Learn how to reduce the threat of misinformation from local, national, and international sources and ensure the validity of the information you share.

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Your instructors are Tara Susman-Peña, Mehri Druckman, and Nina Oduro.

Ms. Susman-Peña, who will be your primary instructor, leads the application of IREX’s media literacy methodology, Learn to Discern, in the US and other countries. Ms. Druckman, who designed and applied Learn to Discern in Ukraine, will explain the methodology’s development, why we’re susceptible to misinformation, and how misinformation is changing with new technology. Ms. Oduro, a master trainer with IREX, will lead you through exercises to build your media literacy skills.

PT5043A

Fighting Misinformation
Digital Media Literacy

With Tara Susman-Peña, Mehri Druckman, and Nina Oduro

Transcript Book

LECTURES 1–8

1 The Misinformation Threat
2 The Evolution of Media and Misinformation
3 Misinformation and the Brain
4 Seeing through Visual Misinformation
5 Countering Fakes and Stereotypes in Media
6 Journalistic Verification Skills
7 Assessing Science and Health News
8 Technology, Misinformation, and the Future
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SENIOR TECHNICAL ADVISOR
IREX

Tara Susman-Peña leads the adaptation and expansion of Learn to Discern, IREX's media literacy methodology, in the United States and other countries. She trains participants and trainers on how to fight misinformation through Learn to Discern, and she also covers other topics such as audience research. She taught at the George Washington University Elliott School of International Affairs and has lectured widely at institutions such as Georgetown University, Columbia University, the Organisation for Economic Co-operation and Development, the National Endowment for Democracy, and the United Nations Educational, Scientific and Cultural Organization.

Ms. Susman-Peña has presented at many international conferences on topics including disinformation; the role of media, information, and innovation in governance, development, and resilience; measuring complex information systems; aid effectiveness; and research methods. At IREX, she has facilitated media development projects in Mozambique, Latin America, and Eurasia.
MEHRI DRUCKMAN
UKRAINE COUNTRY REPRESENTATIVE
IREX

Mehri Druckman is a media literacy and training development expert who combines deep knowledge of antipropaganda programming, effective media support, community engagement, and the application of technology to improve development outcomes with field-tested training methodologies. In 2015, she designed and managed IREX’s innovative Learn to Discern project, a citizen media literacy initiative that reached more than 15,000 Ukrainians. Learn to Discern has since been featured in The New York Times, The Washington Post, The Christian Science Monitor, The Wilson Quarterly, the World Economic Forum’s Global Agenda, Project Syndicate, Columbia Journalism Review, and in reports by the Center for European Policy Analysis and the Legatum Institute.

A skilled facilitator and trainer accustomed to operating in rapidly changing political and social environments, Ms. Druckman is a leader in IREX’s global efforts to build resilience against misinformation and disinformation. She is also a leader in IREX’s efforts to apply global information, communications technology, and new media toward individual and organizational capacity building, community development, public access to information, and citizen engagement.
NINA ODURO
LEADERSHIP TECHNICAL ADVISOR
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Nina Oduro develops and facilitates training for young leaders, educators, and community organizers. She is currently a lead trainer for IREX’s Learn to Discern US initiative and supports curriculum design and delivery alongside IREX’s partners. Ms. Oduro developed IREX’s first comprehensive training guide, drawing on 50 years of the organization’s experience with training as well as industry best practices. Using the guide to support training-skill development throughout IREX, she built a cadre of expert trainers around the world. She has provided technical training support to various programs.

Ms. Oduro began her career in youth leadership development and training at Columbia University, the Posse Foundation, and the United States Embassy in Accra, Ghana, where she advised and trained young leaders for academic success and positive individual and community impact. As a learning consultant with Microsoft, she developed and facilitated training for US-based educators in K-12 schools that enabled them to effectively leverage technology to achieve positive learning outcomes.
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FIGHTING MISINFORMATION
DIGITAL MEDIA LITERACY

We live in the information age. Globally, the total current output of data is roughly 2.5 quintillion bytes, or the equivalent of the content of the Library of Congress 250,000 times over, each day. Adults in the United States today spend an average of 11 hours per day interacting with media.

As individuals, we have remarkable access to information as well as the power to produce and disseminate it. Unfortunately, the web of communications technologies that provides access to all kinds of information also makes it ever easier for falsehoods, slander, prejudices, and bad ideas to travel much faster and farther than ever before. That’s a direct threat to all of us and to democracy, which depends on a well-informed electorate to reach good decisions.

This course is designed to help you identify misinformation, blunt its effects on you, and prevent it from spreading. It is based on the Learn to Discern (L2D) methodology that IREX, a global nonprofit organization, developed in 2015 in Ukraine to help citizens detect and fight Kremlin propaganda that was spreading throughout the information ecosystem.
Since that time, as misinformation has increased as a global problem, IREX has continued to build media literacy skills through L2D in Ukraine, the US, and about a dozen other countries. L2D is practical, fun, easy to use and to teach to others, and specifically designed for the complex digital information age we live in. Research studies have shown that it is effective in building resilience to misinformation that holds up over time.

This course provides key background on the information age that we live in. The course outlines how journalism has changed as it confronts the digital age and why this impacts our ability to access reliable, factual information. Additionally, the course delves into various ways that information can be manipulated and why the wiring of our brains makes us susceptible to manipulative information.

The course also teaches practical skills, including a technique to assess information consumption, tools and skills for visual and textual verification, and a powerful method to resist having your rational brain hijacked by provocative content.

Later, the course takes a special look at how to better assess science and health news. The course ends by looking toward the future at the evolving types of manipulative content you might face. Additionally, the back of this guidebook contains information on several tools you can use in your fight against misinformation.

This course will leave you empowered with a critical perspective on misinformation and how it functions in society today, and an understanding of the range of tools and tactics you can use to fight it.
Misinformation can travel quickly through communities that don’t have strong enough protections in place, causing very real-world harm. Unfortunately, there is nothing as straightforward as a vaccine to protect people from the dangers of misinformation. It takes more than one simple action. It takes awareness, focus, and skill-building. However, it is possible to build up resilience to the dangers of misinformation.
DEFINING TERMS

The term misinformation simply refers to incorrect or misleading information, while disinformation is information that is false and deliberately created to cause harm. Because it can be hard to identify what the intent was of the person who created a piece of information, it’s generally more accurate to use the word misinformation as an umbrella term.

Claire Wardle of First Draft media, an organization devoted to combatting what it calls information disorder, came up with a useful taxonomy of misinformation that identifies seven types of “problematic content.” This framing, which follows, can be helpful.

- **Satire or parody**, which has no intention to cause harm but has potential to fool.
- **False connections**, which occur when headlines, visuals, or captions don’t support the content.
- **Misleading content**, which involves the misleading use of information to frame an issue or individual.
- **False context**, which is when genuine content is shared with false contextual information.
- **Imposter content**, which is generated when genuine news sources are impersonated.
- **Manipulated content**, which is generated when genuine information or imagery is manipulated to deceive.
- **Fabricated content**, which is new content that is entirely false and designed to deceive and do harm.

This taxonomy makes it clear that the world of misinformation is complex and nuanced. More often than not, true elements mix with false elements to create a confusing and powerful piece of misinformation.

There are two additional points that go beyond Wardle’s taxonomy. The first is hate speech, which can fall into any of these types of content. Hate speech is bigoted content that attacks a person or identity group based on that identity, whether it involves race, ethnicity, gender, sexual orientation, or other attributes.
Additionally, there is a further distinction to be made between propaganda and disinformation, both of which can contain elements from several of Wardle’s categories. Propaganda is crafted with the intent to persuade people of a particular idea or point of view. This contrasts with disinformation, which involves deliberate falsehoods intended to cause harm.

**WIDESPREAD HARM**

People spend much of their time interacting with media, but that does not mean that people have the critical skills to analyze and understand it. One well-known study from Stanford University in 2016 demonstrated that youth are easily fooled by misinformation, especially when it comes through social media channels.

This weakness is not found only in youth, however. Research from New York University found that people over 65 shared seven times as much misinformation on Facebook as their younger counterparts.

All of this raises a question: What’s the solution to the misinformation problem? Governments and tech platforms certainly have a role to play in stemming the tide of misinformation. However, every individual needs to take responsibility for combating this threat by becoming more information literate.
EXERCISE: MEDIA LITERACY

To help you start building your media literacy muscles, the following exercise is designed to raise your awareness of how your media environment shapes your perceptions.

Take out a piece of paper and a pen or open the notes app on your phone. Alternatively, you can just think through this exercise. List of all the media that you use or take in during your daily life, and when. For example, maybe you watch a television show in the morning and listen to a podcast on the way to work.

Also take into consideration factors like checking your email, texting people, and interacting with social media platforms. For instance, do you get sucked into using social media for longer than you intended? The goal here is to try to create a detailed portrait of a typical day—not just what you consume, but also how much time you spend doing it.

Now think about the devices you use regularly to consume the media you prefer. This includes cell phones, computers, tablets, and televisions. You might also use books, magazines, and the car radio. They all compete for your attention and shape your ideas.

Based on what you have found so far, try to add up the total number of hours you spend on media each day. What percentage of your waking hours do you spend using different types of media? Does the result surprise you?

How you choose to spend your time is up to you. But when you consider how pervasive media sources are in your daily life, you can’t help but realize that they shape your perspective and define many of the topics you focus on.

Next, ask yourself: How much trust are you placing in the sources of information you use? How much do you really know about the entities that produce the content you are consuming? The sheer quantity of information you are surrounded with can affect your ability to discern its quality.
Starting in 2014, Ukraine fell victim to an increased assault of disinformation and propaganda from the Russian government that continues as of this taping. The campaign has meant to sow confusion, anger, cynicism, and doubt in Ukraine’s population, with a clear purpose: to better enable the Kremlin to pursue its designs on Ukrainian territory.

From the United States, Ukraine’s troubles can seem far away. But consider another, seemingly unrelated, example of information confusion closer to home: the persistence of rumors that the vaccine against measles is dangerous. Measles, a potentially deadly disease that is one of the world’s most infectious, was declared eradicated in this country by the US Centers for Disease Control and Prevention in the year 2000. The measles vaccine is what made that achievement possible.

Thanks, however, to misinformation circulating in pamphlets, books, films, on the Web, and via Twitter, some Americans have become convinced that the vaccine is harmful and have chosen not to inoculate their children. The result has been a resurgence of measles, and as of May 2019, it’s spread to 26 states.

The misinformation originates from various sources, ranging from a shadowy, New York–based advocacy organization to some well-known Hollywood celebrities. According to a study published in the journal of the American Public Health Association, though, Russian Twitter trolls have been actively fueling the anti-vaccination debate in the United States by promoting arguments on both sides, once again producing anger and distrust. Here, the purpose seems to be to weaken the US internationally by turning its people against one another and against our government here at home.

The Kremlin isn’t the only party playing these dangerous games. Its cyber-aggression is just a piece of a much bigger problem that now confronts the entire world: the problem of misinformation. The web of communications technologies that draws us all ever closer together also makes it ever easier for falsehoods, slander, prejudices,
and bad ideas to travel much faster and further than ever before. That’s a direct threat to all of us and to democracy, which depends on a well-informed electorate to reach good decisions.

I work for IREX, a global, nongovernmental development and education organization. We are active in over 100 countries on issues such as education, leadership, information, and youth. The global spread of misinformation intersects with everything we do, so in recent years, we have been tackling the problem head-on.

In this course, some of my colleagues and I are going to share with you our proven methodology for building your resilience to misinformation. We call it Learn to Discern, and we developed it in Ukraine in response to the ongoing crisis there, on the front lines of the information war. By the end of this course, we aim to make you more discerning consumers of information, better equipped to judge the validity of the information you receive, and less prone to pass it on if it’s suspect. As part of that effort, we want to give you a thorough understanding of the nature and scope of the threat that misinformation poses to us all.

Let’s take a moment to define terms. Misinformation simply means incorrect or misleading information, while disinformation is information that is false and deliberately created to cause harm. Because it can be hard to identify what the intent was of the person who created a piece of information, it’s generally more accurate to use the word misinformation as an umbrella term.

While the term fake news has surged in popularity, no one can quite agree on what it means, and it has been used as a slur by politicians to attack reporting that they simply disagree with. It also describes only a small slice of the complex misinformation phenomenon that we live with today. For the sake of accuracy and precision, we will avoid using the term fake news during this course whenever possible.

Claire Wardle of First Draft media, an organization devoted to combatting what it calls information disorder, came up with a useful taxonomy of misinformation that identifies seven types of “problematic content.” The frame is so helpful that I will quote it in its entirety:

Satire or parody: No intention to cause harm but has the potential to fool.

False connection: When headlines, visuals, or captions don’t support the content.
Misleading content: Misleading use of information to frame an issue or an individual.

False context: When genuine content is shared with false contextual information.

Imposter content: When genuine news sources are impersonated.

Manipulated content: When genuine information or imagery is manipulated to deceive.

Fabricated content: New content is 100 percent false, designed to deceive and do harm.

This taxonomy makes it clear that the world of misinformation is complex and nuanced. More often than not, perhaps, true elements mix with false elements to create a confusing and powerful piece of misinformation.

Two additional points that go beyond Wardle’s taxonomy are important to call out here: first, hate speech, which can fall into any of these types of content. Hate speech is bigoted content that attacks a person or identity group based on that identity, whether race, ethnicity, gender, sexual orientation, or other attributes.

Additionally, it’s worth defining propaganda, which can contain elements from several of Wardle’s categories. Propaganda is crafted with the intent to persuade people of a particular idea or point of view—for example, that a particular identity group is not to be trusted. It’s a form of disinformation, which, as I mentioned earlier, involves deliberate falsehoods intended to cause harm.

Today, disinformation is used to sow distrust, polarization, and animosity. Different pieces of disinformation from the same source and with the same intent can seem to represent different points of view entirely. For example, during our 2016 elections, Kremlin-driven disinformation in the US advocated perspectives as diverse as those of the Black Lives Matter movement and Donald Trump’s presidential campaign. As with the disinformation it spread in the debate about the measles vaccine, Russia’s goal was never to convince Americans of either viewpoint, but rather to increase polarization.
Even if they don’t know its source, many people are aware that false and misleading information is all around us. Fifty percent of Americans surveyed feel that made-up news and information is one of the biggest problems of our time, above problems such as climate change and racism, according to a 2019 study by the Pew Research Center. Almost 40 percent of US adults say they often see made-up news and information, and another 51 percent say they sometimes do, so almost all of us are encountering it. Slightly more than half of all adults say that they’ve shared made-up news stories, though most didn’t know it at the time.

The presence of misinformation is also taking its toll on our very relationships. Half of adults said that they have avoided a conversation with someone because of concerns the person would introduce made-up information into the discussion. One confounding fact is that it’s very hard to correct misinformation once it’s been circulating. Misinformation generally gets more traction than any corrective information that comes afterward. In fact, researchers have identified a phenomenon known as the illusory truth effect: The more times we encounter an idea, the more likely we are to believe it, regardless of its validity. Repetition can therefore ingrain false ideas in our head as though they were facts, even if we were initially aware that they are untrue.

A study published by MIT scientists looked at the span of slightly more than a decade of Twitter use. The study found that approximately 126,000 rumors were spread by close to 3 million people. In comparing how true news spread as opposed to how false news spread, an alarming pattern emerged: False news reached more people than the truth and spread more quickly—in fact, six times as fast.

Perhaps the most sobering finding of this study is that it wasn’t machines or robots, commonly called bots, spreading this false information, but people. There seems to be something about the human brain that attracts us to false information and makes us want to share it.

We all spend a lot of time interacting with media nowadays, but that does not mean that we have the critical skills to analyze and understand it. One well-known study from Stanford University in 2016 demonstrated that youth are easily fooled by misinformation, especially when it comes through social media channels.
The study showed that young people from middle school up through college had a hard time even distinguishing advertisements from news articles. They had trouble even identifying where the information came from.

And these weaknesses are not found only in youth. Research from New York University found that people over 65 shared seven times as much misinformation on Facebook as their younger counterparts. This propensity to share misinformation was the same, regardless of their level of education, their political affiliation, or even their level of partisanship. While the study found that the likelihood of sharing false information on Facebook overall was still rare, it’s worth noting the potential harm. Adults in this age range vote in larger numbers than any other adults.

It’s easy to think of people in our lives who would benefit from improving their skills discerning false information from true. But the fact of the matter is we all need it. Every one of us.

I’m going to share a personal example. I recently received a text from my teenage daughter during a school lockdown. Lockdown drills are an unfortunate part of living in 21st-century United States, and this, even more unfortunately, was not a drill, but a real lockdown. Stuck in the library with her peers and without any information as to what was happening from the teachers or the staff, my daughter did what everyone does these days: She turned to her cell phone for answers. A friend sent her a text that seemed to provide a rather frightening piece of insight, and my daughter forwarded the text to me.

The forwarded text had a large title: WTF. A screenshot from the local Fox news station was underneath, with the headline “Prince George’s County Police step up presence at schools following …” My eyes jumped around the words, quickly landing on the phrase “hint at a shooting attack.”

As my heart began to pound, I paused for a moment, looked up from the phone, and realized that I was starting to panic. I took a breath, and when I looked back at the screen, my eyes landed on the date: October 2nd, 2016—over two years earlier. At about the same time, my daughter texted me to say, “Ignore that. Just realized it’s from 2016.”
Under tense circumstances, when we perceive that we or our loved ones are in danger, the body’s stress responses kick in, readying us to function in a life-threatening situation. The part of the brain that activates this response—the amygdala—can’t tell the difference between a lion that might attack us and a scary text. The physiological response to both is the same: We narrow our focus to concentrate on survival.

As we do this, however, the rational processes of the brain become more limited. This makes it easier for us to miss critical details that would help us identify the inaccuracy or even falseness of information. In my own experience, my fear for my daughter’s safety and the words “a shooting attack” were enough to initially shut down my critical appraisal of the text. And this happened even though I train other people on how to deal with exactly this type of information. The lesson here is that no one is exempt from the weaknesses that are hardwired into us as human beings.

What’s the solution to the misinformation problem? Governments and tech platforms certainly have a role to play in stemming the tide of misinformation. But IREX believes that they can’t do it alone. We all need to take responsibility for combating this threat by becoming more information literate, and that includes you.

To help you start building your media literacy muscles, my colleague Nina Oduro, a master trainer at IREX, will take you through an exercise designed to raise your awareness of how your media environment shapes your perceptions.

Have you ever thought about how much time you spend on various types of media? Do you know how much time you spend reading the paper—whether in print or online—watching TV, or on social media? Think about the other content you consume and the programs and platforms that you prefer—whether news sites, streaming entertainment programs, music, sports, or something else—and when you make use of them throughout the morning, afternoon, and evening of a typical day.
Take a moment and take out a piece of paper and a pen, or open the notes app on your phone. Or you can just think through the exercise. List all of the media that you use or take in during your daily life, and when. For example, maybe you watch the Today Show in the morning on the TV and listen to a podcast on the way to work on the bus. Once you get to work, you might check email.

If a Facebook notification pops up, do you click on it? Do you get sucked into the social media platform for longer than you intended? What about message apps? Do you text with friends using Facebook messenger, WhatsApp, or your phone’s message app? Be sure to consider streaming platforms like The Great Courses, Netflix, or something else, or web platforms for music, such as Spotify or Pandora. The categories don’t really matter. The important thing is to try to create a detailed portrait of a typical day—not just what you consume, but also how much time you spend doing it.

Now think about the devices you use regularly to consume the media you prefer. This includes cell phones, computers, tablets, TV. But don’t limit yourself to digital devices; you might also use books, magazines, the car radio. They all compete for your attention and shape your ideas. Do you use any of these tools simultaneously, like texting while watching TV?

Now, based on what you have thought through, try to add up the total number of hours you spend on media each day. What percentage of your waking hours do you spend using different types of media? Does the result surprise you? If media use fills up more of your day than you realized, you’re not alone. Information is everywhere, all around us; we are like fish swimming in an ocean of information. It shapes almost every aspect of your experience, even when you’re not aware of it.

Let’s consider some global statistics that illustrate the information-saturated world we live in today. Every minute of the day, people around the world sent about 13 million text messages. They conduct close to 4 million Google searches. About 600 users publish edits in Wikipedia. Facebook’s users, who number over 2 billion, generate over 4 million likes. We interact with information constantly.
And we are producing it constantly. The total current output of data globally is roughly 2.5 quintillion bytes a day, the equivalent of 250,000 Libraries of Congress. That’s every single day! In fact, 90 percent of the data in the world today has been created in the last two years. As of 2019, 4.4 billion people had access to the internet. That’s 57 percent of the inhabitants of the earth—more than half. More important than that is that it was an 11 percent increase from the year before. If you think about that rate of increase, you can see that within about a decade, much of the whole world will be coming online, with the exception of the most severely impoverished or marginalized groups. Consider the challenge you face as an individual in navigating and assessing all that information.

Now let’s look at our own media consumption habits in light of those of other Americans. Kindergarteners in the United States are exposed to an average of 70 media messages every day. Teens spend at least nine hours a day interacting with media, and adults spend an average of 11 hours per day. In other words, we’re spending most of our waking hours in front of screens and other information sources, interacting with media.

If you translate such figures into the amount of information you consume over a lifetime, you might find the results alarming. For example, the average American over a lifetime will spend seven years and eight months watching TV. If you are close to the average, you will also spend an average of five years and four months interacting with social media. This is particularly striking when compared to the average of three years and five months you will spend eating and drinking, or sadly, the average of one year and three months you will spend socializing face to face with other people over the course of your lifetime. Is that the life you want?

How you choose to spend your time is up to you. But when you consider how pervasive media are in your daily life, you can’t help but realize that they shape your perspective and define many of the topics you focus on. Now ask yourself: How much trust are you placing in the sources of information you use? How much do you really know about the entities that produce the content you are consuming? The sheer quantity of information you are surrounded with can affect your ability to discern its quality. And that’s important, not just because you rely on the information to make decisions, but because, if you’re like most people, you often share it with others.
Think about it. Are you on social media? If so, did you share or like anything within the last couple of days? Did you share or like something about politics or other important policy-related issues? Are you sure what you shared is accurate? Do you verify or double-check the information before you share? Even if you aren’t an active social media user, you still may be sharing information through email or other means. No one is only a consumer of information anymore.

In fact, this is the first time in history that we, as individuals, have had such remarkable access to information and such power to produce and disseminate. But with great power comes great responsibility. We have not yet developed the skills to handle our newfound power responsibly. Clearly, we have a lot of work to do.

Thanks, Nina.

Many of the figures that Nina cited were for American media consumption. But an important feature of the age of digital information is that information doesn’t stop at borders, nor does misinformation. That’s a big reason why it’s so important to take the problem of misinformation seriously and to adopt habits that limit its spread. There’s more at stake than just reducing the number of false rumors that are circulating about celebrities or the benefits of some dietary supplement. Misinformation can sway public opinion, endanger public health, influence elections, or even spark international conflict.

IREX developed its Learn to Discern methodology for building resilience to misinformation from our decades of experience in Ukraine. My colleague Mehri Druckman leads the design and implementation of this methodology there. She will describe IREX’s work in Ukraine, the damage that misinformation has done there, and how IREX has been employing Learn to Discern to combat it.

