# The Internet of Anxiety

## Media Freedom, Technopolitics, and How Communist Cuba Could Save American Democracy

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Art, Design and the Public Domain

*This was written for an Independent Study at the Graduate School of Design. I am a candidate for a Masters in Design Studies, studying in Art, Design and the Public Domain.*

*My intention is to present the following paper as I would a work of art— to open its contents to a broader audience and foster a deeper consideration of the discussed materials, as well as its references and ideas. Moreover, I hope to present a sharp history of mass media in American politics; and a collection of information regarding the state of the Internet as an infrastructure of the digital media economy.*

*On the proliferation of the Internet's economy: I'm interested in the importance that it has provenly provided within political realms— both public and private. In this paper, I have endeavored to foster a movement with the express purpose of subverting the negative trends of these information monopolies and dangerous technopolitics.*

*As an artist, this paper has served as a necessary precursor— with the explicit purpose of understanding the potential of a digital network as both medium and platform for creative and agonistic expression. It is an investment which I hope to frequent as I continue to develop my practice. Perhaps it will lend some light— and optimism— to the future of national identity and morality in an age of technopolitics and algorithmic decision-making. At the very least, I hope it will continue to encourage the citizens— us digital citizens— to consider the responsibility of freedom.*

*Daniel*

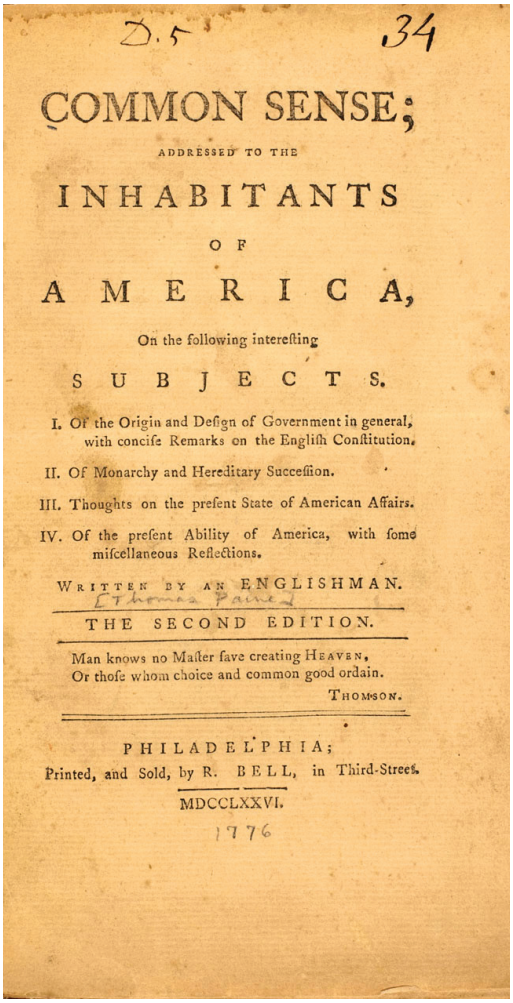
# Table of Contents

*"...a long Habit of not thinking a Thing* wrong*, gives it a superficial appearance of being* right*"*

Thomas Paine, *Common Sense* [1]

## Introduction

Tim Berners-Lee— the inventor of the WorldWideWeb, HyperText Transfer Protocol,* and the first web browser— "imagined the web as an open platform that would allow everyone, everywhere to share information, access opportunities and collaborate across geographic and cultural boundaries."[2] However, Tim Berners-Lee's foundation for a digital platform of free speech, empathy, and democracy has been eroded by an oppressively relentless advertising economy— as well as seemingly unbreakable monopolies on the infrastructure that enables our connectivity. Additionally, the United State's government has aggressively pushed not only transparent, but clandestine programs to monitor virtually all of the online activity of it's citizens (as well as a majority of international Internet traffic). What follows is an analysis of the evolution of this condition: the *Internet of Anxiety*.



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COMMON SENSE;

ADDRESSED TO THE

INHABITANTS

OF

AMERICA,

On the following interesting

SUBJECTS.

I. Of the Origin and Design of Government in general, with concise Remarks on the English Constitution.

II. Of Monarchy and Hereditary Succession.

III. Thoughts on the present State of American Affairs.

IV. Of the present Ability of America, with some miscellaneous Reflections.

WRITTEN BY AN ENGLISHMAN.

[Thomas Paine]

THE SECOND EDITION.

Man knows no Master save creating HEAVEN,
Or those whom choice and common good ordain.
THOMSON.

PHILADELPHIA;
Printed, and Sold, by R. BELL, in Third-Street.

MDCCLXXVI.

1776

**Fig. 1**
1776, *Common Sense* pamphlet

## Print

Mass media technology has played a critical role in American politics since the nation's inception. *Common Sense* (Fig. 1), written by Thomas Paine and published anonymously in 1776, united the colonies against Britain and the diplomatic policies of its monarchy. As a manifesto of American democracy, it effectively captured the spirit of the disenfranchised American colonist— urging a unanimous revolution in the name of freedom and rejection of tyranny.

