it is fair to say that they serve as the *de facto* public sphere of communication and engagement – our window to the rest of the world and the channels through which we assert our presence.

Essentially, we have handed over the public sphere of discourse to private companies, which, in turn, have provided us with a large portion of the ingredients for our construction of reality.

We are studying this phenomenon because its collateral effects, on a large scale, pose potential risks: tribalism that influences people more towards extremist beliefs, the erosion of trust in institutions, the influence of external enemies to stir up conflict, and even risks to democracy itself when it is impossible to know whether anything you see or hear is credible.

Course Goals

Your goal in this course is *not to solve this problem*. Rather, your goal is to describe what *kind of problem* it is. Once you are able to describe this situation as a particular kind of problem, you can become more objective to it and better able to step back from it as an observer. And there are many ways to frame a given problem.

For example, during the emergence of the AIDS crisis in the 1980s, it could have been approached as a crime and punishment issue, a medical technology issue, a psychological issue, or, as it actually turned out, it was addressed as a public health issue. Each approach had implications for the way the problem was solved: What resources would be employed? Who was responsible for producing positive results? What kind of data would be collected? And so on.

This course asks you to do the same thing: Encapsulate the systemic problem presented here according to a framework that matters to you. If you are a Communications major, how would you frame the problem from a Communications perspective? If you are a Management student, how would you frame the problem from a Business or Management perspective? If you are a Nursing student, how would you frame the problem as a public health issue?

What is meant by "Reality" in this course?

Last, we must clarify what is meant in this course by the word "reality."

There is no singular "correct" reality in this course that you need to agree with. Rather, you are asked to view reality as a concept; a benchmark of personal perception that is reinforced collectively in the social context. It is a general, intellectual sense of *what is* and *what should be* as shaped by our sensory perception of our surroundings, social constructs, and the continuing flow of information we encounter.

Which brings us full-circle back to the study of mediated communication as the dominant source of information from which we construct our reality. What is mediated communication? What is synthetic media? How does it work, and how has our engagement with it been exploited for social, political, and commercial purposes?

Let's begin.

Topical narrative of the course

We begin with an introduction to a theoretical structure of mediated communication in the modern age:

- What is mediated communication and how does it differ from direct communication?
- What does it mean to "construct a social world" through mediated communication?
- How do humans accommodate themselves to the structure and "computed sociality" of mediated communications?

Once this groundwork has been established, we explore how algorithmically optimized systems present users with a subjective stream of information and content that is customized according to the user's interests, behaviors, and navigational history.

With an understanding of the dynamic between users and the systems with which they engage, we explore the theoretical underpinnings of epistemology – the study of *how you know what you know*:

- By what process do humans claim to know what they know and believe what they believe?

- What is the difference between evidence-based thinking and faith-based thinking?

Finally, we examine synthetic media – a relatively recent and easily accessible invention capable of generating visual, audio, and text media that traverses the "uncanny valley" of human perception to becoming indistinguishable from human generated media.

We interrogate the consequences of a global media environment where synthetic media has the potential to scramble any remaining sense of certainty in what is real. Special focus is given to clandestine efforts by foreign and domestic groups employing these tactics to subvert democracy and tranquility.

Mediated Communication

> "*...put simply, the importance of interface design revolves around this apparent paradox: we live in a society that is increasingly shaped by events in cyberspace, and yet cyberspace remains, for all practical purposes, invisible, outside our perceptual grasp.* ***Our only access to this parallel universe of zeros and ones runs through the conduit of the computer interface****, which means that the most dynamic and innovative region of the modern world reveals itself to us through the anonymous middlemen of interface design.*" – Steven Johnson, *Interface Culture: How New Technology Transforms the Way We Create and Communicate* (1997).
>
> *"The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.*" – Mark Weiser, Chief Technologist, Xerox PARC

Overview

What does it mean to say that our everyday lives are *mediated*?

Our initial focus is upon the work of Couldry & Hepp's *The Mediated Construction of Reality* where you will be introduced to the concepts and principles of communication in the contemporary age: the Internet, artificial intelligence, mobile devices, social media, the datafication of everything, the privatizing of public discourse, the Internet of Things, and so on.

You may have already studied information literacy or critical thinking where you practiced evaluating information based on its provenance, reliability, validity, and so on. However, the purpose of this section of study is less about evaluating the *product* of communication. It is about the *flow of information* in a media ecology, which suggests that there is more to know about media than its quality. Here, we are interested in *how* information appears to users, the algorithms that determines *which* information appears, and the *context* under which that particular information appears at that moment in time.

In short, this area of study is focused on a process model that explains *why* we encounter information and in what ways it influences the formation of our worldview. Couldry & Hepp's model helps us to visualize our media ecology so that we can scrutinize its components, its producers, and the invisible code that serves as its engine.

Key Terms

Mediated – Refers to an arrangement between you and other people where the interplay occurs "non-face-to-face" through a device, network, platform, or system that is situated in between.

Mediatized or Mediatization – Refers to a phenomenological change in the way humans communicate when there is less direct communication (such as face-to-face) and more mediated communication (such as social media). Schulz (2004) summarizes mediatization as follows:

1. **Extension**: Media technologies serve as extensions of the human capacity to communicate, such as in surmounting the limitations of time, space, and clarity.
2. **Substitution:** Media serve as "media events" that serve as a substitute for in-person social activities. Examples include the use of television broadcasts to replace in-person attendance, texting and email systems to replace in-person conversation, and print media replacing in-person speech.
3. **Amalgamation**: Media are interwoven into the everyday real world. Examples include listening to a podcast while

running or driving, watching videos on YouTube while eating, socializing while at the movies.

4. **Accommodation**: Media serve social, public, and commercial interests which, in turn, influences how humans construct their lives around media to accommodate receiving the benefits of its affordances. An example would be how parenting behavior has changed to accommodate the affordances of smartphones to instantly track and contact their children.

What should you be focusing on?

Your objective in this module is:

- Form a schematic in your mind of your everyday life that illustrates how mediated communication is deeply integrated into it, either directly in your own practices or indirectly because you interact with people who's lives are immersed in such communication.

Readings & Media

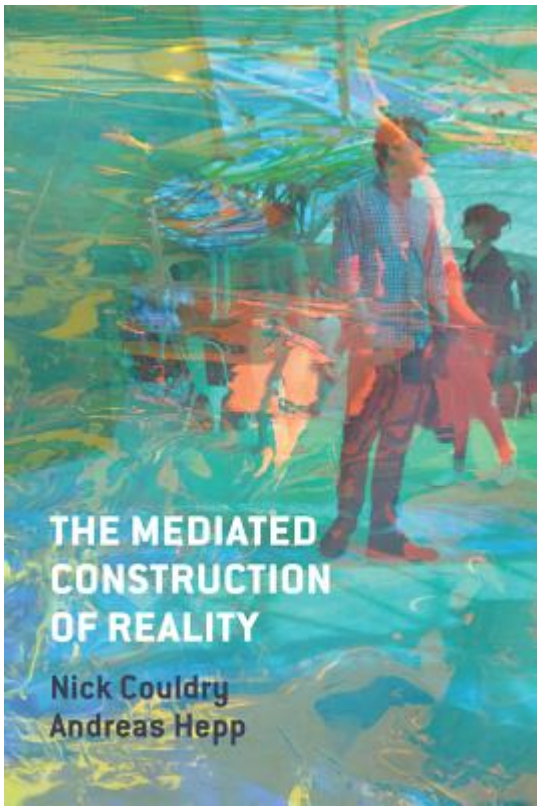
Required Reading: The mediated construction of reality

- Part I: Chapter 2 – The Social World as Communicative Construction
  - 2.1 Theorizing the Social World
  - 2.2 Reality and the Construction of the Social World
  - 2.3 Media and the Communicative Construction of the Social World
- Part II: Chapter 7 – Dimensions of the Social World
  - 7.1 Data and the Premises of Classic Social Phenomenology
  - 7.2 New Institutions for 'Social' Knowledge
  - 7.3 How We Are in a Social World with Data

These chapters present the theoretical underpinnings essential to comprehending the thesis of this course.

The book is a scholarly production and refers to many other scholars who's work you will not need to know to understand the authors' fundamental propositions. Allow yourself to proceed beyond such references without feeling as though you are missing out on critical details.