IREX works in Ukraine in a variety of areas: building a more technologically modern, community-focused library system; building dialogue and community cohesion across polarized groups; and strengthening the work of educators. Our longest running program has been going since 2002. We have been helping independent media to build stronger journalism and business skills, as well as form lasting relationships with US-based news media. And we observed as a dangerous new trend arose.
In late 2013, Ukrainians began to widely protest their government’s decision to suspend progress toward an association agreement with the European Union in what became known as the Euromaidan Revolution. After Ukrainian’s pro-Russian president Victor Yanukovych fled the country, Russia invaded and annexed Crimea, a southern peninsula of Ukraine. In pursuit of that annexation, Russia employed a strategy that became known as hybrid warfare—the use of non-military means such as misinformation in support of military aggression.

More specifically, Russia deployed abundant, compelling messaging to stir up fear amongst the residents of Crimea that they were becoming second-class citizens. Russia then proceeded to annex the peninsula in 2014 and also to occupy parts of Ukraine’s eastern regions of Donetsk and Luhansk. Since that time, all Ukrainians have lived in a propaganda-filled environment where half-truths and “alternative facts” play on fears, confusion, national identities, and patriotic feelings.

Russia’s tactics, according to Ben Nimmo of the Institute for Statecraft in London, created “uncertainty, confusion, and ultimately a doubt whether any source can be trusted without personal experience.” The disinformation problem has been exacerbated by structural weakness in Ukraine’s media sector. Media ownership drives editorial policies, and major channels are owned by oligarchs and political elites with business ties in Russia.

As a result of these factors, Ukrainians have remained poorly informed and confused about crucial governance reforms. Media consumption and its influence on Ukrainians remain high, but cross-checking news sources to verify them—the most basic form of media literacy—is not standard behavior. About half of the population never cross-checks the news they consume. Not surprisingly, many Ukrainians are becoming increasingly cynical and apathetic about the country’s future, with barely one in four saying they trust the media.

The Ukrainian government has recognized the problem. It has expelled dozens of Russian journalists, and it revoked the accreditation of over 100 media outlets between 2014 and 2015. It also banned some Russian channels from TV cable packages and blocked Russian social media and internet resources in 2017. Nevertheless, the government’s mitigation attempts have focused largely on supply-side disciplinary measures.
It was in this context that IREX designed and implemented Learn to Discern as the grassroots response to the problem of manipulative information. We believe that it is an essential companion to supply-side solutions such as alternative content production and support of independent, ethical, and truthful journalism. Learn to Discern helps people more effectively separate fact from fiction and recognize manipulation and bias, as well as provides them with techniques to build emotional resilience to the sway of misinformation.

IREX’s pilot Learn to Discern program was funded by the Canadian government between 2015 and 2016 and conducted in partnership with local organizations Academy of Ukrainian Press and StopFake. Through intense skill-building seminars, it reached more than 15,000 adults of all ages and professional backgrounds. It also reached more than 90,000 people indirectly. Direct participants shared what they learned with family, coworkers, and peers. Accompanying public service announcements and billboard messages alerting Ukrainian citizens to the danger of misinformation reached an estimated 2.5 million people.

In 2018 and 2019, IREX and the Ukrainian Ministry of Education and Science worked with teachers in 50 schools across Ukraine to integrate media literacy lessons into existing courses on history, art, culture, and Ukrainian language and literature. By 2021, techniques from Learn to Discern will be taught to 40,000 students across every region of Ukraine.

Scientifically rigorous evaluations of our work, both with adults and in schools, have found that people who had learned Learn to Discern skills and techniques were more likely to detect hate speech, better at identifying fake news stories, better able to differentiate between facts and opinions, more knowledgeable about the news media industry, and equipped with a stronger sense of personal responsibility and accountability for the information they consume. That is why we’re confident that the skills, techniques, and tools we’re going to teach you in this course are effective and important for you to learn.

Thanks, Mehri.
In the same way that misinformation has destabilized Ukraine and has persuaded some Americans to leave their children vulnerable to the ravages of measles, it can travel quickly through communities that don’t have strong enough protections in place, causing very real-world harm. Unfortunately, there is nothing as straightforward as a vaccine to protect people from the dangers of misinformation. It takes more than one simple action. It takes awareness, focus, and skill-building. But luckily, it is possible to build up resilience to the dangers of misinformation. My colleagues and I look forward to showing you how.
Thanks to increasingly rapid changes in communications technology, we have vastly more sources of information available to us than previous generations. We can also interact with that information, or generate our own, in ways that used to be impossible. This has important implications for our ability to discern truth from falsehood today.
THE FIRST AMENDMENT

The basis for freedom of expression in the United States is the First Amendment to the US Constitution. It’s the foundation for how American news media outlets operate. Among other things, the First Amendment is this country’s strongest means of protecting its citizens against censorship.

However, the proliferation of new sources of information on the internet poses a new kind of challenge to the First Amendment’s protections. The freedom to share information effectively grants the freedom to share misinformation and disinformation—and that can neutralize important news stories, confuse public discourse, and obstruct effective policy making.

We need reliable reporting—the kind that skillful journalists do. Yet the digital platforms where we get our information make it harder and harder to distinguish journalists from activists, lone individuals with political agendas, and even outright purveyors of disinformation.
STANDARDS OF JOURNALISM

According to the American Press Institute, “Journalism is the activity of gathering, assessing, creating, and presenting news and information. It is also the product of these activities.” News pieces should be made up of facts. Their main point is to inform you.

Journalists sometimes do give their opinions and argue a particular view. A longstanding view in American journalism, however, is that opinion should be kept separate from news, and it should be clearly labeled. Opinion pieces do, naturally, often contain facts as well as opinions. However, these facts aren’t there just to inform you; they’re there to support the opinion. The main point of an opinion piece is to persuade you.

There are various organizations that provide common standards for professional journalists in the United States, and the best journalists and news organizations follow those standards. For instance, the Society for Professional Journalists has developed a code of ethics for journalists that is meant to be universal. The following are four of its key pillars.

- **Seek the truth and report it**: This principle commits journalists to look for and clearly present important relevant facts. They should give the facts context, explain them well, and derive the facts from original sources. Journalists should also provide as much information about those sources as possible.

- **Seek to minimize harm**: Journalists strive to present the truth while avoiding harm to individuals.

- **Act independently**: In the US, independent journalism is the highest standard of journalism. It means that journalists are not paid to specifically report on one point of view or advocate for something unless what they write is very clearly identified as opinion.

- **Be accountable and transparent**: If a journalist makes a mistake, it is the journalist’s responsibility (and that of his or her news organization) to acknowledge and correct it.

Professional journalism is not infallible, but it makes a sincere and rigorous effort to find and report the truth. Today, however, anyone with digital access can produce or pass on information whether or not they have gone to the effort to verify it or report it fairly, as professional journalistic standards require.
THE MODERN MEDIA LANDSCAPE

Today, the multiplicity of formats means that the media landscape is complex and confusing. Real, credible news may be packaged in formats you may not recognize. The following is a brief rundown of some of the new ways people receive news.

- **Traditional media reported in multimedia formats.** For example, you might find traditional weather reporting or a local investigative report on a TV channel’s website.

- **News aggregators.** Sites that operate as news aggregators pull news from different sources. It’s hard to know when the aggregator is curating content for you based on trends and what you have clicked on in the past.

- **Traditional media reporting using social media.** An example of this is CNN, a traditional broadcaster, sending out information as short posts on Twitter. Such methods get the stories out to where people are spending their time, but they also make the outlets seem to be on par with everything else on Twitter and Facebook.

- **Bot reporting.** Bots are a type of app (a software application) that tells computers to do very simple tasks automatically and repetitively (and much faster than a person could do). The drawback is that bot reporting only works for simple things. For instance, a bot cannot write a report that provides context or analysis.

- **Tweet storms.** A tweet storm uses a series of numbered tweets that are linked in some way to show a narrative.

- **Social media as sources.** Over time, more and more credible news sources, including traditional media, have begun sourcing stories from social media.

- **Participatory reporting.** Some outlets have called out directly to their audiences for input. For instance, in 2018, ProPublica and Univision’s news arm did direct outreach to its readers in English and Spanish. They asked if people had seen Immigration and Customs Enforcement agents or the border patrol in their communities.
ALGORITHMS

Filter bubbles are a problem for the great majority of Americans who now spend time on social media. This is due to social media algorithms—that is, computer code that makes decisions about what appears in people’s feeds based on what they have liked, commented on, and shared. These algorithms are continually refining whose posts people see and what types of content people are exposed to.

Unless people make a conscious decision to seek out new types of content and perspectives other than those they agree with, they may find themselves trapped in a virtual community of only like-minded people. In a democracy that depends on civil debate, free speech, and a rich diversity of perspectives and experiences, this can be a problematic state of affairs.

Algorithms don’t only curate and narrow the scope of what you see on social media. They do the same for just about everything you do online, including using news apps and search engines. What your online search turns up depends on your past search history, what you have clicked on, and your overall digital habits.
THE EVOLUTION OF MEDIA AND MISINFORMATION

LECTURE 2 TRANSCRIPT

Where do you get your news? Whatever your answer, it may be dramatically different from that of the person who lives next door to you. Thanks to increasingly rapid changes in communications technology, we have vastly more sources of information available to us than previous generations. We can also interact with that information, or generate our own, in ways that used to be impossible. All this has important implications for our ability to discern truth from falsehood today.

How did we get here? Let’s think through the timeline of how communications technologies have evolved to put our present situation into context. In roughly 3000 BCE, foundational forms of communication, like writing on clay tablets, were used to convey information from one person to another. Hand-written books that could be circulated more easily were developed in the 1st century CE. Newspapers were first printed in the 1600s, enabling writers to reach hundreds or even thousands overnight. Telephones arrived in the 1870s, radio in the 1900s, and TV in the 1920s. The 1960s and 1970s saw the invention of the internet and email, which became widely accessible in the 1990s. This was followed with increasing rapidity by internet- and digital-driven platforms like Google in 1998, Facebook in 2004, WhatsApp in 2009, Instagram in 2010, and virtual reality journalism circa 2015.

The effect of all these changes has been to democratize access to information, to the point that today, we literally have it at our fingertips. It has also made us all publishers; each of us can now produce and share all types of content, through social media, blogs and vlogs, and a variety of digital apps and websites. With so many new and unfamiliar sources of information vying for our attention, it’s become difficult to know where to get news that we can trust. And that’s a problem—both for us as individuals and for our democracy.

To understand why, let’s start by considering the basis for freedom of expression in the United States: the First Amendment to the US Constitution. It’s the foundation for how our news media operate.
It protects their ability, and the ability of all of us, to say what we like about the issues that concern us. Among other things, the First Amendment is this country’s strongest means of protecting its citizens against censorship—in other words, control by the state, organizations, or other groups of people over the public expression of information, thoughts, or creativity.

It is especially important that we have the freedom to say what we like and don’t like about our government. This enables us to protest, pressure the government to change, and make decisions at the ballot box. It also means that some speech that’s objectionable and even offensive is allowed. Protections under the First Amendment need to be wide so that we can voice our criticisms, say things that other people don’t want to hear, and engage in productive debate about vital issues. The First Amendment protects factual news stories that journalists research and publish, even if they report things that government officials, private industry, or others don’t want the general public to know.

But the proliferation of new sources of information on the internet poses a new kind of challenge to the First Amendment’s protections. The freedom to share information effectively grants the freedom to share misinformation and disinformation, and that can neutralize important news stories, confuse public discourse, and obstruct effective policy making. We need reliable reporting—the kind that skillful journalists do. Yet the digital platforms where we get our information make it harder and harder to distinguish journalists from activists, lone individuals with political agendas, or even outright purveyors of disinformation.

What is journalism, anyway? What are its standards, and why do they matter? According to the American Press Institute, “Journalism is the activity of gathering, assessing, creating, and presenting news and information. It is also the product of these activities.” News pieces should be made up of facts. Their main point is to inform you. Of course, a news piece might report the opinions of people other than the author. For example, a reporter might write, “‘This is a terrible policy,’ said Janet Smith.” Janet Smith is expressing an opinion, but it’s a fact that she made that statement. So a news article reporting Smith’s statement is still just reporting the facts.

This doesn’t mean that a news article should be nothing but a bullet list of facts. A narrative that is written or told in a compelling way makes excellent journalism. But the journalist should be clear
about what the facts are and what the source of each fact was. In the United States, the highest quality independent journalism strives to be as objective and neutral as possible. The goal is to inform the consumers of that information. Since journalists are human, and by nature people have opinions and biases, it is likely impossible that any journalism will ever be 100 percent objective. However, good journalists strive for objectivity and clearly reveal any opinions, biases, or potential conflicts of interest.

Journalists sometimes do give their opinions and argue a particular view. A longstanding view in American journalism, however, is that opinion should be kept separate from news and should be clearly labeled. Opinion pieces do, naturally, often contain facts as well as opinions. But these facts aren’t there just to inform you; they’re there to support the opinion. The main point of an opinion piece is to persuade you.

Journalism, like other professions, such as medicine, is guided by a set of standards and ethics. Journalism is not the same as medicine, of course; doctors have to take an exam and must meet accepted medical standards, or they can’t qualify to work as a doctor. Anyone can claim to be a journalist. However, there are various organizations that provide common standards for professional journalists in the United States, and the best journalists and news organizations follow these standards. Understanding these standards can help us better evaluate the quality of the news we consume and decide whether or not to trust it.

The Society for Professional Journalists has developed a code of ethics for journalists that’s meant to be universal. Let’s talk about four of its key pillars.

1. Seek the truth and report it. This principle commits journalists to look for and clearly present important, relevant facts. They should give the facts context, explain them well, and derive the facts from original sources. Journalists should also provide as much information about those sources as possible.

2. Seek to minimize harm. When you report on people, you can possibly cause them some form of harm. Journalists strive to present the truth while avoiding harm to individuals.

3. Act independently. In the US, independent journalism is the highest standard of journalism. It means that journalists are not paid to specifically report on one point of view.
or advocate for something unless what they write is very clearly identified as opinion. Even though traditionally, journalism is funded through advertising, it should be funded through a number of different types of advertisers so that no individual advertiser can unduly influence what is reported or how. If an advertiser runs an ad that is made to look like objective reporting, the publication should clearly identify it as advertising.

4. Be accountable and transparent. If a journalist makes a mistake, it is the journalist’s responsibility (and that of his or her news organization) to acknowledge and correct it. If the journalist has a connection with a person he or she is reporting on, the journalist must reveal that connection. For example, The Washington Post is owned by Jeff Bezos, so any time the paper reports on Amazon, it must disclose that relationship.

The point here is that there is a difference between professional journalism and those who follow its standards, on the one hand, and anyone else who simply puts information out there in the world, on the other. Professional journalism is not infallible, but it makes a sincere and rigorous effort to find and report the truth. That’s an essential function in a democracy, which relies on informed citizens to think for themselves, elect competent leaders, support or oppose their policies, and hold them to account.

Today, however, anyone with digital access can produce or pass on information, whether or not they have gone to the effort to verify it or report it fairly, as professional journalistic standards require. As unreliable information becomes commonplace, it’s easy for the information that we can rely on to get lost in all the noise. Consider how complex our media ecosystem has become.

It wasn’t so long ago that print newspapers, TV, and radio were almost everyone’s primary news sources. Today, most of those traditional sources are also online, where they compete with countless internet-only sources and forms of social media in which the business model is anchored in attempting to capture our attention. Sometimes without even realizing it, many of us get our news from native news aggregator apps on our cell phones, such as the Apple or the Google news apps, or through our social media feeds. In many cases, our friends and our “friends” have become the gatekeepers for our news and information content.
Print and broadcast media have not only gone digital; they have adapted, creating multiple formats for the digital age. But the multiplicity of formats means that the media landscape is complex and confusing. Real, credible news may be packaged in formats you may not recognize. Here’s a quick run-down of some of the new ways we get our news.

Traditional media reported in multimedia formats: For example, you might find traditional weather reporting or a local investigative report on a TV channel’s website. Such reports may be accompanied by a variety of extra features, such as social media posts, interactive visualizations, or video. There may be links to original source material, which you can visit to provide further information and help verify the content, if needed.

News aggregators: Sites like Yahoo News pull in reporting from different sources. The sites could have a report on a kidnapping from Time Magazine and a plane crash report from the Miami Herald newspaper. You don’t have to pick one news provider, as the aggregator will do it for you. But will it pick the stories that you need to see? It’s hard to know when the aggregator is curating content for you based on trends and what you have clicked on in the past.

Traditional media reporting using social media: For example, CNN, a traditional broadcaster, reported a traditional news story about the death of a hero of the Holocaust, but sent it out in a tweet—that is, a short post on Twitter. The Detroit News (a smaller local) has also used this approach, reporting on local political corruption in a tweet. The Dallas Morning News show did a live broadcast about the 2017 Women’s March in Washington, DC right to Facebook Live. These methods get stories out to where people are spending their time. But it also makes them seem to be on par with everything else on Twitter and Facebook.

Bot reporting: “Bot” is short for robot. Bots are just a type of app—that is, a software application—that tells computers to do very simple tasks automatically and repetitively (and much faster than a person could do). Often, we hear about bots in a negative light—for example, bots sending you email spam. But bots can also be used for regular, if simple, reporting. The Washington Post created a bot for the Olympics in 2016 to send simple reports, such as the winner of the men's air rifle competition. The drawback: Bot reporting only works for simple things. It can give you facts such as scores or financial information like stocks rising or falling. It can’t write a report that provides context or analysis.
Tweet Storms: A tweet storm uses a series of numbered tweets that are linked in some way to show a narrative. In 2017, ProPublica, a nonprofit investigative journalism organization, did an investigation of President Trump’s Twitter activity and released its reporting through a tweet storm. It was one of the first (if not the first) example of this type of reporting happening in the US.

Social media as sources: Traditionally, journalists have to use sources for any facts they report, and good reporting uses more than one source. Sources are traditionally people. But more and more, credible news sources, including traditional media, are sourcing stories from social media.

Participatory reporting: Nowadays, anyone can follow journalists and tweet at them. But some outlets have gone farther, calling out directly to their audiences for input. In 2018, ProPublica, together with Univision news, did direct outreach to its readers in English and Spanish. They asked if people had seen Immigration and Customs Enforcement agents or border patrol in their communities. In gathering background information through its digital reporting platforms, the news organizations directly involved their audience in the story.

These developments make our lives more convenient and give us easier access to information. The new formats can provide more enriched, nuanced information than before. But they don’t exactly make the process of sorting out the truth more straightforward.

To make matters more complicated still, we now consume content differently from the way we did before. You previously reflected on your own consumption in our media landscape exercise, so you are aware of the myriad ways that you encounter information each day. Gone are the days when media outlets could expect their audience to spend extended time reading or watching and digesting story after story from just one source.

If you rely heavily on social media, you have probably become used to scrolling endlessly through newsfeeds, browsing through headlines or quick videos, often without reading any entire articles or viewing or listening to any longer reporting. Some mainstream news organizations have taken note. In the Fox news app, a long stream of headlines cascades one after another. The Washington Post app designers have taken this habit to an even further extreme: Each story comes up individually, with a headline, a picture, a few lines, like separate memes. Once you’ve clicked on an individual story, next to the back arrow, it says “Browse.” The app is structured according to the assumption
that readers prefer to browse rather than stay focused on one thing. The result? You receive more information, but you’re not necessarily better informed.

This trend has put journalists under tremendous pressure to report and write quickly in order to feed the 24/7 news cycle and to get clicks for their articles—whether anyone actually reads the stories or not. It’s one of the reasons that headlines are now crafted to provoke strong emotions. Clickbait, manipulative headlines that trade on your curiosity to get your clicks, has become widely used, even by credible sources. This is because clicks generate advertising revenue. The effect is to sensationalize, drawing our attention to stories that may not deserve it, and sometimes at the expense of those that do.

Yet another problem for the great majority of Americans who now spend time on social media is that we can find ourselves inside of what’s called a filter bubble. This is due to social media algorithms—computer code that makes decisions about what appears in our feeds based on what we have “liked,” commented on, and shared. These algorithms are continually refining whose posts we see and what types of content we are exposed to. Unless we make a conscious decision to seek out new types of content and perspectives other than those we agree with, we can find ourselves trapped without knowing it in a virtual community of only like-minded people. It can seem like everyone feels the same way that we do, when it’s really only the people chosen by the algorithm who share our outlook. In a democracy that depends on civil debate, free speech, and a rich diversity of perspectives and experiences, this can be problematic, and even a dangerous state of affairs.

It’s worth noting here that algorithms don’t only curate and narrow the scope of what we see on social media; they do the same for just about everything we do online: our Googling, other types of Web searches, and our cell phone news apps as well. What your online search turns up depends on your past search history, what you’ve clicked on, and your overall digital habits. Search algorithms take into account all the digital exhaust that our online activities leave behind and present us with something that they predict that we’ll want to see. The auto-complete suggestions that search engines offer you as you are typing in your searches depend on your search history as well.

Additionally, the advertising that you see above or below search results depends on what an algorithm believes you want. Remember that search engines make money through advertising.
Marketing is also done in more subtle ways; companies try to optimize the various factors that will lead your search to them, such as paying to have certain key word searches drive results to their site. So in many ways, our internet searches are much more directed and controlled than we may realize. And remember, algorithms were created by people, and thus are subject to human errors and biases.

Here’s IREX’s Nina Oduro with a simple exercise that will let you see algorithms in action.

Get a few people together. Each person should have a device that they use frequently—a phone, tablet, or computer—and should choose a search engine that they use frequently. Have everyone search for exactly the same terms, such as “sandwich,” “fake news,” “Ariana Grande”—really almost anything. Now compare the results. It would be almost impossible for any two people to get exactly the same set of results. As you’ll discover, search engines are much less objective in presenting us with information than they might seem. And of course, the quality of the information that any one search engine can assemble for us varies tremendously. Any user of information who isn’t aware of these problems can be seriously misled.

There’s still another troubling development to keep in mind as we struggle to tell fact from falsehood in this age of information overload: the decline of traditional journalism. Systemic pressures are being put on the practice of journalism that are making it harder and harder to find the information you need, reported in a way that’s useful.

The Pew Research Center analyzed data on newsroom employment over the span of less than a decade. It found that the number of newsroom employees dropped by nearly a quarter, with the fall in newspaper employment driving the declines. In 2008, newspaper employees numbered about 71,000; in 2017, 39,000 remained. The sharpest dip happened from 2008 to 2009. The news industry has suffered diminishing revenues for decades now, with big losses happening as the internet began to take off. The 2008 recession dragged revenues down further. Combined, the age of the internet and the recession caused at least three major impacts specific to the news media industry, including:

- Advertising. Advertisers started pulling out of traditional media. Part of the reason was the recession, and part of it was the move to digital. Instead of advertising being concentrated across
a smaller number of traditional outlets, it became splintered across many different types of platforms offering a range of content, some of which was journalistic and some not.

- Classified ads. These were another major source of funding for traditional media. Digital listing sites—in particular, Craigslist—completely flattened the market for print newspapers, so all that revenue disappeared.

- Subscriptions. With the proliferation of online content, including self-created content, people had more choices and didn’t necessarily go to traditional news platforms as often. They cut back or completely canceled their subscriptions to newspapers and magazines. Why pay for it if you can get it for free?

This doesn’t mean that the new sources that were mushrooming all followed journalistic principles—quite the contrary—but they did scatter the public’s attention. As subscriptions fell, print advertisers took their money elsewhere. Some bought online ads, but those just don’t bring in enough money to make up the shortfall, especially because news organizations compete with social media and other platforms for advertising.