Print, the prevalent media of mass communication, carried Paine's ideas to the masses and emboldened them to participate in the flaring political debate. Though a member of

***** Hypertext Transfer Protocol, or the familiar "http://" seen at the beginning of every web address (today you are more likely to see "https://" which means that the data loaded in your browser is encrypted with Secure Sockets Layer, or SSL)

**Fig. 2**
A printing press, circa late 18th-century

the elite (like many of his Patriot counterparts), his text became widely read because of his shrewd decision to use the vernacular language— drawing upon more "readily understood sources, especially the Bible."[1] Even the illiterate were privy to his provocative political philosophy as *Common Sense* was read aloud in taverns, public houses and other places of regular social exchange. It's estimated that about 120,000 copies of the text had been distributed after just one year in production. As one historian remarks: "in establishing American independence, the pen and press [Fig. 2] had merit equal to that of the sword."[2]

It follows that the *quality* of Paine's words was not the only driving force behind the pamphlet's virality (in the modern sense of the word). The *availability* of *Common Sense*— not only in terms of its populist language, but in the reproducibility of its media— clearly demonstrates the potential of a dispensable media in obtaining political or social support.

The invention of digital media has left the printing press obsolete; but, in 1776, it enabled the rapid and affordable dissemination of the subversive ideas of a few key political thinkers— resulting in the popularization of a historic revolution. Each evolution of the prevailing technology of communication marks a paradigmatic shift in the breadth and scope of socio-political influence. "Technopolitics" is the term that describes this unique relationship:

> *"New media technologies, from the printing press to the Internet, have always been identified as contested terrains of ideological struggle and accompanied with great hope for their radical potential to provide the wider public with information, or to improve critical political debate."*
>
> Blackwell Encyclopedia of Sociology[3]

## Radio

Similar to the Patriots' understanding of print as a platform for free speech and political agonism, radio was heralded

as a revolutionary democratic medium. The first commercial radio broadcasts, from KDKA (Pittsburgh, PA), covered the events of the Harding-Cox presidential election in 1920.[1] By 1940, there were over 28 million household radios— providing the potential to disseminate information instantaneously across the entire nation.[2] In this sense, the medium was truly democratic: "It would link rich and poor, young and old."[3]

However, as Michael Delli Carpini remarks in *Radio's Political Past*, "The 'Golden Age [of radio]' was short-lived." Radio, which had— for a few brief years— been broadcast mainly from public stations (schools, communities, universities, parishes, etc.) was rapidly privatized. AT&T established a station in New York City and began selling air time. In the advertisement-drowned airwaves, the words, "and now a message from our sponsor," must have beamed over your head a dozen times a day— a silent premonition of the future of the digital media economy.

As these stations drew greater profits, that economic gain resulted in a rather direct translation to transmitter gain, at which point these commercial stations "literally drowned out [the transmissions of] public stations."[4] The government, rather than paying private stations to transmit, established its own infrastructure and further defined regulations on radio spectrum allocation and transmitting power.

Oftentimes preference was shown for commercial stations over public broadcasts. Larger networks were established by repeating the signal across multiple antennas, and thus provisioned the American people with a national microphone for anyone to accept. Though it wasn't just anyone. When department store jingles weren't playing over the airwaves, political incumbents were given the opportunity to expound their ideological rhetoric. The strategem for political campaigning was utterly transformed.

In the presidential election of 1924, Calvin Coolidge— the first president to have his inaugural address broadcast over radio (Fig. 3)— won a sweeping victory of almost 16 million

**Fig. 3**
Cal Coolidge, first president to give a radio-broadcast of the inaugural address

popular votes, nearly twice the popular vote of his Democratic opponent, John W. Davis. The Republican Party had afforded Coolidge three times the air time of Davis, leaving no doubt of the profound advantage of the insurgent media technology— and the future of technopolitics.

The lurking consequences of technopolitics comes to bare in the disparity between the two candidates' air times. In fact, the "equal-time rule" was enacted as part of the Radio Act of 1927 soon thereafter— by President Coolidge himself. While this rule was designed to ensure that commercial broadcasting stations were unable to swing an election for their own political or economic interests— either by refusing a candidate air time, or selling it at a higher cost— it's had an incredibly negative effect on political coverage.

By requiring that each of the candidates be allotted an equal span of time, at the same cost— regardless of its relevance to the election*— the equal-time rule disincentivized most stations from offering any broadcast time at all. Regardless, in the event that a party member had procured airtime, independents remained at a gross disadvantage to the massive budgets and donations procured by the Democratic and Republican Parties.

