Managing the Cultural Record in the Information Warfare Era

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Slides: Justin Whitlock

6 March 2019

Managing the Cultural Record in the Information Warfare Era

by **Clifford Lynch** · Monday, October 29, 2018 · **E-Content** · In Print · Editors' Pick · **PDF**

Several rapidly emerging and converging lines of technology development will challenge us to rethink the way we define the cultural record and teach information literacy.

https://web.archive.org/web/20190128083058/https://er.educause.edu/articles/2018/10/managing-the-cultural-record-in-the-information-warfare-era

What belongs in our Cultural Record?

To Represent Us Truly: The Job and Context of Preserving the Cultural Record

To begin with, the cultural record is the sum of the things we put away and drop on the floor as we, the whole society, go through life. It is the detritus of our ways of life and our ways of thinking, of our knowledge and beliefs, and of our superstitions and nightmares. None of these descriptive words outline the shape of something we can grasp, because the cultural record, which contains our cultural heritage, seems to incorporate the whole, unabbreviated body of evidence of everything we produce.

https://search.proquest.com/docview/222565595?pq-origsite=gscholar

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More and more, the cultural record is digital, and growing

A Vision of the Role and Future of Web Archives: The Web Archive in Today's World

May 22, 2012 by Abbey Potter

The following is a guest post by Kalev H. Leetaru, University of Illinois, who presented these ideas at the 2012 General Assembly of the IIPC. This post is the first in a three-part series.

We've reached an incredible point in society. Every single day a quarter-billion photographs are uploaded to Facebook, 300 billion emails are sent and 340 million tweets are posted to Twitter. There are more than 644 million websites with 150,000 new ones added each day, and upwards of 156 million blogs. Even more incredibly, the growth rate of content creation in the digital world is exploding. The entire New York Times over the last 60 years contained around 3 billion words. More than 8 billion words are posted to Twitter every single day. That's right, every 24 hours there are 2.5 times as many words posted to Twitter as there were in every article of every issue of the paper of record of the United States over the last half-century.

https://blogs.loc.gov/thesignal/2012/05/a-vision-of-the-role-and-future-of-web-archives-the-web-archive-in-todays-world/

Digital archives are susceptible to advances in digital forgery technology

- Deep fake audio/video methods

- Social media manipulation

- Insertion of false evidence into legitimate sources

    - Either reduces trust in legitimate sources,

    - Or it can mislead scholars into claims based on false evidence.