An important side note: No one is really getting any content for free. Unless it’s otherwise explicitly stated, you can assume that any company that gives you free content is using, and perhaps selling, any data collected about you while you interact with the content. A good rule of thumb in the digital world is that if you get anything for free, you are the product.

With less revenue coming in for all these reasons, media outlets simply couldn’t afford to employ as many journalists, editors, and other newsroom employees. The reduction in newsroom employees and daily papers made it harder and harder for journalists to do their jobs and report on everything that ought to be covered.

Local news was especially hard hit. Dozens of local daily papers closed altogether, merged, or were reduced to weeklies in just a dozen years. Because of the lack of employment opportunities in smaller towns and the nation’s interior, most US journalists ended up in big cities on the coasts. The impact is fewer journalists to cover what’s happening in your city hall or state legislature or to investigate the local issues that matter to you, like crime, schools, transportation, and the environment.
These changes have had a significant impact in the middle of the country, where people were used to having a paper every single day that told them about what was going on in their communities, cities, their areas. Initiatives such as the Media Deserts Project and Saving Community Journalism have mapped the decline in local newspapers, with startling results. They have documented how suddenly, there is much less daily information through newspapers that employ journalists in local areas. One hundred percent access to newspapers is very rare.

Lesser degrees of access are much more common, and there are even complete vacuums where no newspapers exist. In fact, people in vast swaths of the country seem to have no news relevant to the place where they live. Without local news or access to any other reliable, fact-based source of information, it’s hardly surprising that some people are turning to the non-journalistic information that is available. But that is surely not a recipe for a well-functioning democratic society.

What can be done? In our technology-obsessed modern world, it was probably inevitable that someone would come up with a technological fix. There’s actually a digital tool called NewsGuard that can help you judge the quality of the news that you encounter. Embedded in your browser—and there are versions of it for Chrome, Firefox, Edge, and Safari—NewsGuard rates the news reported on certain top websites. The rating is like a nutrition label for news and is performed not by software, but by expert journalists, based on nine criteria of credibility and transparency that reflect the pillars of journalism that we mentioned earlier. It works best to help you evaluate and judge the trustworthiness of a site, not as a crutch or a shortcut.

That’s encouraging, of course, but no ratings system can keep up with the relentless growth of information on the Web. The state of things today has left us more vulnerable than ever to manipulation. But all is not lost. In fact, the best browser plug-in is still your brain, which is why we’re going to equip you with the cognitive skills and good habits to help you better evaluate the information that you encounter, no matter where it comes from.
Human beings are hardwired to view the world in certain ways that can be traced to the development of our species. For example, the way we judge ideas, how we make decisions, and our motivations to act are fraught with all kinds of biases. These biases are part of what creates efficiencies in how we operate. However, they can be deliberately exploited through the use of misinformation to catch our attention, sway our opinions, or sow doubt and confusion.
COGNITIVE BIASES

If you see something running by at a distance that is small and black and looks like a cat, you will probably decide that it was a cat. It may or may not have been a cat, but you’ll stick with your decision unless you learn otherwise. The brain has the ability to fill in gaps in information in that way. This kind of thinking is automatic, and it facilitates the work of the brain.

Much of the time, this kind of automatic gap filling means that the brain does the work of adapting what you perceive in the world to fit into your understanding of reality, which can lead to cognitive biases. One cognitive bias is that when people want to believe in what they hear or read, their brains ignore a large amount of information, focusing only on the information that confirms the prediction.

People also are subject to selective recall. They tend to remember the things that support their point of view and disregard the rest.

Still another problematic tendency of the brain is known as confirmation bias. This is when people search for and notice only the information that confirms their position.
EMOTIONAL REACTIONS

Another hardwired human tendency that plays a key role in how we consume information is our affinity for stories and the emotional reactions that they produce in us. This affinity can draw us in to news stories and compel us to educate ourselves about what is happening in the world. However, it can also make us vulnerable to manipulation.

Keep in mind that the people who create content are often trying to provoke a strong reaction in you. It should be up to you to decide, however, what to do with your reaction. In other words, it is up to you whether and how you act on a piece of information. You can determine whether or not to share information has a direct impact on the amount of misinformation or manipulative content in the information ecosystem.

Perhaps the most easily recognizable example of information manipulation is in the use and abuse of headlines. Clicking on a link means that the link has captured your attention, and it potentially has also generated advertising revenue. This is one of the reasons that even credible sources are now designing headlines to provoke strong emotions. Examples of clickbait, or manipulative headlines that provoke curiosity to get your clicks, are everywhere.
Clickbait is just one of many different ways that tech companies have taken the science of manipulation seriously. Tristan Harris of the Center for Humane Technology has identified something that he calls brain hacking. This is technology companies employ to keep people hooked on their devices. In fact, tech companies employ psychologists to inform digital designs that keep people engaged digitally and form habits that are hard to break.

**KEY CHARACTERISTICS OF MANIPULATION**

There are many other types of content across the internet designed to manipulate your emotions and your actions. You might encounter it in the form of text, video, audio, or images. Some key characteristics of manipulation include the triggering of fear, hurling insults, or employing insinuation, exaggeration, or distraction.

Manipulative content often presents opinions as fact. It also can include facts mixed together with falsehoods, exaggerations, or facts that aren’t related but are made to seem so. Manipulation often deploys symbols that play on our emotions (such as the American flag) and utilizes stereotypes. Constant repetition is another manipulative tactic.

**BUILDING RESILIENCE**

While you can’t prevent others from trying to manipulate you through media, you can take some steps to build your resilience to manipulation. Take a minute to identify your emotional reactions. Pausing and developing distance from these reactions can help you better understand the news and media you are seeing. This can help you avoid falling for content that might not be true.

The ability to handle your reactions to emotionally charged material and experiences is an extremely powerful skill. It enables you to buffer yourself against the force of information manipulation. The key idea is to defuse your own immediate emotional response so that you can engage your critical thinking skills.

When you come across any kind of content that provokes a strong reaction in you, try following these steps:

- First, pause. Close your eyes or turn your head away from the screen or paper.
- Then, ask yourself: What am I feeling? Put words to the reaction.
- Finally, say the label that you’ve given the feeling to yourself.
These make up the framework of a technique called Label to Disable. The distance that you put between yourself and the emotion with these simple steps can help prevent you from reacting impulsively. Once you have gone through all the steps, you can consider whether or how you want to respond to the content you’ve just encountered.

To help people resist the temptation to forward problematic material to others, IREX’s experts recommend using Label to Disable as the first step in a broader procedure called Care before You Share. Once you’ve named your emotional reaction to the material and taken back your analytical brain, do the following.

1. Take responsibility. Recognize that you are the information gatekeeper. It’s up to you not to spread misinformation.

2. Acknowledge what you may not know. Remember that you need to be extra careful with content that appeals to you, supports what you already believe, or provokes a strong reaction in you.

3. If you have time, check it out. Do what you can to verify information.

4. If you’re still not sure it’s true, don’t share it.

If you can remember to follow these steps whenever you encounter highly charged information, you’ll help make the information ecosystem a much cleaner and safer place for everyone.

SUGGESTED READING

Ciampaglia, et al., “Biases Make People Vulnerable to Misinformation Spread by Social Media.”


Steinmetz, “How Your Brain Tricks You into Believing Fake News.”

Wehner, “Why People Are Wired to Believe What They Want to Believe.”
If you’re on social media, you may have come across a meme that says: “Ah, 1st of April: the only day of the year that people critically evaluate things they find on the internet before accepting them as true.” We may laugh at the observation, but we also feel a twinge of recognition. In daily life, our critical thinking skills are too often not engaged when they should be. Why is this?

As human beings, we are hardwired to view the world in certain ways that can be traced to the development of our species. For example, the way we judge ideas, how we make decisions, and our motivations to act are fraught with all kinds of biases. These biases are part of what creates efficiencies in how we operate. If we had to analyze every single piece of information we encounter, and very deeply think through every decision and action that we take, we would never get out the door in the morning. Yet these biases also can handicap our ability to think independently and act with integrity. And they can be deliberately exploited through the use of misinformation—to catch our attention, sway our opinions, or sow doubt and confusion.

In this lecture, we’re going to take a close look at how information manipulation works and what makes us so susceptible to it. My colleague, Mehri Druckman, who oversees IREX’s Learn to Discern program in Ukraine, has witnessed the underhanded use of misinformation up close. She’ll start us off by explaining some of the most important types of cognitive biases that detract from our ability to critically analyze information.

If at a distance you see something running by that is small and black and looks like a cat, you will probably decide that it was a cat. It might have been a cat, or it might not, but you will stick with your decision unless you learn otherwise. Our brain has the ability to fill in gaps in information in that way. This kind of thinking is automatic, and it facilitates the work of the brain.
Your brain uses a lot of the body’s energy (about 20 percent), and it allocates most of those resources to important and long-term ideas and processes. That means new information is often exposed to this kind of distortion of reality. This is actually an evolutionary adaptation, because it allows you to identify an object without using too much of the brain’s precious resources.

Much of the time, this kind of automatic filling-in-of-the-gaps means that the brain does the work of adapting what we perceive in the world around us to fit into our understanding of reality, which can lead to cognitive bias. Cognitive biases are so common, we are usually unaware of them in our everyday life.

Did you ever read your horoscope? Did it sound accurate? Here’s a prediction meant for Scorpios:

[Today,] all your forward momentum is starting to wane a bit, which is both a positive and a negative thing. On the one hand, this time out will finally give you a chance to take in the interesting view you have been missing out on for so long. But on the other hand, this pause means that you are going to have to wait even longer for the changes you have been hoping for. Conserve your energy and be more patient. Be confident that you will experience what you deserve soon enough.

Does that seem like it applies to you, even if you are not a Scorpio? If so, you are experiencing the Barnum effect. The text may sound convincingly like it describes your life. Really, the content is quite general and lacks details. But don’t worry! Your brain will create it for you. When you really want to believe in what you hear or read, your brain will ignore a large amount of information, focusing only on the information that confirms the prediction. What you perceive is what you really want to see.

In addition to how our brain may focus only on part of the data it encounters, we also are subject to selective recall. That is, we tend to remember the things that support our point of view and disregard the rest. Selective recall also can be triggered in cases when you are reading materials containing different points of view. Your brain will tend to capture only the facts that confirm your previously held point of view.
Still another problematic tendency of the brain is known as confirmation bias. This is when we search for and notice only the information that confirms our position or interpret information only so that it confirms our view. Confirmation bias arises as a result of our reluctance to admit that our perspective may be wrong, since we don’t like to look ignorant. In one research study, participants were provided with information that contradicted their political views while scientists measured the activity of their brains. As they were listening to the contradictory information, the regions of the brain associated with physical pain were activated. When people’s opinions were challenged, they experienced emotional pain.

So it is not surprising that people furiously fight for their own point of view and look for all possible evidence to support it. It is a painful process for people to admit that they are wrong and to adopt a new point of view. Confirmation bias is widespread; we generally accept a story uncritically if it confirms what we would like to be true. Instead, we should challenge our brains to doubt our strongly held views, look for alternative opinions, check multiple sources, and analyze information. Otherwise, we leave ourselves open to manipulation.

Thanks, Mehri.

Another hardwired human tendency that plays a key role in how we consume information is our affinity for stories and the emotional reactions that they produce in us. This affinity can draw us in to news stories and compel us to educate ourselves about what’s happening in the world. It can attract us to other forms of entertainment as well. But particularly in the world of digital media, it can also make us vulnerable to manipulation.

There are many things that motivate information manipulation, from financial gain to attempts to gain political influence or power—and at the very extreme end of this, disinformation—to pulling pranks that simply create chaos. A range of types of actors do the manipulating: politicians, commercial companies, people trying to be social media influencers, and so forth. People have been engaging in this kind of manipulation throughout human history, but in the digital age, it operates on an entirely new scale and with unprecedented speed.

We may never be able to figure out what the motivations are behind much of the content that’s circulating, or sometimes, who has created it. But it’s still helpful to keep in mind that people who create content are often trying to provoke a strong reaction in you. It should be up
to you to decide, however, what to do with your reaction—whether and how you act on a piece of information. Do you pass it along by word of mouth? Do you “like” it or share it? And that seemingly small decision is important, not only for you but for others. The act of really deciding whether or not to share information has a direct impact on the amount of information or manipulative content that we all encounter in our information ecosystem. You may not be able to quickly eliminate all the pollution in your city, but you can clean up the trash in your own yard, so to speak.

Perhaps the most easily recognizable example of information manipulation is in the use and abuse of headlines. Newspaper headlines were always important, even in the days when news was printed only on paper. Not everyone would take the time to read an entire newspaper, so the headline of an article would signal to a reader the main idea of the article, as well as potentially attract her to read it. In the digital age, with so much competing for our attention and our ability to focus shrinking, the job of the headline writer has gotten even more important. As we’ve discussed, people get online news from many sources: from the website of a news outlet, from the app of a news outlet on their smartphone, from a news aggregator app such as Yahoo or Flipboard, from their social media feeds, and so on. A headline needs to stand out amid all that information to attract our attention quickly.

Today, the 24/7 news cycle—along with commercial, entertainment, and user-generated content—compete for your attention and your clicks. Clicking on a link not only means that the link has captured your attention, but potentially also advertising revenue. This is one of the reasons that even credible sources are now designing headlines to provoke strong emotions. Clickbait, manipulative headlines that provoke your curiosity to get your clicks, is everywhere.

Clickbait is just one of many different ways that tech companies have taken the science of manipulation seriously. Tristan Harris of the Center for Humane Technology has identified something that he calls brain hacking that technology companies use to keep us hooked on our devices. A former product manager at Google, Harris saw and helped design the characteristics of tech platforms and devices that make it hard for consumers to resist clicking on things. In fact, tech companies employ psychologists to inform digital designs that keep people engaged digitally and form habits that are hard to break.
Why, for example, do your smartphone apps signal that new information is waiting for you via a red alert in the upper right-hand corner of the relevant icon? Because it’s been determined scientifically that our brains can’t resist responding to that information. Why are alerts continually popping up on our computers, tablets, and phones? Because we can’t resist clicking on them! These are proven ways to grab our attention. The average American now checks their phone 150 times a day. Is this something we are truly choosing to do? You and I are up against the psychology PhDs that tech companies employ to design their products and technology that processes information and presents us with tailored, appealing offerings much more rapidly than the speed of our thoughts.

There are many other types of content across the web designed to manipulate your emotions and, ultimately, your actions. You might encounter it in the form of text, video, audio, or images. Some key characteristics, or markers of manipulation, include triggering fear, hurling insult, or employing insinuation, exaggeration, or distraction. Manipulative content often presents opinions as fact. It can also include facts mixed together with falsehoods, exaggerations, or facts that aren’t related but are made to seem so. Manipulation often deploys symbols that play on our emotions (such as the American flag) and utilizes stereotypes to create a larger than life “other” out of an entire group of people, such as single mothers or homeless people. Constant repetition is another manipulative tactic. If we hear something enough, we may begin to believe it, no matter how unlikely it is. Manipulation triggers and preys on our strong emotional reactions to certain things.

While we can’t prevent others from trying to manipulate us through media, we can take some steps to build our resilience to manipulation. Taking a minute to identify your emotional reaction and to take a pause (and a bit of distance) from it can help you better understand the news and media you’re seeing and better understand your own views towards a topic, which can help you avoid falling for content that might not be true.

This approach to emotionally charged experiences has been advocated in other contexts by author and psychiatrist Dr. Dan Siegel, who dubbed it “Name It to Tame It.” The act of finding words to describe your emotions turns on the part of your brain that gives you mental control and the ability to regulate yourself (the “executive brain”). This gives you the opportunity to choose how you respond to the thing that provoked your reaction.
We’ve given this tactic a new name as it applies to misinformation: We call it Label to Disable. Pausing, labeling your reaction, and activating the executive brain will disable misinformation’s power to provoke an involuntary reaction in you. It will give you the mental space you need to determine the truth of the information, or at least to actively choose: Do you actually want to click on a link? “Like” something? Comment on it? Share it? In this way, it empowers you to stop yourself from contributing to the spread of misinformation.

Here is IREX’s Nina Oduro with an exercise to build your Label to Disable skills.

The ability to handle your reactions to emotionally charged material and experiences is an extremely powerful skill. It enables you to buffer yourself against the force of information manipulation. As Tara mentioned, the key idea is to defuse your own immediate emotional response so that you can engage your critical thinking skills. Here’s how it works. When you come across any kind of content that provokes a strong reaction in you:

- First, pause: Close your eyes or turn your head away from the screen or paper.
- Then, ask yourself: What am I feeling? Put words to the reaction.
- Last, say the label that you’ve given the feeling to yourself.

The distance that you put between yourself and the emotion with these simple steps is what prevents you from reacting impulsively. Only once you’ve gone through all the steps should you consider whether or how you want to respond to the content you’ve just received. You can now actively decide if you want to verify, share, comment, like, or do nothing.

Let’s say you encounter the following headline, which actually appeared in the *New York Post*: “Mom killed shielding kids from speeding car on first day of school.” First, pause: Close your eyes or turn your head away from the screen. Then, ask yourself: What am I feeling? Put words to the reaction. Last, say the label that you’ve given the feeling to yourself.

What was your reaction to the headline? What do you think the person who wrote it was trying to achieve with it? They key is to put language to the feeling you just experienced. Consider writing it down, if it helps. It may be hard to put a label on an emotion, and
it may feel uncomfortable. So here is a list of some strong negative emotions that you may find useful in identifying a reaction you may have:

- Annoyance
- Anger
- Rage
- Terror
- Fear
- Apprehension
- Boredom
- Disgust
- Loathing
- Sadness
- Grief

There are a couple of important points to note here. First, don’t worry about finding the precise label or term for whatever you were feeling. It doesn’t really matter whether you say you were “angry” instead of “irritated.” You don’t have to find the perfect word. The important action is to put language to the feeling to help you take back your brain, and thus, your ability to make rational decisions.

There are some feelings that tend to put us into a stress response more than others—what is called fight or flight mode. When you have this reaction, it is a natural protective response to a perceived threat. It doesn’t matter if the threat is an upsetting headline or a speeding car coming towards us; the physiological response is the same. This is sometimes called an amygdala hijack, meaning that the emotional center of the brain has suddenly and powerfully taken control. This response shuts down our ability to think and act rationally, and we may take an action without thinking it through.
If you encounter a perceived threat in a bar, your stress response might be to get into a fight that you might regret. If you’re sitting at your computer and you encounter a headline that upsets you or provokes your emotions in some other way, you might do something comparable, like sharing it with others before checking whether the story is even true. It’s especially the strong negative emotions that tend to shut down our brains in this way, producing anger or fear instead of lucid thought.

It’s important to note that there is nothing wrong with having these emotions in themselves. We all have them. The point we are trying to make here is not to try to stop them. It’s to notice that you are having a strong reaction in the moment you are having it, stop, and put a label on that reaction. That gives you the freedom to choose what you do next instead of letting your emotions drive you to act impulsively.

Here’s another headline: “Man tries to hug a wild lion. You won’t believe what happens next!” First, pause: Close your eyes, or turn your head away from the screen. Then, ask yourself: What am I feeling? Put words to the reaction. Last, say the label that you’ve given the feeling to yourself.

Now, do you think the headline is worth clicking on? In this case, your feeling may not have been strong and negative, but curious. Were you dying to click on a link to find out what happened? This is an example of clickbait, which uses linguistic tricks that have become very common. Here’s how some classic clickbait headlines begin:

- “You won’t believe…”
- “These 7 tips…”
- “The shocking reason why…”
- “Only the smartest people can find…”

Do any of these sound familiar? More often than not, there isn’t really a payoff when you click on clickbait. The link leads to content that isn’t all that interesting after all. But your click still makes somebody a little bit richer. And as we’ve mentioned, the trend in mainstream media is to use more and more clickbaity headlines to compete with the digital noise. The pause that’s built into Label to Disable gives you the time you need to consider whether the story is likely to be worth clicking on or is just someone’s attempt to profit from your impulses.
Here’s one more example, from a meme that made the rounds on social media: “Warning! Please read, this is real. There is a thing called ‘Momo’ that’s instructing kids to kill themselves. INFORM EVERYONE YOU CAN.” So again, pause: Close your eyes, or turn your head away from the screen. Then, ask yourself: What am I feeling? Last, say the label that you’ve given the feeling to yourself.

Would you click on that link? It’s based on a hoax called the Momo challenge. Police and other authorities warned that Momo challenge videos urging children to harm themselves were popping up on social media. Worried parents cautioned others in droves, also via social media, which incited more parents to panic. That, in turn, caused more local police to give credence to the hoax and fooled news outlets in the process. Rumors of suicides related to all this from such disparate locations as the US, Argentina, and India were reported in the mainstream media. If each one of those parents who first encountered the hoax had paused, taken time to check out the rumor, and considered the consequences before spreading it, they would have lessened the pollution in the information ecosystem. That’s why it’s so important to use Label to Disable anytime you find yourself reacting strongly to information that comes your way.

Did you find yourself having strong reactions to any of the examples that Nina shared with you? It’s possible, of course, that you didn’t. That’s OK: We are all different, and something that makes one person want to scream might barely provoke a sigh in someone else. The thing to remember is that each of us can be upset by certain issues or ideas if they are presented in a certain way. For some of us, it’s politics. For others, it’s the well-being of animals. Still others may care a lot about a certain celebrity. The important thing is to be vigilant in monitoring our own reactions. If you practice Label to Disable repeatedly, you’ll be able to use it when you need it most, which is when it can be the most difficult to remember.

Keep in mind that you don’t have to tell anyone that you had a particular reaction to a particular piece of information if you don’t want to. You can say the label that you’ve put on the feeling to yourself or write it down on a piece of paper. The procedure is very simple yet highly effective, and we encourage you to teach it to others. But it’s not necessary to share what emotional reaction you have if it makes you uncomfortable.
The important thing is to notice it for yourself and put language to the feeling. That simple act gives you the power to decide what you will do and, ultimately, to keep yourself from spreading misinformation and manipulative content.

To help people resist the temptation to forward problematic material to others, we recommend using Label to Disable as the first step in a broader process that we call Care Before You Share. Once you’ve named your emotional reaction to the material and taken back your analytical brain, do the following:

- Take responsibility. Recognize that you are the information gatekeeper. It’s up to you not to spread misinformation.

- Acknowledge what you may not know. Remember that we need to be extra careful with content that appeals to us, or supports what we already believe, or provokes a strong reaction in us.

- If you have time, check it out! Do what you can to verify information.

- And if you’re still not sure it’s true, don’t share it.

If you can remember to Care Before You Share whenever you encounter highly charged information, you’ll help make our information ecosystem a much cleaner and safer place for everyone.
The power of social media to make posts go viral often hinges on visuals. They evoke emotional reactions in people—and they are meant to. They can be some of the most insidious information on the internet. This lecture goes over prominent types of visual misinformation.
THREE TYPES OF MANIPULATION

Three common kinds of visual manipulation to beware of are reuse and mislabeling, the photo selection effect, and deliberate alteration or forgery.

Regarding reuse and mislabeling: It is easy to manipulate visual media quickly without using sophisticated digital tools. People can simply download an image and add text to it. Text that labels or describes a picture or video directs people how to see it and can significantly shape perceptions of it. A photograph that is mislabeled can make people perceive something different than what is there.