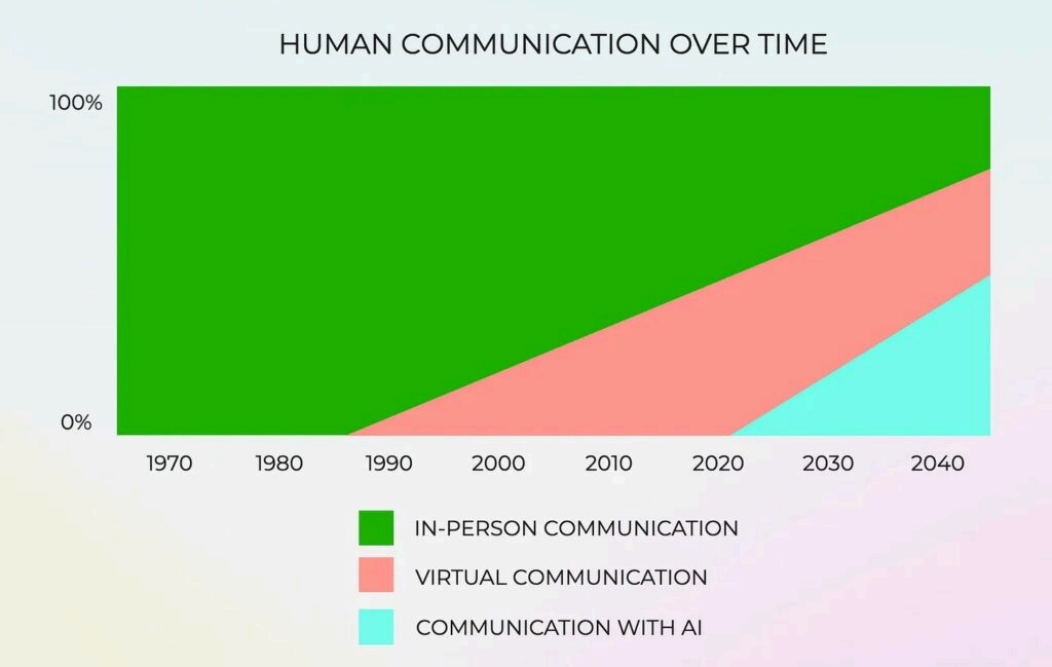
The most important pre-concept to carry forward as you read is to fully understand the meaning of the word *mediated*. *Mediated* refers to an entity or object that is situated in between communicators, much like a mediator would serve as a person in between two negotiators. Mediated communication refers to the phones, artificial intelligence, Internet, social media platforms, television systems, radio networks, and other systems that are intermediaries between you and the rest of the world.



The book describes how these interventions introduce a layer of psychological and social complexity that "colors" how humans make sense of the world, people, communities, cultural/political differences, and other factors that shape the perception of the world "as it really is."

Rex Woodbury (2024) outlines five levels of innovation in online (mediated) communication:

1. IRL – "In Real Life" interactions, like Live Nation
2. Bilateral – Person-to-person interaction
3. Parasocial – One-to-many relationships within online communities.
4. Many-to-Many – "Beehive" environments, like Reddit, Discord, and Twitch
5. AI-Centric – Engaging directly with artificial entities, like AI girlfriends, Character.ai, etc.



Reproduced from "AI's Communication Revolution: We're All Talking to Computers Now" by Rex Woodbury, May 15, 2024

Historically, there have been many scholarly works that examine our social fabric in the context of modern communication. However, the authors of this book have produced an updated reworking of thought that takes into account the enormous consolidation of communicative power into the hands of a mere handful of private companies that have, for the most part, co-opted the sphere of *public* discourse into *private*, for-profit operations. The authors refer to this deeply integrated and pervasive phenomenon as *deep mediatization*.

In these chapters, read and take notes so that you are able to respond to the following questions in the COM 743 course:

- What does it mean that our world has become *mediatized*? How is a mediatized world different to an average person today going about their daily life compared to a person's life 20+ years ago?
- What role does communication play in the construction of our social worlds and our everyday sense of reality?
- What is the relationship between the human sense of reality and the means by which humans communicate?

Couldry, N., & Hepp, A. (2018). *The mediated construction of reality*. John Wiley & Sons.

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Connect to Andres Hepp on Twitter @Andreas_Hepp – Website: andreas-hepp.name

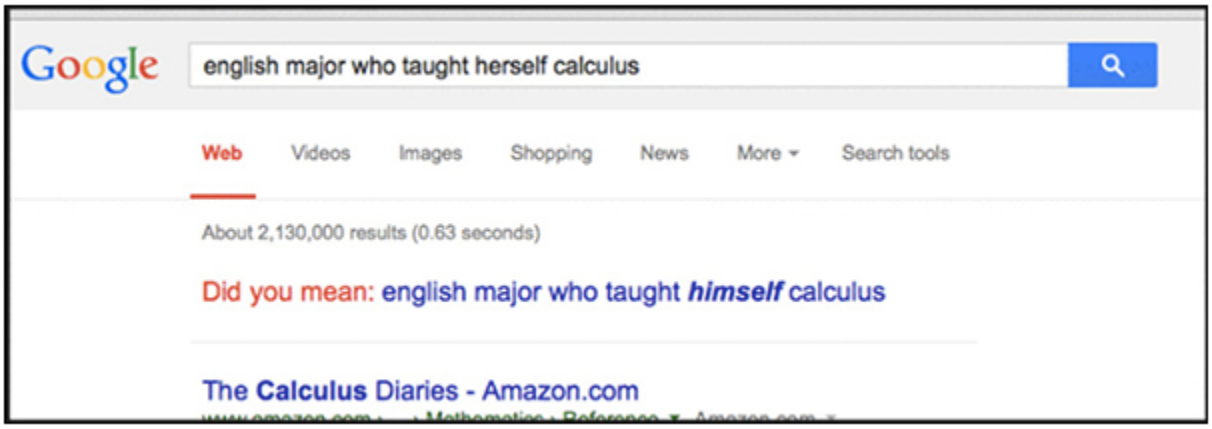
References

Johnson, S. (1997). *Interface Culture: How New Technology Transforms the Way We Create and Communicate*. San Francisco: HarperEdge.

Woodbury, R (2024). "AI's Communication Revolution: We're All Talking to Computers Now." *Digital Native* Substack blog, retrieved 2024 from https://www.digitalnative.tech/p/ais-communication-revolution-were

The Attention Economy & Algorithmic Search

> "As *users engage with technologies such as search engines, they dynamically co-construct content and the technology itself.*" – Safiya Umoja Noble



Screenshot of a Google search recommendation correcting "herself" to "himself." Credit: Safiya Umoja Noble: Algorithms of Oppression: How Search Engines Reinforce Racism.

Overview

In the prior readings, you explored the theoretical construct of a mediatized communication ecology and the relationship to the human construction of reality.

In this chapter, we focus on the digital systems within our mediatized ecology and the algorithms that determine what you see as you engage with them. If you studied information literacy in a prior course, you were likely focused on the *content* of information to determine its objective validity and reliability. Instead, in this area of study, we are interested in knowing *how* that information appeared in front of you as an output of your engagement with a system.

Why does this matter? It is because popular search engines like Google and AI are where many users go to confirm "the real truth" instead of relying on other media institutions or experts. To many, a Google or AI search is an operationalized method of "Doing your own research."

The problem with reliance on search engines and AI is that there is a presumption that the top search results, most popular selections, or AI output affirm the validity of a given answer. From the user's perspective, digital systems are presumed to be objective arbiters of fact checking (Sundin, O., & Carlsson, H., 2016). However, this is not the case. The results of search queries reflect a combination of factors including what other people have selected in similar search queries.

> "Knowledge is not simply conveyed to users, but co-produced by the search engine's ranking systems and profiling systems, none of which are open to the rules of transparency, relevance and privacy in a manner known from library scholarship in the public domain (van Dijck, 2010, p. 575)."

With AI systems trained on Internet data, there is a risk that the output of AI published on the Internet will be circulated back into its own source content, which results in a recursive spiral of "junk data."

> "We find that indiscriminate use of [AI] model-generated content in training causes irreversible defects in the

resulting models, in which tails of the original content distribution disappear. We refer to this effect as 'model collapse' and show that it can occur in LLMs…." (Shumailov, I., Shumaylov, Z., Zhao, Y. et al., 2024).