Deep fakes allow advanced manipulation of audio/video
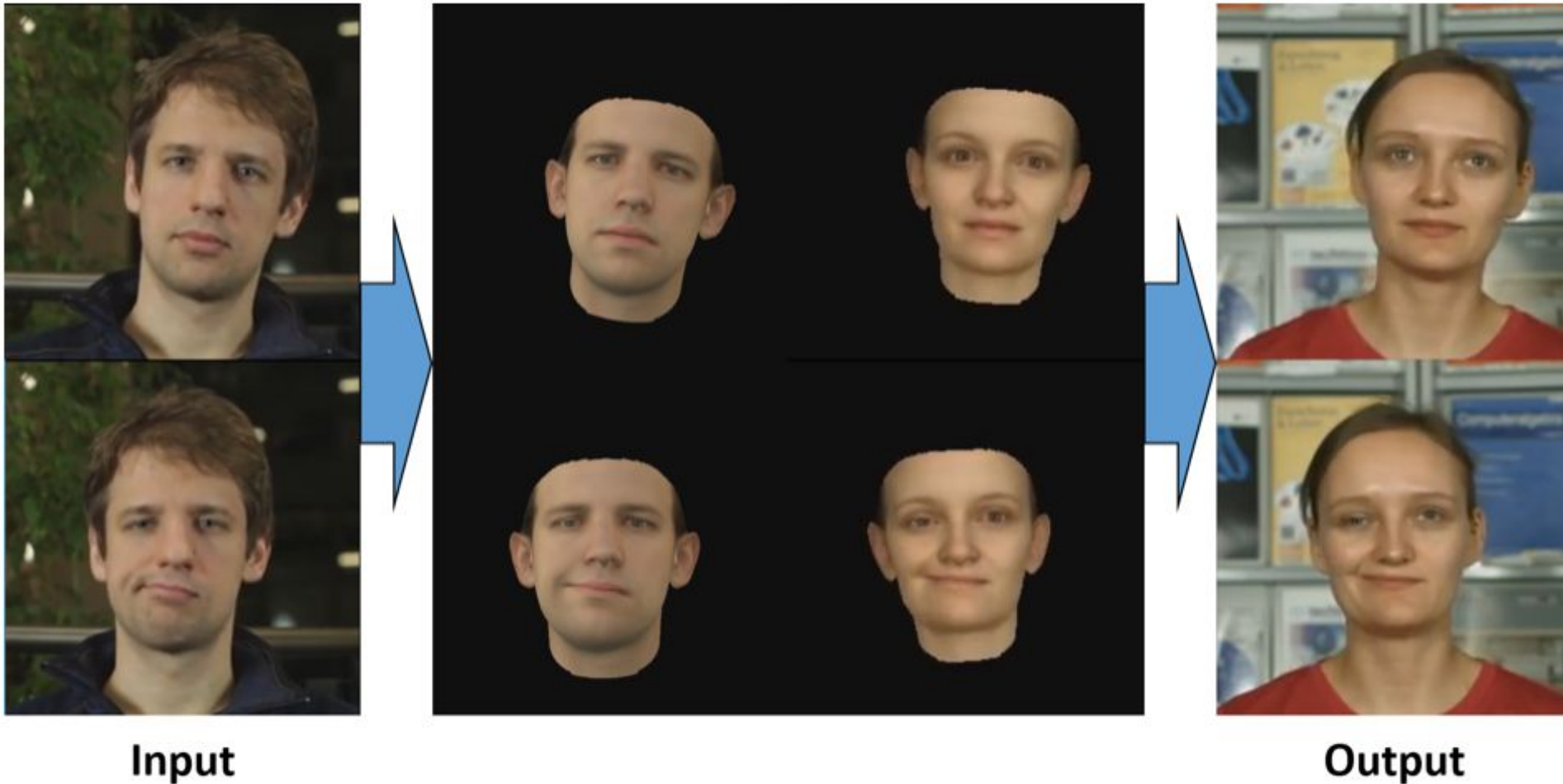
Input

Output

Skepticism is learned: Default setting is to believe what we see and hear.

https://www.imdb.com/title/tt0177789/

The meaning of information literacy needs to change

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Part of the social challenge here is that people seem to be wired to believe their eyes and ears (i.e., "seeing is believing"). Having encountered advertising, propaganda, and fiction, they are experienced with, and hence have some level of defensive skepticism about, the written word. Even though there is a century of experience with photo manipulation. video in particular still seems to be deeply persuasive, and we don't understand how the potential for personalized fabrication in the current environment, as opposed to a "publication" or "broadcast" dissemination, may change the balances.

Awareness of DeepFakes Erodes Trust

TECHTANK
Artificial intelligence, deepfakes, and the uncertain future of truth

John Villasenor · Thursday, February 14, 2019

TECHTANK

Because they are so realistic, deepfakes can scramble our understanding of truth in multiple ways. By exploiting our inclination to trust the reliability of evidence that we see with our own eyes, they can turn fiction into apparent fact. And, as we become more attuned to the existence of deepfakes, there is also a subsequent, corollary effect: they undermine our trust in *all* videos, including those that are genuine. Truth itself becomes elusive, because we can no longer be sure of what is real and what is not.

https://www.brookings.edu/blog/techtank/2019/02/14/artificial-intelligence-deepfakes-and-the-uncertain-future-of-truth/

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3213954

As digital forgeries grow more advanced, we need more advanced tools to detect them.

https://www.darpa.mil/program/media-forensics

Misinformation and fake news enter a new era with social media

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"In addition, a separate and important set of issues concerns how fabricated material broadly (whether old-fashioned text materials or new digital fabrications) is introduced to the public sphere and subsequently promoted and given visibility and credibility (e.g., through manipulating social media system mechanisms or by subverting what are viewed as "official" channels)."