Selection is another way that imagery can be manipulated. This method involves no modifications at all to the image itself. The photo selection effect is a subtle but powerful phenomenon. Choosing only to use certain photos and not others can misrepresent a situation. It is also possible to jump to the wrong conclusion about isolated photos. Photos can also be selectively cropped, and videos can be selectively edited, leaving a false impression.
Lastly, images that have been deliberately altered or forged are also present on the internet. Many such photos and videos emerge out of current events and breaking news situations, when tensions are high and people are clamoring for information. Forgers are eager to exploit the emotions that people have in response to such events.

To protect yourself from the effects of provocative photos, you can use the Label to Disable technique covered in the previous lecture. Take back your brain by pausing and putting language to any emotions you are feeling before you react to an inflammatory image. That way, you can reengage the rational part of your brain, analyze the situation, and make a choice before you interact with the image.

**VERIFYING IMAGES**

If you’re suspicious about an image that you encounter online, examine it closely. Look for any elements that seem out of place. For instance, do the shadows all point in the same direction, or do some seem inconsistent with others? If there’s signage in the photo, what language is it written in? Is it appropriate to the location supposedly shown in the image?

If you decide to check the image out, you can do so using a reverse image. Two tools that can help you do this are Google’s reverse image search feature and TinEye. TinEye allows you to compare an image to others like it on the internet to see what may have changed.

Another tool to consider if you want to put some time and analytical work into discerning the truth of visual images is FotoForensics.com. After you upload a photo or enter a URL, the site will analyze the photo and can detect places where the photograph may have been tampered with. A final useful tool is InVid, which can help detect video alterations.

**CONCLUSION**

Many of the photos and videos you see on social media have been reused, sometimes in a way that changes their meaning. People also purposefully alter pictures to spread false information. Keep in mind that Label to Disable is your first line of defense. If an image or video provokes a reaction in you, pause for a moment and put language to the feeling. Then, you can decide whether to share, avoid sharing, or verify.
In many cases, you can use a reverse image search to determine if an image has been repurposed or if manipulation has taken place. Even when you don’t have time to do so, or a search yields inconclusive results, you’ll know to be wary: Seeing is not necessarily believing.

It’s also important to remember that digital tools and techniques change quickly. A tool may quickly become improved, replaced by something else, or suddenly obsolete. Tools can be great, but there’s no substitute for your own good judgment.

**DIGITAL TOOLS FOR IMAGE VERIFICATION**

**Fotoforensics.**
http://fotoforensics.com/
This image-comparison tool helps you to analyze the compression rate in a photograph, which may help you to tell if it has been tampered with.

**Images.google.com.**
https://images.google.com/
Compares one image to others on the web.

**InVid.**
https://www.invid-project.eu
A suite of visual-analysis tools, accessed as a browser plugin, that can help analyze video.

**Reverse Photos.**
This is also an image-comparison tool; it works well on mobile phones.

**TinEye.**
https://tineye.com/
This image-comparison tool provides dates and more information about other instances an image was put into circulation.

**SUGGESTED READING**

Grady, “The Vision Thing.”

McFarland. “Scientists Have Uncovered Exactly What Makes a Photo Memorable.”
A picture is worth a thousand words. You can see for yourself. Seeing is believing. These common sayings reveal a closely held belief: If you see it with your own eyes, it must be true. Yet we are so totally engulfed by media and mediated images today that we don’t always remember that a photograph, a video, or a meme have all gone through a process before landing in front of our eyes. They have been selected, edited, enhanced, reframed, or otherwise modified by whoever has decided that we should see them.

The power of social media to make posts go viral often hinges on visuals: a politician at a podium in front of a vast audience, a hunter with a gun astride an enormous elephant, a cherubic child in distress. Anyone on social media has seen some version of these photographs numerous times. They evoke emotional reactions in us, and they are meant to. They can be some of the most insidious information on the internet.

Why are visual images so powerful? While it may seem that our eyes function something like a video recorder, instead, our ability to see derives from our brain, which processes and interprets images. Our visual systems are by far the most complex of our sensory systems and require 30 percent of the cerebral cortex to process visual information. Compare that power needed with touch, at eight percent, or hearing, at three percent. The brain is always making shortcuts to quickly and continuously interpret the images that our eyes perceive. Even in everyday life, we don’t see things exactly as they are. A simple example is the fact that our noses are usually blocking some portion of our vision. But unless you think about it, do you see your nose in the way of what’s in front of you? No, because your brain automatically erases it and fills in the gaps. The existence of optical illusions illustrates this point as well: It is possible to systematically trick the brain through the eyes.

A number of studies have found that visuals enhance our ability to recall information, and this appears to apply just as much to misinformation as to true facts. We must therefore be aware that we’re particularly susceptible to misinformation when we’re looking at images or video.
One recent study at MIT explored what characteristics made some photographs more memorable than others. Researchers found that strange and counterintuitive images seemed to stick the best, such as one of a stop sign spray-painted with the word “Go,” or a man in a Sumo outfit dragging a snowboard. While it’s worth noting that this study was done using artificial intelligence rather than people, if you are familiar with the types of random images that go viral on social media, the findings seem to confirm what everyday experience suggests. And other studies, such as one by Washington University in St. Louis, have found that viewing images that evoke strongly negative emotions enhances memory in human beings. So the visual—and even more powerfully, strongly negative, unusual, or even counterintuitive visuals—make a strong impression and stick with us. Think about the expression, “I can’t un-see that!” And the more times that we are exposed to them, the more likely we are to accept them as true.

Let’s look at some of the ways that photos and videos on the Web are often manipulated and how you can detect this manipulation. Three common kinds of visual manipulation to be aware of are re-use and mislabeling, photo selection effect, and deliberate alteration or forgery. Let’s consider an example of each of these types of manipulations.

First, re-use and mislabeling. A tweet from October 17th, 2017 reads, “Someone in the neighborhood Facebook group my mom belongs to washed a coyote because they thought it was a dog.” It includes a retweeted photo of someone holding a coyote, accompanied by text about a lost dog that had been taken in and cared for. The tweet had close to 18,000 retweets. However, the photograph was actually from a 2014 story from the British newspaper The Daily Mail about a family that intentionally adopted a coyote as a baby and kept it as a pet.

Because it’s easy to download almost any photo or video that we come across, or upload our own, and then add some text to create whatever context we choose, it’s easy to manipulate visual media quickly without using Photoshop, editing software, or any other sophisticated digital tools. This is how memes are created on the Web. Often, memes are funny and not meant to harm. One meme that got a lot of traction in 2016 depicted the terrifying head of a great white shark emerging from the water, its mouth open to the sky in seeming agony. “Rare image of a shark stepping on a Lego,” the caption read.
People seem to like to attribute quirky quotes to Mark Twain, often accompanied by images of him that add credibility to the quotations. You can find dozens of such memes, which seem quite convincing, even when Twain never made the statement quoted. Ironically, one such statement misattributed to Twain is “A lie can get halfway around the world while the truth is still putting on its shoes.” The statement appears to have originated with Charles Haddon Spurgeon, a 19th-century English Baptist preacher. Now, of course, misattribution of quotes is nothing new, but the power of memes to embed the quotes in our mind and the speed with which they can circulate to large numbers of people is only characteristic of our current era.

Headlines and captions can also drastically color the way we interpret pictures. Remember that the way that we see is actually our brain working to interpret the many signals it encounters through the eyes. Text that labels or describes a picture or video directs us to how to see it and can significantly shape our perceptions of it. So a photograph that’s mislabeled can make us perceive something different than what’s there. If it triggers a strong emotional reaction, we might share it without really thinking through what we’re doing.

One example is a blurry photo taken in Tunisia of a small group of young men huddled in a circle in a rural area. The photo was titled, “A jihadist camp.” In March 2014, the Tunisian ministry of the interior held a press conference to brief the media on a recent government counterterrorism operation in the coastal governorate of Monastir. Part of the “evidence” displayed in the press conference was a set of pictures of a supposed jihadist camp, including the photo of that group of young men. The media quickly disseminated the information. But it turned out that the picture was of a boy scout camp dating back to 2010 that someone had pulled off of Facebook. This mislabeled photo stirred up fear in the Tunisian population and could have brought harm to the innocent young men in the photo. Once its true origin became known, though, it called into question the Tunisian government’s position that its counterterrorism operation was necessary at all.

Selection is another way that imagery can be manipulated, and without any modifications at all to the image itself. What is called photo selection effect is a subtle, but still quite powerful phenomenon. News editors always employ editorial selection when deciding what photos to run with a story. But in some cases, the story can be reshaped depending on the photo that’s chosen to represent it.
Choosing only to use certain photos and not others can also misrepresent a situation. We can jump to the wrong conclusion about isolated photos. Even without text guiding us to see something, our own experiences, knowledge, and biases, also opinions, can shape how we interpret a picture or a video. Photos can be selectively cropped, and videos can be selectively edited to leave a false impression.

Consider the example of a photo that circulated widely on the Web of a meeting between President Trump and Canadian Prime Minister Justin Trudeau. The photo shows Trump extending his hand to Trudeau. Trudeau’s position and facial expression seem to suggest that he is hesitant to shake it. But the problem with photographing people in action is that a photo catches a split second that actually may have been totally unrepresentative.

You may have noticed the same phenomenon when you pause a video you’re watching: People in mid-speech suddenly have funny facial expressions that you never would have noticed without pausing. And in the case of the photo of Trump and Trudeau, a video of the same meeting creates a very different impression of their encounter. Trudeau does not appear to hesitate at all in shaking Trump’s hand. You can imagine that the photographer took many shots that captured different moments that made up the handshake, but the editor selected a picture implying that Trudeau was hesitating. That choice seems to have misrepresented the encounter.

It’s easy to misinterpret a portion of a video or photo when it’s been removed from its context. Remember that the actions and expressions in a photo aren’t always what they appear to be at first and that we all interpret images in a way that fits with our preconceived notions.

Lastly, images that have been deliberately altered or forged are also present on the internet. How can you tell when a photo has been altered? We’ll start with an example that circulated in 2018 of Emma Gonzalez, one of the survivors of that year’s shooting at Marjory Stoneman Douglas High School in Parkland, Florida. Gonzalez became a vocal anti-gun activist. In the photo, she appears to be tearing a copy of the Constitution of the United States down the middle. The Twitter user who originally shared the photo added a caption that helped shape how people viewed the photo. It read, “Proudly shredding The Constitution. Horrifying to every educated American.” The photo provoked outrage in many viewers. As we will see, however, it was an outright fabrication, a deliberate mischaracterization of Gonzalez and her beliefs.
How can you protect yourself against such forgeries? How can you know when your eyes are deceiving you? First, employ the technique that we covered in our previous lecture: Label to Disable. Take back your brain by pausing and putting language to any emotions you are feeling before you react to an inflammatory image. That way, you can reengage the rational part of your brain, analyze the situation, and make a choice before you like the image, comment on it, or share it.

It’s good to keep in mind that a lot of deliberately altered or forged photos and videos emerge out of current events and breaking news situations, when tensions are high and people are clamoring for information. Forgers are eager to exploit the emotions that people have in response to such events and know that the more upset people are, the more likely they are to share falsified information without thinking things through first and verifying the images.

Now, here’s Nina Oduro to explain some techniques for verifying visual images.

If you’re suspicious about an image that you encounter online, examine it closely. Look for any elements that seem out of place. Do shadows all point in the same direction, or do some seem inconsistent with others? If there’s signage in the photo, what language is it written in? Is it appropriate to the location supposedly shown in the image?

If you decide to check the image out, you can do so using a reverse image search. There are two tools that can help you do this. The first method is by using Google image search. Reverse image searches are easiest if you’re using Google Chrome as your browser. For this reason, you may want to consider installing Chrome on your phone or computer. You can go to Google and click “Images” in the upper right corner, or go to images.google.com. Then take these steps.

Click the camera icon. Text will appear that says, “Search by image. Search Google with an image instead of text. Try dragging an image here.” On an Android mobile device, press your finger to the screen, hold, and choose “Search Google for this image.” Google image search is more difficult on an iPhone, so you can either use TinEye, which I’ll explain in a moment, or try going to the URL reverse.photos. That site will allow you to search for photos via a simple upload button. Alternatively, you can wait until you have access to a computer to do the search.
Once you are in Google Images, there are several ways to search for an image. You can right-click the image on a PC. On a Mac, hit control-click. On mobile, tap the image to open it as a full-screen view. Drag the image into the search box. You can also upload an image from your computer, enter the URL of an image you want to check out, or drag the image from a web page open in another tab.

Scroll down to where you see “Visually similar images,” and then “Pages that include matching images” to learn more about the image and trace what may have been done to it. Many of the search results will have dates. Look for the earliest date you can find, and also look for reputable news outlets. Compare the earliest image you find with the one that raised your suspicions. Has the image been altered? Is it being used in a way that’s consistent with its original meaning?

Let’s go back to the case of Emma Gonzalez, the student who was shown ripping up a copy of the Constitution. In that photo, there are harsh shadows across her face and dark circles under her eyes, and her skin has a ghostly pallor. If you do a Google search for the image, the results will show a number of versions of the doctored photo, but also included will be the original photo. In it, you’ll see that Emma was actually ripping up a paper target of the kind used on a shooting range. Someone altered the photo to make it seem like there was a copy of the Constitution in her hands. If you’re interested, you can also find several articles about the doctored photo online.

Google image search doesn’t list results by date of publication, so sometimes using TinEye is more helpful. As I mentioned, TinEye is also easier for doing a search on an iPhone. It’s a tool you can use regardless of what web browser you’re using, and it makes it easy to find the earliest usages of an image.

Let’s say I want to check out an image I’ve come across showing US ambassador to Russia John Tefft. The photo, which was originally published by the Kremlin-driven REN-TV of Russia, appears to show Ambassador Tefft attending an antigovernment rally in Moscow. This, of course, would be completely inappropriate for an ambassador. Here is how to check it out using TinEye.com.

Save the picture you want to verify. On a cell phone, press the picture on your screen and hold it until you see an option to save it. In your browser, go to tineye.com. Select “upload image” and choose the image you want to verify. On a computer, you can also drag the picture into the search box or enter the URL.
Hit “return,” or click on the magnifying glass icon. Then, if you click on one of the images returned in the search, you can toggle to compare it to the picture you submitted. In the “Sort by” drop-down menu, you can arrange the findings based on what you are looking for. For example, you can sort by “oldest” or “most changed.”

TinEye allows you to compare your image to others like it on the internet to see what may have changed. In the case of the photo of Ambassador Tefft, it turns out that the oldest version of the photo shows him at a press conference. Amusingly, the TinEye search will also bring up versions of the photo created by the US Embassy to playfully expose the fraud, including the ambassador in the middle of an ice hockey rink.

While there are some clunky aspects to reverse image searching, especially on a mobile device, this is an area in which the continual refinement, change, and updating of digital tools is likely to yield improved usability. In fact, in the intervening time between when we recorded this segment and whenever you are watching it, the tools may well have improved.

Another tool to consider if you want to put some time and analytical work into discerning the truth of visual images is FotoForensics.com. That’s F-O-T-O-F-O-R-E-N-S-I-C-S dot C-O-M. After you upload a photo or URL, the site will analyze the photo and can detect places where the photograph may have been tampered with, based on the differences in the compression rate across the picture. It will spit back a processed version of the photo that may reveal lighter areas where the photo has been tampered with.

There are some challenges. You have to do some analysis of the image that is returned to you, and it may not provide an easy answer. Plus, the more a picture circulates, the more compressed it becomes, and the more likely further alterations may have occurred, so you are likely to get clearer results if you can access the original photo. But if it’s something that’s very interesting or important to you, or if you enjoy visual sleuthing, you might want to try FotoForensics.

Another tool that you may find useful is InVID, which can help detect video alterations. Go to invid-project.eu. That’s I-N-V-I-D dash P-R-O-J-E-C-T dot E-U. And click on tools and services. InVID will only work for Chrome and Firefox browsers, but it can also be installed in your browser with just a click.
Let’s say you want to do a reverse image search on a disturbing video you’ve found on YouTube of an eagle swooping down and snatching a baby in what looks like a public park. With the YouTube video open in your browser, click on the plug-in icon, and then click “Open InVID.”

An InVID search gives you all sorts of information about the video, including when it was uploaded and some notable comments on it. The plug-in also breaks the video down frame by frame. This is useful for two reasons. First, you can use the buttons provided to do a reverse image search on the stills and see if they have appeared elsewhere. Second, you can look at the frames individually to see if anything suggests the video has been manipulated.

If you do that for frames of the YouTube video of the eagle snatching the baby, you’ll see a glitch where part of the eagle’s wing disappears. There are also several frames where a shadow appears out of nowhere, and in the wrong place. It turns out that the video has been doctored using computer-generated imagery, or CGI. There was no real baby snatching after all, but without the right tools, you might never know. That’s the power of reverse image search.

Thanks, Nina.

It turns out that a lot of the photos and videos you see on social media have been reused, and sometimes in a way that changes their meaning. Pictures also get purposefully altered to spread false information. Keep in mind that Label to Disable is your first line of defense. If an image or video provokes a reaction in you, pause for a moment and put language to the feeling. Then you can decide: share, don’t share, or verify? In many cases, you can use your reverse-image-search skills to determine if an image has been repurposed or if manipulation has taken place. Even when you don’t have time to do so or a search yields inconclusive results, however, you’ll know to be wary. Seeing is not necessarily believing.

It’s also important to remember the fast-changing nature of digital tools and techniques. A tool may quickly become improved, replaced by something else, or suddenly obsolete. Tools can be great, but there’s no substitute for your own good judgment. With all digital media, it’s important to Care Before You Share: You are the ultimate gatekeeper when it comes to preventing the spread of misinformation and disinformation.
This lecture explores two very different types of misinformation that both have an especially damaging effect on our social fabric: fake information and stereotypes. The three species of fake information this lecture focuses on are fake social media accounts, fake chat messages, and fake reviews. The lecture also provides some signs to look out for when it comes to stereotyping.
FAKE SOCIAL MEDIA ACCOUNTS

Social media platforms are all-too-convenient tools for spreading fake information because they are easy to access and use. There can be many reasons for people to spread misinformation in this manner, including political, financial, and recreational reasons. It’s often impossible to find out for each individual case.

To determine whether or not information on social media comes from an authentic person, there are a number of checks you can do. You may not arrive at a definitive answer. With that caveat in mind, here are the checks:

1. Start with Label to Disable. Pause for a moment, disconnect from what provoked the reaction, and put words to the feeling you are experiencing so you can regain control of your logical brain.

2. Look at the profile. Ask yourself: Did the user join recently? Do the user’s photo, handle, and screen name match, or do you find, for example, a woman’s picture with a man’s name? Discrepancies could signal that you are dealing with a bot. Additionally, anonymous users or those who provide very limited information are more likely to be bots.

3. Look at the user’s name. In some cases, a fake name may be almost indistinguishable from a real one.

4. Perform a reverse image search on the profile photo. Many fake profiles steal photos from real people.

5. Compare the number of users followed or shares to the number of followers or friends. If the account follows thousands of users or has thousands of shares but only has a handful of followers or friends, it could be a bot.

6. Most importantly, if you’re not sure about the information, don’t share it.

FAKE CHAT MESSAGES

Fake chat messages are another type of misinformation. For example, it is very easy to create fake text message exchanges. If you run into an image of a text chat on social media that provokes a strong reaction in you, first employ Label to Disable to get your rational brain in gear. Then, ask yourself: How would someone have obtained this chat? Are these really things that these people would likely say? If not, don’t share the chat.
FAKE REVIEWS
Fake product reviews can be a real problem for consumers. There are a few signs that tend to point to fake reviews. The following useful tips are based on an episode of National Public Radio’s *Planet Money* and on an interview with a computer scientist who specializes in fake review detection. (The scientist requested anonymity.)

1. Be aware that most reviews are not fake. The big online retailer and review forums all have teams dedicated to ferreting out fake reviews. However, it is a constant battle. Additionally, some fake reviews come from commercial companies themselves as they try to promote what they’re selling.

2. Ask yourself: Does the language of the review sound unnatural? Does it sound like it was taken from marketing material?

3. Are there non-obvious terms used in multiple reviews, as if those reviewers are following the same script?

4. Do the positive reviews all cluster around a small stretch of time?

5. Are there many reviews from new accounts?

6. Are the reviews clustered mostly around perfect and terrible ratings, with very few in the middle?

7. Play the numbers game: Trust a product with many reviews averaging four stars over one that boasts five stars but only has a handful of reviewers. Keep in mind that people do tend to complain more than they praise, so take negative reviews with a grain of salt.

8. Finally, be wary of using reviews to make decisions that require better evidence. For instance, it might not be worth taking a dietary supplement that may have dangerous side effects simply because it has positive reviews.

STEREOTYPES
Stereotypes make up one area where doubt and caution are particularly called. Most often, people create stereotypes about those who are least like themselves. People can also internalize and believe stereotypes about the groups they belong to.

People often use social stereotypes as a means to identify a person, relying on fixed signs of identity instead of the behavior of an individual to decide what to believe about the person.
Some of the signs of stereotyping to look out for, in yourself and others, are these:

1. Generalities. Some generalities frequently used describe people are dumb, smart, lazy, hard-working, cheap, greedy, criminal, drug- or alcohol-abusing, hypersexualized, and timid.

2. Belittling. Examples include calling a grown person “little,” “boy,” or “girl.”

3. Mocking—that is, making someone the butt of jokes.

4. Exaggeration and caricature.

5. Exoticizing. Even if the person who said it means it as a compliment, exoticizing someone has the effect of dehumanizing the person and making unwarranted assumptions about him or her.

6. Exclusionary language. This involves assuming that people are not part of your group. An example would be a white person assuming that a non-white person is not American.
DEALING WITH STEREOTYPES

The artist Alexandra Bell has deconstructed hidden stereotypes and biases in how certain stories about African Americans are reported in the news media, including in The New York Times. She points out that design elements as subtle as the size of a picture, where a story is placed in a layout, and the message that headlines send can shape perceptions of victims in subtle ways.

When you next come across some news reporting that focuses on a person or group that is commonly stereotyped, pause. Then, ask yourself some questions:

- Is there any message about a particular identity group contained in the story, even if it’s hard to immediately tell where the message is coming from?
- If one person’s racial group is identified, are other people’s racial groups identified as well? Is there a credible reason for race to be called out?
- Is the victim of a crime, such as a shooting, treated like a victim or treated like a suspect?
- Is the placement of a story or the length of time or number of words given to it justified by its importance to society?
- If the story profiles a family, does it assume that each of the parents should be playing a certain role relative to their gender?

If you are interested in delving further into your own hidden biases, consider participating in an online project designed to educate people about hidden biases and to collect data about those biases. You can find it at implicit.harvard.edu.

Mahzarin Banaji, the Harvard social psychologist who created the implicit bias test based on her research, said that she was surprised to discover her own race biases when she received her results from the test. Everyone has biases, but when we become aware of them, we become better able to choose how we want to think about and treat other people. Awareness of biases can also help identify and prevent the spread of biased information and hate speech.

SUGGESTED READING

Banaji, “Project Implicit.”

The New Yorker, “Rewriting Racist Headlines.”
In this lecture, we’re going to explore two very different types of misinformation that both have an especially damaging effect on our social fabric: fake information and stereotypes. These two topics aren’t inherently related, but when they’re combined, watch out!