"Google's search feature AI Overviews cites YouTube more than any medical website when answering queries about health conditions, according to research that raises fresh questions about a tool seen by 2 billion people each month" (Gregory, A., 2026).

When you trace the flow of information in algorithmically optimized systems, you find that the "truth" in digital network systems isn't about the validity of information, it is about what the majority of people *believe* is true. As more people accept top search results and AI output as objective proof of a given body of knowledge, it creates a feedback loop that elevates popular content to a higher state of relevance regardless of its quality. In fact, search results are *designed* to be subjective and are, to a degree, determined by who you are, your interests, where you had just navigated on the Internet, and where you are physically located (Kozyreva et al., 2021).

Our study of algorithmic systems suggests that there is more to the human experience of "knowing" than the mere evaluation of information for its credibility. We must examine how the information we find is the output of robust calculations that are different for every user *by design* according to for-profit business models.

The Attention Economy: We will also explore the algorithmically driven strategies found in social media systems that serve the Attention Economy. The Attention Economy is (among several definitions) a model of commercial activity designed to sustain the user's attention for as long as possible to capture user data for use in targeted advertisements and personalizing content. One of the strategies to achieve platform "stickiness" is by using algorithms that make the user feel as though they belong to a community of like-minded people, which influences the user's desire to connect, engage, share, and "stick" on the system for as long as possible.

While the idea of a personalized Internet or app experience is a reasonable value proposition for users (especially since they can use these apps at no cost), there is a potential for users to experience an echo chamber effect that affirms and intensifies a singular worldview. When users co-construct online communities based on uniform worldviews, there is a greater risk of tribalistic divisiveness.

Key Terms

Algorithm – A set of mathematical rules that calculate an outcome according to the logic designed in the code. Algorithms are created by humans. There are many variations to this definitions according to the context of its use. This article by the MIT Technology Review offers an expanded analysis.

Homophily Principle – A term used to describe the psychological tendency of people to gravitate towards other people with whom they share a similar worldview, values, interests, etc. The diagram below shows how social media systems recirculate user engagement data to inform both the construct of affinity groups as well as the algorithms that predict which content would be most interesting to them (to foster further engagement and data collection).

The effects of homophily-based design are mixed: there is variation in the design of social media systems (such as reciprocal/non-reciprocal connections) as well as the degree to which any set of partisan content causes an individual to migrate their worldview towards one direction or another.

The more important takeaway from this research is to acknowledge that the content one encounters in all forms of social media are co-constructed according to the Homophily Principle, not by a purely objective landscape of content.

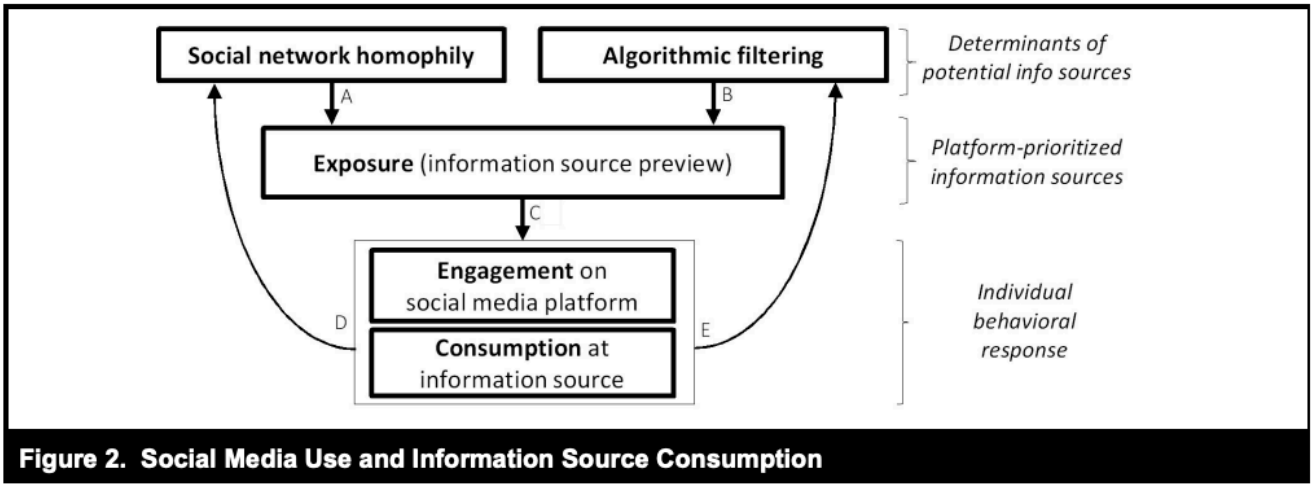


Figure 2. Social Media Use and Information Source Consumption

Image from "Understanding Echo Chambers and Filter Bubbles: The Impact of Social Media on Diversification and Partisan Shifts in News Consumption" (Kitchens, B., Johnson, S. L., & Gray, P., 2020)

Personalized – In the study of algorithmically optimized systems, personalization refers to the response of digital systems to the characteristics of the user and their past navigation behavior. For example, if you search for an item in Amazon, a digital cookie is saved in your browser that is retrieved by a tracker embedded on the Web page you are visiting and then used as a basis for serving you ads in the sidebar. You will often see ads for items that you just search for because the ads are personalized to your (apparent) interests. While there is no personally identifiable information being transferred in this process, a person who uses the same computer or device for all of their online navigation will accumulate a body of metadata (data about a "person," not specifically you) that serves as a profile signature to inform how an algorithmically optimized system should respond.

If you like, read more about metadata and tracking in this open e-book chapter, Metadata, Tracking and the User's Experience.

Note: There are many other Key Terms to review in the S.1896 – *Algorithmic Justice and Online Platform Transparency Act* resource listed below.

What should you be focusing on?

The purpose of this week's study is to comprehend how personalized content appears in an individual's channels of communication according to the purposeful designs of commercially driven interests.

Your goal is to be able to explain how it is possible for individuals to construct a certain perception of reality according to the design of various channels of mediated communication they encounter.

Readings & Media

Thematic narrative in this chapter

In the following readings and media, the authors will present the following themes:

1. Search algorithms are created by humans who bring their cultural biases to their design. As such, algorithms may serve as a codification of bias.
2. Search algorithms do not produce objective results; Internet content is personalized according to profit-driven strategies.
3. Algorithmic systems can limit the breadth of information people may encounter.
4. Transparency in algorithmic design is a double-edged sword, though there are solutions to consider if we determine that social media should operate in the public good.

Required Article: "Technology and democracy: a paradox wrapped in a contradiction inside an irony" by Stephan Lewandowsky and Peter Pomerantsev (2021) (7 pages)

This article spans the topics of the Attention Economy, personalized algorithms, the illusion of objectivity and choice, and how all of these topics relate to an asymmetry of power.

Lewandowsky, S., & Pomerantsev, P. (2022). Technology and democracy: a paradox wrapped in a contradiction inside an irony. *Memory, Mind & Media*, 1, e5. doi:10.1017/mem.2021.7

Required Video: "FTC investigating 'surveillance pricing'" (4:05) CBS News, August, 2024

This video describe how the Federal Trade Commission (FTC) is investigating how retailers and "middlemen" (data analytics firms that develop customized algorithms) change prices for their online products according to the metadata associated with the consumer's browsing history and other online habits. This emphasizes that the "economic reality" that individuals experience online is a reflection of the *flow of data* rather than an objective representation of (in this case) the price of a product or service.

This segment is based on the FTC's updated report, "FTC Surveillance Pricing Study Indicates Wide Range of Personal Data Used to Set Individualized Consumer Prices," January 17, 2025.

Last, it is important to recognize that the moniker associated with this practice suggests that companies are conducting *surveillance* on its consumers. **This is inaccurate.** "Surveillance pricing" is being used as a form of rhetoric

to inflate the perception of what is actually occurring here. *Surveillance* refers to intentional monitoring of a *known individual* for the purpose of gathering data – usually for law enforcement purposes. The individual under surveillance is identified by name and other attributes of their Personally Identifiable Information (PII). However, the form of personalization referred to in this article is not surveillance – it is *metadata tracking*, which contains no PII and the individual subject to the flexible pricing policy is not known. Metadata tracking is used for many other purposes, such as personalizing Internet content, preferences for such things like streaming services, and Google search results. It is relatively benign and can be negated easily by clearing one's browser cookies or using an incognito browsing mode.