https://web.archive.org/web/20190128083058/https://er.educause.edu/articles/2018/10/managing-the-cultural-record-in-the-information-warfare-era

Dissemination of Fake News over Social Media

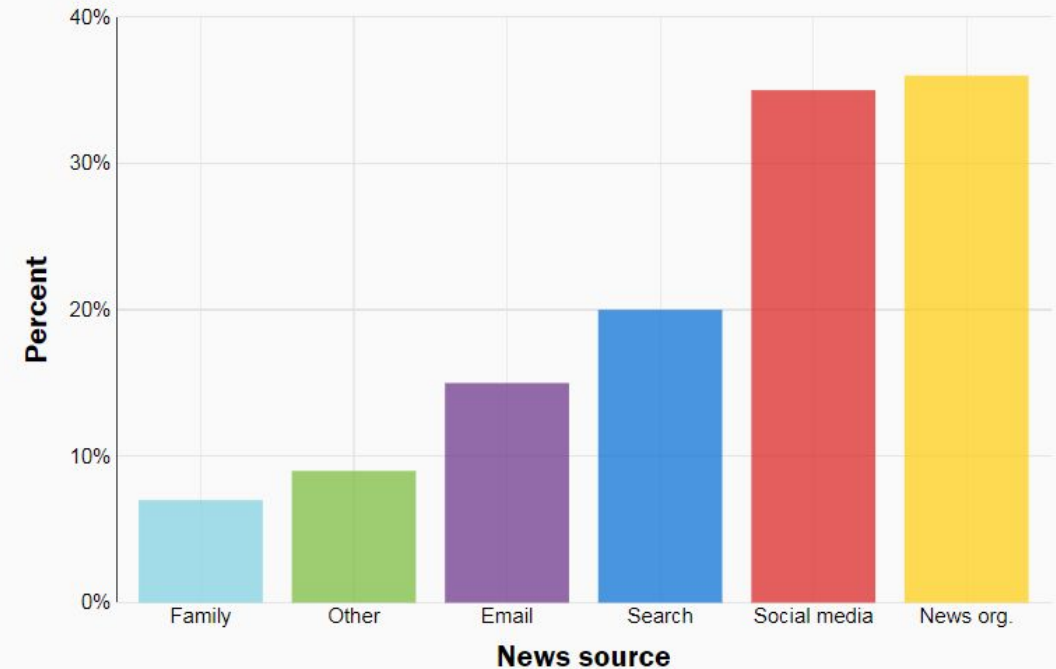

Figure 4: Public trust in traditional news media, 1997-2016

Source: Gallup, "Americans' Trust in Mass Media Sinks to New Low," September 14, 2016.

Figure 1: Where people get online news in the US, 2017

Source: Pew Research Center, "How Americans Encounter, Recall, and Act Upon Digital News," February 9, 2017.

https://www.brookings.edu/research/how-to-combat-fake-news-and-disinformation/

While widespread, how to measure its impact?

POLITICS

Did Fake News On Facebook Help Elect Trump? Here's What We Know

April 11, 2018 · 7:00 AM ET

DANIELLE KURTZLEBEN

More than one-quarter of voting-age adults visited a fake news website supporting either Clinton or Trump in the final weeks of the 2016 campaign, according to estimates from Guess and his co-authors. That information was gleaned from a sample of more than 2,500 Americans' web traffic data collected (with consent) from October and November of 2016.