Let’s consider fake information first. After international soccer star Diego Maradona fell ill during a soccer match in 2018, an audio recording claiming that he had died spread widely on WhatsApp, the messaging app with extremely wide global reach. Audio files are an increasingly popular way that people transmit messages to family and friends—that is, to people whom they trust and who trust them—because no typing is involved.

Hoaxes related to celebrity deaths are nothing new, but this one was especially virulent. That’s because WhatsApp is an encrypted service that enables users to communicate for free. Maradona reportedly offered a 10,000-dollar reward to help find the person who virtually “killed him” on the messaging service, but apparently to no avail. Trying to stanch the flow of rumors on its platform, in January of 2019, WhatsApp—which is owned by Facebook—began to limit the number of times that a message can be forwarded to individuals and to groups. That may have helped, but the problem with it—and all responses to hoaxes—is that they are always reactions after the harm has been done. There is no known way to fully anticipate and prevent the spread of fakes.

In this course, as I’ve mentioned, we are trying to avoid the term fake news, despite the fact that it has become quite popular. It’s an imprecise term, without a clear definition. Research shows that increasingly, people use the term in the same way some politicians do: to refer to facts that go against their political leanings or beliefs, or that they simply don’t like. In any case, there is plenty of fake information to be aware of, especially in the digital space. And let’s be clear: By fake, we mean fabricated; demonstrably false. We’re going to look at three kinds of fake information: fake social media accounts, fake chat messages, and fake reviews.
Social media are all-too-convenient tools for spreading fake information because they are easy to access and use; almost anyone can publish anything. In addition, they are relatively anonymous and enable the rapid spread of messages. The logic and standards that apply to journalists do not apply to most users of social media. Some of the misinformation on the internet gets spread via fake social media accounts, which aren’t what they appear to be. Sometimes a real person is behind the account, and sometimes it’s run by a bot. “Bot,” in case you don’t know, is short for robot. It’s a simple software application that is programmed to masquerade as a human.

Why would anyone create such a thing to spread misinformation? There can be many reasons—political, financial, recreational. It’s often impossible to find out for each individual case. But suppose you come across some information on social media that you find absolutely amazing and unexpected, and you want to know who posted it. How do you know if it even comes from a real social media account, representing a real person? There’s a number of checks you can do. Here are some of the most effective. But keep in mind, you may not get a definitive answer. Weigh up the evidence as you go.

1. As with everything you encounter online that provokes a strong reaction in you, start with Label to Disable, which we discussed previously. Pause for a moment, disconnect from what provoked the reaction, and put words to the feeling you are experiencing so you can regain control of your logical brain.

2. Look at the profile. Did the user just join recently? Do the user’s photo, handle, and screen name match, or do you find, for example, a woman’s picture with a man’s name? That could be the product of a bot. Also, anonymous users, or those who provide very limited information, are more likely to be bots.

3. Look at the user’s name really carefully. In some cases, a fake name may be almost indistinguishable from a real one. For example, it’s possible to type the Twitter handle @RealDonaldTrump using capital Is in place of lower-case Ls. There’s pretty much no way for you to tell the difference using your eyes alone, but there is a workaround. Type the username as it should appear into Twitter or Google and see if the post you’re looking for is still there. If it isn’t, the name you were looking at is bogus.
4. Reverse image search the profile photo. Lots of fake profiles steal photos from real people, which means that when we share their posts, we're not just sharing misinformation, but we might be hurting that real person, too. Be suspicious if your search turns up lots of different names. We discussed how to do a reverse image search previously.

5. Compare number of users followed or shares to number of followers or friends. If the account follows thousands of users, or has thousands of shares but only has a handful of followers or friends, it could well be a bot.

6. And most importantly, care before you share. If you're not sure about the information, don't share it.

Let’s try out our method for evaluating social media accounts with Nina Oduro.

We’re going to start with what appears to be an NBC News social media account on Twitter. Nowadays, most journalists as well as credible media outlets use Twitter and other types of social media. Imagine that your attention is drawn to the account by the following tweet that actually appeared. It reads, “Just Developed Neuro-Advanced ‘Limitless’ pill will go public in less than 24 hours.”

Immediately, you should be on your guard. The tweet stretches the limits of credibility. The idea of some kind of fantastic pill about to hit the market in 24 hours already seems designed to trigger a “Wow!” response, and the fact that you’ve probably never heard anything about the pill before should make you skeptical. So there’s reason to be cautious from the beginning. “Limitless” also refers to a movie and TV show featuring a character who took a pill that gave him special powers. It’s unlikely that a mainstream news outlet would use the term to refer to a genuine product.

The available information about the account indicates that it wasn’t started recently, and a reverse image search of the NBC News logo that appears there won’t tell us anything. But if you look at the number of followers of the account, you’ll notice that it’s around 1,500—a pretty small following for a major news network. Also consider the name of the account: NBC News Mind. Does NBC really have an account just for stories about the mind? If we Google “NBC mind,” we don’t find any unit by that name. On balance, then, there are several reasons to doubt the authenticity of this account.
Checking whether an account is fake is a fairly easy way of telling whether you should lower your trust in a particular piece of information. Just being aware that accounts can be fake and may have been created to push a certain agenda can get you thinking more critically about content you see on social media, and that’s always a good thing. It doesn’t mean that you should just simply doubt everything you see. But be prepared to turn on your analytical mind to assess the validity of a social media account before you believe a piece of information that it’s spreading.

Thanks, Nina.

Fake chat messages are another type of misinformation that seems to be gaining currency. Don’t be too concerned about chatting with someone on your own phone; if you have the correct number for someone you know, it’s probably them. When you see chats replicated online, though—especially if they’re supposed to be from famous people—be more suspicious.

For example, perhaps you have seen screenshots that purported to be text conversations involving a famous person, such as Justin Bieber or Donald Trump. How would you know whether these conversations are real or not? If you have a smartphone, there is a simple search you can do that will show you how easy it is to fake a text conversation. Just search for “fake iPhone chat.” You may be astonished at the results. If you are so inclined, you can create fake chats at iphonefaketext.com, ifaketextmessage.com, fakeimess.com/generator, or many, many other sites.

So if you run into an image of a chat text in social media that provokes a strong reaction to you, first employ Label to Disable to get your rational brain in gear. And then ask yourself: How would someone have gotten ahold of this chat? Are these really things these people would likely say? If not, don’t share the chat.

A third common kind of misinformation on the Web is fake product reviews, which can be a real problem for consumers. Many people read product reviews to decide whether or not to make a purchase online. It can be helpful to know the perspective of people like us, rather than marketers, who have actually tried out a product or service and don’t have anything personally to gain by persuading others of their opinion. However, reviews on sites may be faked, either as a prank, or by people who were paid for their reviews, or by someone who works for the company, trying to promote the product. We can become more savvy consumers by understanding how these fakes work.
There are a few signs that tend to point to fake reviews, and we should be aware of these. We’ve compiled the following tips based on an episode of NPR’s Planet Money and on an interview with a computer scientist who specializes in fake review detection, who requested anonymity.

First, be aware that most reviews are not fake. The big online retailer and review forums all have teams dedicated to ferreting out fake reviews because they undermine the retailer’s credibility. But they’re in an arms race with the fraudsters, so it’s a constant battle. The retailers can’t fend off all fake reviews. And of course, some fake reviews come from commercial companies themselves, as well; they’re trying to promote what they’re selling.

Ask yourself:

- Does the language of the review sound unnatural, like it was taken from marketing material?
- Are there non-obvious terms used in multiple reviews, as if the reviewers were following the same script?
- Do the positive reviews all cluster around a small stretch of time, like just a few days?
- Are a lot of the reviews from new accounts?
- Are the reviews clustered mostly around five stars and one star, with very few in the middle?

Play the numbers game: Trust a product with lots of reviews and only four out of five stars over the one that boasts five stars but only has a handful of reviewers. Also, keep in mind that people do tend to complain more than they praise, so take those negative reviews with a grain of salt. And finally, be wary of using reviews to make decisions that really require better evidence. Do you want to risk taking a dietary supplement that may have dangerous side effects, just because 70 people you don’t know say it worked for them?

These tips aren’t foolproof, so you can never be 100 percent sure of the veracity of a cell phone screenshot or an online review. Fortunately, other sources, such as quality news outlets, are still generally reliable. But it’s probably good to be in the habit of cultivating a little doubt at all times, and never be more than 99 percent certain.
One area where doubt and caution are particularly called for is that of stereotypes. Have you ever felt stereotyped? Most of us have. And we all stereotype others. We all have hidden biases, and we all form stereotypes. It’s actually part of how the human brain work—a mental shortcut that saves us time and energy—and in many cases, it’s useful. As psychologist Paul Bloom says, you would never ask a toddler for directions. Past experience (and common sense) tell us that most toddlers don’t know enough to help us find our way.

The problem with stereotypes comes when they dehumanize people or cause us to make false and unfair assumptions about their characters, their beliefs, or their abilities. Instead of seeing a person, we may just see one example of a type. And this blinds us to what a person is really like. Frequent stereotyping can lead to discrimination or even violence.

Although it’s not a flattering thing to admit about oneself, it’s important not to pretend that we never stereotype. Again, as human beings, we all engage in stereotyping. The important thing is to recognize harmful stereotypes and then work to counteract them. Most often, we create stereotypes about those who are least like us, but we can also internalize and believe stereotypes about our own group. We often use social stereotypes as a means to identify a person. We rely on fixed signs of identity instead of the behavior of an individual to decide what we believe about the person.

Some of the signs of stereotyping to look out for, in yourself and others, include:

- Generalities: “All African Americans are...,” “All women are...,” etc. Some generalities that you’ll hear frequently used include dumb, smart, lazy, hard-working, cheap, greedy, criminal, drug- or alcohol-abusing, hypersexualized, timid.
- Belittling: Calling a grown person “little” or “boy” or “girl.”
- Mocking, or making the butt of jokes.
- Exaggeration, caricature, such as big noses in the cartoons of Jews.
- Exoticizing: Saying, for example, an Asian woman looks “exotic” or depicting Native Americans as always engaged in spiritual rituals. Even if the person who said it meant it as a compliment, exoticizing someone has the effect of dehumanizing the person and making unwarranted assumptions about him or her.
Exclusionary language: Assuming that people are not part of your group. For example, a white person assuming that a non-white person is not American.

While many of these signs are so ingrained they can be hard to see, we can learn new skills and form new habits that work in our favor—that better align our actions with our values. Nina Oduro will take you through a powerful exercise that will give you a chance to reflect on the issue of stereotyping and on your own identity.

We call this exercise Identity Bubbles. Think about yourself for a moment. If you have a piece of paper, you can write down your name in the center of it. Imagine you are inside of a circle with different bubbles all around you. In each of the bubbles is a different aspect of your identity. Think about what these would be for you. These can be anything from your gender and sexual orientation to race, ethnicity, indigenous group, religion, immigration status, nationality, age, disability, to terms like “athlete,” “teacher,” “student,” “musician,” “activist”—any group or label that you identify with. Think of all of the different attributes that would identify you, and put each of them in a bubble. If you have a paper, you can draw the bubbles around your name and put a different aspect of your identity in each one. Do avoid personally descriptive adjectives like “hard-working.” Focus on identities, not attributes. Respond as thoroughly as possible.

Once you have finished, take a moment to reflect. If you wrote down identities on a piece of paper, take a look at the paper. Which identities do you want to play up and which do you want to play down? Why? Which are more apparent in certain circumstances, and which are more hidden? Which make you feel more vulnerable or excluded? Which bring you advantage and power? Consider that every person, of every background, has a collection of identities and a set of personal feelings about them.

We all have multiple identities that we use to describe ourselves. A lot of times, we might jump to conclusions about how to categorize someone, ignoring the many ways they themselves would describe their identity. Each of us can be considered “the other” by members of a different group. It’s also important to keep in mind that certain identities give us power in our society, while others can be used to exclude us. Just as you wouldn’t want to be othered or excluded by someone else, keep in mind that nobody else does, either.

Thanks, Nina.
People create stereotypes partly on their own, in addition to the influence of society and media. We internalize stereotypes, often without realizing it, when they get repeated over and over, even in subtle ways. Remember our discussion of the illusory truth effect? If we hear something many times, we are more likely to believe it, regardless of our initial reaction to the information. In some ways, this is our brain doing what it should be doing. When our ancestors stereotyped bears as dangerous creatures, they were right! But applying the same logic to humans often isn’t based on reality. Stereotypes can create or reinforce unequal power relations.

The persuasive power of the media makes it especially important to be aware of how stereotypes and biases play out in them. Often the influence of stereotypes is very subtle and can only be detected by looking at patterns over time. But if you know what to look for, you can start to detect the influence of media-reinforced stereotypes on your own thinking, as well as others.

Words and images that are spread through media can reinforce stereotypes and negative attitudes towards different groups and amplify divisive issues within and between groups of people. This negative impact may not even be intentional. Some of the stereotypes are so familiar we don’t even think twice about the messages embedded in them. These stereotypes can generate prejudice—literally, the prejudging of a person based on assumptions rather than real knowledge. Prejudice, in turn, forms the basis for unfair discrimination against a group or individual. And prejudice and unfair discrimination can lead to hate speech, a dangerous kind of communication that is threatening or abusive toward people in a particular identity group.

The internet, and social media in particular, has unfortunately provided an efficient mechanism for the widespread delivery of hate speech of all types. Hate speech is defined as content built on prejudices that is offensive, demeaning, or abusive against people in an identity group. While social media platforms have made some attempts to reckon with hate speech, responses thus far have not kept up with the scale of the problem. For example, a 2017 investigation by the nonprofit investigative news outlet ProPublica found that Facebook’s filters, meant to separate hate speech from other forms of expression, in fact had the biases of their programmers baked into the algorithms. So when Facebook began to take down so-called objectionable content, according to ProPublica, it “favored elites and governments over grassroots activists and racial minorities.”
At its most extreme, unchecked stereotyping and hate speech in the media can lead to violence. In these cases, stereotyping and hate speech are often combined with false accusations in a volatile mix that can spread like wildfire. There are too many horrifying examples in which mass medias played a critical role in disseminating the stereotypes and hate speech that helped clear a path to genocide. A famous instance from the 1930s and ‘40s is Nazi Germany’s use of every available form of media to paint a picture of Jews as dangerous and subhuman. This campaign helped to make the Holocaust possible.

In the 1990s, national radio broadcasts of the Rwandan radio station RTLM inflamed prejudices of Rwanda’s Hutus against the nation’s Tutsi minority—calling them cockroaches, among other slurs—leading to genocidal slaughter. In 2017 and 2018, Myanmar’s military made use of Facebook to incite genocidal violence against the Rohingya minority through anti-Muslim rhetoric, manipulative content, and rumor. We do not have time to do justice to the complexity of these terrible events, but the role of media in amplifying and spreading hate speech across many platforms cannot be ignored.

There are plenty of other, more everyday examples that demonstrate the kind of persistent stereotyping that can influence our own perspectives if we are not aware. News headlines, stories, photos, and even graphic design can subtly reinforce and play upon our biases, or otherwise make statements about bias in our society. For example, the race of an alleged criminal may be reported even though it had nothing to do with the crime, thereby creating an unwarranted association in our minds of criminal behavior with that person’s race.

Artist Alexandra Bell has deconstructed hidden stereotypes and biases in how certain stories about African Americans are reported in the news media, including *The New York Times*. She points out that design elements as subtle as the size of a picture, where the story is placed in a layout, as well as the message that headlines send can shape our perceptions of people in subtle ways. When you next come across some news reporting that focuses on a person or group that’s commonly stereotyped, pause. Ask yourself some questions:

- Is there any message about a particular identity group that I’m getting from this story, even if I can’t tell immediately where the message is coming from?
If one person’s racial group is identified, are other people’s racial groups also identified? Is there a credible reason for race to be called out?

Is the victim of a crime, such as a shooting, treated like a victim, or treated like a suspect?

Is the placement of the story, or the length of time or number of words that are given to it, justified by its importance to society?

If the story profiles a family, does it assume that each of the parents should be playing a certain role relative to their gender?

If you’re interested in delving further into your own hidden biases, consider participating in an online project designed to educate people about hidden biases and to collect data about those biases. You can find it at implicit.harvard.edu.

Mahzarin Banaji, the Harvard social psychologist who created the implicit bias test based on her research, said she was surprised to discover her own race biases when she got her results from the test. Again, these are biases that we all have, in one way or another. But when we become aware of them, we become better able to choose how we want to think about and treat other people, and we can help identify and prevent the spread of biased information and hate speech.

We tend—all of us, everyone included—to act as though we understand how our brains function. We all like to believe that we know how we behave, what motivates us, and how and why we make decisions. But there is so much we don’t understand. Imagine you were watching yourself as though you were a character in a movie, navigating social media and other types of information, reacting to the fake information, stereotyped material, and other misinformation that comes your way. You might be surprised, or even flummoxed, by some of your own decisions and actions.

It’s the condition of being human that makes us biased and makes us vulnerable to misinformation. That’s another reason why it’s important to Care Before You Share: to pause, to look critically at the information you’ve received, and to consider carefully what ideas you may be spreading by passing it on to other people.
Realistically speaking, it is neither desirable nor possible to check out all the information that comes your way. There is no simple trick that will help you spot misinformation all the time. However, you need to be ready to check out content that comes from unfamiliar sources, especially when it provokes a strong reaction in you. This lecture goes over several tools that will help you verify content.
CROSS-CHECKING

The most basic form of verification is called cross-checking. Cross-checking information simply means comparing the information you have found to information about the same topic in different sources to see whether all of the sources describe it in the same way. Cross-checking can be as simple as doing an internet search using Google or another search engine and then looking carefully at what comes up in your search. Skip any advertisements that come up and go beyond the first few results.

If you use Google, it’s important to remember that Google’s searches are guided by algorithms: computer-guided processes that tailor what will appear in search results based on your past search history, your internet habits, as well as advertising and marketing by different companies. That means your Google search won’t find everything on the internet that you ask for in a search; it will assemble a mixture of things it thinks you want to see and things it will profit from showing you, arranged in an order that the algorithm chooses.

Google is the dominant search engine on the Web, but it is not the only one. You may find it helpful to try others. DuckDuckGo is a search engine that doesn’t collect any data from the users that search on it, meaning that searches are not tailored and that your data is not sold to advertisers. This helps protect your privacy and can also help you break out of your information bubble.
LATERAL READING

Lateral reading is the skill that fact checkers use. The first step in lateral reading is to cross-check, but in a particular way. Don’t just look at other sites that the site you are examining links to. Instead, look at which sites link to the site under examinations. Are they reliable? Do they confirm the information?

Wikipedia is a good starting point for cross-checking and lateral reading. Wikipedia’s collaborative, self-regulating information platform overall works very well in verifying facts and minimizing bias: Users collectively act as a check on one another.

If you can, trace the origin of the claim you are trying to verify from website to website until you find its original source. Good journalists will be open and transparent about the steps they took to report a story, but others may simply provide a link to a website where they found information that they are reporting as fact.

Yet another element of lateral reading is to look up the website where the piece that you want to verify appeared. This can give you insights into their expertise as well as potentially ulterior motives for publishing the content.

One way to tell who runs a website is to look it up using a tool provided by ICANN. This allows you to see who it’s registered to, and when it was registered. ICANN is an international nonprofit that determines the internet’s system of domain names. The correct URL for an ICANN lookup is https://whois.icann.org/en. Be careful to avoid copycat sites.

PLAGIARISM

One of the challenges of the digital information age is that it’s easy to plagiarize content. However, there are some defenses against plagiarism. A simple first step to verify a piece of content and where it came from is to check the original publication date. Old stories often get recycled on social media, so look around on other sites to see when the one that interests you was first published.

The Internet Archive, at archive.org, is a great nonprofit resource that works to preserve and archive the web. It works through an open access tool called the Wayback Machine. Its work ensures that people can go back and find content that might have been changed or even deleted and see when something was originally published.
ABUSE OF STATISTICS

Statistics are especially subject to abuse. Fortunately, statistics are usually relatively easy to check. Here are some tactics you can use to verify evidence:

- Ask yourself: Does the stat seem too good to be true? It may well be. That is a good clue to check it out.
- Think about the numbers involved. Do they support the argument being made? Do they make sense?
- If a link or name of a source document or organization is given in the article where the stat appears, cross-check. Click the link or use Google to try to find the document in question.
- Review the source document to substantiate whether it actually says what the article claims it says.
- Use lateral reading to learn about the author or source of the article. Then ask yourself: Does the author or source organization have the authority and expertise to provide that information?
- Google or search the organization’s website for additional information.
- If you still have doubts, try to identify a reputable source for checking the information elsewhere.
You can find helpful and reputable sources for a wide variety of statistics that you might want to research. For example, http://Iseek.com is a specialized search engine that allows you to look across thousands of preapproved sources, including universities, governments, and nonprofits, on a wide variety of academic topics. For data involving the sciences, try the Library of Congress’s Science Reference Services, which offer a list of reference guides on a wide variety of scientific topics. If you need to verify figures about countries, including their people, history, government, and economy, go to the CIA World Factbook.

EXERCISE: VERIFY THIS!

This lecture’s activity asks you to look at a couple of articles and consider key ways to judge a piece of content based both on its sources—people the journalist or author talked to—and the citations of documents, such as reports, legislation, emails, video, and audio. As you work through the following worksheets, think about when an article needs sources and when it needs citations.

While the lecture asks you to practice with web-based articles, this set of questions can be used for video, TV, radio, reporting on social media, and other kinds of content. If you want to practice with more articles beyond the two in this lecture, you can find additional copies of the worksheet at the back of the guidebook.

ARTICLE 1:


EXERCISE WORKSHEET FOR ARTICLE 1

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<td>Does the article refer to people who served as sources? Is this needed in this article?</td>
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<td>Are the sources and citations multiple, or is only one source or document used throughout?</td>
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<td>Questions</td>
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<td>Does the article accurately describe the sources and citations it is using?</td>
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<td>Can the sources used be trusted to be independent and not distort the truth to serve their self-interest?</td>
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<td>Are the sources named, or are anonymous sources used? If the latter, is there a good reason provided for the anonymity?</td>
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<tr>
<td>Does the person quoted have good evidence for what they're saying? Would you expect them to be an authority on that topic?</td>
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“answers” on page 84

**ARTICLE 2:**


**EXERCISE WORKSHEET FOR ARTICLE 2**

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<td>Does the person quoted have good evidence for what they’re saying? Would you expect them to be an authority on that topic?</td>
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</tbody>
</table>

“answers” on page 84:

**SUGGESTED READING**


Vigen, “Spurious Correlations.”

**CREDIBLE REFERENCE SOURCES**

**American FactFinder.**

https://factfinder.census.gov/.
Contains US Census data, including information on age, income, housing, industries race, country of origin, poverty, and education.

http://Archive.today or http://archive.fo/.

**CIA World Factbook**

Includes facts about countries, including their people, history, government, and economy, plus maps and flags of the world.

Congress.gov, Senate.gov, and House.gov. These provide good historical government data.
FBI. “Crime in the United States.”
Contains More recent data on crime rates in the U.S.

ICANN's Whois lookup.
https://lookup.icann.org/.

Iseek.
A specialized search engine that allows you to look across thousands of preapproved sources.

National Security Archive.
https://nsarchive.gwu.edu/.
A depository for over 30 years of declassified US government documents.

http://www.loc.gov/rr/scitech/.
A list of reference guides on a wide variety of scientific topics.

Sourcebook of Criminal Justice Statistics.
https://www.albany.edu/sourcebook/.
Information on crimes, arrests, prosecutions, and prisons, including some long-term trends.