One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.usnh.edu/com743/?p=44#oembed-1

Required Video: "Wall Street Journal: How TikTok's Algorithm Figures You Out | WSJ" (13:02)

This video focuses exclusively on TikTok's algorithm, but the concept of personalizing content is the same for all other social media platforms which operate on the same premise of the Attention Economy for their profitability.

One of the comments at the end by a data scientist sums up the theme of this video: "Whether it's on TikTok, on Facebook, on YouTube, we're interacting with algorithms in our everyday life, more and more. We are training them, and they're training us."

As you watch this video, consider what it is that the algorithms are "training" us to do. There are multiple levels to consider beyond just swiping to the next video.



One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.usnh.edu/com743/?p=44#oembed-2

Required Chapter: "Algorithms of Oppression: How Search Engines Reinforce Racism. Chapter 5 (excerpt) – Safiya Umoja Noble (2018). (20 minute read)

Read the sub-chapter Search as a Source of Reality. You may need to scroll up or down to locate the beginning of this sub-chapter within the e-book.

Noble's research in this area is centered on the premise that "...information provided to a user is deeply contextualized and stands within a frame of reference (Noble, S., 2018, p. 108)," which points to the need to deconstruct the historical philosophy that informs how information should be classified (and thus, retrieved).

Noble goes a step further than merely stating that contemporary search engines are biased towards a commercial interest. They are biased towards reflecting a *cultural frame of reference*. Thus, algorithmic search is more than just personalized for us; it is recursively "culturalized" as well. (For further reading to support this proposition, skim through the chapter "Searching for Black Girls").

Safiya Umoja Noble. (2018). *Algorithms of Oppression: How Search Engines Reinforce Racism*. NYU Press.

Required "Searching for Alternative Facts: Analyzing Scriptural Inference in Conservative News Practices" – Francesca Tripodi (2018). Excerpt: "Googling for Truth" (15 minute read)

This is an excerpt from a larger report which you can access directly from the Data & Society Research Institute website. While the larger theme of the paper focuses on the news engagement habits of self-identified Conservatives, the section we are interested in is generalizable to all users of search engines to seek information.

This chapter describes how people employ Google search as a method of "Doing your own research" as a way to circumvent the perceived biases of news media and other institutions.

Pay particular attention to the way an initial search query is phrased. As you will see in later studies, if it is possible to influence how a search query is phrased, it is possible to control the search results.

Tripoli, F. (2019, May 16). Searching for Alternative Facts: Analyzing Scriptural Inference in Conservative News Practices. *Searching for Alternative Facts*. Data & Society. https://datasociety.net/library/searching-for-alternative-facts/

Required "Behind The Filter Bubble" Politicology Podcast, May 25, 2022. (Look on the upper right corner for the red "Play Episode" button). (45 minute listen)

This podcast focuses on the expertise of Stanford Professors Mehran Sahami and Rob Reich. Among other topics, they ask: What does it mean when opaque algorithms operate without transparency as if they are presumed to be serving a public good? What would happen if there was total transparency of the algorithms? Would it make things better or worse? Below is a list of the topics covered.

The first two topics in the podcast repeat subject matter already covered in prior chapter resources, but they are articulated so well that it may help to solidify your understanding of the issues. Note that the player controls on this webpage include speed control if you prefer to play back the content faster than 1X speed.

- 02:21 – What do social media algorithms do and how do they impact what you see on platforms?
- 05:01 – The embedded values on social media platforms.
- 11:07 – How algorithmic transparency could help bad actors.
- 12:23 – What algorithms look for and what they're trained to do.
- 15:05 – Content moderation and algorithmic amplification.
- 23:53 – Transparency without going open source.
- 28:01 – Algorithmic choice through "middleware."
- 32:27 – Consumer Choice, misinformation, and filter bubbles.

- 48:43 – Whether Democracy can withstand this.

Reich, R. (Host). (2022, May 25). Behind the Filter Bubble [Audio podcast episode]. In *Politicology*. https://www.podchaser.com/podcasts/politicology-1230612/episodes/behind-the-filter-bubble-139837562

Optional: About Facebook's Advantage+ Creative. This is documentation published by Meta (Facebooks owner) that explains how their Advantage+ tools can customize your media content in various ways to convert the best engagement results. It works by offering several enhancements and then an analytics dashboard to tell you which methods work best for gaining attention, shares, and clicks. If you are a social media marketing major, this is a must-read.

Optional: "New York Seeks to Ban Algorithmic Feeds for Teens" – By Andrew Hutchinson, Social Media Today, June 20, 2024 (**2:00 minute read)**. This article describes several regulatory efforts to control the effects of algorithms on teens based on claims that algorithmically optimized content is harmful. There are conflicting reports to this claim. In contrast, "Yet Another Massive Study Says There's No Evidence That Social Media Is Inherently Harmful To Teens" outlines the case against causal effects of social media. Note that *TechDirt is not a scholarly resource*. While their irreverent blogging is noteworthy and well-cited, readers should be cautious of the author's bias.

Optional: "Code-Dependent: Pros and Cons of the Algorithm Age" – By Lee Rainie and Janna Anderson, Pew Research Center, 2017 (**5:00 minute read)**. This article outlines seven themes that have emerged as more algorithmically optimized systems are implemented throughout the Internet. Skim through this article to capture the major concerns expressed by the survey participants.

Optional: "Many Tech Experts Say Digital Disruption Will Hurt Democracy" – By Janna Anderson and Lee Rainie, Pew Research Center. February 21, 2020. The Pew Research Center conducts ongoing research on public opinion and expert commentary on contemporary issues, many of which center on technology, the Internet, and social media. This article presents survey results about questions related to public trust and civil divisiveness.

"About half predict that humans' use of technology will weaken democracy between now and 2030 due to the speed and scope of reality distortion, the decline of journalism and the impact of surveillance capitalism. A third expect technology to strengthen democracy as reformers find ways to fight back against info-warriors and chaos (Anderson and Raine, 2020, p. 1)."

Optional: The Attention Economy – By Lexie Kane on June 30, 2019, Nielsen Norman Group. This article describes the Attention Economy from the perspective of website and app design: How do advertisers force users to pay attention to ads or content? This may interest you if your studies center around marketing and business.

Optional: Understanding Echo Chambers and Filter Bubbles: The Impact of Social Media on Diversification and Partisan Shifts in News Consumption – By Kitchens, B., Johnson, S. L., & Gray, P. (2020). This is the full research study referred to in the Homophily Principle section above. Recommend reading the Literature Review and the Practical Implications section to gather a sense of the research questions and how the results were interpreted. It is critical to note that the findings do not suggest that there are direct causal relationships between the use of social media systems as a whole and the formation of certain psychological dispositions, i.e, liberal, conservative, etc. There is too much diversity in the design of social media systems, and the data is limited in this research to user behavior (not user beliefs).

References

Anderson, J., & Rainie, L. (2020). Many tech experts say digital disruption will hurt democracy. *Pew Research Center. Internet & Technology. Feb*, *21*.

Gregory, A. (2026, January 24). *Google AI Overviews cite YouTube more than any medical site for health queries, study suggests.* The Guardian. https://www.theguardian.com/technology/2026/jan/24/google-ai-overviews-youtube-medical-citations-study

Kitchens, B., Johnson, S. L., & Gray, P. (2020). Understanding Echo Chambers and Filter Bubbles: The Impact of Social Media on Diversification and Partisan Shifts in News Consumption. *MIS Quarterly*, 44(4).

Kozyreva, A., Lorenz-Spreen, P., Hertwig, R. *et al.* Public attitudes towards algorithmic personalization and use of personal data online: evidence from Germany, Great Britain, and the United States. *Humanit Soc Sci Commun* **8**, 117 (2021). https://doi.org/10.1057/s41599-021-00787-w

Shumailov, I., Shumaylov, Z., Zhao, Y. *et al.* AI models collapse when trained on recursively generated data. *Nature* **631**, 755–759 (2024). https://doi.org/10.1038/s41586-024-07566-y

Sundin, O., & Carlsson, H. (2016). Outsourcing trust to the information infrastructure in schools: how search engines order knowledge in education practices. *Journal of Documentation*.

van Dijck, José. (2010), "Search engines and the production of academic knowledge." *International Journal of Cultural Studies*. Vol. 13 No. 6, pp. 574–592.