Only an estimated 10 percent of Americans account for nearly 60 percent of visits to fake news sites, according to that study from Princeton's Guess and his co-authors. Not only that, but that 10 percent is the 10 percent of people with the "most conservative information diets."

https://www.npr.org/2018/04/11/601323233/6-facts-we-know-about-fake-news-in-the-2016-election

Impact of fake science news is easier to quantify

Health Policy and Technology

Volume 7, Issue 2, June 2018, Pages 115-118

The spread of medical fake news in social media – The pilot quantitative study

Przemyslaw M. Waszak [a, b] ✉, Wioleta Kasprzycka-Waszak [c], Alicja Kubanek [d]

⊞ Show more

https://doi.org/10.1016/j.hlpt.2018.03.002

40% of the most frequently shared links contained text we classified as fake news. These were shared more than 450,000 times. The most fallacious content concerned vaccines, while news about cardiovascular diseases was, in general, well sourced and informative. More than 20% of dangerous links from our material was generated by one source.

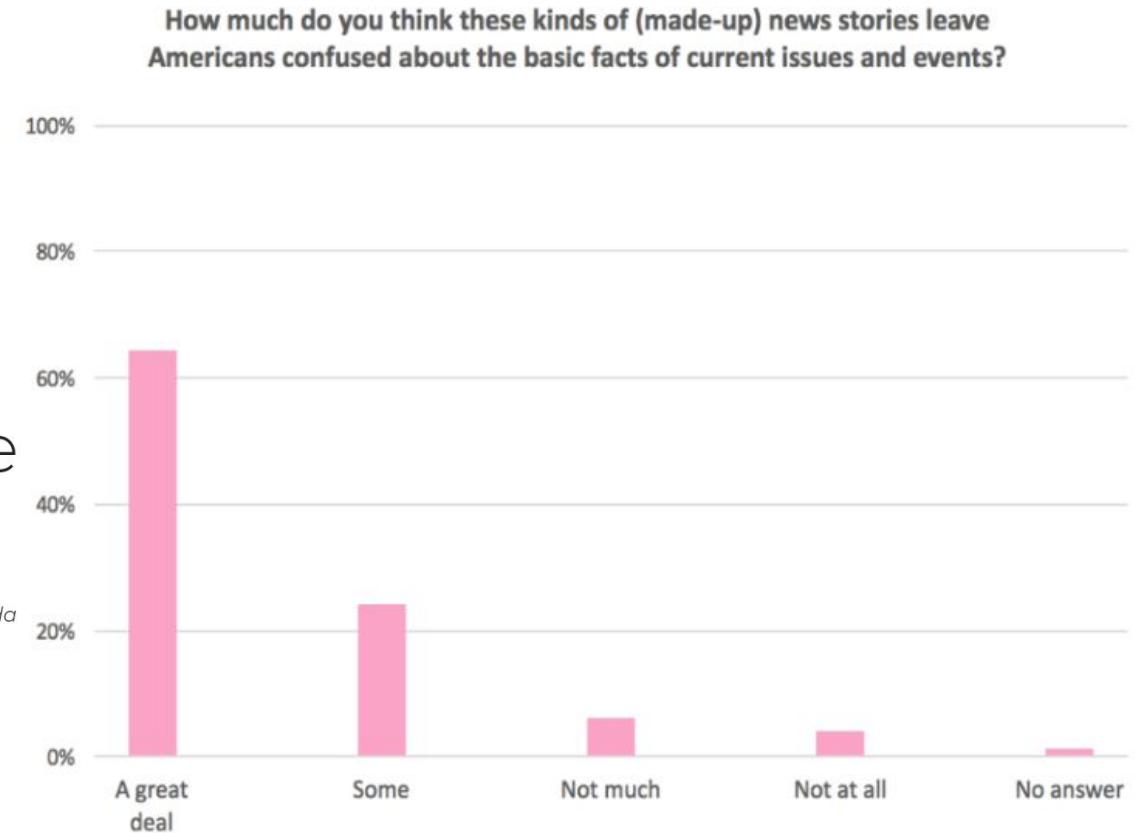https://www.sciencedirect.com/science/article/pii/S2211883718300881

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Whether or not it impacted the elections, people are rightly concerned.

Responsibility, Overconfidence, & Intervention Efforts in the Age of Fake News

Claire Liu is a junior pursuing a double major in Government and independent study, focused on persuasion and propaganda through the Arts and Sciences College Scholar program, and a minor in French. She was a Roper Center Kohut Fellow in the summer of 2017. **To learn more about the Kohut Fellowship, click here**.