Data on employment and unemployment, pay, and inflation.

The Wayback Machine.
http://web.archive.org/.

World Bank Data.
Free access to vast amounts of data on global development.

DIFFERENT BROWSERS TO TRY
Bing: https://www.bing.com/.
Dogpile: https://www.dogpile.com/.
DuckDuckGo: https://duckduckgo.com/.
Google: https://www.google.com/.
Yahoo: https://www.yahoo.com/.
ANSWERS FOR ARTICLE 1:

The article uses a number of sources and citations. The sources are an executive (via a statement), the president of the Cooper’s Ferry Partnership, and a Camden city spokesman. The citations include a CNN article, a study on bikeshare programs, a previous NJ.com article, and a Rutgers University announcement. Most of these are linked.

The article accurately describes its sources and citations, and all could be expected to be authoritative on the topics they’re speaking to. There are no anonymous sources. Some of the sources might be expected to have their own interests at heart, but these do not overwhelm the story. For example, the company official is no doubt trying to put a positive spin on the situation, but his is far from the only voice in the piece.

For future reference: It is not necessarily a bad thing if an article lacks citations. Sometimes, all the information comes from talking to people, rather than from documents that can be linked to. However, where a story does rely on written or recorded evidence, you can have more confidence if those citations are provided.

ANSWERS FOR ARTICLE 2:

This article uses sources and citations poorly. The main point is based on the words of the anonymous “CDC doctor” quoted at the beginning. We are not told why this source must remain anonymous. Then, the article refers generally to “scientists” and “many health officials.” Citing information to the CDC directly is better, but there is no link for us to verify. This wouldn’t by itself be a huge problem, but we should already be doubting this story highly because of its reliance on an unjustified anonymous source. As the story goes on, it finds some better sources for a couple of points, such as the 10 percent effectiveness claim. However, the article then makes many claims with no support at all, with one example being this: “It is now a known fact that flu vaccines contain mercury.” Another huge problem with this article is that much of it is opinion—a reason to doubt the writer’s motives and thus the truth of the piece overall.
How do we know what we know? When you encounter new information online, how can you determine whether to believe it or not? In this lecture, we’re going to look more closely at how good journalists do their work. In this way, you will have a better appreciation of the basis for properly researched stories that you may read online, and you can apply journalistic methods to determine the truth of any content you encounter.

First, though, let’s review the critical difference in journalism—and every other walk of life—between fact and opinion. This may seem like an obvious distinction, and it’s easy to take it for granted. But in this day and age, when opinion is often presented as fact, and facts that are presented may be dubious, it’s important to remind ourselves of the basic definitions before we start exploring techniques of verification.

An opinion is a belief or point of view. It might or might not be based on facts. You can’t demonstrate that an opinion itself is true or false, so any effort to verify it is an exercise in futility. For example, it’s my opinion that California is the best state for a vacation. Now, I can hold that opinion regardless of what the facts may indicate, and only I can know whether what I state as my opinion is what I truly believe.

A statement of fact, in contrast, is something you can show to be true or false. You can check its accuracy, and you can demonstrate its truth or falsehood to someone with evidence. Factual statements about California include the number of beaches and the average temperature. I can support my opinion about California with these factual statements, but they have independent validity. Statements of fact can, of course, be false. “The population of the United States is 1 billion” is a false statement of fact, because it makes a claim that we can check and discover to be false. It is not an opinion; it is an incorrect statement. We are entitled to our own opinions, but not to our own facts.
In American journalism, as I’ve mentioned previously, it was long considered important to label an opinion piece, in which an author is arguing a specific view, as such. In newspapers, opinion pieces are traditionally published separately from articles devoted to factual reporting. Nowadays, however, you may have observed that some news outlets present commentary—which is really just another term for an opinion piece—framed as though it were factual reporting. You have also certainly come across what’s called spin—a form of propaganda that selects and frames certain facts to support one point of view or another. Of course, an opinion piece, a piece of commentary, or a bit of spin all routinely include facts along with the opinions of the author. Those facts are there for a purpose, however: to persuade you of the author’s opinion. Even if the facts are accurate, the author may have omitted other facts that do not support his or her opinion. Unless you can distinguish the facts from the opinion and consider them separately, you’re being persuaded without even being aware of it.

Quality journalism is based on facts. Journalism, like science, asks questions about the world to try to produce a better body of knowledge about it and how it works. Journalists’ data collection is derived from sources, as well as data and research and observation. These days, even the best journalists use social media as sources for stories, but they go through processes of testing and verification of the information in order to vet it.

Realistically speaking, it’s neither desirable nor possible to check out all the information that comes our way. And there’s no simple trick that’s going to help us spot misinformation all the time. But you need to be ready to check out content that comes from unfamiliar sources, especially when it provokes a strong reaction in you. When searching for the truth of a matter, you have to act a bit like an art restorer working with the shards of an ancient vase. You may not have a coherent picture in your mind of how it all fits together at the outset, but if you keep assembling it piece by piece, its shape will eventually emerge.

The most basic form of verification is called cross-checking. Cross-checking information simply means comparing the information you’ve found to information about the same topic in different sources to see whether all the sources describe it in the same way. Cross-checking can be as simple as doing an internet search using Google or another search engine and then looking carefully at what comes up in your search. Skip any advertisements that come up, going beyond just the first few results, and even going beyond the first page of results.
If you use Google, it’s important to remember that Google’s searches are guided by algorithms: computer-guided processes that tailor what will appear in search results based on your past search history, your internet habits, as well as advertising and marketing by different companies. That means your Google search won’t find everything on the Web that you ask for in a search; it will assemble a mixture of things that it thinks you want to see and things it will profit from showing you, arranged in an order that the algorithm chooses.

Google is the dominant search engine on the Web, but it’s not the only one. You may find it helpful to try others. Duck Duck Go is a search engine that doesn’t collect any data from the users that search on it, meaning that searches are not tailored and that your data is not sold to advertisers. This helps protect your privacy and can also help break you out of your information bubble so that you get results beyond just those that an algorithm expects that you want based on your past preferences. Duck Duck Go also has other convenient features, such as the ability to filter by region of the world, time, and level of mature content.

To compare other types of results, you can also try searching on other search engines that, like Google, do collect user data to tailor search results. For example, you might try Bing, Dogpile, or Yahoo. Comparing the results you get from searching the same key words across different platforms can give you some insight into the kinds of algorithms each engine has.

If you want to dig a little deeper than simple cross-checking allows, the skill you need is called lateral reading. This is the skill that fact checkers use. It builds on cross-checking but involves other kinds of verification as well. In his guide *Web Literacy for Student Fact Checkers*, author Michael A. Caulfield offers an excellent summary of the context that makes this necessary. It’s worth quoting at length. Caulfield writes:

> When you start to read a book, a journal article, or a physical newspaper in the “real world,” you already know quite a bit about your source. You’ve subscribed to the newspaper, or picked it up from a newsstand because you’ve heard of it. You’ve ordered the book from Amazon or purchased it from a local bookstore because it was a book you were interested in reading. You’ve chosen a journal article either because of the quality of the journal article or because someone whose expertise and background you know cited
it. In other words, when you get to the document you need to evaluate, the process of getting there has already given you some initial bearings.

Compared to these intellectual journeys, web reading is a bit more like teleportation. Even after following a source upstream, you arrive at a page, site, and author that are often all unknown to you. How do you analyze the author’s qualifications or the trustworthiness of the site?

Lateral reading is the answer to the question that Caulfield raises. Most people naturally move vertically in a website, scrolling up and down, looking at the “About” page, and looking within the site itself to try to find clues as to how reliable it is. But a site that’s not credible will try to hide that fact from its readers. So the first step in lateral reading is to cross-check, but in a particular way. Don’t just look at the other sites that the site you are examining links to. Instead, look at which sites link to your site. Are they reliable? Do they confirm the information?

Wikipedia is a good starting point for cross-checking and lateral reading. Wikipedia’s collaborative, self-regulating information platform overall works very well in verifying facts and minimizing bias. Users collectively act as a check on one another. The platform itself lets the reader know when an entry is not up to Wikipedia’s standard of fact-based credibility, and the content should be approached with caution. While in its early days, Wikipedia was not considered trustworthy, about two decades in, you can count on it as a first stop for reliable information.

If you can, trace the origin of the claim you are trying to verify from website to website until you find its original source. Good journalists will be open and transparent about the steps they took to report a story—that is, where the information came from—but others may simply provide a link to a website where they found information that they are reporting as fact. It’s always a good idea to read the most original reporting, because it allows you to see what steps the journalist who did that original work took to corroborate the information. It also lets you see whether other people have added new layers of interpretation onto the information since.

Another valuable technique in lateral reading is to look for information about the author of the piece you are trying to verify. If you have the author’s name, put it into your search engine to see what else the author has written and what more you can find out about his or her opinions, affiliations, and background.
Yet another element of lateral reading is to look up the website where the piece that you wanted to verify appeared. This can give you insights into their expertise (or lack of it), as well as potentially ulterior motives for publishing the content. One way to tell who runs a website is to look it up using Whois. This allows you to see who it’s registered to and when it was registered. The correct URL for a Whois lookup is whois.icann.org. That’s spelled W-H-O-I-S dot I-C-A-N-N dot O-R-G. The site is run by ICANN, an international nonprofit that determines the internet’s system of domain names. Be careful to avoid copycat sites like whois.net.

You don’t always need to follow each of the steps that I’ve just described; in certain cases, just one or two may suffice. But if you master the tools of lateral reading, you’ll be able to chase down the truth of many of the claims that you encounter online. Let’s try some lateral reading with Nina Oduro.

Let’s say you’re scrolling through your Facebook feed and come across a post relating to cannabidiol, or CBD, an active ingredient in marijuana that some people believe has health benefits. The headline reads, “Ben & Jerry’s to Start Selling CBD-Infused Ice Cream as Soon as Possible.” It seems interesting, but you want to know whether it’s really true. What should you do?

If you click on the link, it will take you to a website called The Mind Unleashed and an article written by Emma Fiala. If you have the plug-in NewsGuard installed in your browser, as Tara suggested previously, you will see that NewsGuard’s journalistic “nutrition label” rates the site negatively on all its nine categories of journalistic integrity. NewsGuard’s overall summary is: “Proceed with caution: This website severely violates basic standards of credibility and transparency.”

Nonetheless, you may be curious about the topic. Suppose you scan through the article to pick out some of the basic facts that it’s reporting. The article discusses plans for the ice cream manufacturer to develop an ice cream with cannabis compounds pending FDA approval of CBD. It discusses Ben & Jerry’s activist history and provides some background into the current boom in CBD products and their legal status. It also displays a mock-up of a pint of the frozen treat labeled “CBD TBD.”

The next step is to investigate using lateral reading. First, open up more tabs on your browser and see what else you can find about the sources for the article. The article provides a number of links to other sites, including the Ben & Jerry’s website; what the article
calls a “press release” (which is actually a similar-sounding article on the website MassLive.com); various news media websites; and US government records on upcoming hearings about CBD. See what you can learn from these sources.

Next, do a search to see what other articles come up about the topic and whether or not they verify the author’s central argument. If you search for “Ben & Jerry’s CBD,” you’ll find articles from various news sources and the actual statement from the Ben & Jerry’s website. As it turns out, the statement was quoted accurately and is the source of the photo of the pint of ice cream with the CBD label. The statement affirms the company’s interest in what it calls “groovy” things. It says that CBD is “on trend”—meaning it’s something customers want—and that Ben & Jerry’s is committed to what it calls “values-led” sourcing of its ingredients. The company’s actual plans are a bit vague, though; Ben & Jerry’s states that it is “open to bringing CBD-infused ice cream to your freezer as soon as it’s legalized at the federal level.” So it’s not like it’s something they are already planning to do.

A number of related articles also come up in your search, many of which are credible. They range from People magazine to Fox News to local newspapers. Most of these cite the press release. They also cite some earlier reporting about Ben & Jerry’s activism and company culture and different examples of state and federal progress (or lack thereof) on legalizing cannabis-derived products.

The online version of The Burlington Free Press, which reports from Ben & Jerry’s home city in Vermont, has one of the more nuanced reports. Its story is entitled, “Ben & Jerry’s isn’t selling CBD-infused products (yet) but other companies are. Here’s why.” This article actually includes original reporting on other CBD-infused food products (including ice cream, at another company), an analysis of the complicated path to legalization, and even a video explainer about the medicinal purposes of CBD.

So what have you learned from lateral reading? It seems that the original article you saw contained some things that are definitely true but left some important things out. If you had read only that article, you wouldn’t have had a very full or accurate picture of its subject. But thanks to lateral reading, you’ve been able to make an independent assessment of it. You’ve verified the article’s basic claims, surfaced some of its shortcomings, and developed for yourself a more credible version of the story.

Thanks, Nina.
One of the challenges of the digital information age is that it’s easy to reuse content, or even just copy and paste an entire body of text into one’s own work without referring to the original work or giving the original author any credit. The word for that, as you probably learned in school, is plagiarism, and it’s still as wrong as it ever was. But now that it can be done so easily, what defense is there against it?

A simple first step to verify a piece of content and where it came from is to check the original publication date. We tend to assume that what we see on social media or in the news is new. If the event described actually happened years ago, this places the event in a very different context and can change how we feel about it. Old stories often get recycled on social media, so look around on other sites to see when the one that interests you was first published. The UK’s Guardian newspaper put a simple practice in place to try to stem misinformation coming from out of date stories. In April 2019, the online paper began prominently marking the date of old publications in yellow.

What if you have a hunch that an author has taken the text in his or her article from somewhere else, but you can’t locate the original site? It could be that the text previously appeared on the Web but no longer does. The internet archive, at archive.org, is a great nonprofit resource that works to preserve and archive the Web through an open-access tool called The Wayback Machine. Its work ensures that people can go back and find content that may have been changed or even deleted and see when something was originally published. Using archival tools like The Wayback Machine or archive.today (another tool which stores snapshots of individual web pages in response to user requests), you can explore not only internet history but also the history of a particular article.

If you want a handy way to remind yourself about the questions to ask about a suspect piece of information, fall back on the five Ws: who, what, when, where, and why. Ask yourself: Who wrote it? What other sources have reported on the topic? When was it created? Where else can you find information about it? And why did its creator publish it?

Of course, often we won’t have the time or interest to behave like a fact checker. We tend to dig very deeply into something only if it’s a topic we really care about. We are lucky that in the US, there are a number of fact-checking websites that can help us do a quick check of the most widespread rumors, hoaxes, and manipulative content.
Before the internet age, fact checkers worked at publications and news outlets anonymously and under the radar. Today, with so much content about that has uncertain provenance, fact checking has become a journalistic activity in its own right.

A lot of people associate fact checkers with politics, but fact checkers verify and debunk information in many areas beyond the political sphere. For example, there are fact checkers who investigate scientific claims (one is called SciCheck; it’s run by FactCheck.org). Some investigate all manner of hoaxes and wild claims (such as Snopes.com), and others verify claims about celebrities (for example, Gossip Cop). True fact checkers do not have political agendas or motivations, and they come from across the political spectrum. For example, one former Tea Party activist, Felicia Cravens, has created a Facebook page called Unfakery, where she posts fact checks and encourages people of all political stripes to debunk falsehoods regardless of whose political agenda they support. We encourage you to check out Unfakery as well as the other sites I’ve mentioned. You can find them, as well as others, listed in the guidebook for this course.

One kind of factual evidence that is especially subject to abuse is statistics. There’s something about numbers that makes them especially convincing, even when our rational brains know better. Can you think of any examples of a dubious statistic that you’ve heard repeated? How about “We only use about 10 percent of our brains”? This one is so often repeated that we may take it to be true, even though it’s off by 90 percent! Fortunately, statistics are usually relatively easy to check. Here are some tactics you can use to verify evidence.

- **Ask yourself:** Does the stat seem too good to be true? It may well be. That’s a good clue to check it out.
- **Think about the numbers involved.** Do they support the argument being made? Do they make sense?
- **If a link or name of a source document or organization is given in the article where the stat appears,** cross-check! Click the link or Google to try to find the document in question.
- **Review the source document to substantiate whether it actually says what the article claims it says.**
Use lateral reading to learn about the author or the source of the article. Then ask yourself: Does the author or source or organization have the authority and expertise to provide that information?

Google or search the organization’s website for additional information.

And if you still have doubts, try to identify a reputable source for checking the information elsewhere.

You can find helpful and reputable sources for a wide variety of statistics that you may want to research. For example, Iseek.com (that’s I-S-E-E-K dot com) is a specialized search engine that allows you to look across thousands of pre-approved sources, including universities, governments, and nonprofits, on a wide variety of academic topics. For data involving the sciences, try the Library of Congress’s Science Reference Services. It offers a list of reference guides on a wide variety of scientific topics. If you need to verify figures about countries, including their people, history, government, and economy, go to the CIA World Factbook. We’ve included a list of the websites for these and many other trustworthy reference sources in the guidebook for this course.

If you’d like to practice verification, see the guidebook for a chart to help prompt your questioning and a couple of sample articles to practice on. Once you’ve gone through the exercise a couple of times, you’ll become accustomed to asking yourself basic verification questions when you encounter new information.

Perhaps no statistics are as memorable as the ones we see illustrated visually, whether in graphs, charts, or some other form. Visuals can enhance our ability to remember information, which is why we have to be especially careful in our assessment of the visual presentation of data. One example of how data can be presented in misleading ways is the common bar chart. When you look at a bar chart with numerical values on its vertical scale, always make sure that the lowest number on the scale is zero. If it isn’t, beware. This will skew how you interpret the data, as you can’t see the entire length of the bars.

Also examine the values on the horizontal scale and compare them to the spacing between the chart’s bars. The spacing of the bars should accurately represent the horizontal bar’s values. Let’s say the horizontal bar represents intervals of time and the spacing between the bars is even, but the time intervals on the horizontal
bar are irregular: Some months are given more space than others, some months are omitted, and so forth. That means apples are not being compared to apples. There’s no good reason to design a bar chart that way unless you are trying to disguise what the data really show. So when you see such irregularities, beware!

Another common problem in data presentation is when charts or pictures are not drawn to scale. This can give a misleading sense of how big something is in relation to something else. A good example of this is the typical world map, the kind you see everywhere. It’s called a Mercator projection map after the 16th-century Flemish cartographer who created it. Any map that depicts the surface of the spherical earth as a flat sheet is going to create some distortions, but the Mercator map significantly distorts proportions. Thanks to that map, many Americans have grown up believing that the United States is at least half the size of Africa. In reality, Africa is several times the size of the US; it’s possible to fit the area of the United States, China, India, Pakistan, Iran, and much more within it.

The same kind of misimpressions can be created by a lack of proper scale in two or more items presented in a graph or chart. Unless you are alert to the possibility of such distortions, you can quickly be persuaded by data that the data may mean something very different from what the actual numbers indicate. In a sense, then, visual representation of data can be a lot like a piece of commentary on a website or in a magazine. It may present facts, but it may be trying to create a particular impression about those facts. You need to differentiate between the data and the presentation to know whether or not you’re being influenced.

When you roll your sleeves up and start getting into the weeds, checking out a claim can be a little daunting. But you don’t have to commit every reference website to memory or do a perfect fact check every time. The most important thing is just to be a bit more cautious before accepting the claims you encounter, and, once again, to check them out before passing on what could be misinformation to others.
Science and health news can be confusing and frustrating. Part of the reason is that is the very nature of science itself. Scientific knowledge is always changing; new discoveries are constantly rendering previous beliefs obsolete. At the same time, when the great weight of the evidence favors a particular conclusion, there is good reason to believe it. The news media do not always do a good job of explaining scientific findings or putting them in proper context. They also compete for the public's attention with misinformation, which sometimes comes from parties whose interests are threatened by what researchers have found. This lecture looks at how to distinguish the news you can trust from the news you can’t.
THE SCIENTIFIC METHOD

To start, it’s important to have a clear understanding of the scientific method. Robert Niles, writing in the Online Journalism Review in 2011, summarized it nicely in seven steps:

1. Find a topic or question worth exploring.
2. Do some initial background research to learn about your topic or question. Read what has been written before.
3. Come up with a hypothesis. This is your best guess of what happened, what is happening, or what will happen based on what you already know.
4. Test your hypothesis. Do this by collecting data, either through controlled experimentation or observation.
5. Look at and analyze your data.
6. Based on your analysis, either accept or reject your hypothesis.
7. Publish your information, including all relevant details on how you collected and analyzed your data.

SCIENCE AND HEALTH NEWS WORKSHEET

The below worksheet is designed to help you vet the scientific validity of reported science and health news. Most of the items on it summarize tips from Health News Review, a health journalism watchdog, and from Africa Check, a fact-checking organization.

When you read a story on a science or health topic, ask yourself the following questions. There are copies of a stripped-down version of this worksheet at the end of the guidebook.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Notes</th>
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<tr>
<td>Does the story use hyperbolic language? Rarely do scientific studies yield true “breakthrough,” “revolutionary,” or “game-changing” treatments. Science tends to gain knowledge in small steps.</td>
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<tr>
<td>Questions</td>
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<tr>
<td>What other studies have been done? Good scientific research takes account of the work of others. It might support that work or challenge it, but it doesn’t ignore it.</td>
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<tr>
<td>What was the sample size? If this was a health study, how many people participated in it? Statistically, data from hundreds or thousands of people is generally more reliable than data from just a few people. Smaller studies involving just a few people are often just pilot research that is conducted to determine whether doing a larger study makes sense. Any good science or health reporter should know that the results of such pilot studies carry little weight on their own. And if a news story relies on anecdotes alone, that’s even less reliable—the sample size is even smaller than you’d find in any scientific study. Anecdotes in a news story can serve to illustrate a problem or a point, but taken by themselves, they yield terrible data.</td>
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<td>Did the study involve mice or people? Many medical studies are conducted on rodents first. This lays the groundwork for human studies, but a certain effect in mice may not appear in people.</td>
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<tr>
<td>Questions</td>
<td>Notes</td>
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<tr>
<td>Do the reported findings show causation or mere correlation? Two things can be correlated, or systematically associated, without one causing the other.</td>
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<td>If the story is about a medical treatment, does it talk about cost and availability? If a treatment is too expensive for most people to use, it may not make much difference.</td>
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<td>Does the story provide details on a treatment’s benefits and harms?</td>
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<td>Regarding benefits: How effective is the treatment? Is this quantified?</td>
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<tr>
<td>Regarding harms: Few treatments are without their side effects. What are these? What about potential interactions with other drugs? If these are not mentioned, the article isn’t very trustworthy.</td>
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<tr>
<td>Is the story engaging in disease-mongering? Sometimes a story will exaggerate the severity of a condition or medicalize what is actually a normal state of health.</td>
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<td>Questions</td>
<td>Notes</td>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td>Is the article based on research that was published in a reputable scientific journal? Real scientific journals have a rigorous review process to try and make sure studies were carried out well and results are accurate. However, just as there are fake news publishers, there are fake journals.</td>
<td></td>
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<tr>
<td>Who funded the research? Be careful of conflicts of interest.</td>
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**HEALTH NEWS EVALUATION CHART AND SAMPLE ARTICLES**

If you would like to practice looking for those markers in reporting or digital content, you can use the following chart to help prompt your questioning. There are also sample articles to practice on. Once you’ve gone through the exercise a couple of times, you will become more accustomed to asking yourself basic verification questions when you encounter new science and health information. There are additional copies of this chart at the back of the guidebook.