In an effort to better elucidate the disquieting power of radio, here is a notice published in the New York Times on December 5th, 1923— prior to Coolidge's address:

> *"The voice of President Coolidge, addressing Congress tomorrow, will be carried over a greater portion of the United States and will be heard by more people than the voice of any man in history."* [5]

**Television**

However, in 1939 at the New York World's Fair, the nation received its first glimpse of the new media technology that would eventually eclipse radio: television. The RCA, TRK-12

*This became relevant in the election of President Reagan, as well as in our most recent election with the celebrity icon, President Trump.

Phantom Teleceiver that was on display had a custom translucent cabinet to dispel any doubts about the legitimacy of the unbelievable technology (Fig. 4). A hinged mirror at the top, angled at 45-degrees, reflected an upward-facing, circular screen.

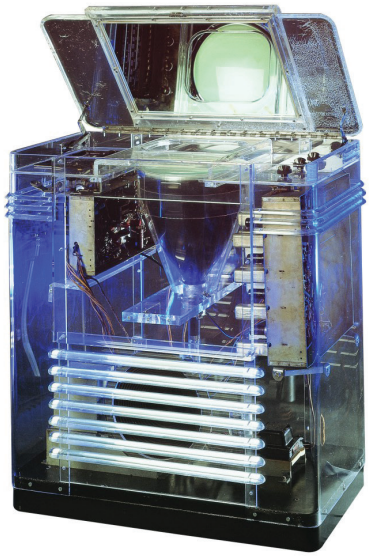


**Fig. 4**
RCA, TRK-12 Phantom Teleceiver from the New York World's Fair

Television provided the same political opportunity as radio, with the addition of a moving image— elevating the level of intimacy between voter and incumbent. From the report, *Role of Television in the 1968 Campaign*, "Kenneth P. O'Donnell, former special assistant to John F. Kennedy, has asserted that... 'TV cannot manufacture them [candidates]. It can only transmit what is there.'" [1]

It wasn't until 1952— the year of Eisenhower's election-eve ad campaign ("Eisenhower Answers America") that television was pervasive enough to justify a substantial portion of the Republican Party's spending. By 1964, a 30-minute segment cost around $125,000; but, even then— as former Republican National Chairman Dean Burch put it:

> *"obtaining desirable time is difficult, for the TV executives are usually anxious to protect their most popular shows from the incursions of a mere candidate for the presidency of the United States."* [2]

Unlike print and radio, television provided a clear rendering of the physical appearance of the political candidates— in the televised presidential debate of 1960 (Fig. 5), Kennedy was composed, his features young and handsome, and his suit contrasted sharply with the light-colored backdrop. Nixon might as well be in the electric chair: he was sweating under the stage lights, obviously uncomfortable, his suit loose. Its light color was overexposed on many TV sets— causing him to disappear into the background. Radio listeners, however, when asked to remark on the outcome of the debate, had replied that Nixon had seemed "assured, cautious, and dignified."[3]

**Fig. 5**
1960, Televised Kennedy/Nixon debate

Television advertising would eventually overtake the combined spending of radio, newspaper, and magazine advertising.[4] According to former Chair of the Federal Communications Commission (FCC), Newton Minow: "In 1960 gross broadcast revenues of the television industry were over $1,268,000,000."[5] In the same speech* from 1961 (addressing the National Association of Broadcasters, NAB), he issued a scathing critique of the state of television:

> *"when television is bad, nothing is worse. I invite you to sit down in front of your television set when your station goes on the air... I can assure you that what you will observe is a vast wasteland. You will see a procession of game shows, violence, audience participation shows, formula comedies about totally unbelievable families, blood and thunder, mayhem, violence, sadism, murder, Western badmen, Western good men, private eyes, gangsters, more violence and cartoons. And, endlessly, commercials— many screaming, cajoling and offending. And most of all, boredom. True, you will see a few things you will enjoy. But they will be very, very few. And if you think I exaggerate, try it."* [6]

Minow's powerful words rang true, leaving the NAB conference in silence. *Advertising*, rooting itself at the backbone of the media economy, has eschewed intelligent and wholesome content— eradicating any substantial contribution to democracy and political debate. Yet, most disheartening still, is the reality that the ineffable privatization, centralization, and regulation of these platforms has seemingly left the American people mesmerized— subdued into the assumption that their right to this technology is solely as its consumers.

**Internet**

The final media technology discussed in this paper has become the most prolific means of communication yet. As of 2017, more than half of the world's population has connected to the Internet (almost 3.8 billion), 2.3 billion people use a smartphone, and more than 84% of American households have at least one laptop or desktop computer.[1][2][3]

*Minow's speech was recorded in the Congressional Record and he later became the recipient of a Peabody Award for his work as Chair of the FCC

Unlike it's predecessors, the Internet has enabled not only the instantaneous communication of text and image, but the exchange of over 100,000 different file types (videos, photos, text, digital models, databases, etc). It contextualizes its users in a virtual terrain— a digital microcosm of the physical world that enables the navigation of new and profound public spheres. Interfacing with the WorldWideWeb through a computer or phone, users can now access over a billion websites— providing consumer goods and services, educational resources, entertainment, and practically any other digital content you can imagine.