How much do you think these kinds of (made-up) news stories leave Americans confused about the basic facts of current issues and events?

Survey by Pew Research Center for the People & the Press.
Methodology: Conducted by Princeton Survey Research Associates International December 2016

https://ropercenter.cornell.edu/responsibility-overconfidence-intervention-efforts-age-fake-news

Individual activism could become even harder

OpenGlobalRights

Page | Positive Narratives | Social Practice | Technology | Courts | Trump | Business Models | Public Opinion | Fu

Collecting, preserving, and verifying online evidence of human rights violations

The amount of digital informatio... human rights practitioners with a... document abuses and address a... collecting the right information r... tools.

> "The propagation of disinformation is detrimental not only to campaigns, but also to NGOs and individual activists

By: **Enrique Piracés**
January 30, 2018

Available in:
Español

https://www.openglobalrights.org/collecting-preserving-and-verifying-online-evidence-of-human-rights-violations/

Activists attacked with fake news, how to verify the original?
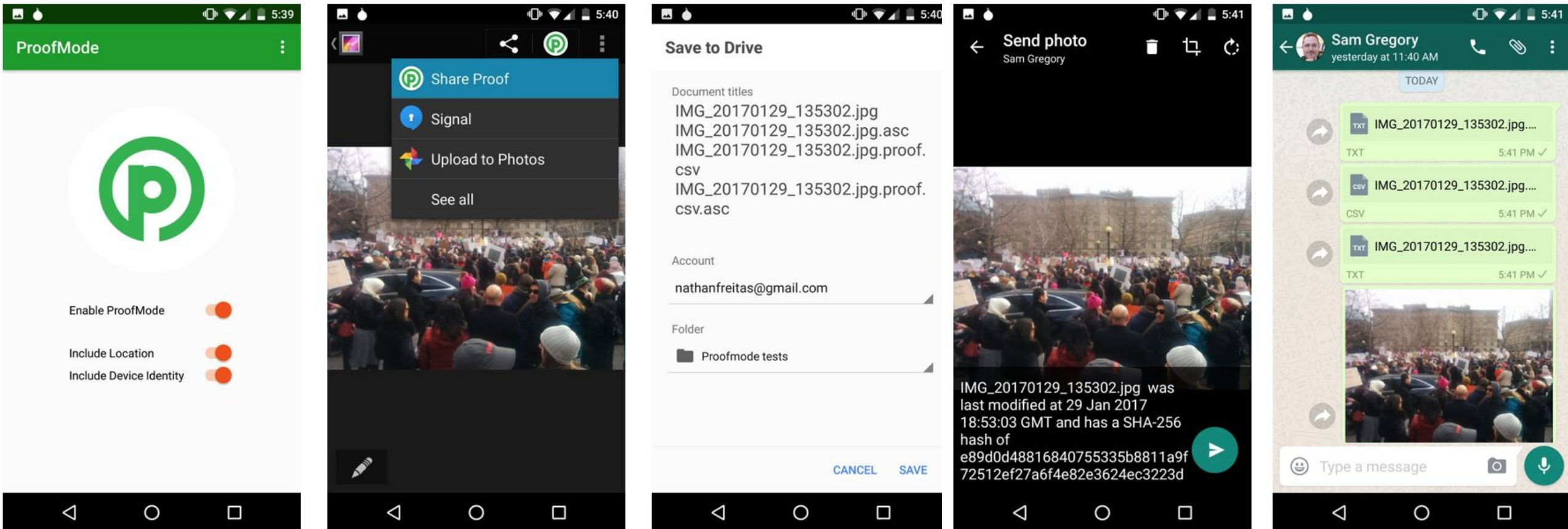

https://web.archive.org/web/20190305214321/https://www.cnn.com/2018/03/26/us/emma-gonzalez-photo-doctored-trnd/index.html

Verifying visual evidence by signing data at creation

https://guardianproject.info/2017/02/24/combating-fake-news-with-a-smartphone-proof-mode/

Proof Mode is not a perfect solution

Schneier on Security

Blog   Newsletter   Books   Essays   News   Talks   Academic   About Me

Blog >

"Proof Mode" for your Smartphone

ProofMode is an app for your smartphone that adds data to th...
real and unaltered:

> On the technical front, what the app is doing is autom...
> key for this installed instance of the app itself, and us...
> photos and videos at time of capture. A sha256 hash...
> with a snapshot of all available device sensor...
> mobile networks, altitude, device language, ha...
> signed, and stored with the media. All of this h...
> battery life or performance, every time the use...