<table>
<thead>
<tr>
<th>Other studies mentioned?</th>
<th>Bad</th>
<th>Average</th>
<th>Good</th>
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<td>Sample size?</td>
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<td>Mice or men?</td>
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<td>Correlation or causation?</td>
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<td>Cost and availability?</td>
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<td>Benefits and harms?</td>
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<td>Is it new, and is that good?</td>
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<td>Disease-mongering?</td>
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<td>Real journal?</td>
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<td>Who funded?</td>
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**SAMPLE ARTICLES FOR PRACTICING VERIFICATION TECHNIQUES**

1. **“Sleep Apnea Patient Finds Rest with Implant Device.”**

2. **“Scientist Edge Closer to a Blood Test to Detect Cancers.”**

3. **“Three-in-One Pill Shows Promise in Beating High Blood Pressure.”**

4. **“How Barbershops Could Help Lower Blood Pressure.”**

**SUGGESTED READING**

Goldacre, “Battling Bad Science.”

National Academy of Sciences, “Answers to Everyday Science and Health Questions from the National Academies.”
CREDIBLE SOURCES FOR HEALTH AND SCIENCE INFORMATION

Africa Check. “7 Steps to Detect if Someone Is Talking Science Nonsense.”
Source for tips on verifying science news.

Beall’s List of Predatory Journals and Publishers.
https://beallslist.weebly.com/.
Which supposedly scientific journals may have been flagged as unreliable? Check here for predatory and vanity publishers.

Centers for Disease Control and Prevention.
https://www.cdc.gov/.
Tracks the spread of infectious disease in the US and provides information on a variety of health topics.

Cochrane Library.
Reviews thousands of studies to provide overviews of current scientific findings on health topics, presented in layman’s terms.

FDA.
https://www.fda.gov/home/.
US agency that regulates drug approvals and many food products. The FDA also regulates nutritional labeling.

Health News Review.
https://www.healthnewsreview.org/about-us/review-criteria/.
Source for tips on verifying health news.

USDA.
U.S. agency that regulates safety of meat and egg products.

Reliable sources of information on disease and injury, including symptoms, prevention and treatments.

World Health Organization.
https://www.who.int/.
Tracks the spread of infectious diseases around the world.
Scientific and medical research play increasingly important roles in our lives, which means that the accuracy of what we read and hear about them is increasingly important as well. How can society make good decisions on complex subjects such as global warming, environmental protection, public health, or genetic engineering if we can’t trust what’s reported about them?

And yet, we seem to be bombarded by contradictory information about these fields. News about nutrition seems particularly inconsistent and subject to trends. Is the Atkins diet good for you, or not? How about the Paleo diet? Should you be on a low-fat diet? What about a high-fat diet? What’s healthier: butter or margarine? Should you use sugar substitutes or avoid them?

Part of the reason science and health news can be so confusing and frustrating is the very nature of science itself. Scientific knowledge is always changing, and by its nature, it is uncertain; new discoveries are constantly rendering previous beliefs obsolete. At the same time, when the great weight of evidence favors a particular conclusion, there’s good reason to believe it. The news media don’t always do a good job of explaining scientific findings or putting them in proper context. They also compete for the public’s attention with misinformation, which sometimes comes from parties whose interests are threatened by what researchers have found.

Let’s take a close look at how to make sense of science and health news and how to distinguish the news you can trust from the news you can’t. To start, it’s important to have a clear understanding of the scientific method. Robert Niles, writing in Online Journalism Review in 2011, summarized it nicely in seven steps:

1. Find a topic or question worth exploring.

2. Do some initial background research to learn about your topic or question. Read what’s been written before.
3. Come up with a hypothesis. This is your best guess of what has happened, what is happening, or what will happen, based upon what you already know.

4. Test your hypothesis. You can do this by collecting data, either through controlled experimentation or observation.

5. Look at and analyze your data.

6. Based on your analysis, either accept or reject your hypothesis.

7. Publish your information, including all relevant details on how you collected and analyzed your data.

Notice the open-mindedness that the scientific process requires. To find a topic or question to explore, a researcher needs to begin with curiosity, which requires the researcher to accept that what he or she knows isn’t all there is to know. The researcher needs to come up with a hypothesis for why things are the way they are, but needs to be open to the possibility that the facts won’t bear that hypothesis out. After publishing research findings, the researcher needs to be open to the possibility that other research may prove those findings wrong, just as other researchers need to be open to the possibility that the findings may be right.

Even once research findings are widely accepted, scientists still often refer to knowledge they derive from them as theories. Gravity, for example, is referred to as a theory, even though we all know that there’s only one direction an apple is going to fall from a tree. That’s because for all we know about gravity, there’s still more we don’t know, and things that we think we know could still be proven wrong. From start to finish, the scientific method demands humility, honesty, and transparency in order to achieve reliable results. Exaggeration or suppression of research results, or unsupported claims about what they could mean, are all completely contrary to the purpose and spirit of the endeavor.

Interestingly, Robert Niles argued that the work of the best journalists takes largely the same approach as that of scientific researchers. Like scientists, journalists develop hypotheses about why things are the way they are, and then they test those hypotheses by collecting data from sources, observation, public records, and so forth. Today, they often use social media as a source of information, although doing
so always requires verification. Then journalists publish their findings—and again, like scientists, they need to be open to the possibility that those findings are incorrect.

Unfortunately, not all journalists have a good understanding of the scientific method, and much of the public misunderstands it as well. My colleague Nina Oduro will help us think through the process.

Many people think of the scientific method as something that only scientists and other researchers use. But whether you realize it or not, you actually use it quite often in your day-to-day life. It’s really just a methodical approach to solving problems and building your knowledge of something that you want to understand. For example, let’s say your car won’t turn on. What do you do?

Well, suppose you look closely at the car and you find no signs of life. There is no sound of the engine turning over, and the lights on the dashboard don’t come on. So you might check first to see if the battery is working. Maybe you can borrow a tester for the battery, or you might check the alternator.

That all probably sounds pretty straightforward, but if you think about it, you have just developed and tested two hypotheses. Your first hypothesis is that the battery is dead. Through observation and testing, you may rule out the first hypothesis. Your second hypothesis is that your alternator may have gone bad. You can test that hypothesis, too, to see if you are correct. If you replace the alternator and the car starts up, you’ve probably got your answer as to what was wrong with it. But you’ll probably want to observe your car carefully the next few times you start it to make sure that you’ve really solved the problem. That’s essentially what scientists do. They test hypotheses, cautiously draw conclusions from the results, and keep testing and observing to see whether their conclusions are correct.

Let’s debrief. What does this example illustrate about the scientific process? First of all, it shows that hypotheses are essential. If you don’t have at least a guess as to why your car won’t start, you can’t do much more than stomp your feet and call for help. But it also shows that getting too attached to a hypothesis is a bad idea. If you won’t consider any explanation for why your car won’t start other than that the battery is dead, you’ll never even check to see whether the alternator is working. You’ve got to remain open to the possibility that you might be wrong and discard your hypothesis if, after repeated tests, the evidence doesn’t support it.
In the same vein, you can only develop confidence in a hypothesis if the evidence clearly supports it. Scientists usually have to observe or test a given phenomenon many, many times before they can come to a good understanding of it. Inevitably, along the way, they will get some things wrong. But it’s all a part of the process of searching for scientific truth.

So now that you know the basics of the scientific method, how can you tell which science and health news to believe and which to ignore? There’s a lot of reporting out there on science and health topics, and unfortunately, even the best news organizations sometimes use overly alarmist language or fail to put new studies in their proper context. But some key indicators can tell us when we’re reading good, informative science reporting, and when we should be more skeptical about news of scientific claims.

We have assembled a science and health news checklist to help you test the scientific validity of what’s being reported. Most of these items summarize tips from *Health News Review*, a health journalism watchdog, and from Africa Check, a fact-checking organization. When you read a story on a science or health topic, ask yourself the following questions.

Does the story use hyperbolic language? Rarely do scientific studies yield true “breakthrough,” “revolutionary,” or “game-changer” treatments, and they certainly don’t claim to have discovered “miracles.” Science tends to gain knowledge in small steps.

What other studies have been done? Good scientific research takes account of the work of others. It might support that work or challenge it, but it doesn’t ignore it. No single study is good enough to make scientists reach a definitive conclusion. So a good science or health news story will place a new study in the context of past research. A good science reporter will also ask other scientists who weren’t involved in the new study what they think of its findings and significance. This is especially important to keep in mind when you read about research findings that may surprise you. If a study finds that broccoli is bad for you, or that smoking doesn’t cause cancer, ask yourself if that new study really could be credible, given what most scientists think and what past scientific research has shown.

What was the sample size? If this was a health study, how many people participated in it? Statistically, data from hundreds or thousands of people is generally more reliable than data from just, say, 10. Smaller studies involving just a few people are often just pilot research that’s
conducted to determine whether doing a larger study makes sense. Any good science or health reporter should know that the results of such pilot studies carry little weight on their own. And if a news story relies on anecdotes alone, that’s even less reliable—the sample size is even smaller than you’d find in any scientific study. Anecdotes in a news story can serve to illustrate a problem or a point, but by themselves, they yield terrible data.

Of mice or men? Lots of medical studies get conducted on rodents first. This lays the groundwork for human studies, but just because you see a certain effect in mice doesn’t mean you can expect the same result in people.

Do the reported findings show causation or mere correlation? Two things can be correlated, or systematically associated, without one causing the other. For example, it’s been observed that as ice cream sales increase, so, too, do drowning deaths. Does this mean that ice cream causes drowning? Why would that be? If you look more closely at the data, you’ll see that increases in ice cream sales and drowning deaths both occur during the summer months. Instead of the increase in one factor causing an increase in the other, it seems more probable that as the weather gets warmer, ice cream sales and drowning deaths increase independently.

Tyler Vigen, a Harvard Law student, created a website called Spurious Correlations that’s full of such curious pairings. For example, it shows that as per capita margarine consumption in Maine declined between the year 2000 and 2009, so did divorce rates. Is it really possible that eating less margarine leads to fewer divorces? Or the other way around? Possible, sure, but highly unlikely. Cut back on margarine if you want to, but in all probability, this is another case of correlation without causation.

A lot of scientific stories report that two phenomena have been “correlated” or “linked,” but that does not mean that one has been determined to cause the other. In order to demonstrate a causal relationship convincingly, researchers need to perform specific types of statistical tests on the data, such as regression, or employ specific research methodologies, such as randomized control trials. The fact that they have correlated two phenomena might mean that one causes the other, but as a reader, you should proceed with caution instead of leaping to conclusions.
If the story is about a medical treatment, does it talk about cost and availability? Lots of newly discovered medical treatments are described as “promising.” But if the treatment is too expensive for most people to use, it may not make much difference—or not until the price comes down. Also, stories often hype up new treatments long before they’re actually available to the public. Look to see whether the story is just talking about research, or whether it describes actual plans to release and market the treatment.

Does the story provide details on a treatment’s benefits and harms? First, benefits: How effective is the treatment? Is this quantified? And what about possible harms? Few treatments are without their side effects. What are these? What about potential interactions with other drugs? If these aren’t mentioned, the article isn’t very trustworthy.

Is the story engaging in disease-mongering? Sometimes a story will exaggerate the severity of a condition or medicalize what’s actually a normal state of health. In the late 1970s, for example, being shy was not a medical condition. By the early 1990s, it was widely considered a mental disorder and was treated with antidepressants. You can decide for yourself whether that’s a good thing, but if you see an article medicalize what seems to you to be an ordinary state of health, it may be a sign that the author is interested in selling you a product or treatment rather than trying to simply inform you about a new research development.

Is the article based on research that was published in a reputable scientific journal? If you want to dig deeper, look at the study that the story is based on. Is the journal legitimate? Real scientific journals—and there are thousands of them—have a rigorous review process to try and make sure that studies were carried out well and results are accurate. However, just as there are fake news publishers, there are fake journals.

Who funded the research? Be careful of conflicts of interest. If the study that you’re reading is about the health effects of sugar, was it funded by a soda company? But remember that research costs money, and someone has to pay for it. Oftentimes, it’s a government. Even industry-funded studies can often be good science—just think about whether the research findings benefit the industry or not, and if they do, look closely at how the study was conducted.
If you want to review the points I just covered, you can find a worksheet listing the same markers of scientific validity in the guidebook for this course. If you would like to practice looking for those markers in reporting or digital content, there’s also a chart in the guidebook to help prompt your questioning and a couple of sample articles to practice on. Once you’ve gone through the exercise a couple of times, you will become more accustomed to asking yourself basic verification questions when you encounter new science and health information.

Let’s return now to the subject of anecdotal evidence, which I mentioned earlier, because it plays an especially problematic role in health information that circulates on the Web and in social media. There are many health-related websites. Some of them are valid and provide useful information. Some of them are the personal projects of non-experts, while others are selling products in the guise of offering objective health advice. Often, they make claims in the form of stories about individuals who allegedly benefited from a particular medicine or treatment. You may receive a similar kind of input from friends, or friends of friends, on social media. They may sing the praises of a product or treatment that they say helped them. And while it’s easy to be skeptical of anecdotal information in theory, when someone we know and trust swears that something was effective for them, it can be easier to be taken in.

Here are some of the key reasons to be wary of anecdotal information about medical cures:

- **Self-limiting illnesses**: Some illnesses go away with or without treatment.
- **Self-healing**: By definition, people who are at the worst point of an illness get better, if they survive. If someone takes a particular medication at that low point and gets better, that may seem like proof that the medication solved the problem, but it also might have done nothing, and the person got better anyway.
- **Multiple treatments**: If someone tells you they are using several medical treatments at once and gets better, how can you tell which one, if any, was the cure?
- **Confirmation bias**: As we’ve seen previously, people tend to see the results they want to see, especially if they’re paying a lot of money for a treatment.
- Poor recall: We have a hard time remembering the fluctuations in how we feel from day to day. When people try to reconstruct those memories, they’re prey to confirmation bias.

- Placebo response: Getting treatment makes people feel subjectively better, even if the treatment isn’t actually doing anything to their bodies.

- Side effects: As I noted earlier, it’s important to ascertain not only if a treatment works, but if it’s likely to cause serious side effects. Anecdotal information that one person suffered no side effects isn’t a reliable indication of whether you will or won’t suffer them yourself.

- Dead men tell no tales: Those for whom a miraculous extract didn’t work are unlikely to give testimonials, and people who die can never tell us what they thought of their treatment.

We’re going to turn to Nina again to practice identifying some of the flaws in anecdotal health information.

Let’s say that your best friend Juan was suffering from a bad flu. He tried ibuprofen, but he just felt worse and worse. So he did two sessions with a certified master of reiki, the form of alternative medicine also known as energy healing. He began feeling better. After three sessions, his flu was gone. He concluded that reiki works. Is this a sensible conclusion that can support your friend’s health decision making in the future, or your own? Why or why not?

Well, you might really care about your friend Juan, but it may be that there were some other reasons that he got better. For example, it could be that Juan was already at the worst point of his illness, and he just recovered on his own. Or this might be a case of confirmation bias: Juan may have just seen the results he wanted to see. Juan might have had an extra incentive to do so if the reiki treatments were expensive. Alternatively, or in addition, Juan’s experience might be a classic placebo response. Getting the treatment may have actually made him feel better, even if the treatment didn’t really heal him. All these explanations are possible. The problem is that we don’t know which one to believe, if any, because all we have to go on is Juan’s anecdote; we have no other evidence to consider.
Here’s another situation. On Facebook, your old school friend Tatyana announced that she was diagnosed with breast cancer. She later said that green tea extract helped relieve her nausea from chemotherapy, and it eventually killed off the tumor. She’s now cancer-free, so she says the green tea extract works. You’re naturally happy for her, but consider: It could be that she was getting multiple treatments. If she used several at once, how can she tell what made her better? It’s likely that the chemotherapy, not the green tea extract, eliminated the tumor. Maybe Tatyana just has poor recall: It can be hard to remember the fluctuations in how we feel from day to day, and when we try to remember, we’re prey to confirmation bias. Nausea is never as bad when we recall it as it was in the moment. So Tatyana’s anecdotal information is as unreliable as Juan’s was.

Let’s look at one last example. Suppose your aunt Florence has suffered from chronic pain for over 20 years. She heard about vitamin B6 on the news. She started taking super-high doses six weeks ago. She feels better now on most days, so she concludes that B6 works. She might be right, but then again, this could be another case of placebo response. As with Juan, the vitamins may be making Florence subjectively feel better, even if they aren’t actually doing anything to her body. And in fact, the vitamins might be doing bad things to Florence’s body. Just because she feels good now doesn’t mean that taking them is good for her. In fact, in high doses, vitamin B6 can cause serious side effects. For example, it can damage the nerves.

Here, as in the other two examples, anecdotal evidence doesn’t give us enough information to make a good decision. If you have chronic pain, you’d be much better off checking with your doctor or looking to reliable web-based resources than relying on your aunt’s personal experiences. Which web resources can you count on for accurate health news? Unfortunately, bad sources of health information far outnumber good sources on the web. But there are some highly reliable and easy-to-use resources that we can recommend to you, and you’ll find a list of them in the guidebook accompanying this course.

Here’s a couple of examples of how you can put these resources to use. Let’s say your friend Karen is feeling depressed. Her cousin recommended that she take St. John’s wort. Karen has turned to you for your advice. What would you advise her?
One good place to research supplements is the Cochrane Library. It reviews thousands of studies and provides overviews, in layman’s terms, of current scientific findings on health topics. Type “St. John’s wort” into the search box and click on the first study to appear from the search. Let’s say it’s “St. John’s wort for major depression.” Then scroll down to “Plain language summary,” which summarizes the findings of the study in layman’s terms. This will tell you that trials found that St. John’s wort was similarly effective as standard antidepressants, but it seemed less effective in non-German speaking countries, and flaws in the study could not be ruled out. Plus, the St. John’s products on the market vary a lot, and it might interact with other drugs to cause side effects. Cochrane advises that patients wanting to use St. John’s wort should see a health professional.

Or suppose you are cooking salmon and you want to make sure that you are cooking it at a safe temperature. Where do you go to find out? The US Food and Drug Administration and US Department of Agriculture are the federal agencies that regulate food safety. So for starters, Google “safe cook temp salmon USDA.” You’ll soon find a link for the USDA’s website. There, you can search for “Safe Minimum Internal Temperature,” which will bring up multiple results, including a chart on the subject. If you click on the chart, it will tell you that fish and shellfish should be cooked with a minimum internal temperature of 145 degrees Fahrenheit. Enjoy your salmon, and the comfort of knowing that you cooked it properly!

Learning to check out dubious claims that you encounter about science and health is an important way to protect yourself, as well as to avoid passing on misinformation to others. Make sure to stay skeptical when you see ads and publicity for supplements, since such information is only lightly regulated. Getting valid and evidence-based science and health information matters in the real world. The 2019 measles outbreak in the Pacific Northwest and New York that we discussed at the outset of this course—an outbreak that was fueled by low vaccination rates driven by misinformation about vaccines—is one important example. By adopting the cautious, questioning outlook that scientists themselves have as you read and share science and health news, you can stay better informed while supporting the advancement of science and public health as well.
A misinformation arms race is continually underway. On one side of the race are developers of new forms of trickery such as so-called deepfake videos. These are videos that can be used to make people look like they are saying something they never actually said, to a very high degree of realism. Artificial intelligence has also made it possible to create fake audio and to quickly generate fake text in the style of a particular speaker. On the other side are AI researchers who are searching for ways to identify such misinformation and stop it.
MULTIPLE FRONTS

The war on misinformation will have to be waged on several fronts, using multiple methods that will require great human ingenuity. Efforts against misinformation must include:

- Improving and increasing independent journalism and access to information.
- Making tech platforms accountable for their roles in spreading misinformation, including through regulation.
- Creating international commitments to fact-based information.
- Strengthening individuals’ and communities’ skills in navigating information, scrutinizing its veracity, and resisting the impulse to pass it on unless they are sure it is accurate.

To further enhance your media literacy skills and your ability to pass them on to others, this lecture turns to some ways that you might respond to some of the newest and most potent forms of misinformation out there. Suppose one or more of the following happen to you:

- You hear an audio file that a friend messages to you. In the recording, a well-known celebrity admits to cheating on his girlfriend. What would you do?
- You see a video on YouTube that claims to show a cop shooting an unarmed suspect. What do you do?
- You’re playing an augmented reality history game on your phone. As you look through your phone’s camera at a school near your house, a plaque flashes up on the screen, claiming that this was the site of a Civil War battle. Is this true?

The first step when something provokes a strong reaction in you is always Label to Disable:

- **Pause**: Turn your head away from the screen or paper.
- **Ask**: What am I feeling?
- **Say**: The label that you’ve given the feeling to yourself.

Putting language to the feeling will let you take back your rational brain. Then, you can do some detective work.
Regarding the audio file of the supposed celebrity: Audio files that sound convincing but don’t precisely replicate a voice are easy to fake. Check with a fact-checking organization like Gossip Cop or see if the story has been covered by a news organization that follows good journalistic standards.

For the video of the shooting, start with a fact-checking organization or news outlet that follows good journalistic standards. Police shootings are usually widely covered. Also get a screenshot of the video and then do a reverse-image search of it to see if the video is what it purports to be or is repurposed from some previous event. Finally, use the plugin InVid to check when the video was uploaded to YouTube.

For the augmented reality game, go to a reputable reference on history. Try typing “Civil War” into iSeek, a specialized search engine, and then use one of the resources you find. Alternatively, look up the battle on Wikipedia, and then then click on the references so you can view the original source.
There is no simple way to spot misinformation. You need to use an analytical mindset. Even if you can’t figure out which verification technique to use in a specific situation, the simple act of pausing and reactivating your critical thinking will enable you to choose not to share any dubious information.

**MOVING FORWARD**

The problem of misinformation and manipulation is a huge one, but you don’t need to go it alone: There is a growing number of people who are equipped to spread media literacy in their communities and prevent dubious information from circulating. As for what you can do, here are some practical ways to take action:

- Make a commitment not to create or share dubious information. Tell one or two other people about this commitment and why it’s important, and teach them what you have learned in this course if they are interested.

- Break your information bubble. Explore media that have a different political slant than that of the media you usually consume.

- Find practical ways to keep the skills and tools you have learned present for you. For example, post a list of fact-checking websites on your wall. Put a post-it that says “Label to Disable” on your computer. Set a daily alarm or calendar reminder to bring your awareness back to the kind of information you are consuming, and how.

- Finally, do a digital detox. Spend one day a week away from screens and the internet, try a social media fast, or take a vacation from all things digital. Important as news and commentary can be, keep in mind that all media have a vested interest in holding your attention. Don’t ever let yourself become apathetic—but keep the urgent calls of the latest headlines in perspective.
SUGGESTED READING

Buzzfeed, “You Won’t Believe What Obama Says in This Video!”

FACT-CHECKING RESOURCES

With the relentless advance of technology, new ways of sharing information with others are being developed at an ever-faster pace, and they are becoming more accessible, easier to use, and cheaper. Digital technology has opened up myriad new opportunities for communicating with others and finding information quickly on an astounding range of topics. Information technology is increasingly becoming democratized; it’s becoming available to anyone, anywhere in the world.

