Hypertext, Social Media, and Civic Engagement

How Hypertext is Ruining the World, and Might Just Save It

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Information School
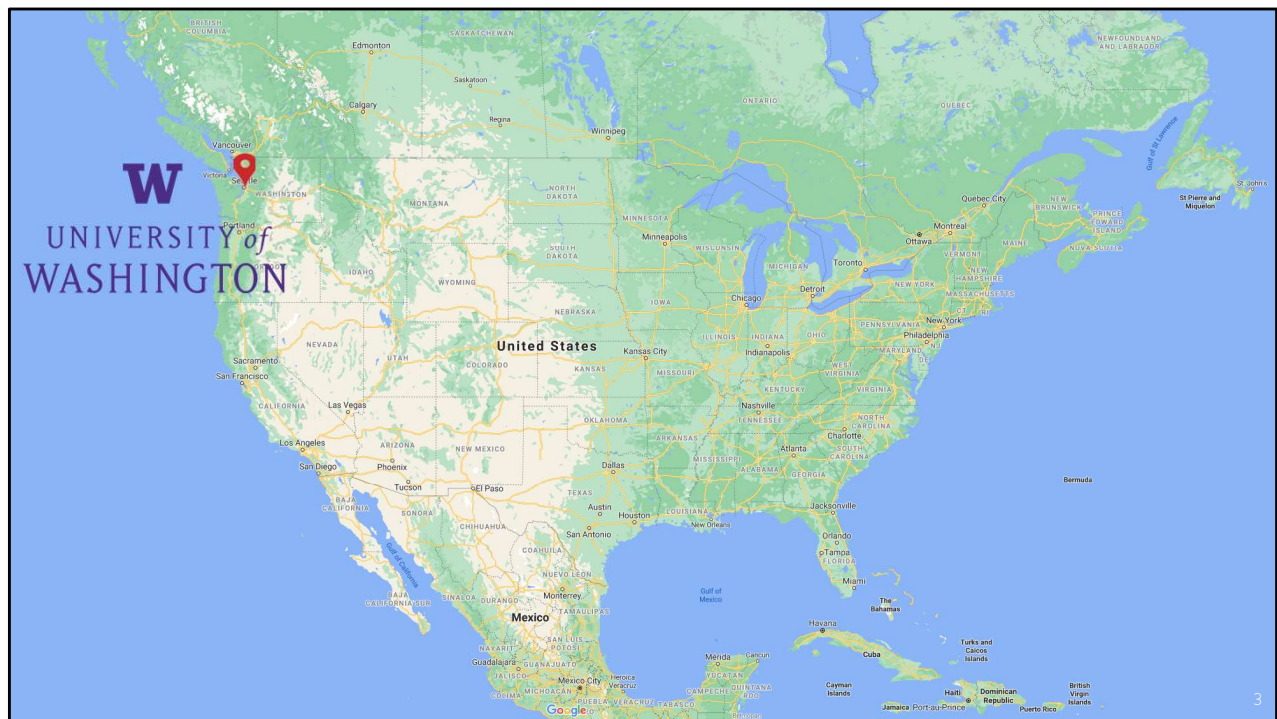UNIVERSITY of WASHINGTON

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Hello, my name is Jacob Wobbrock and today I will be talking to you about *Hypertext, Social Media, and Civic Engagement: How Hypertext is Ruining the World, and Might Just Save It.*

Who am I?

First, a few quick notes about who I am and where I come from.

I live and work in Seattle, Washington, in the United States, where I am a professor at the University of Washington.

Seattle and the University of Washington are beautiful places. This is what my campus looked like in the spring a year before the COVID-19 pandemic forced all of us to work from home.

I have a number of involvements at the University of Washington. I am a Professor in The Information School. I also have a courtesy appointment in the Paul G. Allen School of Computer Science & Engineering. I'm a member of the cross-campus DUB Group, which is one of the top research and education communities in Human-Computer Interaction worldwide. My own lab is called the ACE Lab, for Accessible Computing Experiences. I'm a Co-PI on AccessComputing, which seeks to broaden participation in computing disciplines by people with disabilities. And I co-founded and co-direct the UW Center for Research and Education on Accessible Technology and Experiences, a new high-profile research center thus-far funded by Microsoft.

Much of my work entails studying people's interactions with technology and inventing new ways for improving those interactions.

Credibility of fake news

Wobbrock, J.O., Hsu, A.K., Burger, M.A. and Magee, M.J. (2019). Isolating the effects of web page visual appearance on the perceived credibility of online news among college students. *Proceedings of the ACM Conference on Hypertext and Social Media (HT '19)*. New York: ACM Press, pp. 191-200. https://dl.acm.org/doi/10.1145/3342220.3343663

Douglas Engelbart Award for Best Paper

Recently I have been studying online news credibility, particularly the visual properties that make news seem credible or questionable. I had a paper at Hypertext 2019 on this topic.

Global issues, U.S. focus

One caveat about by talk today: Although the issues I'll be talking about are global in nature, much of my talk will have a focus on the United States, simply because that's what I know best, and because that's where the phenomena I'll be covering seem most pronounced.

So let's dive in…

Our world today faces tremendous problems…
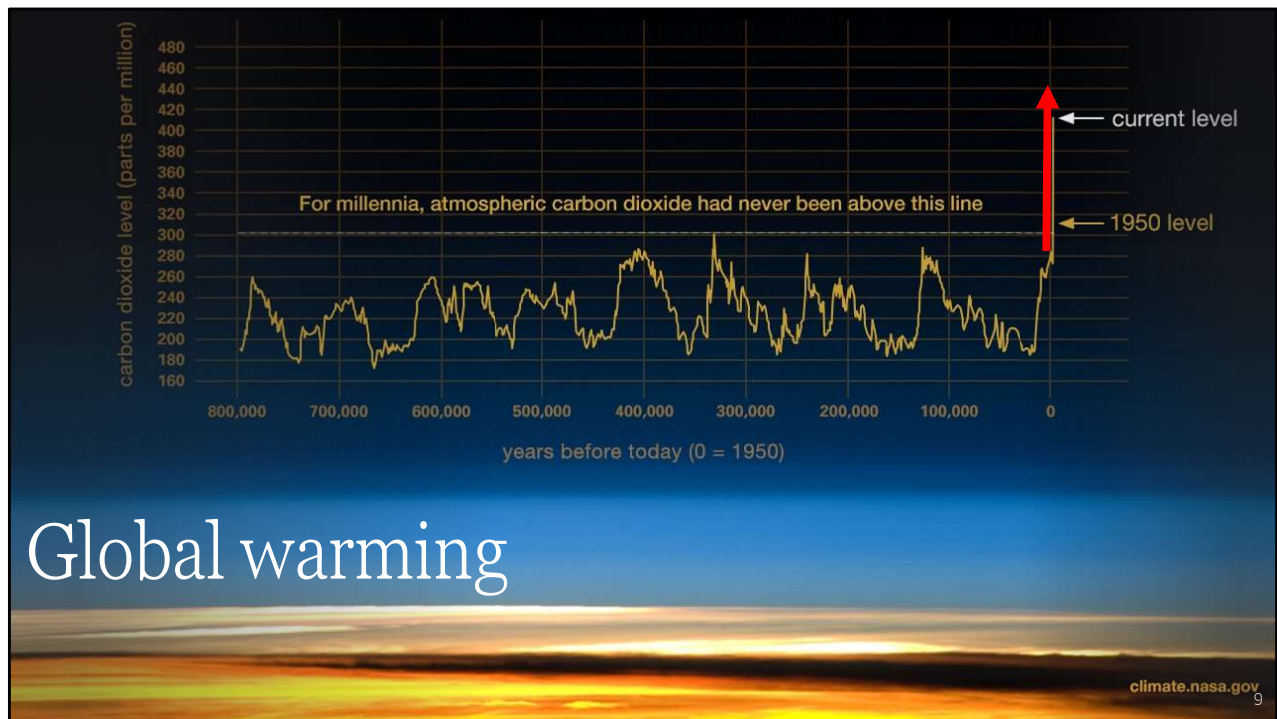
Global warming

… Global warming and carbon emissions are sharply rising.

// From https://climate.nasa.gov/evidence/ : "This graph, based on the comparison of atmospheric samples contained in ice cores and more recent direct measurements, provides evidence that atmospheric CO_2 has increased since the Industrial Revolution. (Credit: Luthi, D., et al.. 2008; Etheridge, D.M., et al. 2010; Vostok ice core data/J.R. Petit et al.; NOAA Mauna Loa CO_2 record.)"