This doesn't solve all the problems with fake photos, b...

Tags: authentication, cameras, keys, PGP, signatures
Posted on March 1, 2017 at 6:02 AM · 22 Comments

On the technical front, what the app is doing is automatically generating an OpenPGP key for this installed instance of the app itself, and using that to automatically sign all photos and videos at time of capture. A sha256 hash is also generated, and combined with a snapshot of all available device sensor data, such as GPS location, wifi and mobile networks, altitude, device language, hardware type, and more. This is also signed, and stored with the media. All of this happens with no noticeable impact on battery life or performance, every time the user takes a photo or video.

Thoth · March 1, 2017 6:45 AM

@Simon

A better scheme that I have came up with in the past is to use a secure server backed by a HSM or smart card to generate a User Keypair. The User Public Key would be installed into the smartphone without needing any passwords whatsoever. The Frontline Private Key would be stored in a HSM or smart card attached to a remote server in a safe location for provisioning. The usual defenses like

https://www.schneier.com/blog/archives/2017/03/proof_mode_for_.html

When the official record is tampered with, who can you trust?

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"While rewriting or populating the news with fake audio-visual material is likely to have the biggest impact on the public at large, we need to think through the potential impact of a subtly corrupted scientific record and the issue of how we will develop a generation of scholars who can question, recognize, and deal with this sort of intentional corruption."

https://web.archive.org/web/20190128083058/https://er.educause.edu/articles/2018/10/managing-the-cultural-record-in-the-information-warfare-era

Physical forgeries slowed scientific advancement

This 1915 painting by John Cooke depicts scientists comparing Piltdown Man's remains to other species. Charles Dawson and Sir Arthur Smith Woodward stand next to each other toward the upper right. JOHN COOKE/WIKIMEDIA COMMONS

Study reveals culprit behind Piltdown Man, one of science's most famous hoaxes

By **Michael Price** | Aug. 9, 2016 , 7:15 PM

https://web.archive.org/web/20180711202533/http://www.sciencemag.org/news/2016/08/study-reveals-culprit-behind-piltdown-man-one-science-s-most-famous-hoaxes

https://blogs.scientificamerican.com/anthropology-in-practice/the-missing-link-that-wasne28099t/

Insertion of false documents have affected non-digital archives in the past, as well as historical narrative
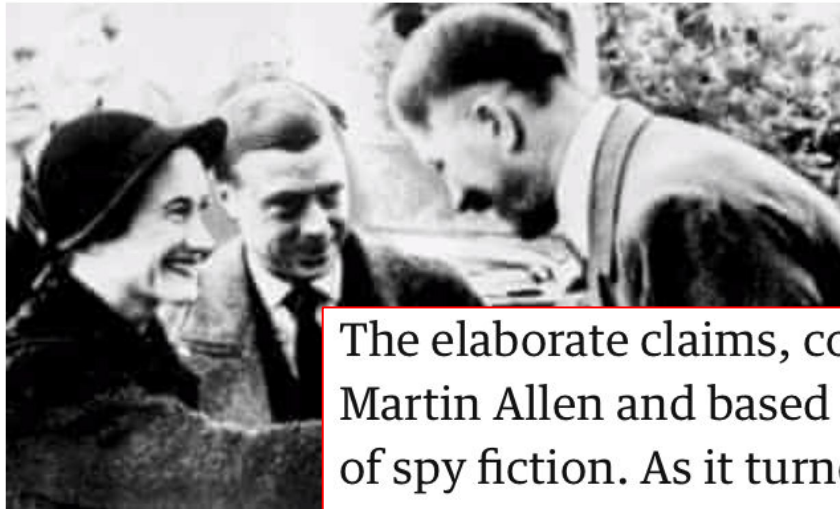
The 29 fakes behind a rewriting of history