Technology, of course, is just a tool; it can be used for good or for nefarious purposes, so every exciting new resource that can solve a problem also has the potential to be appropriated in harmful ways. Bad actors who want to spread misinformation can be quite creative in how they do so, and misinformation is now a global problem that can cause harm on a global scale. Some of America’s sharpest technological minds are working to address that problem. You can help in how you consume and share information. But in order to combat the problem effectively, you need to understand its truly troubling scope.

One aspect of the problem is technological. Even as we have been preparing this course, a misinformation arms race has been underway. We’ve had to edit and re-edit our script based on new technological advances, which are hard to stay completely on top of. On one side of the race are developers of new forms of trickery such as so-called deepfake videos. These are videos that can be used to make people look like they are saying something that they never actually said, to a very high degree of realism. Artificial intelligence has also made it possible to create fake audio and to quickly generate fake text in the style of a particular speaker. On the other side are AI researchers who are searching for ways to identify such misinformation and stop it.

Let’s take a closer look at deepfakes. As you may have heard, the term deepfake comes from “deep learning” AI techniques that are used to create such fabrications. Deepfakes refer to manipulation of audio and/or video using AI to create startlingly realistic fakes.
In 2018, BuzzFeed and the University of Washington created a public service announcement about manipulated video using the video of President Obama and the voice of comedian Jordan Peele. The video employs deepfake technology to demonstrate to viewers the dangers of manipulated information.

Developers keep refining technology, and these techniques continue to evolve, and fake video is becoming more and more widespread and harder and harder to detect. Until early 2019, its most notorious misuses in the United States were the grafting of the faces of Hollywood celebrities onto pornographic video. As of this taping, however, there is a very real threat that it could be used to manufacture public statements by political leaders that the leaders never made. In fact, according to The Washington Post, just the idea of deepfakes has already played a significant role in the politics of other nations.

In 2018, for example, a controversial video surfaced of President Ali Bongo of the nation of Gabon in Central Africa. Because the president had been long out of public view and was rumored to be sick or deceased, his opponents claimed that the video was a deepfake. Whether or not that claim was true, the video has been cited as a catalyst for the unsuccessful coup that the Gabonese military launched the following week.

In June 2019, a national scandal erupted in Malaysia over a viral video that some believe is a deepfake. It depicts a government employee apparently confessing to being one of two men who were recorded having intimate relations in videos and photos that were shared on social media. The first man identifies the other as Malaysia’s economic affairs minister.

As I mentioned earlier, efforts are underway to detect deepfake videos. But as of this recording, researchers are unable to keep up with the innovations of those who create deepfakes, and the possibility looms that it may soon become impossible for practical purposes to determine whether an event that has been recorded on video is real or isn’t. Such a development could potentially leave the public vulnerable to dangerous fabrications of all kinds and make it extremely difficult to achieve public consensus on any issue.

But the fakes don’t even need to be high tech or based on AI. Even the US Congress couldn’t ignore the threat that such manipulated videos pose when two such videos were created of House Speaker
Nancy Pelosi. Pelosi’s image and audio were altered so that she appeared to be stammering and disoriented at news conferences, when in fact, nothing of the sort actually occurred. The videos went viral on social media and were viewed millions of times. These videos were cheapfakes; they were simply slowed down and edited footage, not at all the product of sophisticated technological manipulation. Yet they still initially fooled some people. Following national media coverage of these videos, there’s now widespread concern that manipulated videos could have an even bigger impact. They could be used to sway elections by misleading voters with false impressions of political candidates.

Fake audio, which I also mentioned earlier, is another potential area where we might be duped. There are companies that are building a business on this audio technology, such as Lyrebird (that’s L-Y-R-E-B-I-R-D). These companies are using artificial intelligence to create simulated audio to use, for example, as vocal avatars for audiobooks, hotlines, and text readers, or even to restore a voice to someone who has lost it for medical reasons. The technology for audio deepfakes lags behind that of video, but there still is reason to be concerned. It has the potential to be at least as destructive as video deepfakes. Currently, it remains to be seen how best to detect it, other than through sophisticated software.

Yet another technological development that raises possible misinformation concerns is augmented reality, or AR. When you use your phone or tablet as a lens through which to view the world, AR uses your device to seemingly overlay information and imagery on the world around you. If you are unfamiliar with augmented reality, think Pokémon Go, a game in which the players use their smartphones to hunt for animated game characters overlaid on the image of the real world.

AR offers all kinds of interesting opportunities in gaming, education, and other benign purposes, but it’s also entirely possible that someone could tag, place filters over, or hang digital signs on other people or their property without them consenting or even knowing about it. Imagine your house being used to advertise something without your consent. Or imagine how a bully at school might in real time label another child with harassing words or overlay the child’s image with threatening pictures or symbols that only some other children could see.
This type of harassment or intimidation might be deployed against a person’s colleagues, associates, or family members. It could be used to deface public buildings with hate speech.

It’s tempting to brush all these scary possibilities aside as mere paranoid handwringing. Certainly, we would all like to believe that they won’t really happen. But IREX’s work around the world convinces us that the threat is real and growing. And this is the second aspect to the misinformation problem that we all face: the increasing ability and willingness of governments and private actors to use digital technology to spread misinformation nationally and internationally for their own ends. IREX’s Mehri Druckman has seen it happen firsthand and knows all too well how easily a populace can be misled.

In addition to Ukraine and the United States, IREX works in some 120 countries around the world. We have witnessed different incarnations of misinformation and disinformation in most of them, and its growing use is what prompted us to develop our Learn to Discern program.

Of course, misinformation is nothing new; governments have been making use of it since long before the advent of the digital age. For example, in 1987, the Tunisian people awoke to a new Tunisian President—Zine El Abidine Ben Ali, who delivered a speech on what he called a “Blessed Transformation.” Ben Ali had previously been in military intelligence and national security as well as various government positions. In his speech, he announced that his deposed predecessor, Habib Bourguiba, was unable to run the country due to mental instability.

The speech was broadcast on state-run TV and radio. Rather than verifying the dubious claim, the state-run broadcasters acted as the mouthpiece of the president, celebrating the new leader without attempting to check what he claimed in his speech, providing context, or providing alternative voices. This misinformation helped construct a foundation for 23 years of Ben Ali’s dictatorship.

Powerful as such analog-based misinformation was, the rise of the internet and the development of advanced digital communication tools has expanded the scope of the misinformation problem dramatically. Misinformation has become increasingly easy to distribute and difficult to control; it can be generated by anyone for any reason and can cross national borders with ease.
For example, on the eve of the US elections in 2016, BuzzFeed broke a story. Male youth in one town in the Balkan country of Macedonia were responsible for creating over 140 websites that spewed false stories across the Facebook feeds of Americans. While political in nature, the made-up stories were not politically motivated. So what was the motivation? Money. Macedonia’s weakened economy led these youth to seek creative ways to earn money through digital advertising revenue. With the traction that these false stories gained on social media, there is little doubt that they influenced some Americans at the polls.

A different kind of trouble ensued when Facebook entered Myanmar. Facebook became the main source of internet—and thus information—for the country’s 20 million people. The New York Times reported that no measures were put in place to try to mitigate the legacy of the country’s history of censorship and social and political polarization, with devastating results. The Myanmar military, some of whose members had trained in disinformation techniques in Russia, used anti-Muslim rhetoric on Facebook to incite genocidal violence against the Myanmar’s Rohingya minority from 2017 to 2018. The social media platform was reportedly blind to “a crescendo of posts and misinformation that helped to fuel modern ethnic cleansing in Myanmar.”

As The New York Times has also reported, Russia’s methods for spreading false information on social media are also being taken up by other governments around the globe, including those of Venezuela, Iran, and Bangladesh. It is important, then, to understand some of the key characteristics of Russia’s brand of information manipulation. In the words of the Rand Corporation research organization, while some disinformation campaigns have a clear goal, in others, “Russia’s strategy is to question all narratives and obfuscate facts, rather than push a particular narrative, with the ultimate goal of degrading trust in Western institutions and the democratic process.” Rand’s research outlines four distinctive features of contemporary Russian propaganda:

1. High-volume and multichannel
2. Rapid, continuous, and repetitive
3. Lacking commitment to objective reality
4. Lacking commitment to consistency
The first and second features—high volume/multichannel and rapid/continuous/repetitive—are only possible in an era of widespread digital communication. The broad availability of this technology today facilitates Russia’s firehose approach to spreading misinformation that comes from a multitude of sources. These methods offer a real and substantial threat to democracies, including in the United States.

It is important to understand that much of today’s misinformation isn’t necessarily about converting people to a new set of beliefs. Rather, it is about power, controlling the narrative. It is about reframing how people think about the world so as to limit how they can interpret their realities. In the US, as has been discussed earlier in the course, much of the misinformation—both from abroad and from within the country—has served to further polarize people across political lines. Polarization has in turn created high levels of tension and challenged democratic collaboration nationally, as well as weakening the US internationally.

It’s also worth noting how the tactics of some purveyors of misinformation here in the US parallel the Russian government’s approach. Like Russia, they promote messages with little basis in reality, implying that facts do not exist and nothing can be trusted. For example, conspiracy theorist Alex Jones, who runs the website Infowars, sows doubt about actual events by subjecting them to a distorted form of media literacy techniques of the kind we have discussed in this course. As if stepping through a looking glass, he scrutinizes factual video and photographs for alleged proof of tampering, attempting cynically to prove that the truth is not true.

One notorious example is his effort to disprove the 2012 mass-shooting incident at Sandy Hook Elementary School in Newtown, Connecticut by bogus analyses of children’s photographs, CNN interviews with parents, and other fact-based media. In 2018, YouTube, Apple, and Facebook removed Jones’s content from their platforms because they considered it to be hate speech, which violates each company’s policy. But such case-by-case pursuit of bad actors on the Web seems unlikely to stem the misinformation tide.
So how do we fight misinformation? Typically, nations turn to countering disinformation through strategic communications, creating and disseminating counter-narratives to try to win a war of ideas. The problem with this approach is that counterpropaganda, as this tactic is also known, is by nature always on the defensive; it must follow the rules set by the propaganda or disinformation that it seeks to disarm. As a result, the best we can hope for with countering disinformation is an endless information boxing match.

Another commonly championed solution is for independent news media to fact check and debunk misinformation. Correcting misinformation is a noble and important activity. Unfortunately, however, there is scant evidence that just exposing falsehoods or providing proven facts is an effective way to vanquish the problem. Revealing truth by itself does not automatically undo the hold that falsehoods have on people’s minds.

Instead of relying on a single solution, IREX believes that the war on misinformation will have to be waged on several fronts, using multiple methods that will require great human ingenuity. We must fight misinformation:

- By improving and increasing independent journalism and access to information
- By making tech platforms accountable for their roles in spreading misinformation, including through regulation
- By creating international commitments to fact-based information
- By strengthening individuals’ and communities’ skills in navigating information, scrutinizing its veracity, and resisting the impulse to pass it on unless they are sure it is accurate.

In service of this last point, IREX is currently teaching versions of our Learn to Discern program in other countries, including Georgia, Serbia, Guatemala, Indonesia, Iraq, Jordan, Tunisia, and the UK. We hope that with the skills you acquire in this course, you can play a role in combatting the threat that misinformation poses to free societies around the world.

Thanks, Mehri.
To further enhance your media literacy skills and your ability to pass them on to others, let’s consider some ways that you might respond to some of the newest and most potent forms of misinformation out there—forms such as audiofakes, deepfakes, and cheapfakes. Suppose one or more of the following happen to you:

- You hear an audio file that a friend messages to you. In the recording, a well-known celebrity admits to cheating on his girlfriend. What would you do?
- You see a video on YouTube that claims to show a cop shooting an unarmed suspect. What do you do?
- You’re playing an augmented reality history game on your phone. As you look through your phone’s camera at a school near your house, a plaque flashes up on the screen, claiming that this was the site of a Civil War battle. Is this true?

Here are some tips on how to handle these examples. The first step when something provokes a strong reaction in you is always Label to Disable. First, pause: Turn your head away from the screen or paper. Then, ask: What am I feeling? Next, say the label that you’ve given the feeling to yourself. Putting language to the feeling will let you take back your rational brain so you can do some detective work.

Let’s start with the audio file of the supposed celebrity. Audio files that sound convincing but don’t precisely replicate a voice are easy to fake. Check with a fact-checking organization like Gossip Cop, or see if the story’s been covered by a news organization that follows good journalistic standards.

For the video of the shooting, start with a fact-checking organization or news outlet that follows good journalistic standards. Police shootings are usually widely covered. Also, try getting a screenshot of the video, and then do a reverse image search to see if the video is what it purports to be or is repurposed from some previous event. Finally, use the plug-in InVID to check when the video was uploaded to YouTube. We discussed how to find and install InVID previously.

For the augmented reality game, go to a reputable reference on history. Try typing “Civil War” into iSeek, the specialized search engine that we also discussed previously, and then use one of the resources that you find. Or look up the battle on Wikipedia and click on the references.
so you can view the original source. As a reminder, you can find
information on InVID, iSeek, and other resources that we have
daveled in this course in the course guidebook.

Alas, as you’ve probably realized by now, there’s no simple way
to spot misinformation. You need to use an analytical mindset.
Even if you can’t figure out what verification technique to use in
a specific situation, the simple act of pausing and reactivating
your critical thinking will enable you to choose not to share any
dubious information.

Let’s pull together the main skills and tools that you now have
that can help you better discern the quality of the information you
encounter. Here’s Nina Oduro with a quick review.

In this era of constant information overload, it’s important to be
aware of your own habits. From time to time, take a step back,
take stock, and reflect on your information consumption. Take an
inventory of the media and the platforms you use to make sure
that you feel comfortable relying on those sources. Also consider
how much time you’re spending with them and whether it really
reflects your values and what you want for your life.

When you come across some content—whether a headline, a photo,
or some other media—that provokes a strong reaction in you, use
Label to Disable before doing anything else with the information.
Make sure you are actually choosing what to do next, not just
reacting without thinking.

If you decide to look deeper, you have an arsenal of techniques
and tools to draw on. First, evaluate: Does the content follow basic
journalistic standards? Recall what they are:

- Seek the truth and report it. Journalists look for and clearly
  present important relevant facts and give the facts context,
  explain them well, and derive the facts from original sources.

- Minimize harm. Journalists strive to present the truth while
  avoiding harm to individuals.

- Act independently. If a journalist is paid to specifically report
  on one point of view, he or she is not independent. A journalist
  should not advocate for something unless it is very clearly
  identified as opinion.
Be accountable and transparent. Journalists (and news organizations) should acknowledge and correct any mistakes. They should also call out any potential conflicts of interest.

Second, check out the content. There are a lot of potential avenues to do this. Remember the five Ws—who, what, where, when, and why—to help jog your memory:

- Who wrote it? Do they have the expertise to report on that information? Who is behind a platform or website? You can verify ownership of a website on Whois. You can also check to see if NewsGuard has created a nutrition label for a website.
- What else talks about this subject? Look for what other sources may have reported on a topic by cross-checking. Google it! Or try Duck Duck Go. Have other credible sources reported on the same thing? Or did they debunk the story you are looking into?
- Where can you find more information? Go broad and read laterally, like a fact checker or a historian. Instead of digging deeper within a website, open several tabs and read across several different sources. Compare and evaluate what they say. Piece together the big picture for yourself.
- When was the item created? Check the date. If someone sends you a report on a snowstorm in July, that might be shocking news, but did that report really originate in July? Verify when the information was first published. Review the history of publication on the internet archive (a.k.a Wayback Machine). And check to see whether the information in the item has been changed since.
- Why did the content creator publish it? Was it just to inform? Was it to persuade? Was it to sell something? Was it to create fear or provoke some other negative reaction? Keep an eye out for markers of misinformation, such as provocative or incendiary language.

Third, check with the fact checkers. Start with Wikipedia. Also look on one of the many credible fact-checking websites to see if someone else has already verified or debunked the information. If you can’t bring them to mind, check the guidebook for this course for a list.
Fourth, scrutinize photos. Be aware of photo reuse, alteration, and selection effects. Try a reverse image search with Google image search or the website TinEye.com.

Fifth, be aware of your own innate biases. Ask yourself: Is this content trading on stereotypes and biases people have, perhaps in a subtle way? Am I falling prey to that?

And remember, you don’t need to use the whole arsenal. The most important thing is to Care Before You Share. That means:

- Take back your logical brain with Label to Disable before you act on a piece of information.
- Take responsibility. Recognize that you are the information gatekeeper, and don’t spread misinformation.
- Acknowledge what you may not know.
- If you have time, check it out! Do what you can to verify information using the skills and tools we’ve covered.
- And finally, if you’re still not sure it’s true, don’t share it.

Thanks, Nina.

How do you feel now about your ability to tackle misinformation and manipulation? We hope that you feel empowered to put the skills you’ve learned to use. The problem we face is a huge one, but you don’t need to go it alone; there is a growing number of us who are equipped to spread media literacy in our communities and prevent dubious information from circulating. What can you do? Here are some practical ways to take action.

Make a commitment not to create or share dubious information. Tell one or two other people about this commitment and why it’s important, and teach them what you’ve learned in this course if they’re interested.

Break your information bubble. Explore media that have different political slants than the media you usually consume on topics that matter to you.

Find practical ways to keep the skills and tools that you’ve learned present for you. For example, post a list of fact-checking websites on your wall. Put a post-it that says “Label to Disable” on your computer. Set a daily alarm or calendar reminder to bring your awareness back to the kind of information you are consuming and how.
Lastly, do a digital detox! Spend one day a week away from screens and the internet, try a social media fast, or take a vacation from all things digital. Important as news and commentary can be, keep in mind that all media have a vested interest in holding your attention. Don’t ever let yourself become apathetic, but keep the urgent calls of the latest headlines in perspective. Taking a periodic break from it all will help you remember that there’s plenty of life to be lived away from our glowing devices.

You are the future of media literacy. So lead by example. Ask yourself: What can I commit to doing differently to stop the spread of misinformation right now?
1. What is the accurate and precise term for incorrect or misleading information?
   a. Fake news.
   b. Misinformation.
   c. Disinformation.
   d. Parody.

2. The illusory truth effect occurs when:
   a. Truth appears to have a magical quality.
   b. We hear something repeatedly and become more likely to believe it.
   c. Optical illusions ingrain the truth in our brains.

3. Which of the following are key pillars of the Code of Ethics of the Society for Professional Journalists?
   a. Seek the truth and report it.
   b. Seek to minimize harm.
   c. Act independently.
   d. Be accountable and transparent.
   e. All of the above.

4. Algorithms serve what function in social media?
   a. Estimating the cost of advertising on a page.
   b. Deciding the rhythm with which “likes” are recorded on a post.
   c. Determining what appears on a person’s feed based on how they engaged in the past.
   d. Helping promote digital games to the user, based on their answers to a survey.
5. What is confirmation bias?
   a. A type of stereotyping that confirms a person’s first idea about someone.
   b. An innocuous cognitive tendency that does not leave people susceptible to misinformation.
   c. The human tendency to only take in information that supports our point of view and ignore information that contradicts it.

6. Why is Label to Disable important?
   a. It’s a very credible fact-checking website.
   b. It can help you save money when you purchase clothing from well-known designer labels.
   c. It diffuses a strong emotional response and activates the analytical mind.
   d. It can help you calculate the number of hours you spend on media every day.

7. Why should we be concerned about memes on the web?
   a. They detract from the seriousness of independent news.
   b. The combination of a strong visual and text can be quite convincing and even manipulative.
   c. They are forgeries that can only be decoded using bots.
   d. They emit a loud beep that distracts us from focusing on a single task.

8. Which of the following statements about stereotypes is true?
   a. Stereotypes are rarely seen in the information age.
   b. Subtle stereotypes in media have little impact on how we see the world.
   c. Not everyone stereotypes other groups of people.
   d. Media has been used to reinforce stereotypes that were part of a leadup to genocide as recently as 2018.
9. Which of the following is true about fact-checking?
   a. It is the most important skill in media literacy.
   b. As a detailed examination of all of the pages within a website, it is a necessary first step.
   c. A number of independent websites, such as FactCheck and Snopes, offer verified information as a public service.
   d. It is a skill employed mainly to verify purported facts about politics.

10. Which of the following techniques can be used in textual verification?
   a. Google a topic and check the results of the search.
   b. Trace the information in a claim to its original source.
   c. Use the five Ws as a prompt for your analysis: who, what, when, where, and why.
   d. Check Wikipedia.
   e. All of the above

11. Which common data visualization is actually completely distorted?
   a. The Mercator world map.
   b. The American flag.
   c. The Greek alphabet.
   d. Stock market ticker symbols.

12. Why is it hard to sort out the truth in science and health news?
   a. There is very little good reporting about science.
   b. Scientific knowledge is evolving and never completely proven.
   c. There are no fact checking websites devoted to science.
   d. Scientists often conceal their findings from the public until they have tested a hypothesis many times.
13. Which of the following suggests that you are reading reporting on trustworthy science?

a. A headline announcing a “game-changing” treatment for cancer that was just discovered.

b. A sample size of 10 in a two-month study of a new nutritional regime that lowered cholesterol in all participants.

c. A promising new treatment for diabetes that seems to have no drawbacks or limitations.

d. A plain-language case study used to explain some research published in the *New England Journal of Medicine*.

14. What makes deepfakes such a risky new phenomenon?

a. They are hidden within the internet and may emerge at any moment without warning.

b. The technology uses artificial intelligence to create fake video that appears to be real.

c. The technology is widespread and most people can create them easily.

d. They create the realistic appearance of sea creatures in places where they don’t belong, such as a shark on a highway or stepping on a Lego.

15. Which of the following can help fight misinformation?

a. Individuals taking responsibility for what they share online.

b. Digital platforms acknowledging their role in spreading misinformation.

c. The improvement of independent journalism and increasing access to fact-based information.

d. All of the above.
LECTURE 1


Center for Media Literacy. “Media Literacy in the USA.” http://www.medialit.org/reading‑room/media‑literacy‑usa. A brief literature review dating back to before the 1960s of the development of the field of media literacy in the United States.


Domo.com. “Data Never Sleeps 7.0” https://www.domo.com/learn/data‑never‑sleeps‑7#. Different calculations by a commercial digital media research company about digital media use over the years. Updated each year. This course was taped before version 7.0 was released.


**LECTURE 2**


Ohio University. “The Media Deserts Project.” http://test.voinovichschool.ohio.edu/media/media.htm. A mapping of how local newspapers have disappeared over time in the US.


LECTURE 3


Metzger, Miriam J., and Andrew J. Flanagin. “Credibility and Trust of Information in Online Environments: The Use of Cognitive Heuristics.” Journal of Pragmatics 59, 2013. A summary of the shortcuts the brain takes that are most relevant to how people judge the degree of credibility of information they encounter online.


Siegel, Dan. “Name It to Tame It.” Dalai Lama Center for Peace and Education, December 8, 2014. https://www.youtube.com/watch?v=ZcDLZppD4Jc. A brief explanation of the Name It to Tame It technique and the science behind why it works.


LECTURE 4


LECTURE 5


Always. “#Like a Girl.” https://www.youtube.com/watch?v=XjJQBJWYDTs. Video that upends insults such as, “You run like a girl.”

Banaji, Mahzarin. “Project Implicit.” https://implicit.harvard.edu/implicit/takeatest.html. Online test that reveals individual biases that we are unaware of.


LECTURE 6


LECTURE 7


LECTURE 8


IMAGE CREDITS

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## EXERCISE WORKSHEET FOR EVALUATING ARTICLES

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*SCIENCE AND HEALTH NEWS WORKSHEET*
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