The Argument Over Epistemology

> "As the historian of science Jacob Bronowski wrote in 1973, '**There is no way of exchanging information that does not involve an act of judgment.**' We've grown accustomed to many of those acts of judgment being made by algorithms that have a commercial goal in mind." – *Barbara Fister*

Overview

In the previous chapter, you examined how some mediated communication systems are designed to capture user behavior to personalize the user's search and social media experience. From this perspective, you have a sense of how information *flows through* algorithmically optimized communication systems. More importantly, you are now able to answer the question, "How did that information get there?"

In this chapter, we examine how the human thought process transforms information into belief structures. Belief, of course, is the essential basis of one's perception of reality: W*hat is* society and *what should society be*.

What is epistemology?: Epistemology is a domain of scientific study that seeks to understand how humans know what they know: By what cognitive methods do humans validate their knowledge as true, conclusively?

We examine two theories of epistemology that support the larger question of how humans construct reality through communication, such as evidence-based epistemology (evaluating the objective provenance of information) and faith-based epistemology (relying on the subjective credibility of the person or institution that conveys information).

About faith and religion: Before we begin, it is important to note that "faith-based," in this inquiry, does not refer exclusively to epistemology in a religious context, such as you may have heard in the expression, *faith-based charities*. Instead, "faith" is applied here in its generic definition, meaning some form of inner conviction, trust, or attitude. While this manner of thinking is a foundational component of religious faith, our inquiry is not focused specifically on religious faith nor the people who believe in their religion as a matter of faith. Rather, we are interested solely in faith-based thinking, in general.

The purpose of this study is to deconstruct the differences between each form of epistemology so that you can explain how it is possible for people to construct dramatically different belief structures based upon consuming the same information.

Your ability to explain these differences will enable you to identify patterns of thinking in different groups of people, how those patterns are evident in their respective constructions of reality, and how messages are designed to appeal to audiences according to how they would be most receptive to them.

What should you be focusing on?

You will encounter a combination of research and expert commentary, some of which may presuppose that a particular way of thinking is preferential to others.

The focus of these readings and media is not intended to validate one method of knowledge construction over another.

It is, instead, intended to demonstrate that there is diversity in the human approach to constructing knowledge that informs how messages are designed, developed, published, and interpreted by audiences to achieve a communication goal.

Your goal in interpreting these resources is to trace the flow of information according to how humans engage with it and identify how your academic studies intersect or relate to it.

Readings & Media

Thematic narrative in this chapter

In the following readings and media, the authors will present the following themes:

1. Media literacy education is inadequate in staunching the effects of misinformation. Rather, it is more important to study the different ways that humans process information to determine what is true, legitimate, and valid.
2. Historically, there has been an honor code called "social epistemology" that surrounds objective truth-seeking. It has been undermined by both information systems and the bad actors who use them to subvert social coherence and certainty.
3. Librarians need to move beyond promoting information literacy and promote "how information works" in contemporary media within the context of democracy and ethical frameworks.

Required "danah boyd SXSW EDU Keynote | What Hath We Wrought?" – by danah boyd, March 7, 2018. (46:00)

dana boyd (all lowercase) is a renowned social science researcher focused on the impact of technologies on society. Her interests are to better understand why people believe what they believe.

> "We cannot and should not assert authority over epistemology, but we [as educators] can encourage our students to be more aware of how interpretation is socially constructed and to understand how that can be manipulated. Of course, just because you know you're being manipulated doesn't mean that you can resist it."

In this video, Ms. boyd presents two profiles of epistemology and suggests that our greater mission in modern society should be focused on understanding how groups of people interpret information – not just on developing media literacy.

The value of this presentation is in how she visualizes the differences in each thought process and how bad actors weaponize evidence-based thinking to undermine settled knowledge.

Last, it is no secret that Ms. boyd presents a politically left-leaning attitude. The presentation of this video is not intended to endorse a particular political position. Taken objectively, her thesis and evidence is appropriate whether interrogating either left- or right-leaning propaganda from an epistemological perspective.

A text-based transcript is available on her blog.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.usnh.edu/com743/?p=98#oembed-1

Boyd, D. (2018). You think you want media literacy… do you. Data & Society. *Retrieved from https://points. datasociety. net/you-think-you-want-medialiteracy-do-you-7cad6af18ec2*.

Connect to dana boyd on Twitter: @zephoria

Required "Lizard People in the Library" by Barbra Fister, Project Information Literacy, February 3, 2021 (5 pages).

This article identifies several problems with the media literacy landscape. In particular, Fister looks at how the "Do your own research" approach has led to a decay in the legitimacy of expertise. She calls for education in "how information works," which is precisely what we are doing in this course.

Required "The Constitution of Knowledge" by Jonathan Rauch, *National Affairs*. Fall, 2018 (22 pages).

This article places recent political rhetoric into an objective testing method. In particular, he describes how the epistemic process is utterly undermined by disinformation. This is relevant in our study since the means of promoting disinformation is by using the dominant forms of mediated communication we access today.

Rauch, J. (2018). The constitution of knowledge. *National Affairs*, 37(4), 125-137.

Connect to Jonathan Rauch on Twitter: @jon_rauch

Synthetic media: AI generated content

Overview

In the second half of this book, we step inside the mediated communication ecology to examine synthetic media:

- Content composed of objects/people that do not actually exist in real life.
- Content that is not created by actual people.
- Artificial content that is derived from the extraction and computational extrapolation of real objects or people.

The purpose of introducing synthetic media into our narrative of study is to say, in so many words, "It is already difficult to know what to believe as objective truth within mediated communication content created *by humans*. Now we have to contend with media created by artificial intelligence (AI)!"

While the current state of AI-generated media is somewhere beyond its early stages, it is imperfect. Most AI-generated images, audio, and video content is easy to detect. Yet, as the pace of AI development continues, AI-generated synthetic media will become difficult to discern from human generated media. AI-generated human faces have already achieved an extraordinary level of quality worth implementing for commercial purposes.

In this chapter, we examine AI-generated content that produces new content "out of thin air" and then we consider its implications to the human construction of reality, given the prior factors we have already studied.

Key Terms

Datasets: All AI systems require being "fed" data from which the system can learn the patterns of information in everyday objects. For example, if an AI system needs to recognize the characteristics of a dog, it will be provided with millions of images of dogs to ascertain the range of representations of "dog." Once seeded with this information, an AI system can be employed to recognize or, as in the case examples below, generate examples of imagery that do not exist in real life. Review the article "LAION-5B: A New Era of Open Large-scale Multi-modal Datasets."

Liar's Dividend: This expression is used to describe a pathological media environment where public perception becomes so skeptical of fake content that liars and con artists can reasonably persuade people that real content is fake. This is exemplified by the quote made by Steve Bannon, former chief strategist for Donald Trump, "The Democrats don't matter. The real opposition is the media. And the way to deal with them is to flood the zone with shit."

This "flooding the zone" tactic refers to intentionally contaminating an information ecosystem with misinformation so that audiences become confused and distrusting. They cannot distinguish what is real and what is not. The longterm effect is a public weariness over the process of finding the truth at all, which leads people to abandon the idea that the truth is knowable. Review the article, "Deepfakes, Elections, and Shrinking the Liar's Dividend."

What should you be focusing on?

Your goal this week is to investigate the various developments of AI-generated content to determine who is using it and for what purpose. As you review each resource:

- Think about the patterns of use that have occurred in prior technology advancements: What was the developers' original vision for their products? How were they actually used? How did bad actors leverage these innovations to achieve their goals? What do those patterns suggest about the future use of current innovations in AI-generated content?
- Think about what kind of ethical concerns should be discussed, by whom, and under what conditions. What should we be discussing about these systems before they reach a point of ubiquity, like the way YouTube, Facebook, and other globally accessible communication platforms have permeated societies?

Readings & Media

Thematic narrative in this chapter

In the following readings and media, the authors will present the following themes:

1. Artificial intelligence can generate coherent text and realistic images.
2. The open availability of synthetic media applications inspires many creative uses.

Required "The Digital "Real" is Probably Now Unknowable to the Human Eye" by Stefan Baushard, *Education Disrupted: Teaching and Learning in An AI World*, August 12, 2024. (9 pages, mostly images)

This article curates several examples of AI-generated images and videos that are so realistic, they are hardly discernible as fake. As the recent controversy over the Vice President Kamala Harris airport crowd photo suggests, the inability to discern real from fake imagery creates a weary and ambivalent public that cannot be certain about the validity of anything.