· National Archives 'Amateurish' false records planted over five years
· Patrols and spy cameras at public reading rooms

Paul Lewis

🐦 @PaulLewis
✉ Email
Sun 4 May 2008
19.20 EDT

f 🐦 ✉ ⤴ 22

The elaborate claims, contained in three separate books by the historian Martin Allen and based on previously unseen documents, read like the stuff of spy fiction. As it turned out, they were.

▲ A letter to Adolf Hitler from the Duke of Windsor, supposedly written in 1939, turned out to be a fake.
Photograph: PA

They were the secret intelligence files that turned second world war history on its head with "revelations" of British collaboration with the Nazis.

https://web.archive.org/web/20190104190702/https://www.theguardian.com/uk/2008/may/05/nationalarchives.secondworldwar

Alterations are not always so easily corrected

The True Story of Lee Israel and the Literary Forgeries in *Can You Ever Forgive Me?*

Melissa McCarthy plays the biographer-turned-forger in an Oscar nominated performance.

by **LAUREN HUBBARD** FEB 22, 2019

LEE ISRAEL
ANDREW HENDERSON/NEW YORK TIMES/REDUX

The letters were very convincing: two of them featured in *The Letters of Noël Coward* published by Alfred A. Knopf in 2007, over ten years after Israel pleaded guilty for her crimes. "I had a whole cock-and-bull story made up about the cousin who died and left me these wonderful letters. I never had to explain," she told NPR, referring to the autograph dealers she worked with as "spectacularly incurious."
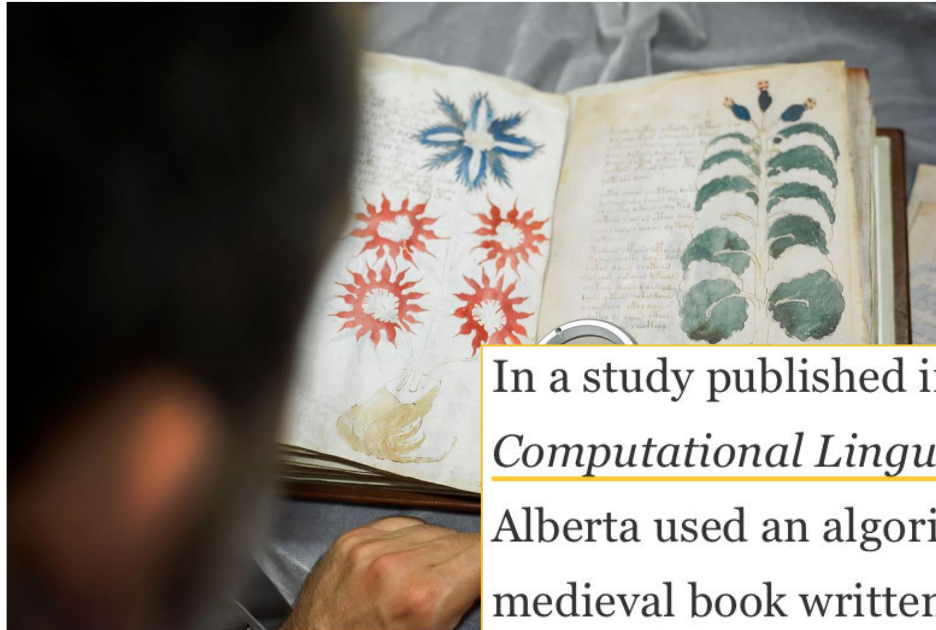
Historical forgeries can linger for centuries