New reported cases by day in the United States
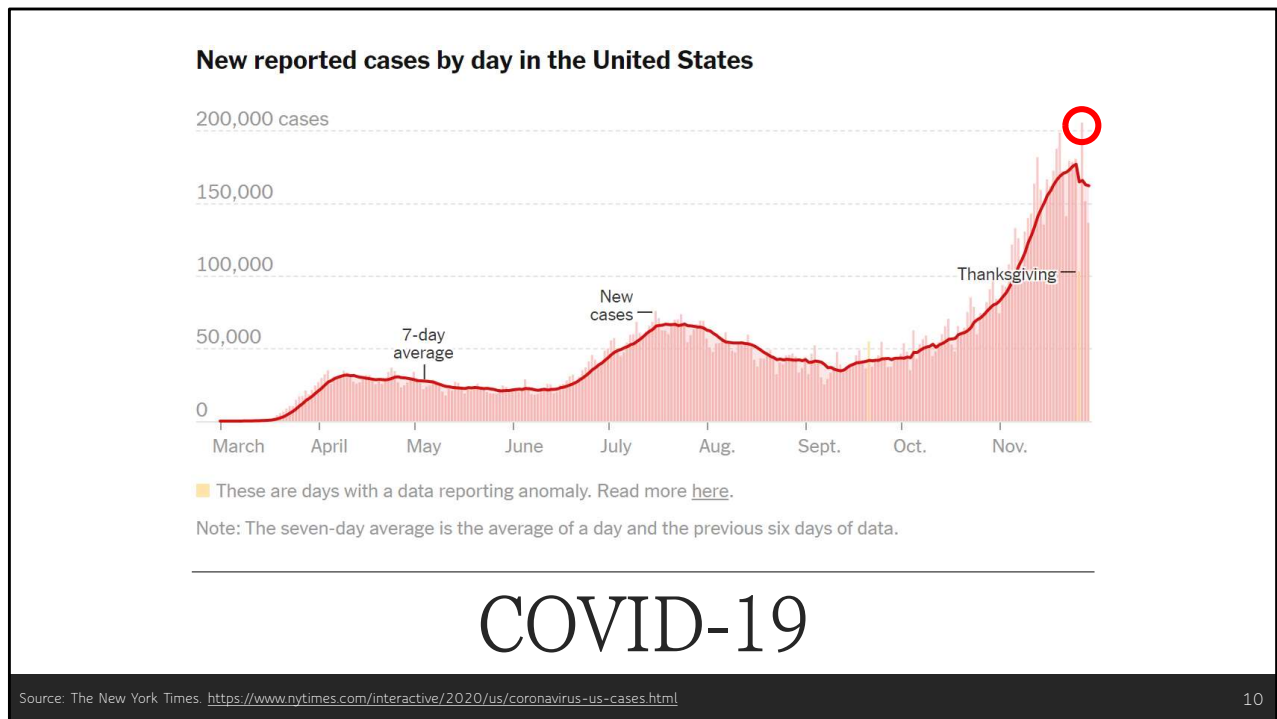
COVID-19

… The COVID-19 pandemic. In the United States, we recently exceeded 200,000 new cases of coronavirus in a single day.

Extreme poverty

Extreme poverty is on the decline worldwide, but still represents a massive challenge and an ongoing failure of states to provide necessities for their people.

// Photo credit: https://www.usnews.com/news/articles/2016-01-22/billionaires-could-eradicate-extreme-poverty-report-says

U.S. has highest level of income inequality among G7 countries

Widening inequality

U.S. has highest level of income inequality among G7 countries

Gini coefficient of gross income inequality, latest year available

Country	Gini
U.S.	0.434
UK	0.392
Italy	0.373
Japan	0.363
Canada	0.352
Germany	0.351
France	0.326
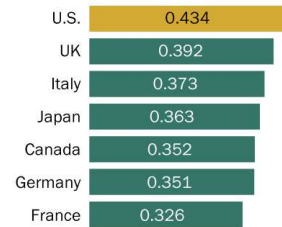
Source: Organization for Economic Cooperation and Development.

PEW RESEARCH CENTER

…Widening income inequality has dramatically increased, especially in the United States, and constitutes a growing threat to stability. The U.S. now has the highest level of income inequality among the G7 countries.

// To compare income inequality across countries, the OECD uses the Gini coefficient, a commonly used measure ranging from 0, or perfect equality, to 1, or complete inequality. In 2017, the U.S. had a Gini coefficient of 0.434. In the other G7 nations, the Gini ranged from 0.326 in France to 0.392 in the UK.

Endless wars

The United States has now been at war for its longest period in history, nearly 20 years in Afghanistan. A majority of U.S. military veterans – 58 percent – say the wars in Afghanistan and Iraq were "not worth fighting."

// "Majorities of both veterans (58 percent) and the public (59 percent) say the war in Afghanistan was not worth fighting. About four-in-ten or fewer say it was worth fighting," according to the Pew Research Center.

// The same held for the war in Iraq and the US military intervention against ISIS in Syria, with 64 percent of veterans saying the former was "not worth fighting," and 55 percent saying the latter was "not worth it."

// Photo credit: https://english.aawsat.com/home/article/1809456/majority-us-vets-say-middle-east-wars-not-worth-fighting

Violent religious extremism

Although ISIS has been set back by U.S. and coalition efforts, violent religious extremism is still a global threat.

// Photo credit: https://lobelog.com/the-fall-of-isis-and-the-day-after-question/

White supremacy

And, of course, in the United States and parts of Europe, we have our own dangerous versions of ideological extremism, fundamentalism, and white supremacy.

// Photo credits:

// https://www.economist.com/the-economist-explains/2019/08/14/what-is-white-nationalism

// https://www.enfoquederecho.com/2017/08/20/causas-perdidas-a-proposito-de-las-manifestaciones-de-la-supremacia-blanca-y-el-rol-de-donald-trump/

// https://www.theguardian.com/technology/2019/nov/21/facebook-white-nationalists-ban-vdare-red-ice

Racial discrimination

In the United States, racial discrimination, police brutality, police killings of unarmed Black people, and clashes between alt-right militias and antifa groups have reached a fever pitch.

// Photo credit: https://www.nydailynews.com/news/crime/ny-decision-made-on-possible-charges-against-cops-in-floyd-case-20200603-ymg7s7lj4ng6vomteclyrl7v6y-story.html
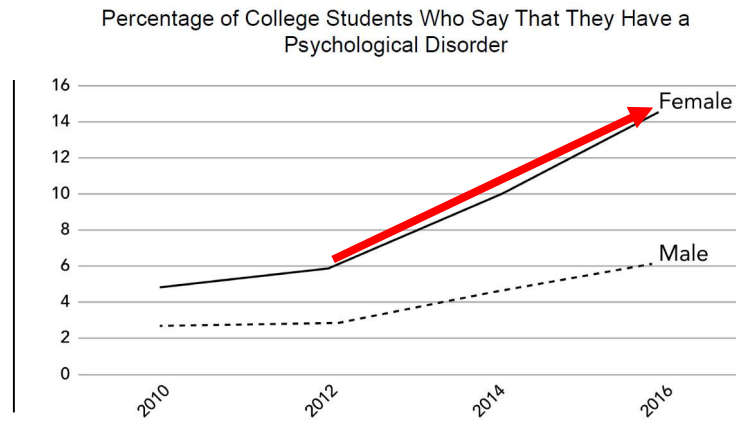
Mental health crises are on the rise on American university campuses, especially among female students.

AFOSR-3223

Summary Report

AUGMENTING HUMAN INTELLECT: A CONCEPTUAL FRAMEWORK

Prepared for:
DIRECTOR OF INFORMATION SCIENCES
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
WASHINGTON 25, D.C.

CONTRACT AF 49(638)-1024

By: D. C. Engelbart

STANFORD RESEARCH INSTITUTE

MENLO PARK, CALIFORNIA   *SRI

> Man's population and gross product are increasing at a considerable rate, but the complexity of his problems grows still faster, and the urgency with which solutions must be found becomes steadily greater in response to the increased rate of activity and the increasingly global nature of that activity.
>
> – Douglas Engelbart (1962)

18

Now, you might be wondering, what does any of this have to do with the human factors of hypertext? Well, hang in there with me awhile longer and I'll show you.

But let's remember that Douglas Engelbart predicted that the complexity and urgency of our society's problems would only increase, and if we could augment people's intellectual capabilities with better tools, we would be better positioned to solve these complex, urgent problems.

He wrote in 1962: … [READ EXCERPT]

Well, clearly the problems are here. But do we have the tools to solve them?

These problems require massive, coordinated solutions, but…

WE'RE GETTING WORSE AT WORKING TOGETHER…

Issue polarization

Issue Polarization
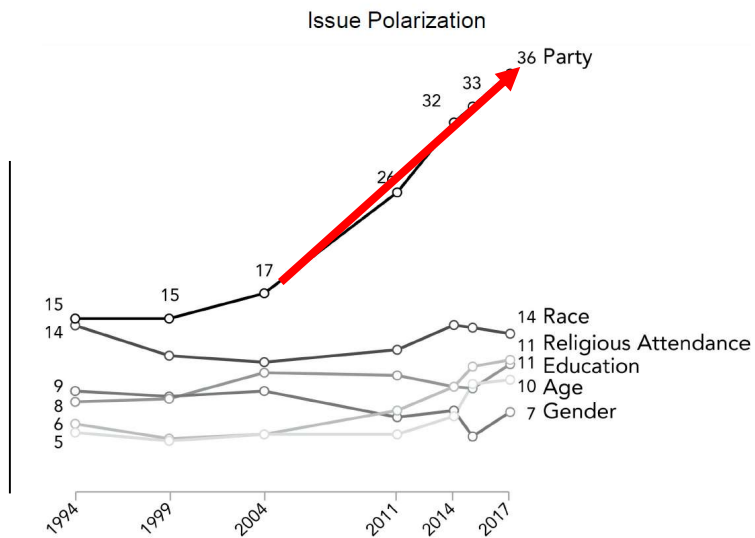
FIGURE 6.1. The distance between Republicans and Democrats, on a set of 10 policy questions, has grown very large since 2004. Differences by race, gender, education, and age have not changed much since 1994. (Source: Pew Research Center.)

In the United States and elsewhere, we are more polarized on political issues than ever before. This plot shows that over the last 15 years, Americans' opinions on policy questions diverge most by political party affiliation, far more than by race, religious attendance, education level, age, or gender.