However, the Web wasn't always the incredible trove of information as we know it to be. It emerged from ARPANET, an experimental network conceived of by the Advanced Research Projects Agency (ARPA)— an organization for science and technology research related to national security. It was initiated by President Eisenhower in 1958 in response to the Soviet space program. "Defense" has since been prepended, with the resultant acronym: DARPA. The goal of ARPANET was to build a network for researchers to share access to supercomputers— which were a limited luxury, expensive and spread out across multiple institutions.

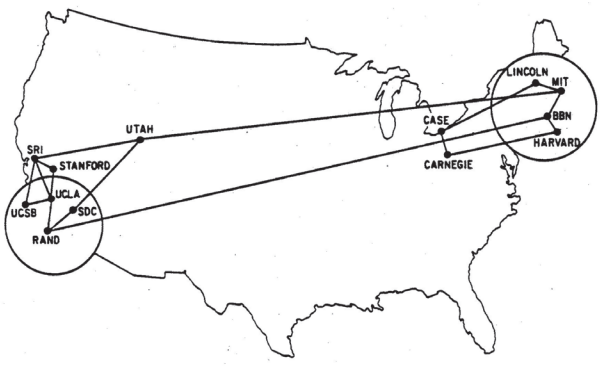



**Fig. 6**
Map of ARPANET, circa 1970

By 1970, ARPANET consisted of 13 network hosts— including: MIT, Harvard, UCLA, Stanford, and others. It was controlled and managed by DARPA— and more broadly, the US military. However, in 1984 the decision was made to split the network into a series of networks that could then be maintained remotely— still communicating across these individual clusters. It was around this time that the Transmission Control Protocol/Internet Protocol (TCP/IP) was established as the communication standard for exchanging data packets between network hosts.

It was also around this time that the first transatlantic fiber-optic cable,* TAT-8, was laid from New Jersey to England and France. It has since been retired, but there are now hundreds of undersea fiber optics connecting major

*Long rods of translucent glass or plastic that use light to encode data through pulse code modulation

Internet gateways across oceans and along coastlines. Some of the most recent cables are capable of transmitting up to 10 Terabytes/second, a proven alternative to satellite links which have a much more limited capacity.[4]

Another network— created by the National Science Foundation (NSF) and dubbed "NSFNET"— was developed using ARPANET's same protocols and, similarly, connected a series of supercomputers across a network of universities and research institutions funded by the NSF. When the ARPANET was officially brought offline in 1990, NSFNET formed the new backbone of the Internet— a high-speed highway for each of the separate networks. At this point, about 6,000 networks were communicating through the NSFNET.[5]

Though the use of personal computers had been growing since 1975, it wasn't until the mid-to-late 1980s that these machines were considered to be an affordable luxury. Additionally, many of the early terminal commands weren't easy to pick up. IBM, Apple, and Microsoft were the forerunners in supplying this hardware and software— especially in establishing an operating system (OS) that was simple enough for a general public to use. Steve Jobs' determination to create an elegant, utilitarian interface was especially influential in bringing computing from universities and professionals to families and homes.

**Fig. 7**
Macintosh SE, First Apple computer capable of connecting to the Internet (1987)


It wasn't until 1995, soon after the Clinton Administration liquidated the NSFNET and sold control of its data highways to commercial companies, that the Internet exploded in the public eye. Today, many of the original companies that purchased this infrastructure, the Internet Service Providers (ISPs), still possess the majority of the market. In fact— AT&T, Verizon (originally "UUnet" and "WorldCom"), Time Warner Cable (merged with "AOL") and Comcast now control two-thirds of all residential Internet connections in the US.[6]

The world teetered at the edge of a revolution in new media technology once again; however, this latest paradigm-shift in information exchange would have more bearing on the political landscape than ever before. A measurement of the monthly data traffic through the NSFNET backbone demonstrates the incredible growth of the WorldWideWeb: In 1990, the NSFNET handled 1TB (Terabyte, or 1,000 Gigabytes) per month. Just 10 years later, an average of 20,000-35,000 TBs of data were moving across the NSFNET each month. Today, global IP traffic has reached 122 EBs (Exabytes) a month— for reference, that's 122,000,000 TBs.[7]

In it's infancy, the Internet's involvement in politics wasn't especially rousing. There were a few websites dedicated to political campaigns and appealing for donations; though, browsing was slow and content limited. By 1995, however, Amazon, Craiglist, eBay and a few other services which still exist (flourish) today had already gone live. Netflix was up with a DVD mailing service in 1997. AOL's Instant Messenger (AIM) quickly became a sensation among kids and teenagers, and e-mail was no longer exclusive to engineers and scientists.

For the majority of users, the Web's real use-value wasn't until the dot-com bubble of 2000 which coincided with increased traffic capacity through ISPs— the commercial availability of fiber-optic connections, the beginning of broadband Internet and the "IEEE* 802.11b Direct Sequence standard" (the standard for converting data over radio waves— or, more plainly, an 11Mbit/s Wi-Fi connection operating in the 2.4GHz radio-frequency range). It was in 2004 that the Internet's use for popular participation, as well as propelling political support, drew the attention of activists, campaign managers, fundraising directors, and political scientists alike.