A quote from the article states, "I wonder if this will kill the internet. The online world will become a place not of fake news, but of fake reality."

Required "Designed to Deceive: Do These People Look Real to You?" by Kashmir Hill and Jeremy White, *The New York Times,* November 11, 2020 (about 10 pages with interactive elements).

This extraordinary article describes how AI is used to generate realistic images of people and animals. Scroll down through the initial visual content to read the article. Use the interactive features at the bottom that show how it is possible to edit the features, gender, race, mood, and physical perspective.

Note: The New York Times requires a paid subscription, but visitors can access a certain number of articles at no charge each month. If you cannot access the article, please contact the instructor.

Supplemental: "Animatable Gaussians: Learning Pose-dependent Gaussian Maps for High-fidelity Human Avatar Modeling" by Zhe Li, Zerong Zheng, Lizhen Wang, Yebin Liu.

Scroll to the bottom to view the experimental applications of this tool.

Hill, K., & White, J. (2020). *Designed to deceive: Do these people look real to you?* The New York Times, Nov. 21, 2020. https://www.nytimes.com/interactive/2020/11/21/science/artificial-intelligence-fake-people-faces.html

Required "The People Onscreen Are Fake. The Disinformation Is Real." By Adam Satariano and Paul Mozur, *The New York Times*, Feb. 7, 2023

This article describes how Synthesia, an AI-generated video system for creating business: training, corporate communication, and product demo videos was used to produce propaganda.

Note: The New York Times requires a paid subscription, but visitors can access a certain number of articles at no charge each month. If you cannot access the article, please contact the instructor.

Supplemental: "UK startup's generative AI tools used for Venezuelan propaganda" by Oscar Hornstein, UKTN, March 17, 2023. An example of actual propaganda created in Venezuela.

Satariano, A., & Mozur, P. (2023, February 2). *The People Onscreen Are Fake. The Disinformation Is Real.* The New York Times. https://www.nytimes.com/2023/02/07/technology/artificial-intelligence-training-deepfake.html

Required "These AI-generated news anchors are freaking me out" by Kyle Orland, December 15, 2023, *Ars Technica*. (5 pages)

This article describes examples of AI-generated news content from a service provider called Channel 1 (not an actual TV channel). The showcase example shows an original French video recording translated and regenerated by an AI application to show the subject speaking in English with the same voice as the original. While the business model for this company is intended to serve regular newscasts, consider the potential for misuse.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.usnh.edu/com743/?p=100#oembed-1

Optional: "Almost an Agent: What GPTs can do" by Ethan Mollick, One Useful Thing blog, November 7, 2023. This article describes how an AI agent that produces text and images can be constructed without knowing code or specialized knowledge.

Optional: Review "The AI Index Report – Measuring Trends in Artificial Intelligence." This is a comprehensive compilation and analysis of the state of AI, how it is being used, ethical issues, legislative trends, and international implications. It is produced every year by Stanford University.

Synthetic media: Deepfakes

> "A *deepfake is meant to cause an incongruence between expectation and perceived reality.*" – Dobber et al.
>
> On deepfakes of public death, or "digital desecration": "*Public death has long been a site of spectacle and power, and mockery of the dead predates the internet. [What's new with AI deepfakes] … is the medium's claim to presence. AI impersonation [of the dead] shifts desecration from depicting someone to ventriloquizing them: synthesizing face, voice, and affect and then staging 'new' actions, lines, and reactions. That's not just cruelty; it's an authored performance that borrows the authority of the person's likeness. AI also enables digital desecration at greater scale and immediacy.*" – Julie Carpenter, Ph.D., author, "The Naked Android: Synthetic Socialness and the Human Gaze."

Overview

This chapter is a continuation of last chapter's exploration of purely AI-generated content. Deepfakes, however, combine existing real content with AI-generated media to create new content that appears to be representing a real person's communication.

Here is a Bloomberg Quicktake that demonstrates what this looks like.

> *One or more interactive elements has been excluded from this version of the text. You can view them online here:*
> *https://pressbooks.usnh.edu/com743/?p=102#oembed-1*

Naturally, there are concerns beyond using deepfakes as a form of entertainment. If deepfake technologies were used exclusively by Hollywood film effects specialists, perhaps these clips wouldn't be too much cause for concern. (Do you recall how impressive it was in 1994 when Forrest Gump met President Kennedy and Kennedy's speech was synthesized?).

However, deepfake software is freely available today and nearly anyone with a desire to make them can do so at minimal cost.

What does it mean when a single person can produce fake communication and impose asymmetrical chaos into our social and political well-being?

Below: A deepfake video experiment produced by Ethan Mollick, a leading researcher and writer in the area of AI and LLMs. Note that the clip includes AI-generated voice and picture in multiple languages.

> *One or more interactive elements has been excluded from this version of the text. You can view them online here:*
> *https://pressbooks.usnh.edu/com743/?p=102#oembed-2*

Key Terms

The Liar's Dividend: In the article "Deep Fakes: A Looming Challenge for Privacy, Democracy, and National Security," the

authors, Robert Chesney and Danielle Keats Citron, propose that the risk of deepfake media permeating society is not so much in the misleading perception posed by actual deepfake content but, instead, in the notion that even legitimate media *could be* synthetic. The "dividend" contained in the phrase refers to the benefit gained by powerful entities or individuals when the public does not know for certain whether *any* media is real, particularly when an individual denies culpability for behaviors recorded on video by claiming that the video was a fake.

Read more about the research conducted to measure the impact of deepfake media on human perception.

There are two examples worth exploring that demonstrate the undermining effect of deepfake videos on the perception of actual, non-fake video content:

- "GOP House candidate publishes 23-page report claiming George Floyd death was deepfake video" – A conspiracy claim that the George Floyd videos depicting his apprehension and death by police was faked.
- "A Military Coup in Gabon Inspired by a Potential Deepfake Video is Our Political Future" – The somewhat odd appearance of president Bongo of Gabon in a video address sparked a controversy by his opponents claiming that the video was a deepfake. The video was, in fact, authentic, though the president had experienced a stroke which altered his appearance.

What should you be focusing on?

Your goal this module is to assess the influence of deepfake media in the human effort to form reliable mental models of the real world. As you review the readings and media, think about what kind of problem this is from the perspective of your chosen framework.

Readings & Media

Thematic narrative in this chapter

In the following readings and media, the authors will present the following themes:

1. Deepfake media is able to synthesize motion video, audio, and natural phenomena. Current applications produce novelty-quality results, but they are improving.
2. Deepfake media has the potential to disrupt perceptions of truth in social, political, and legal situations.
3. It is possible for deepfake media to be deployed in combination with targeted online publication strategies to produce a more intense effect, though it is unclear how influential or persuasive deepfake videos are to targeted audiences.

Experiment Test yourself!

Go to Detect Fakes on the MIT website and test your ability to detect a deepfake video.

After testing yourself, review the features of Reality Defender, a deepfake detection system.

Required "Deepfakes, explained" by Meredith Somers, MIT Sloan School of Management, July 21, 2020 (9 pages)

This article provides a foundational explanation of deepfake videos with links to some prominent examples. Be sure to view the deepfakes of Mark Zuckerberg and Kim Kardashian.

Somers, M. (2020). Deepfakes, explained. MIT Sloan School of Management. *Retrieved from https://points.datasociety. net/you-think-you-want-medialiteracy-do-you-7cad6af18ec2.*

Required "Animatable Gaussians: Learning Pose-dependent Gaussian Maps for High-fidelity Human Avatar Modeling" by Zhe Li, Zerong Zheng, Lizhen Wang, Yebin Liu1, November, 2023.

Scroll to the bottom to review examples of extrapolated movement mapped to lifelike avatars. The quality of these examples is outstanding though there are still discernibly synthetic features. Consider the potential to generate lifelike avatars of targeted individuals performing actions that they did not do. Pay close attention to the realistic movement of the clothing as the avatars move – a feature you might not even notice unless directed to look for it.

Below is a variation of this technology demonstrated by taking a still reference image and mapping it onto existing biometric-based human movement. (This video has no sound).