Affective polarization
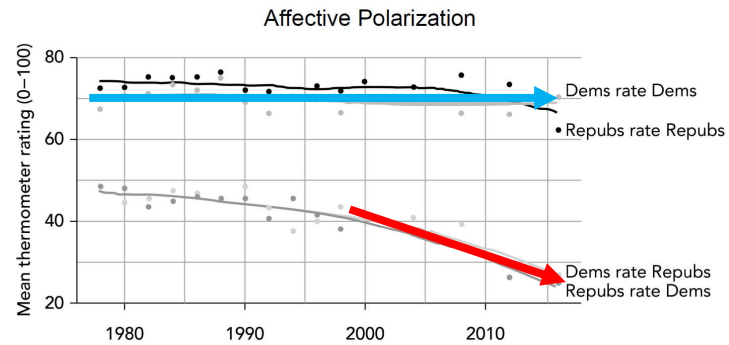
FIGURE 6.2. *Affective partisan polarization. Americans' feelings toward their own party have barely changed since the 1970s, but Americans have become increasingly "cold" or hostile toward the other party since the 1990s. (Source: American National Election Study,[6] plotted by Iyengar and Krupenkin, 2018.)*

Similarly, Americans are more emotionally polarized than ever before. This plot shows that over the last 20 years, Americans' feelings toward their own political party have remained relatively stable, but their *feelings* about the opposing party have become increasingly negative, cold, or even hostile.

Rise of far-right nationalism

The rise and tactics of far-right populist and nationalist leaders in the U.S., Brazil, the U.K., Hungary, Poland – and elsewhere – are both a sign of discontent and a cause of increased tensions and political stalemates.

// USA: Donald Trump
// Brazil: Jair Bolsonaro
// UK: Boris Johnson
// Hungary: Viktor Orbán
// Poland: Jarosław Kaczyński

Lost collective abilities...

In short, we have lost our collective abilities to solve major problems. In fact, we have lost our collective abilities to even discuss our problems constructively.

We can't agree on facts

Having different opinions is one thing, but we can't even agree on facts. For example, we have, on the one hand, the American Centers for Disease Control recommending masks to prevent the spread of COVID-19; and on the other hand, the main coronavirus advisor to President Trump (until recently), Dr. Scott Atlas, telling the public that masks don't work.

// For more: https://www.forbes.com/sites/brucelee/2020/10/18/twitter-removes-face-mask-tweet-from-trumps-covid-19-coronavirus-advisor-scott-atlas/?sh=2c1a9ea01f21

We don't view science as authoritative

Which brings me to a related point: Millions of people no longer view science as authoritative. Pronounced examples are the COVID-19 pandemic, vaccinations, and humans' contributions to global warming.

We can't have constructive disagreement without vilification

We also seem unable to have constructive disagreement without vilifying our political opponents. What's telling is that both sides feel unfairly vilified by the other side.

// Source: https://washingtonmonthly.com/2020/01/08/for-republicans-the-vilification-of-enemies-is-all-that-matters/

// Source: https://www.sfgate.com/opinion/saunders/article/Republicans-vilified-Democrats-excused-4017807.php

// Source: https://www.usnews.com/news/elections/articles/2019-10-21/democrats-republicans-and-the-new-politics-of-hate

We won't work together

We simply won't work together anymore to resolve our differences and solve these major problems we face.

// Image credit: https://www.miamiherald.com/opinion/op-ed/article218315270.html

The New York Times

Opinion

The Rotting of the Republican Mind

When one party becomes detached from reality.

By David Brooks
Opinion Columnist

Nov. 26, 2020

Dan Anderson/EPA, via Shutterstock

In a recent Monmouth University survey, 77 percent of Trump backers said Joe Biden had won the presidential election because of fraud. Many of these same people think climate change is not real. Many of these same people believe they don't need to listen to scientific experts on how to prevent the spread of the coronavirus.

We live in a country in epistemological crisis, in which much of the Republican Party has become detached from reality. Moreover, this is not just an American problem. All around the world, rising right-wing populist parties are floating on oceans of misinformation and falsehood. What is going on?

. . .

Over the past decades the information age has created a lot more people who make their living working with ideas, who are professional members of this epistemic process. The information economy has increasingly rewarded them with money and status. It has increasingly concentrated them in ever more prosperous metro areas.

While these cities have been prospering, places where fewer people have college degrees have been spiraling down: flatter incomes, decimated families, dissolved communities. In 1972, people without college degrees were nearly as happy as those with college degrees. Now those without a degree are far more unhappy about their lives.

. . .

Brooks, D. (2020). The rotting of the Republican mind: When one party becomes detached from reality. The New York Times. November 26, 2020. https://www.nytimes.com/2020/11/26/opinion/republican-disinformation.html

David Brooks is a longtime American political and social columnist for The New York Times, and a lifelong Republican. Despite his political affiliation, he recently released an op-ed with a provocative title: "The Rotting of the Republican Mind." In it, Brooks illuminates our inability to work together and what drives it.

Normally, in my talks, I'm reluctant to read passages of text like this, but I think it is worth it in this case. So please read along with me. I've highlighted some phrases I think are especially important.

The Rotting of the Republican Mind

When one party becomes detached from reality.

By David Brooks
Opinion Columnist

Nov. 26, 2020

People in this precarious state are going to demand stories that will both explain their distrust back to them and also enclose them within a safe community of believers. The evangelists of distrust, from Donald Trump to Alex Jones to the followers of QAnon, rose up to give them those stories and provide that community. Paradoxically, conspiracy theories have become the most effective community bonding mechanisms of the 21st century.

For those awash in anxiety and alienation, who feel that everything is spinning out of control, conspiracy theories are extremely effective emotional tools. For those in low status groups, they provide a sense of superiority: *I possess important information most people do not have.* For those who feel powerless, they provide agency: *I have the power to reject "experts" and expose hidden cabals.* As Cass Sunstein of Harvard Law School points out, they provide liberation: *If I imagine my foes are completely malevolent, then I can use any tactic I want.*

Under Trump, the Republican identity is defined not by a set of policy beliefs but by a paranoid mind-set. He and his media allies simply ignore the rules of the epistemic regime and have set up a rival trolling regime. The internet is an ideal medium for untested information to get around traditional gatekeepers, but it is an accelerant of the paranoia, not its source. Distrust and precarity, caused by economic, cultural and spiritual threat, are the source.

[AFTER READING]   The need for stories, for community, for security, and for trust all feature prominently as underlying needs in David Brooks' account. And the internet is the place that people are meeting these needs.

"The internet is an ideal medium for untested information to get around traditional gatekeepers…"

So how does this "untested information" spread?

Social media

Which brings us to social media platforms, where misinformation can spread more quickly than truth, and, studies show, it usually does.

Fake news

Fake news is one form of misinformation that travels widely on social media.

My colleague at the University of Washington, Jevin D. West, who studies the online spread of misinformation, often starts his talks with this graph from Craig Silverman's study of the 2016 election.

Silverman showed that during the 2016 election, there were more engagements with "fake news" than mainstream news.
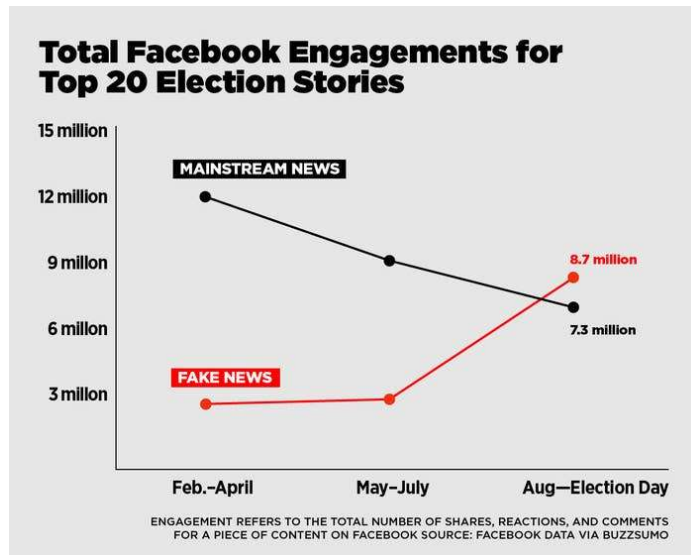
// Article source: https://www.buzzfeednews.com/article/craigsilverman/viral-fake-election-news-outperformed-real-news-on-facebook

2016 U.S. Presidential Election

The FAKE NEWS media (failing @nytimes, @NBCNews, @ABC, @CBS, @CNN) is not my enemy, it is the enemy of the American People!

— Donald J. Trump (@realDonaldTrump) February 17, 2017

Russia talk is FAKE NEWS put out by the Dems, and played up by the media, in order to mask the big election defeat and the illegal leaks!

— Donald J. Trump (@realDonaldTrump) February 26, 2017

Just watched the totally biased and fake news reports of the so-called Russia story on NBC and ABC. Such dishonesty!

— Donald J. Trump (@realDonaldTrump) March 23, 2017

The Lawfare Institute. (nd). Donald Trump's Statements on Putin/Russia/Fake News Media. https://www.lawfareblog.com/donald-trumps-statements-putinrussiafake-news-media   33

We know that fake news played a big role in the 2016 American Presidential election, generally by promoting articles that favored Donald Trump over Hilary Clinton.