Howard Dean's campaign "marked the first time a candidate successfully funded a campaign by utilizing the internet for fund-raising."[8] Using a "tri-marketing" technique— an inte-

*The Institute for Electrical Engineers, which certifies the wireless inter-operability of new devices

gration of the Internet, postal service, and phone— he was able to amass donations from 350,000 supporters, mostly in micro-payments of around $150 (a strikingly similar technique to the "crowd-funding" seen today on popular websites like *Kickstarter*).[9]

**Fig. 8**
Howard Dean eats a turkey sandwich at his computer in an impromptu fundraising stunt during political opponent Dick Cheney's fundraising banquet

In one online stunt— on the same day his Republican opponent, Dick Cheney, was hosting a $2000-a-plate fundraising banquet, Dean called on his supporters to join him at their computers for lunch, posting a picture of himself eating a turkey sandwich (Fig. 8). During that time, he was able to match Cheney's fundraiser with an outpouring of donations from his online community. Dean's innovative use of digital media (his blog, e-mail, and candidate website), in tandem with the mainstream media traditionally used in political campaigns, rocketed him forward— receiving a grand total of approximately $53 million dollars in funding. In his own words:

> *"A lot of people talked about how our campaign revolutionized the use of the Internet to raise money. But the Internet isn't magic, it's just a tool that can be used to do things differently. We treated it as a community, and we grew the community into something that has lasted long after the campaign ended. The Internet let us build that community in real time, on a massive scale..."* [10]

**Internet:** Social Media

Social Media, most noticeably Facebook, resulted in a surge of political involvement and user-generated content online. By connecting millions of people (now over a billion people use Facebook), the social media platform has amassed an incredible database of personal information. The Facebook "feed"— the steady stream of shared content (photos, videos, events, groups, links, and opinions)— has become an ideological front for the exchange of opinion between circles of friends, colleagues, and strangers alike. In addition, it has enabled the rapid proliferation of political advertisements— displaying this media within Facebook's personal and public digital forums (the Facebook "wall").

Twitter, another social media service, allows its users to post 140-character messages (since increased to 280 characters). The physical data-footprint that composes these "micro-blogs" is extremely efficient, enabling rapid viewing and dissemination. Followers (subscribers), and other users on the Twitter platform, can up-vote these "tweets" (similar to "liking" a Facebook post), "re-tweet" it, and respond with their own tweets. Twitter gives tweets with more activity additional prominence on their mobile and web applications, snowballing their exchange and viewership.

By the presidential election in 2008, "46 percent of all Americans used the Internet, e-mail, or phone text messaging for political purposes"— up 31% from the 2004 election. [1] During this time, Twitter also developed a sub-application that would give its users real-time polling data, and partnered with the *National Public Radio* (NPR) and *Public Broadcasting Service* (PBS) to make this tool more publicly accessible. Both Facebook and Twitter have enabled the contribution of public opinion surrounding the candidates and their political policies to be heard and shared— a powerful democratic amenity that had been short-lived upon the privatization of television and radio.

Centralized, commercial forms of mass media, despite a decentralized network of distribution (local radio and television channels), often remain in the hands of the elite. This is the result of both costly deployment and heavy regulatory barriers. Twitter and Facebook, on the other hand, had the potential to develop into a *popular* media.

Despite that potential, these social media organizations are only simulating a "public" sphere. In reality, it is important to note that they are still commercial entities with the power to control and manipulate their product. However, their rhizomatic (or "grassroots") structure undoubtedly "changes the nature of political participation and removes the barriers of information professionalization."[2] In an article for WIRED Magazine, on the presidential election in 2008, Sarah Stirling writes:

> Obama *"used the web more effectively than any prior national candidate... With an enormous internet-driven donor base of 1.5 million people, more than 800,000 of whom have accounts on Obama's social networking website, Obama is the first internet candidate to win mainstream success. His online supporters have created more than 30,000 events to promote his candidacy,"* and *"Just under half its record-level of $265 million raised so far came from donations of $200 or less, much of which flowed to the campaign through the internet."* [3]


**Fig. 9**
Shepard Fairey's iconic "HOPE" poster, offically recognized by the Obama campaign.

Over 74% of Obama's "wired" supporters actively used the Internet to receive campaign news and updates.[4] His charisma as a candidate, paired with the shrewd management of a technical support team— analyzing and maintaining a multi-platform presence online and off, catapulted him to the Presidency. The efforts of this strategy led to the achievement of nearly $780 million in donations.[5]

**Internet:** Wireless

Not long after the 2008 elections, there were dramatic boosts in data-transfer rates, especially wireless. In 2009, and again in 2013, the IEEE released a new set of standards

for encoding/decoding the transfer of data packets across different radio bandwidths. Wireless-enabled devices saw jumps of 546Mbit/s and 700Mbit/s, respectively— bringing the maximum data-transfer rates of the latter (IEEE 802.11ac) standard to 1300Mbit/s (162.5Mb/s).