NATIONAL GEOGRAPHIC

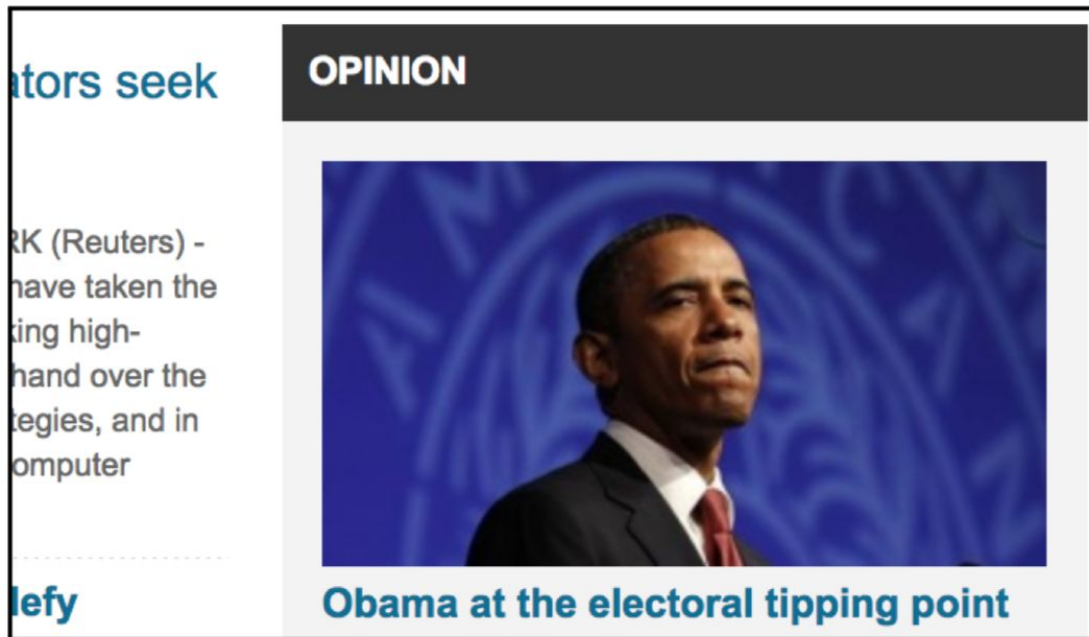Tune in to watch Free Solo on National Geographic – Sunday, M

In a study published in the journal *Transactions of the Association of Computational Linguistics*, computing scientists from the University of Alberta used an algorithm to try to decode parts of the Voynich Manuscript, a medieval book written in an undecipherable code with an unknown language.

The Voynich Manuscript, a small unassuming book stored in a Yale University vault, is one of the most mysterious books in the world. The precious document containing elegant writing and strange drawings is believed to have been written six centuries ago in an unknown or coded language that has never been cracked.

PHOTOGRAPH BY CESAR MANSO, AFP, GETTY

https://web.archive.org/web/20190305214856/https://news.nationalgeographic.com/2018/02/voynich-manuscript-cipher-code-hebrew-europe-spd/

Changing the Archived Web from the Present

Lerner, Ada, Tadayoshi Kohno, and Franziska Roesner. "Rewriting history: Changing the archived web from the present." *Proceedings of the 2017 ACM SIGSAC Conference on Computer and Communications Security*. ACM, 2017.

Archives need a way to verify media has not been altered

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"Independent of the efforts to document the capture of materials in a trustworthy way, the cultural memory sector must step up to the challenges of contextualizing media once it is created and disseminated. Registries are fairly straightforward, at least technologically. It's important to track chains of custody and provenance in ways that are transparent and secure."

https://web.archive.org/web/20190128083058/https://er.educause.edu/articles/2018/10/managing-the-cultural-record-in-the-information-warfare-era

A four pronged approach to preserving cultural record

- Documentation of provenance and chain of custody for archival data.
  - A lot of interest in distributed ledgers, or blockchain technology.
  - Current methods need to be more transparent.
- Improved forensic tools for verifying authenticity of digital records.
  - DARPA is spearheading research in this area in regards to Deep Fakes.
- Digitally signing media at time of capture as an aid to provenance.
- Contextualization of fake news or falsified data.
  - Fakes are as much a part of the cultural record as legitimate news, but requires some sort of contextualization to understand why it was generated.