In an ironic twist, it has since been *Donald Trump* claiming that reports of the influence of fake news on his election are, *themselves*, the fake news.

2016 U.S. Presidential Election

Within three months of the election:

- 30M fake news stories were shared on Facebook by those favoring Trump.

- 8M were shared by those favoring Clinton.

– Allcott & Gentzkow (2017)

Russia story on NBC and ABC. Such dishonesty!

— Donald J. Trump (@realDonaldTrump) March 23, 2017

The Lawfare Institute. (nd). Donald Trump's Statements on Putin/Russia/Fake News Media. https://www.lawfareblog.com/donald-trumps-statements-putinrussiafake-news-media

34

In the three months leading up to the 2016 U.S. Presidential election, 30M fake news stories were shared on Facebook by those favoring Trump. And 8M were shared by those favoring Clinton.

It will be interesting to see these data for the recent 2020 election.

Conspiracy theories
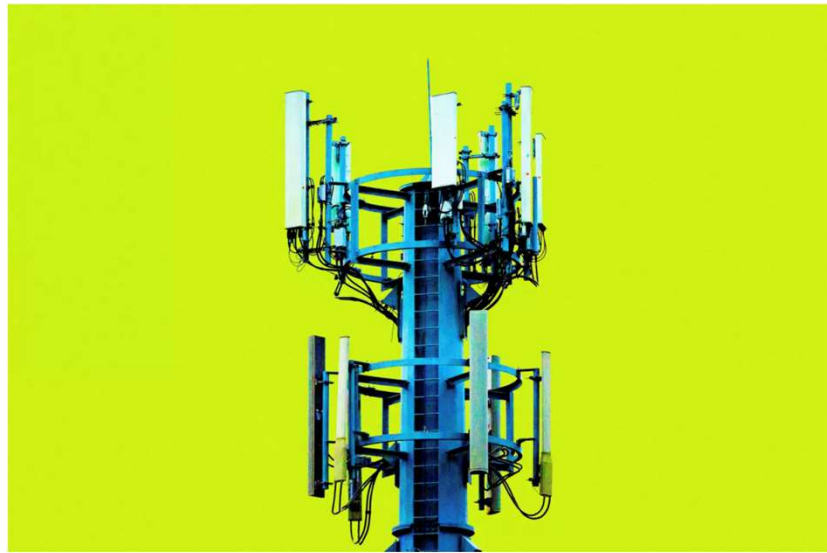
Credit **Getty Images / WIRED**

Conspiracy theories also spread like wildfire on social media. Have you heard of the 5G coronavirus conspiracy theory? It says that 5G towers like this one cause or can be linked to coronavirus.

Conspiracy theories
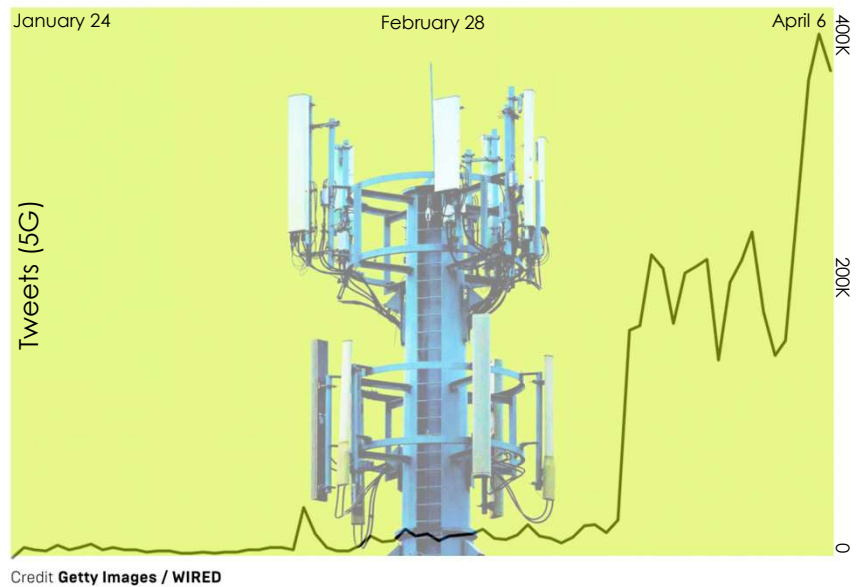
Dr. West and his colleagues collected 400M tweets about COVID as of early April. These were *all* Twitter conversations about COVID-19 at the time. Within this collection of 400M tweets, more than 5M tweets were about the 5G conspiracy theory. That means more than 1 in every 100 tweets about COVID-19 at that time were about a single totally false conspiracy theory. Incredibly alarming!
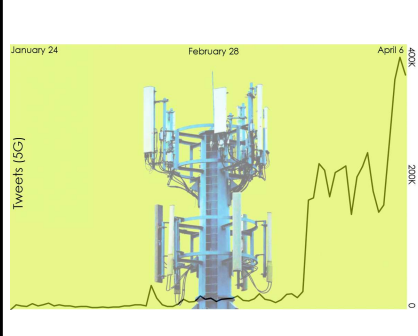
> " some weeks later, it started to break out, propelled by engagement algorithms that were smart enough to spot a viral trend but dumb enough not to notice the idiocy of its content.
>
> From those obscure beginnings, the conspiracy theory has now been pushed by celebrities with hundreds of thousands or millions of social media followers
>
> scientifically baseless comments don't exist in a vacuum. In fact, they exist in sludge of conspiracy theories that have been shared millions of times on social media.
>
> Like anti-vax content, this messaging is spreading via platforms which have been designed explicitly to help propagate the content which people find most compelling; most irresistible to click on "

James Temperton's article for *Wired* on the 5G conspiracy theory contains some alarming quotes that point to the power of social media in spreading conspiracy theories.

[READ QUOTES]

37

Spreading lies

So how do these lies *actually spread*? That was the focus of an issue of *Science* in 2018, which contained a highly-cited article called *The Science of Fake News*.

// Image credit: https://science.sciencemag.org/content/359/6380/eaat4382

> About 47% of Americans overall report getting news from social media often or sometimes, with Facebook as, by far, the dominant source (13). Social media are key conduits for fake news sites (3).
>
> social networks, in turn, reduce tolerance for alternative views, amplify attitudinal polarization, boost the likelihood of accepting ideologically compatible news, and increase closure to new information. Dislike of the "other side" (affective polarization) has also risen. These trends have created a context in which fake news can attract a mass audience.
>
> Another study reported that false information on Twitter is typically retweeted by many more people, and far more rapidly, than true information, especially when the topic is politics (4).
>
> mediation of much fake news via social media might accentuate its effect because of the implicit endorsement that comes with sharing.
>
> people prefer information that confirms their preexisting attitudes (selective exposure), view information consistent with their preexisting beliefs as more persuasive than dissonant information (confirmation bias), and are inclined to accept information that pleases them (desirability bias).
>
> Moreover, they are more likely to accept familiar information as true (10). There is thus a risk that repeating false information, even in a fact-checking context, may increase an individual's likelihood of accepting it as true.

Lazer et al. (2018). The science of fake news. *Science 359* (6380), pp. 1094-1096. https://science.sciencemag.org/content/359/6380/1094

It also contains some quotes that are worth reading in full. I have highlighted the most alarming phrases.

Fake News on Facebook and Twitter: Investigating How People (Don't) Investigate

Christine Geeng   Savanna Yee   Franziska Roesner
Paul G. Allen School of Computer Science & Engineering
University of Washington
{cgeeng,savannay,franzi}@cs.washington.edu

ABSTRACT
With misinformation proliferating online and more people getting news from social media, it is crucial to understand how people assess and interact with low-credibility posts. This study explores how users react to fake news posts on their Facebook or Twitter feeds, as if posted by someone they follow. We conducted semi-structured interviews with 25 participants who use social media regularly for news, temporarily caused fake news to appear in their feeds with a browser extension unbeknownst to them, and observed as they walked us through their feeds. We found various reasons why people do not investigate low-credibility posts, including taking trusted posters' content at face value, as well as not wanting to spend the extra time. We also document people's investigative methods for determining credibility using both platform affordances and their own ad-hoc strategies. Based on our findings, we present design recommendations for supporting users when investigating low-credibility posts.

Author Keywords
Misinformation; disinformation; fake news; social media; Facebook; Twitter; trust; verification;

CCS Concepts
•Human-centered computing → Social media; *Empirical studies in collaborative and social computing;* •Security and privacy → Social aspects of security and privacy;

INTRODUCTION
While propaganda, conspiracy theories, and hoaxes are not fundamentally new, the recent spread and volume of misinformation disseminated through Facebook, Twitter, and other social media platforms during events like the 2016 United States election has prompted widespread concern over "fake news" online. Social media companies have taken steps to remove misinformation (unintentional false stories) and disinformation (intentional false stories) [43] from their sites, as well as the accounts who spread these stories. However, the speed, ease, and scalability of information spread on social media means that (even automated) content moderation by the platforms cannot always keep up with the problem.

The reality of misinformation on social media begs the question of how people interact with it, whether they believe it, and how they debunk it. To support users in making decisions about the credibility of content they encounter, third parties have created fact-checking databases [28, 75, 78], browser extensions [29, 63], and media literacy initiatives [8, 41, 70]. Facebook and Twitter themselves have made algorithm and user interface (UI) changes to help address this. Meanwhile, researchers have investigated how people assess the credibility of news on social media [33, 44, 49, 81]. However, prior work has typically not studied users' interactions with fake news posted by people they know on their own social media feeds, and companies have given us little public information about how people use the platforms' current design affordances.