The Long Term Evolution (LTE) standard for encoding carrier data was launched in 2009, and the first 4G (4th generation) LTE-certified smartphones were released in 2011. Operating within specific carrier-owned frequencies, 4G would enable down-links of up to 50Mbit/s— faster than the Wi-Fi standards used in many of these devices at the time. With carrier data, you could browse the web from a smartphone— even stream high-resolution video— virtually anywhere, given the existence of carrier infrastructure.

As subscriptions to this technology became more affordable, it has enabled a symbiosis of not only human-computer— but human-information. For those who could afford it, there was no need to worry about the availability of Wi-Fi hotspots— the Internet had become available everywhere at once, constantly attached to the user's body with Google acting as their (faster and smarter) second brain. As of October 2016, mobile surpassed desktop computers as the platform of choice in world-wide Internet usage.[1] The exponential content generated by the information economy is accessed countless times a day, creating observable "social physics"— masses of data generating ever-growing gravities, swelling with each share, "like", or view.

**Internet:** Advertising

In the United States, many of the online platforms that could sustain and empower radical democratic movements and political participation do little to seriously address the polemical issues afflicting the country. Furthermore, they've managed to commercialize this national anxiety, profiting on the advertising revenue generated by the mass of 60-second, cookie-cutter news clips. In the two decades

since the popular adoption of the Web, it has done more to radicalize American capitalism than democracy.

In 1994, the first digital banner ad was implemented by *Wired Magazine*— unsurprisingly, for the first company to sell radio advertisements: AT&T.[1] Digital advertising revolutionized the marketing industry— giving company's their first glimpse at accurate conversion-rate statistics. The most promising revenue stream of any digital platform, advertising has since consumed the entirety of the Web.


**Fig. 10**
The first banner ad changed the digital economy forever

An article by *Huffington Post* cites a marketing strategist, Mehmood Hanif, who estimates that today the average Internet user is served 11,250 ads/month.[2] Another report, published by the Association of National Advertisers (ANA), established that "advertising contributed $3.4 trillion to the U.S. GDP in 2014, comprising 19 percent of the nation's total economic output."[3]

Facebook and Google now generates virtually all of their revenue on advertisements. Along with Microsoft, Apple, and Amazon, these tech behemoths— dubbed the "frightful five" by *New York Times* tech columnist Farhad Manjoo— have established themselves as the gatekeepers of the world's digital information economy (totaling half of the top 10 most valuable companies in the American stock market for a combined value of $2.3 trillion).[4] The nature of these corporations as suppliers of digital infrastructure— hosting, caching*, querying, and distributing digital content on the Web and in app stores— has afforded them tremendous leverage over the digital economy and its politics. By 2015, Google and Facebook were responsible for roughly 70% of all Internet traffic.[5]

Further implications of this dominance and the accumulated wealth of these companies is their habitual cannibalization of promising new startups. The lengthy list includes such popular names as: YouTube, WhatsApp, Oculus VR, Boston

*Recently or frequently accessed digital information that is stored locally on your computer or nearby servers for faster access.

Dynamics, Android, Twitch, DeepMind (artificial intelligence), and others. Any promising startup that declines an offer— or, more appropriately, refuses to be bought-out— can be quashed by as much as a press release from one of the frightful five announcing their competing venture.

In a panel discussion at Fordham University, entitled *Morality in America*, Zephyr Teachout called Facebook and Google the "troll under the bridge"— taking its toll on ad revenue from press organizations.[6] Original content that had once been supported by subscribers and advertisers—in print, broadcast, and digital formats— is now shared on social media with no tangible cost to the consumer.

The recent controversy over "fake news" and its proliferation on social media is as much a result of this sharing economy (a platform thus far rendering Facebook unaccountable for its content) as it is the poor judgment of the consumer and their unwillingness to pay for credible, trusted outlets. An added result is a pertinent directive among newspapers and networks to produce content that is click-able, shareable, tweet-able, and like-able— perhaps even eroding the esteem of these organizations and transforming the concept of "news" to include a paradoxical folly of click-bait and tabloid nonsense.

The result is a WorldWideWeb that is driven by social traffic and advertising revenue, exposed only through the centralized authority of a dominant few. The web is not free; the algorithms used to serve you content are not neutral; and using one of the frightful five as your portal to digital content has yet another consequence for freedom and democracy: user-generated data.

**Internet:** Big Data

The escalation of data-transfer rates— plus advancements in data-compression, caching, storage, and artificial intelligence— have enabled the curation of more and more high-level content. The amount of data is staggering:

> *It's been predicted that in 2017, more data will be generated than in all other combined years of the Internet's existence.*[1]

In the election in 2016, it was obvious that securing a political victory would demand the exploitation of digital media. Both presidential candidates, Hillary Clinton and Donald Trump, took advantage of digital media in many of the ways seen in the previous two elections, capitalizing on social traffic and sharable content. However, two new resources have become available: massive amounts of user-generated data and the analytical tools to exploit it.