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.usnh.edu/com743/?p=102#oembed-3

Required "Deepfakes 2.0: The New Era of 'Truth Decay'" by Brig. Gen. R. Patrick Huston and Lt. Col. M. Eric Bahm, *Just Security*, April 14, 2020 (4 pages)

This article describes the scope of the misinformation problem and offers some solutions. An excerpt of the potential effects:

- **Fake Evidence:** Manipulated videos being used as evidence in court.
- **Sparking a war:** a fake video of Israeli soldiers physically assaulting a Palestinian child could spark a new wave of violence in Israel.

- **Manipulating Markets**: fake videos of a CEO used to disrupt an initial public offering.
- **Creating Political Fissures:** fake videos intended to sow discord between foreign allies.
- **Influencing Elections:** A doctored video of a politician looking sick designed to tip the scales of an election.

Related: Nikon, Sony and Canon fight AI fakes with new camera tech (1 page)
Related: Deepfake deluge expected from AI image generation breakthrough (so long, LoRA?) (1 page)

Huston, R. P., & Bahm, M. E. (2020). Deepfakes 2.0: The new era of "truth decay." *Just Security*.

Required "Is seeing still believing? The deepfake challenge to truth in politics" by William A. Galston, *Brooking Institute*, January 8, 2020. (8 pages)

This article touches upon several of the topics we have covered in this course: engagement with mediated communication, epistemological differences, and subjectively optimized information bubbles.

Look for the author's framing of the problem and how he approaches combating it. Think about how you would approach the problem according to your chosen framework.

Galston, W. A. (2020). Is seeing still believing? The deepfake challenge to truth in politics. *The Brookings Institution. January*, 8.

For further study: "Deepfakes: The Coming Infocalypse" by Nina Schick.
Optional: "Nvidia researchers debut GauGAN, AI that creates fake landscapes that look real"
Optional: Examples of AI-generated audio samples imitating known speakers.

Foreign and Domestic Computational Propaganda

https://twitter.com/ngleicher/status/1504186935291506693

Above, Nathaniel Gleicher, head of Security Policy at Facebook, announces on Twitter that they have removed a deepfake video of Ukranian president Zelensky produced by Russian propagandists.

If you happen to own a Twitter/X account, click through the link and review the pattern of comments to get a sense of their sentiment.

Overview

Up to this point in our studies, we have examined the presence of intermediary technologies and the nature of our relationships with them. As new technologies proliferate into common usage, a predictably intense effort is made by bad actors (and some with best intentions) to exploit the affordances of these systems for a variety of social or political ends. When photography, radio, and motion picture film emerged, they were quickly employed to deliver propaganda, often to audiences that had not yet developed a sense of literacy to comprehend the creator's manipulative tactics to distort reality.

The question we encounter in this module's study goes beyond identifying how social media systems and search engines can be exploited to spread propaganda – we know that it has been going on in various forms for a long time. The more important question is *how well does it work*? Even if the most realistic looking deepfake video was shared all over social media, would it make a difference? If not, why do regimes all over the world continue to generate it?

This chapter examines **Computational Propaganda**: a form of propaganda employed by foreign and domestic groups that exploits the affordances of AI, social media systems, and search algorithms to promote ideological or political messages. Computational propaganda is a form of **Cognitive Warfare**.

The motives for producing this propaganda varies depending on the entity. A foreign enemy may wish to undermine faith in democratic institutions, foment mistrust in elected officials, compromise democratic common ground, or reduce voter motivation to participate in the democratic process. A domestic enemy may wish to promote an ideology that elevates a dominant social order or to demonize a particular group or individual.

The intended effect of computational propaganda is, over the long term, to produce a perception of reality that operates as an internal psychological force leading to social and political conflict. As you will see, however, it is difficult to quantifiably measure how the effect of Cognitive Warfare impacts the outcome of key events, such as a presidential election.

Key Terms

Cognitive Warfare – "Cognitive warfare is an unconventional form of warfare that uses cyber tools to alter enemy cognitive processes, exploit mental biases or reflexive thinking, and provoke thought distortions, influence decision-making and hinder actions, with negative effects, both at the individual and collective levels" (Claverie & Cluzel, 2022, p. 2).

Manufacturing Consensus – The practice of using a collection of automated bots in social media to promote the illusion of consensus about an issue. The collective effect of this practice also drowns out other views by the infinite

quantity of content published by bots (Howard, 2018, p.4). This term is often associated with *astroturfing*, which the intentional effort to create the illusion of grassroots support for an issue or candidate.

PSYOPS – An acronym short for Psychological Operations: "Psychological warfare involves the planned use of propaganda and other psychological operations to influence the opinions, emotions, attitudes, and behavior of opposition groups" (RAND Corporation, n.d.). PSYOPS would be considered an umbrella term under which cognitive warfare would be classified.

What should you be focusing on?

Your goal in this chapter is to synthesize how all of the prior topics of study in this book culminate into an operationalized effort by entities to shape the perception of reality through algorithmically optimized communication systems.

Readings & Media

Note that APA formatted references for all of the articles below are listed at the bottom of this chapter for use in your posts and paper.

Thematic narrative in this chapter

In the following readings and media, the authors will present the following themes:

1. Social media systems and search algorithms are routinely exploited by ideological and political actors to promote propaganda to targeted audiences.
2. Synthetic media will be an ongoing component of computational propaganda.
3. Both humans and pre-programmed bots will generate propaganda which will appear across many different device ecologies.

Required "The Cognitive Warfare Concept" (PDF) by Bernard Claverie, François du Cluzel. *Computational Propaganda Research Project*, 2019 (10 pages)

This article explains the concept and purpose of cognitive warfare as a state-sponsored strategic operation executed primarily through networked information systems. Generally, cognitive warfare is expressed here as covert operations, though one definition characterizes cognitive warfare as "conflict short of war."

> "The main goal is not to serve as an adjunct to strategy or to defeat an enemy without a fight, but to **wage a war on what an enemy community thinks, loves, or believes in by altering perceptions**. It is a war on how the enemy thinks, how its minds work, how it sees the world and develops its conceptual thinking. The effects

sought are an alteration of worldviews, and thereby affect their peace of mind, certainties, competitiveness and prosperity" (Claverie & du Cluzel, 2019, p. 5).

Required Video: "Disinformation Technology: How Online Propaganda Campaigns Are Influencing Us | Renee DiResta" March 11, 2018, Long Now Foundation. (9:00 min)

Renee DiResta is a renowned scholar in the field of disinformation and propaganda studies. As a data scientist, she demonstrates how information flows through social media according to various techniques. In the lecture segment below, DiResta describes how social media systems are used as efficient vehicles for computational propaganda.

> "As deepfakes become more prevalent, as the content that is manipulatable changes, the adversary grabs onto the most bleeding edge thing, recognizing that that's where the least defense is, that those fronts are not really well defended, not well-monitored (18:48)."

You may wish to use the speed controls in the YouTube player to play back at a faster speed, if needed. Hover over the video and click the gear button on the lower right corner, then change the playback speed – try it at 1.25.

The required section in this video starts at 14:11 and ends at 23:13.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.usnh.edu/com743/?p=106#oembed-1

Required "How foreign operations are manipulating social media to influence your views" by Filippo Menczer, *The Conversation*, October 8, 2024 (4 pages)

This article is produced by the Observatory on Social Media, a scholarly institute at the University of Indiana that tracks influence campaigns. They describe the techniques used to flood social media systems with content and manipulate the promotional algorithms to elevate propaganda to wider audiences.

The article references a research study that describes how malicious actors amplify and distribute disinformation across the social media landscape: Quantifying the vulnerabilities of the online public square to adversarial manipulation tactics. (Read the Conclusion section on page 8).

Similarly, Chen et al. (2021) describe how political ecosystems form around user accounts: "Neutral bots probe political bias on social media." Focus your attention to the Introduction and Discussion.

> "...not only do users exchange huge amounts of information [on social media] with large numbers of others via many hidden mechanisms, but these interactions can be manipulated overtly and covertly by legitimate influencers as well as inauthentic, adversarial actors who are motivated to influence opinions or radicalize behaviors (Huston and Bahm, 2020, p. 1).

Contrary Evidence

The articles below dispute the claim that propaganda on social media has any significant effect on swaying election results. While it is true that elections reflect the collective reality of a population, there are many factors that contribute to a person's decision to vote a particular way, which may explain why computational propaganda is less effective in swaying elections.

It is important to ask, however, whether the findings of these studies related to election outcomes transfer similarly to popular sentiment about other issues. For example, if studies suggest that computational propaganda does not significantly affect voting behavior, can the same be said about the use of propaganda to influence popular sentiment about transgender people, immigrants, climate change, or privately owned health insurance companies?