To better understand how people investigate misinformation on social media today, and to ultimately inform future design affordances to aid them in this task, we pose the following research questions:

1. How do people interact with misinformation posts on their social media feeds (particularly, Facebook and Twitter)?
2. How do people investigate whether a post is accurate?
3. When people fail to investigate a false post, what are the reasons for this?
4. When people do investigate a post, what are the platform affordances they use, and what are the ad-hoc strategies they use that could inspire future affordances?

We focus specifically on Facebook and Twitter, two popular social media sites that many people use for news consumption [77]—note that we use the term "feed" in this paper to refer generally to both Facebook's News Feed and Twitter's timeline. We conducted an in-person qualitative study that included (a) semi-structured interviews to gain context around people's social media use and prior experience with misinformation and (b) a think-aloud study in which participants scrolled through their own feeds, modified by a browser extension we created to temporarily cause some posts to look as though they contained misinformation.

Paper 655

Page 1

40

A paper by my UW colleague, Franziska Roesner, and her students, showed that most people never investigate fake news in their social media feeds, especially when links to articles were posted by a known or trusted source.

So fake news, conspiracies, and falsehoods can spread unchecked.

Trump's tweets

Donald J. Trump
@realDonaldTrump

I will be leaving the great Walter Reed Medical Center today at 6:30 P.M. Feeling really good! Don't be afraid of Covid. Don't let it dominate your life. We have developed, under the Trump Administration, some really great drugs & knowledge. I feel better than I did 20 years ago!

11:37 AM · Oct 5, 2020 · Twitter for iPhone

126.6K Retweets   152.3K Quote Tweets   576.7K Likes

Byler, D. (2020). This is Trump's worst tweet ever. No, really. *The Washington Post*. https://www.washingtonpost.com/opinions/2020/10/06/this-is-trumps-worst-tweet-ever-no-really/ 41

Of course, this list of social media woes would not be complete without reference to an American President who tweets regularly to nearly 90M followers, many of whom take his word as truth without question. Trump's tweets have exacerbated political polarization, promulgated fake news, heightened racial tensions, and contributed to rejection of shared truths, including facts of science and medicine. This tweet here might be one of the most harmful to those who would follow his advice.

The connective tissue in this diseased body?

So, with this unchecked spread of misinformation infecting the body of our online discourse, what is its connective tissue? What draws it all together and allows it to spread so easily?

Hyperlinks

[The Memex] affords an immediate step ... to associative indexing, the basic idea of which is ... any item may be caused ... to select immediately and automatically another. This is the essential feature of the Memex. The process of tying two items together is the important thing. ... It is more than this, for any item can be joined into numerous trails. ... It is an interesting trail, pertinent to the discussion. So [the user] sets a reproducer in action, [copies] the whole trail out, and passes it to his friend for insertion in his own Memex, there to be linked into the more general trail. ... Wholly new forms of encyclopedias will appear, ready-made with a mesh of associative trails running through them, ready to be dropped into the Memex and there amplified.

Bush, V. (1945). As we may think. *The Atlantic Monthly 176* (1), pp. 101-108. https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/

43

Hyperlinks. That ingenious ability to connect information (or misinformation) and spread it widely through social media platforms, which, after all, are *hypermedia platforms*, makes possible all of the ills we have seen.

Let's go all the way back to our roots.

Here is an excerpt from Bush's classic 1945 envisioning piece on the *Memex*. Let me read this and then highlight a few things.

[READ EXCERPT]

Seeds of the problems...

In this text, we see the seeds of the problems we've just toured.

Hyperlinks

Social media addiction, compulsive use, doomscrolling

Selective exposure, confirmation bias, desirability bias

Sharing, liking, friending, following

Social media feed visible to others

"Knowledge" held by a select few, conspiracies

Amplified by repeated sharing and liking

[The Memex] affords an immediate step … to associative indexing, the basic idea of which is … any item may be caused … to select immediately and automatically another. This is the essential feature of the Memex. The process of tying two items together is the important thing. … It is more than this, for any item can be joined into numerous trails. … It is an interesting trail, pertinent to the discussion. So [the user] sets a reproducer in action, [copies] the whole trail out, and passes it to his friend for insertion in his own Memex, there to be linked into the more general trail. … Wholly new forms of encyclopedias will appear, ready-made with a mesh of associative trails running through them, ready to be dropped into the Memex and there amplified.

Bush, V. (1945). As we may think. 101-108. https://www.theatlantic.c we-may-think/303881/

Let me highlight some phrases and extrapolate the problems we're seeing.

A sad irony…

What Bush (1945) envisioned as a means to connect people to facts, knowledge, and the wonders of science, now has become a vehicle for the spread of falsehoods, conspiracies, and acutely *unscientific*, alternate realities.

It is a sad irony that…

So what can be done?

O.K., so that's been a pretty heavy load of negativity so far. But that's where we are today. We've lost our collective abilities to work together to solve big problems. And social media is providing a platform for amplifying misinformation and sowing division. And it's all connected by and spreading easily because of the ingenious invention of hyperlinks and everything we can do with them.

So what can be done?
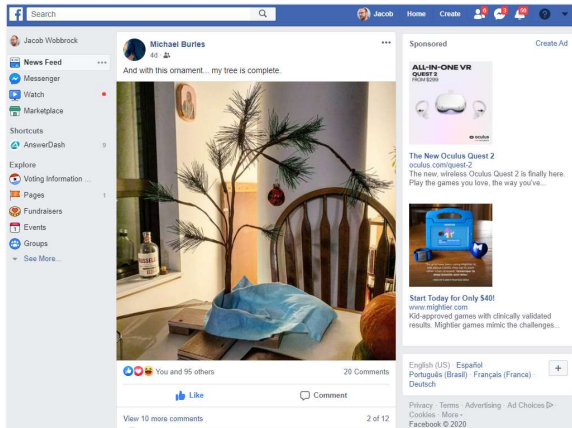
Social media *is* hypermedia

EVERYTHING IN SOCIAL MEDIA CONNECTS TO SOMEWHERE OR SOMEONE ELSE

First, let us recognize that social media *is* hypermedia. Everything in social media connects to somewhere or someone else, including not just textual links but images and videos as well.

We'd be hard pressed to click on anything in either of these interfaces and not be instantly connected to something else.

Hypermedia interfaces have power...

And I don't have to tell you in *this* audience that hypermedia interfaces have tremendous power. If hyperlinks can connect people to misinformation, they can also connect people to *(true) information*.

So how can we use this power for good?

To connect
us to truth

As I said, hyperlinks have the power to connect us to the truth.

As one example, Twitter has started flagging content that it deems false or misleading. Many of Donald Trump's tweets about his own re-election "success" were flagged by Twitter with hyperlinks leading to authoritative news content.
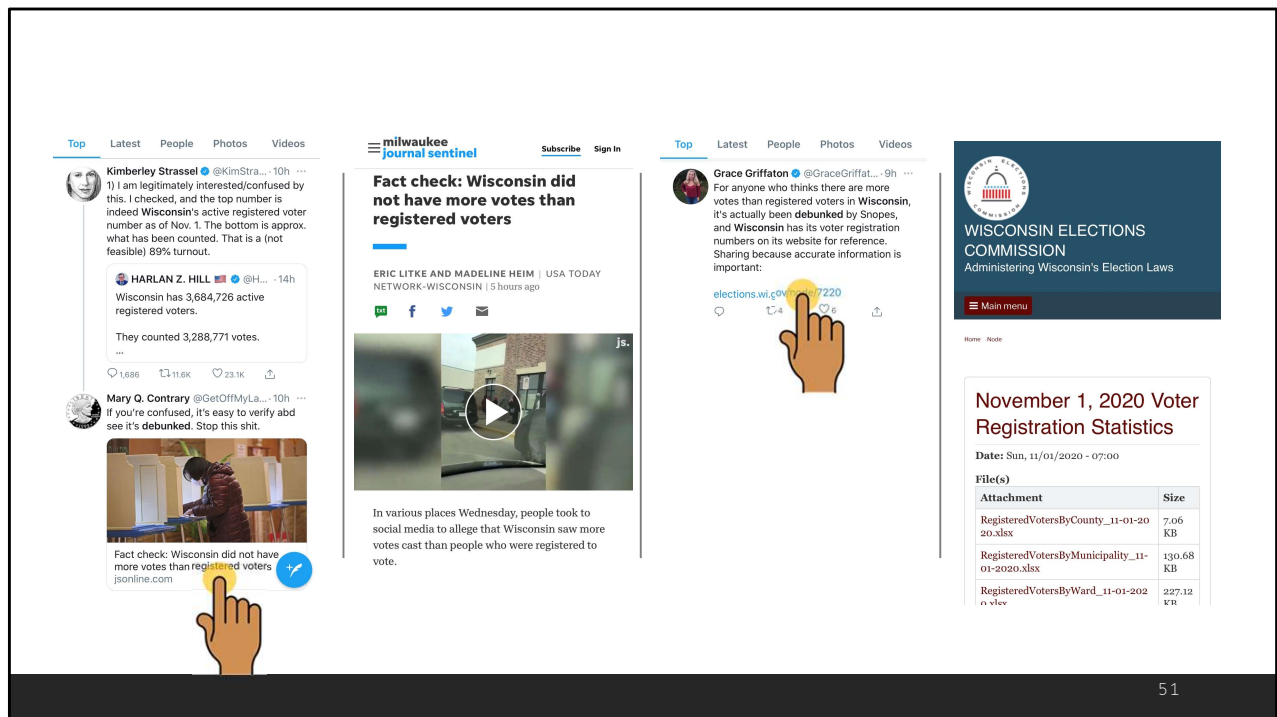
Another example is when uncertainty arose about Wisconsin's registered voters and the number of votes cast.