> *In 2013, the Internet generated about* 2.5 *quintillion bytes a day— that's* 25 *followed by* 17 *zeros and comes out to an average of* 0.92GB *per person per day.*[2]

Not only the amount but the *specificity* of the data we create is constantly evolving. Most people are aware of the typical data they're leaving behind: their search history, IP address, and perhaps their online purchases. This information alone can be used to understand your interests, your location, your inner-circle of friends, and more. The stark reality, however, is that computers have been programmed to read this data with incredible precision.

Today, digital marketing experts can algorithmically derive more about your personality, your habits, beliefs and political ideology, than you're even consciously aware of maintaining. The websites you visit, ads you click, stories you read, photos you *like*, posts you *re-tweet*— even the hesitation you might have shown, hovering your mouse over the Amazon "purchase" button— **all** of that data can be accurately extrapolated to build an explicit digital model of your personality.

The science fiction author, Charles Stross— giving a talk at the 34th annual Chaos Communication Congress* (C3), observed that it has become exceedingly troublesome to write about the future when considering the present capabilities of technology. Over the course of his shrewd 50-minute talk, an apprehensive Stross forced the audience to face the frightening misappropriation of their present-day technologies. In one example, he illustrated the disturbing potential of the newest iPhone— which will push user-generated data to an unprecedented level of uncertainty.[3]

Using a built-in light detection and ranging (LIDAR) scanner, the phone is unlocked by a 3D-scan of the user's face. The infrared camera is not switched on temporarily for what would otherwise be a creative security feature; in fact, this function is shared with your applications and constantly records the user's face as they navigate their phone. Users of the iPhone X have consequently relinquished an informed metric that will eventually be used to algorithmically determine which content causes them to smile, laugh, blanch, or frown. Eye-tracking can even determine which section of the page has drawn a glance— or which has more effectively captured their gaze.

**Fig. 11**
Professionally made masks used to test security of iPhone X's facial recognition software, presented at Apple's product showcase in 2017

The scenario Stross suggests is by no means science fiction. Though the iPhone X has been introduced post-election, and only used by a small percentage of Americans, its easy to imagine these sensors (and others) becoming ubiquitous across devices in only a few years. Even *without* this kind of algorithmic "emotion recognition", the certainty of the present analytical models can accurately diagnose voters who are undecided and susceptible to persuasion— even which specific principles have triggered that indecision.

In fact, in Donald Trump's recent presidential election, the execution of data analytics and the resultant tactical campaign for constituent conversion within social media employed these techniques in a historically unprecedented way. Putting aside any possibility of Russian collusion, how could it be possible that Hillary Clinton— who'd been given

*A conference held by the self-proclaimed "largest association of hackers" in Europe, the Chaos Computer Club.

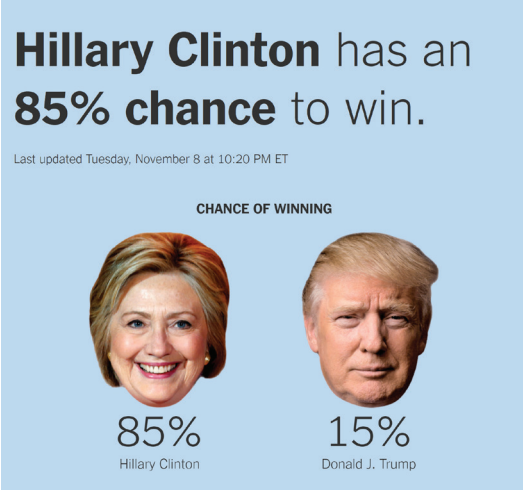



**Fig. 12**
Election forecast by the *New York Times*

an 85% chance of winning by the *New York Times* (Fig. 12)— lose to Trump, a candidate with no prior political experience?[4] The answer, if we look closely, appears to lie in his consultation with the data-driven political and commercial marketing firm, *Cambridge Analytica* (CA):

> *We source data from a trusted list of major data providers and combine it with your own to produce deeper and richer insights. Then we centralize your data assets and match your data to ours, to help you to find and persuade voters quickly and efficiently.*[5]
>
> Website, Cambridge Analytica

Founded in 2013 and headquartered in London, CA is largely backed by Robert Mercer— a wealthy hedge-fund manager and one of Trump's major donors. Additionally, Steve Bannon, Trump's former administration strategist, was once vice president of CA before working for the campaign.

In the past, CA has cooperated with a number of political candidates across the world— even participating in the Brexit "Leave" campaign and working with Ted Cruz in the 2016 Primaries before joining the race with Trump. The deep-pockets of the Trump campaign, in collaboration with CA, has clearly afforded an elaborate and effective operation: With a budget in the tens of millions, their efforts reached...