Required

Note that APA formatted references for these articles are listed at the bottom of this chapter for use in your posts and paper.

- In contrast to the prior readings, MIT Technology Review's 2024 article "AI's impact on elections is being overblown" proposes reasons why AI-generated content had little effect on election outcomes.
- In this study, "Do (Microtargeted) Deepfakes Have Real Effects on Political Attitudes? review the Abstract, then read the sub-section "Should we worry about (microtargeted) deepfakes?"
- Review the Abstract from the Eady, G., et al. (2023) research study: Exposure to the Russian Internet Research Agency foreign influence campaign on Twitter in the 2016 US election and its relationship to attitudes and voting behavior.
- Read the Discussion section towards the bottom in the research study by Almond et al. (2022) which makes indirect inferences about the effect of Russian interference: Reduced trolling on Russian holidays and daily US Presidential election odds.

Optional: "What's behind the "All Eyes on Rafah" image that went viral on social media" by Ivana Saric in Axios.com, May 30, 2024.

This article describes the details related to the 2024 Israel-Palestine conflict when AI-generated images appeared on social media showing destruction in Rafah.

Optional: "Social media goes to war" by Mark Scott and Rebecca Kern in Politico.com, March, 2022.

This article describes specific action taken between governments and social media companies in response to misinformation and propaganda campaigns.

Optional: "How I Built an AI-Powered, Self-Running Propaganda Machine for $105" by Jack Brewster, *The Wall Street Journa*l, April 12, 2024.

Optional: "Meta Adversarial Threat Report 2023" published by Meta, the parent corporation of Facebook, November, 2023. This report describes the extent of Coordinated Inauthentic Behavior (CIB) propagated by foreign governments using Facebook to reach American audiences. Read the brief Summary of Findings.

Optional: "Synthetic and manipulated media policy" published by X (former Twitter), April, 2023. This document describes X's policy regarding users posting synthetic media designed ti mislead or confuse viewers.

References

Almond D, Du X, Vogel A (2022) Reduced trolling on Russian holidays and daily US Presidential election odds. PLoS ONE 17(3): e0264507. https://doi.org/10.1371/journal.pone.0264507

Bradshaw, S., & Howard, P. N. (2019). The global disinformation order: 2019 global inventory of organised social media manipulation. *Global Inventory of Organised Social Media Manipulation*. Working Paper 2019.2. Oxford, UK: Project on Computational Propaganda.

Chen, W., Pacheco, D., Yang, KC. *et al.* Neutral bots probe political bias on social media. *Nat Commun* **12,** 5580 (2021). https://doi.org/10.1038/s41467-021-25738-6

Claverie, B., & du Cluzel, F. (2022). The Cognitive Warfare Concept. *Innovation Hub Sponsored by NATO Allied Command Transformation*, 2022-02.

Dobber, T., Metoui, N., Trilling, D., Helberger, N., & de Vreese, C. (2021). Do (microtargeted) deepfakes have real effects on political attitudes?. *The International Journal of Press/Politics*, 26(1), 69-91.

Eady, G., Paskhalis, T., Zilinsky, J. *et al.* Exposure to the Russian Internet Research Agency foreign influence campaign on Twitter in the 2016 US election and its relationship to attitudes and voting behavior. *Nat Commun* **14**, 62 (2023). https://doi.org/10.1038/s41467-022-35576-9

Howard, P., Woolley, S. (2018). *Computational Propaganda: Political Parties, Politicians, and Political Manipulation on Social Media*. United Kingdom: Oxford University Press.

Simon, F. M., McBride, K., & and, S. A. (2024). *AI's impact on elections is being overblown*. Technology Review, Inc.

Unanticipated and Unintended Consequences

Overview

In the prior chapter, you saw where Facebook took action to remediate an instance where their platform was used to spread misinformation through the use of synthetic media. When Facebook was first launched in the early 2000s, do you suppose they could have anticipated this scenario would have emerged?

When OpenAI launched ChatGPT, do you suppose they anticipated that its habit of "hallucinating" would have put them in a legal position to defend themselves in a defamation suit? OpenAI knew that its product was imperfect in this way, but they launched it publicly anyway.

In your final paper for the course, you will describe what kind of problem we are encountering in contemporary mediated communication systems. One of the factors you will consider is accountability: Who is responsible for the elements of the systems we have studied? What were their intended goals? Were the collateral effects of achieving those goals anticipated, unanticipated, intentional, or unintentional?

In this chapter, you will review the Law of Unintended Consequences, which isn't really a law in the scientific or legal sense. It is a concept used in sociology studies to explain how actions often cause effects that are both anticipated and unanticipated; intended and unintended. This chapter introduces a modern interpretation of this theory within the digital technology domain.

From a historical context, we have observed a number of unintended and unanticipated outcomes stemming from events, legislation, and technological advances:

- The American Civil War led to the expansion of baseball as a national pastime.
- The Eighteenth Amendment outlawing alcohol consumption (Prohibition) produced the rise of organized crime, social intermingling of men and women in speakeasies outside of the home, and social intermingling of whites and African Americans in nightclubs leading to the popular rise of Jazz music.
- The Ford Model T allowed common Americans to access private transportation leading to men and women to experience new forms of privacy (and sex). The modern concept of the "date" was a collateral effect of widely popular access to automobiles.
- The participation of African American soldiers in WWII to liberate Europe cultivated the mindset to liberate themselves in America through civil rights action.

Skim: Porn, Squatting at LinkNYC Kiosks an 'Unintended Consequence,' Mayor Says By Jeff Mays (September 16, 2016). This article describes the unintended effect of a campaign to expand wifi access by installing wifi kiosks. "*People watching pornography, masturbating and otherwise abusing LinkNYC internet kiosks is an 'unintended consequence' of the effort to provide free high-speed Internet access to all, Mayor Bill de Blasio said Friday.*"

What should you be focusing on?

Your goal this week is to apply the matrix of Unanticipated and Unintended Consequences of Digital Technologies to examples of mediated communication systems so that you can evaluate how such consequences can be addressed.

Readings & Media

Required "Unintended Consequences" by Rob Norton, *EconLib.org*, (no date) (4 pages)

This article offers a synopsis of the Law of Unintended Consequences, a theory employed in the study of economics. It describes the main points made by the sociologist Robert K. Merton in his article, "The Unanticipated Consequences of Purposive Social Action."

This article will help you to better understand the second article, below, which builds upon this theory as it applies in the modern digital domain.

Required "Play, Chat, Date, Learn and Suffer" (PDF) by Rosenbaum et al., *Academic Letters*, August, 2021 (6 pages)

This article breaks out the four combinations of consequences into quadrants that reflect different areas of accountability.

Figure 1. (Un)Anticipated and (Un)Intended Consequences of Digital Technologies

Consequences	Anticipated	Unanticipated
Intended	Management is aware of positive, negative or perverse outcomes that will emerge from the commercialization of digital service Management can eliminate or minimize the negative or perverse outcomes that emerge during or after commercialization *because they are strategically prepared to do so.*	Management is aware of positive, negative, or perverse outcomes that will emerge from the commercialization of a digital service. Management can eliminate or minimize the negative or perverse outcomes that merge during or after commercialization; *however, it fails to do so because they are operating unethically.*
Unintended	Management is unsure of the positive, negative, or perverse outcomes that may emerge from the commercialization of a digital service. Management is committed to eliminating or minimizing the negative or perverse outcomes that emerge during or after commercialization *because they are organizationally responsive.*	Management is unsure of the positive, negative, or perverse outcomes that may emerge from the commercialization of a digital service. Management lacks a commitment to eliminating or minimizing the negative or perverse outcomes that emerge during or after commercialization *because they are (or choose to be) blind to the problem.*

Table reproduced from Rosenbaum et al. (2021).

Rosenbaum, M., Walters, G., Edwards, K., Gonzalez, C., & Contreras Ramírez, G. (2021). Play, Chat, Date, Learn, and Suffer? Merton's Law of Unintended Consequences and Digital Technology Failures. *Academia Letters*, 2.

Required Podcast excerpts related to unintended consequences of the Internet's growth and commercialization (9 pages total)



An interactive H5P element has been excluded from this version of the text. You can view it online here: https://pressbooks.usnh.edu/com743/?p=69#h5p-1