Although Twitter itself did not clarify these concerns, other people quickly cleared up confusions with hyperlinks leading to authoritative content. Here are two examples.

To debunk conspiracy theories
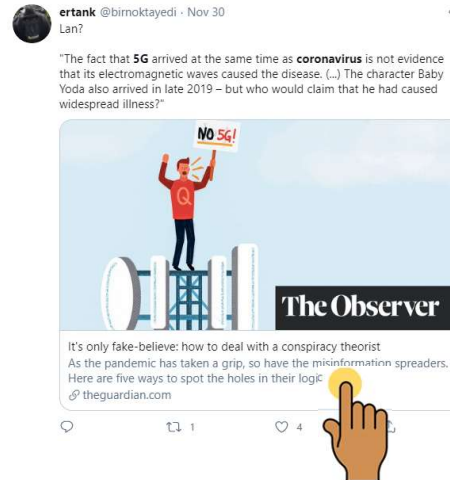
Hypertext interfaces can also debunk conspiracy theories. Remember the 5G coronavirus conspiracy theory? Links to authoritative news articles debunking this conspiracy helped tamp down the spread.

To debunk conspiracy theories

// Article: https://www.theguardian.com/society/2020/nov/29/how-to-deal-with-a-conspiracy-theorist-5g-covid-plandemic-qanon

FeedReflect

To indicate
credibility
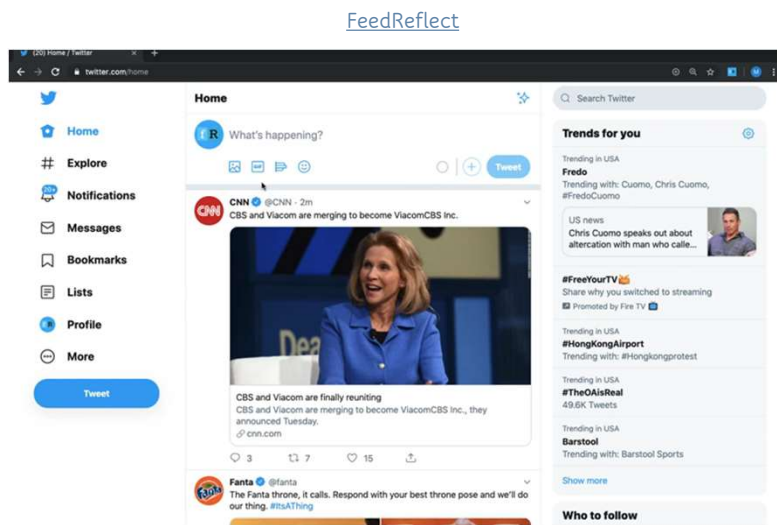
Bhuiyan, M.M., Zhang, K., Vick, K., Horning, M.A. and Mitra, T. (2018). FeedReflect: A tool for nudging users to assess news credibility on Twitter. *Companion of the ACM Conf. on Computer Supported Cooperative Work & Social Computing (CSCW '18)*. New York: ACM Press, pp. 205-208. https://dl.acm.org/doi/10.1145/3272973.3274056

54

Hypertext interfaces can also indicate the credibility of information.

My colleague at the UW Information School, Tanushree Mitra, and her collaborators created *FeedReflect*, a browser plugin that augments tweets with visual cues to nudge users to more carefully consider hyperlinked articles appearing in their feeds.

FeedReflect emphasizes news links that come from reliable sources, coloring them green, and de-emphasizes news links that come from questionable sources, fading them out. Reliable sources that prompted questions in people's comments are emphasized in yellow to encourage further investigation.

Users can also rate the credibility of news sources they encounter along a variety of dimensions. This video shows these features. [PLAY VIDEO]
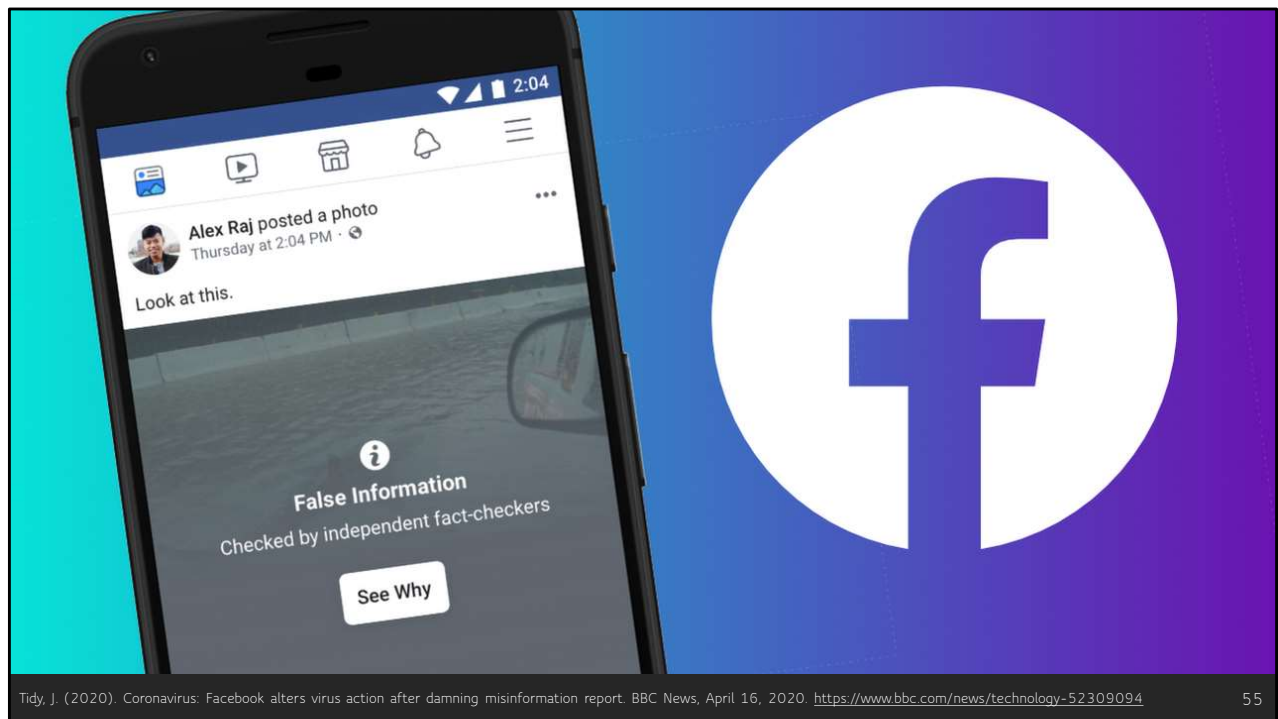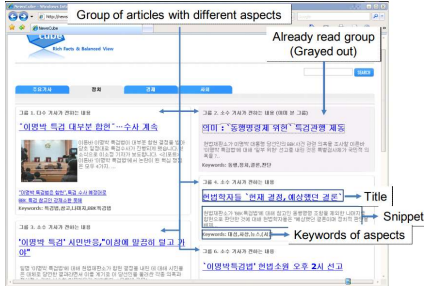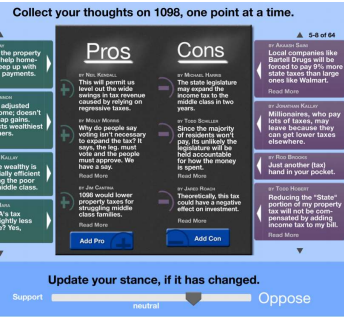
Facebook has taken to graying over posts that have been deemed "false information" by independent fact-checkers.

// Photo credit: https://www.bbc.com/news/technology-52309094
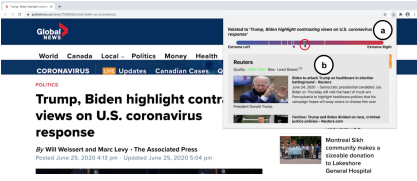
NewsCube   ConsiderIt   Counterweight

To gather a range of ideas

Hypertext interfaces can also gather a range of ideas from across the opinion spectrum. Research systems like *NewsCube*, *ConsiderIt*, and *Counterweight* have created hypertextual interfaces that allow users to explore a range of articles, opinions, and ideas.

// NewsCube: https://dl.acm.org/doi/abs/10.1145/1518701.1518772
// ConsiderIt: https://dl.acm.org/doi/10.1145/2145204.2145249
// Counterweight: https://dl.acm.org/doi/abs/10.1145/3379350.3416154

The Wall Street Journal showed liberal and conservative Facebook posts side-by-side in a feature they called "Blue Feed, Red Feed."
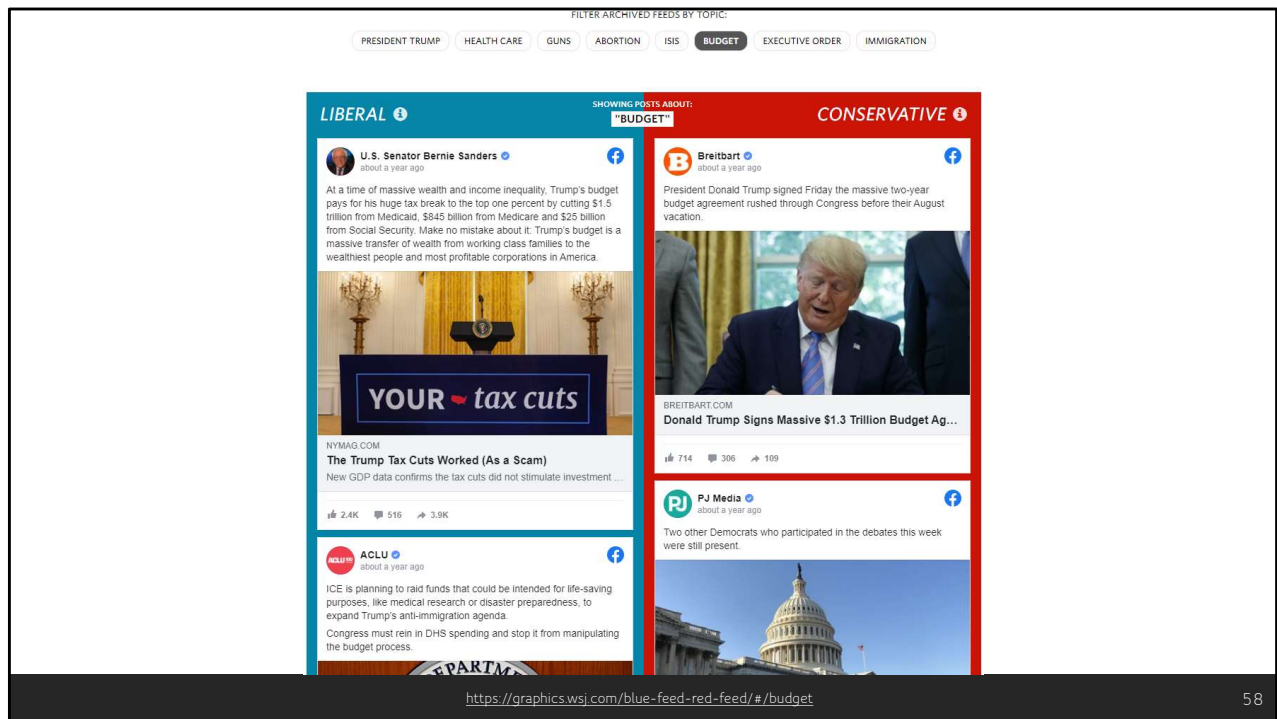
Here is what that interface looked like for the topic of "budget."

But what about trust?

All of these hyperlinked interfaces can help curtail the spread of misinformation and promote truth over falsehood.

But if we are going to work together across ideological divides – *really* work together – there still lingers the underlying issue of *trust*.

What about trust?

60

Remember that David Brooks article I showed you previously? What I didn't show you was the last paragraph of that article, where Mr. Brooks offers some insight into how to address the problems he's observed. He says: [READ QUOTE]

Trust is social. So can *social* media foster trust?

Foundations of trust

"...trust is a bet about the future contingent actions of others."

–Piotr Sztompka (1999)

TRUST		
Reputation (past deeds)	Performance (current deeds, present conduct)	Appearance (dress, grooming, fitness, civility, age, gender, ethnicity)

62

Well, what are the foundations of trust?

Psychologists used to regard trust as a mere attitude but have come to see trust as fundamentally *relational*, not about individuals but about relationships. The eminent Polish sociologist Piotr Sztompka formulated a definition of trust, which said, "trust is a bet about the future contingent actions of others." For Sztompka, trust had three components:

- Reputation is about past deeds, things known about you that you have done.
- Performance is about current deeds, how you are conducting yourself now.
- Appearance is visual appearance but also involves civility in Sztompka's account.

All three of these are present in social media. Take Twitter for example:

- Reputation is visible in a person's bio and tweet history.
- Performance is about their current tweet and what they're doing with it.
- And appearance is about their profile picture and banner choices, but also their civility during exchanges.

Baughan
et al.

"We conducted a controlled experiment on Twitter, **systematically varying respectful versus neutral language** with ingroup versus outgroup conversations. We found that respectful language diminishes the effects of ingroup bias and improves the quality of discourse overall by reducing shaming language and increasing respectful language."

Baughan, A., Khasanova, E., Cross, K., and Hiniker, A. (in progress). "With all due respect: Online political arguments, ingroup bias, and linguistic choices."

My UW colleague, Alexis Hiniker, and her Ph.D. student, Amanda Baughan -- who led the project I'm about to describe -- conducted a study to see if respectful behavior could affect online discourse on Twitter. Baughan sent me this summary. She says: ...

Neutral #1

Joe Biden ✔ @JoeBiden · Aug 10
Social Security is the bedrock of American retirement — giving countless Americans peace of mind and the ability to retire with dignity. I've been fighting to protect and expand the program throughout my career — and I'll continue that fight as president.

○ 5.9K   ↻ 17.9K   ♡ 80.7K

scorpio @Scorpioman68 · Aug 10
Amazing that for 40 yrs u wanted to cut social security and u did nothing but make racist statements and now In 6 months you're a changed man . Like u always say come on man.

○ 4   ↻ 1   ♡ 26

David Pratt @DavidWPratt · Aug 10
I disagree, because I think the federal deficit is already $2.7T, in large thanks to Trump's administration's spending. Democrats like Joe Biden are working to make sure every American can financially survive the pandemic.

○ 3   ↻   ♡ 1

Ramiro Ayala
@RamiroA15788281

Replying to @DavidWPratt @Scorpioman68 and @JoeBiden
All I can say is you're an idiot

1:24 AM · Aug 14, 2020 · Twitter for iPhone

Baughan, A., Khasanova, E., Cross, K., and Hiniker, A. (in progress). "With all due respect: Online political arguments, ingroup bias, and linguistic choices."   64

Here is an example of neutral language. I won't read it all, but David Pratt, where the orange arrow is, is actually Amanda Baughan, the researcher. David's reply offers neutral but pointed disagreement, starting with "I disagree" before presenting his argument. In response, he gets, "All I can say is you're an idiot."

// Tweet source:
https://twitter.com/RamiroA15788281/status/1294188081189285888

Neutral #2

Baughan, A., Khasanova, E., Cross, K., and Hiniker, A. (in progress). "With all due respect: Online political arguments, ingroup bias, and linguistic choices."   65
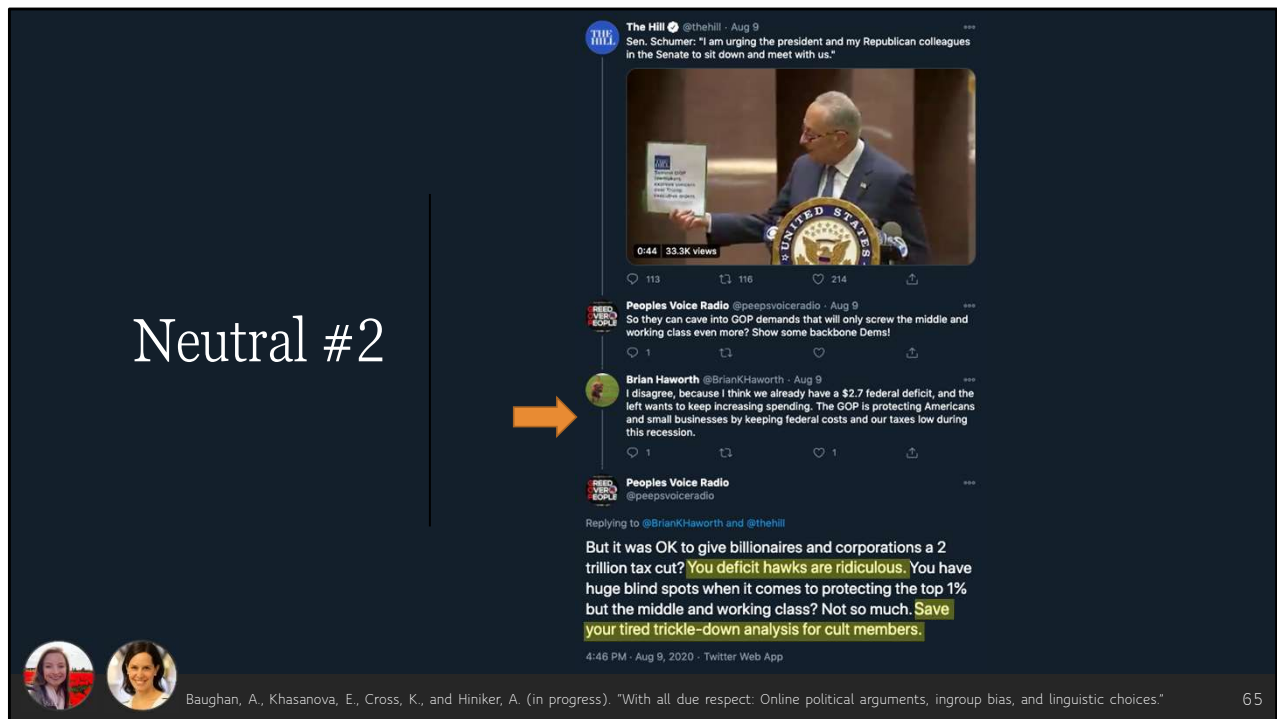
Here is another example. Brian Haworth is also the researcher, Amanda Baughan. Brian's reply is again neutral but pointed disagreement, not disrespectful but not particularly respectful or showing empathy. The response is to call him a ridiculous cult member.

// Tweet source: https://twitter.com/peepsvoiceradio/status/1292608322810642433

Neutral #3

John Solomon @jsolomonReports · Aug 8
Breaking: Trump signs executive orders providing coronavirus relief funds, bypassing Congress | Just The News

Trump signs executive orders providing coronavirus relief funds, by...
Talks for stimulus packages have hit a stalemate on Capitol Hill.
justthenews.com

227   3.2K   8.7K

GodisFaithful @walt077 · Aug 8
I don't think he bypassed Congress. He rather bypassed Obstructionist

10   6   52

David Pratt @DavidWPratt · Aug 8
I disagree, because I think the federal deficit is already $2.7T, in large thanks to Trump's administration's spending. Democrats were working to make sure every American can financially survive the pandemic, and Republicans refused negotiations.

2

aturbo
@aturbo17
Replying to @DavidWPratt @walt077 and @jsolomonReports
It's sad that there are people like you who believe the crap that you just wrote. Seek help.

2:34 PM · Aug 8, 2020 · Twitter for iPhone

And again, neutral but pointed disagreement from David Pratt, without showing any signs of overt respect or empathy. The result, again, is an uncharitable rebuke.

// Tweet source: https://twitter.com/aturbo17/status/1292212533999280128

Respectful #1

Baughan, A., Khasanova, E., Cross, K., and Hiniker, A. (in progress). "With all due respect: Online political arguments, ingroup bias, and linguistic choices."

67

O.K., here now are some respectful responses. They all still show disagreement, but they begin with, "I respect your views, …" and *then* proceed to their objections. But note the response elicited, which is much more respectful.

// Tweet source: https://twitter.com/SandyWoodlan/status/1295930123141517313

Respectful #2

Baughan, A., Khasanova, E., Cross, K., and Hiniker, A. (in progress). "With all due respect: Online political arguments, ingroup bias, and linguistic choices."

68

Here, also, we see respectful disagreement, and a disagreeing response that is also a kind response.

// Tweet source: https://twitter.com/BrianKHaworth/status/1291500930177748992

Respectful #3

And again, a respectful but disagreeing post from the researcher elicits respectful disagreement from the other party, and an acknowledgement of the rights of everyone to express their own views in a democracy.

// Tweet source: https://twitter.com/darkparkeyville/status/1292229358346801152

How can we design interfaces to promote trust and understanding?

So what we've just seen are examples of how respectful online discourse – even disagreement – can elicit respectful responses, and even in some cases enhanced empathy and possibly trust.

But Twitter does not do anything to *encourage* this kind of interaction. If anything, by promoting tweets that elicit strong reactions, it encourages the opposite. We hear of "viral outrage." We don't hear of "viral trust and understanding."

So how can we design interfaces to promote trust and understanding?

Rethink online interactions

Text suggestions detect second-person language (which erodes constructive discourse) and provide support for adjusting to first-person language (which promotes constructive discourse)

A "Common Ground" highlighter tool allows conversational participants to highlight subsections of a passage they agree with

How can you possibly think that??

Reaction buttons include "Apologize" and "Forgive" options to make these essential expressions more accessible and lower stakes

Using NLP to detect bare commands, negative affect, second-person language, and more, an algorithm scores the interpersonal strength of a message. This can be raised by the conversational partner once the message is posted, if the partner sees more value and emotional intelligence in the message than the algorithm recognizes.

Interpersonal score: 2/10

Q W E R T Y U I O P
A S D F G H J K L
⬆ Z X C V B N M ⌫
123 🌐 🎤 space return

Any message can be toggled into "Vulnerability Mode," which changes the visual appearance when it is posted to disclose the challenge the user feels in sharing

No auto-complete or prompted phrases, to ensure both parties know the content is crafted authentically by the speaker

My colleague Alexis Hiniker is rethinking online social interactions and exploring new interfaces to encourage trust- and empathy-building. Here is a sketch of a mobile social media app she's creating to foster trust and healthy relationships online.

[TOUR THE INTERFACE]

This is one example of how we might re-imagine the purpose of our online social interactions and shrink the "divide of disrespect."

Augmenting our civic capabilities?

Which brings me to my final thought, and back to Douglas Engelbart, who, as we all know, inspired us to think about how to augment human capabilities through powerful tools.

When it comes to social media and online interactions, can we think about augmenting not just our own *personal* capabilities, but also our "*civic* capabilities?"

By "augmenting human intellect" we mean increasing the capability of a man to approach a complex problem situation, to gain comprehension to suit his particular needs, and to derive solutions to problems. Increased capability in this respect is taken to mean a mixture of th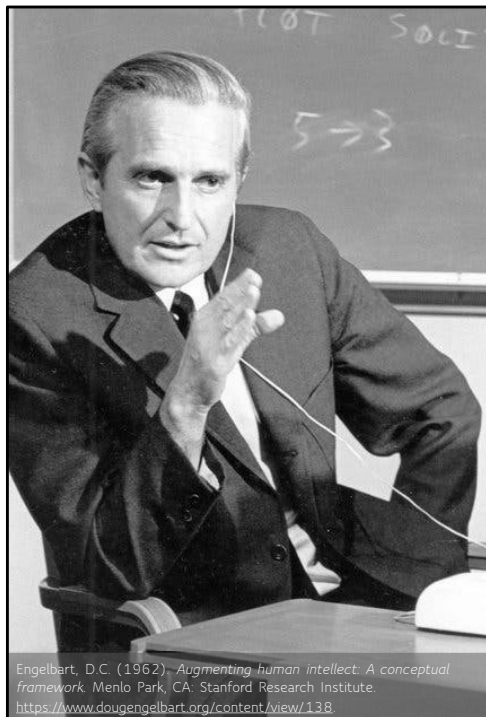e following: more-rapid comprehension, better comprehension, the possibility of gaining a useful degree of comprehension in a situation that previously was too complex, speedier solutions, better solutions, and the possibility of finding solutions to problems that before seemed insoluble. And by "complex situations" we include the professional problems of diplomats, executives, social scientists, life scientists, physical scientists, attorneys, designers--whether the problem situation exists for twenty minutes or twenty years.

Augmenting man's intellect, in the sense defined above, would warrant full pursuit by an enlightened society if there could be shown a reasonable approach and some plausible benefits.

The objective of this study is to develop a conceptual framework within which could grow a coordinated research and development program whose goals would be the following: (1) to find the factors that limit the effectiveness of the individual's basic information-handling capabilities in meeting the various needs of society for problem solving in its most general sense; and (2) to develop new techniques, procedures, and systems that will better match these basic capabilities to the needs, problems, and progress of society.

73

If this sounds like too far a stretch for Engelbart's vision, I'd beg to differ. Engelbart was always concerned with solving society's biggest problems. He saw boosting our collective intelligence as a means to doing this. He wrote: … [READ HIGHLIGHTS]

Presumably man's spirit should be elevated if he can better review his shady past and analyze more completely and objectively his present problems. He has built a civilization so complex that he needs to mechanize his record more fully if he is to push his experiment to its logical conclusion and not merely become bogged down part way there by overtaxing his limited memory. His excursion may be more enjoyable if he can reacquire the privilege of forgetting the manifold things he does not need to have immediately at hand, with some assurance that he can find them again if they prove important. The applications of science have built man a well-supplied house, and are teaching him to live healthily therein. They have enabled him to throw masses of people against another with cruel weapons. They may yet allow him truly to encompass the great record and to grow in the wisdom of race experience. He may perish in conflict before he learns to wield that record for his true good. Yet, in the application of science to the needs and desires of man, it would seem to be a singularly unfortunate stage at which to terminate the process, or to lose hope as to the outcome. ✪

Vannevar Bush also foresaw the use of hyperlinked information systems to the application of large-scale societal problems.

So, from the very first envisioning of hypertext systems, their ability to augment our collective "civic capabilities" was part of that vision.

Bush wrote: … [READ HIGHLIGHTS]

I agree, we must not "lose hope as to the outcome" despite all of the problems I have described today.

A call to action...

I will leave you with a call to action.

A story…

On her first day of work, a newly hired research scientist at a prestigious laboratory joins her colleagues from different fields around the lunch table. As conversation unfolds, she asks, "What are the most important problems in each of your various fields?" The scientists all take their turn answering. When everyone is finished, the new hire asks for a show of hands: "So how many of you are currently working on the problems you just described?"

No hands go up.

And to do that, I have a story for us.

[READ STORY]

I am guilty of this. Perhaps you are, too. But we *can* do better with the blessings of intelligence, education, science, technology, and our research communities – and we must take full advantage of them all if we are to solve the problems we face.

So many problems...

Global warming

COVID-19

Extreme poverty

Endless wars

Widening inequality

Violent religious extremism

White supremacy

Racial discrimination

Mental health crises

. . .

What can we do in our work to improve upon any one of these problems?

How can we connect people to (true) information that improves their lives?

How can we foster trust, encourage empathy, and promote constructive dialog in hyperlinked social media spaces?

77

There are so many problems that matter. At the start of this talk, I listed these. [ANIMATE]

So now I ask us… [READ CHARGES]

I will leave you to consider these questions for your own work.

Acknowledgements

Alexis Hiniker   Amanda Baughan   Jevin D. West   Tanushree Mitra   Amy X. Zhang

W CENTER FOR AN INFORMED PUBLIC
UNIVERSITY *of* WASHINGTON
http://cip.uw.edu/

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Thank You

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Thank you!