> *50 million Facebook users, creating 1.5 million impressions on Twitter, 3.3 million on Snapchat, accruing over 28 million views on their digital videos and millions more on ads expertly placed on the televisions of undecided voters across the country.*[6]

Using "psychographics"— a metric for marketing firms to algorithmically derive the specific personality attributes of disparate consumers— CA amassed as many as "5,000 data points on every American" on their list.[7] Altogether, CA has been credited with using up to 240 million of these psychographic profiles in the election.[8]

According to Joel Winston— a consumer protection litigator and former Deputy Attorney General in Trenton, NJ— an estimated 6 million people on this list were provided by the data collection efforts of the Republican National Committee (RNC). The other hundreds of millions of remaining users had their data purchased from "certified Facebook marketing partners Experian PLC, Datalogix, Epsilon, and Acxiom Corporation."[9] Remarkably, these "trusted major data providers"— in CA's own words— rarely have any public records of where or how your data has been collected; and, the legality of this collection is likely questionable.

Whether CA mined* any additional data themselves remains a mystery of their operation; however, one source indicates their use of a service provided by Amazon, a member of our frightful five. Amazon's *Mechanical Turk* is a fairly well-known service among university students, researchers, and marketing firms. It's based on the premise that real, reliable feedback— questions ranging from usability of graphic interfaces or the effectiveness of an advertisement, to how likely you are to purchase a gun— can be obtained en masse, at low cost, and in a short amount of time.

Anyone can sign up for an account on Mechanical Turk, and this poll "Requester" has the ability to filter the demographic of its poll-takers, "turks", to address a hyper-specific audience— for reference, here is an excerpt of the list of possible criteria (Fig.13). Much of the research done on machine-learning— a process by which computers are trained to analyze and process tremendous amounts of information— demands the use of Mechanical Turk or a similar service. A basic example might be semantic machine-learning: 100,000 poll-takers on Mechanical Turk each identify which photos out of 100 contain a banana; through the data generated by human poll-takers on this site, a computer might then be able to "learn" what makes a banana (color, shape, texture).

It follows that machine-learning with voter data would enable CA to train a computer to understand— not what

Employment Status - Full time (35+ hours per week)
Employment Status - Part time (1-34 hours per week)
Employment Status - Unemployed
Exercise - Every Day
Exercise - Four Plus Times a Week
Exercise - Not at All
Exercise - Once a Week
Exercise - Two to Three Times a Week
Facebook Account Holder
Financial Asset Owned - Certificate of Deposit (CD)
Financial Asset Owned - Checking Account
Financial Asset Owned - Common Share Stocks
Financial Asset Owned - Exchange-Traded Fund (ETF)
Financial Asset Owned - Money Market Account
Financial Asset Owned - Mutual Funds
Financial Asset Owned - Real Estate Investment Trusts (REITs)
Financial Asset Owned - Savings Account
Financial Asset Owned - Stock Options
Financial Asset Owned - U.S. Treasury Bills/Government Debt
Gender - Female
Gender - Male
Google Account Holder
Handedness - Left
Handedness - Right
Household Income - $100,000 or more
Household Income - $25,000 - $49,999
Household Income - $50,000 - $74,999
Household Income - $75,000 - $99,999
Household Income - Less than $25,000
Insurance Policyholder - Auto Insurance
Insurance Policyholder - Healthcare Insurance
Insurance Policyholder - Home Owners Insurance
Insurance Policyholder - Life Insurance
Insurance Policyholder - Renters Insurance
Job Function - Accounting & Finance
Job Function - Administrative
Job Function - Arts & Design
Job Function - Education & Training
Job Function - Engineering
Job Function - Information Technology
Job Function - Management
Job Function - Marketing, Sales & Business Development
Job Function - Operations
Language Fluency (Basic) - Brazilian Portuguese
Language Fluency (Basic) - Chinese Mandarin
Language Fluency (Basic) - French
Language Fluency (Basic) - German
Language Fluency (Basic) - Spanish
LinkedIn Account Holder
Marital Status - Divorced
Marital Status - Married
Marital Status - Single
Military experience
Myspace Account Holder
Online Purchase - Automotive Products
Online Purchase - Baby & Kids
Online Purchase - Books
Online Purchase - Clothing & Shoes
Online Purchase - Electronics & Computers
Online Purchase - Groceries & Food
Online Purchase - Handmade Products
Online Purchase - Health & Beauty
Online Purchase - Home & Garden
Online Purchase - Jewelry
Online Purchase - Movies
Online Purchase - Music
Online Purchase - Sports & Outdoor Equipment
Online Purchase - Toys
Online Purchase - Videogames
Parenthood Status
Pinterest Account Holder
Primary Internet Device - Desktop
Primary Internet Device - Laptop
Primary Internet Device - Smartphone or Tablet
Primary Mobile Device - Android
Primary Mobile Device - iPhone
Primary News Source - Online News (News Websites, News Apps)

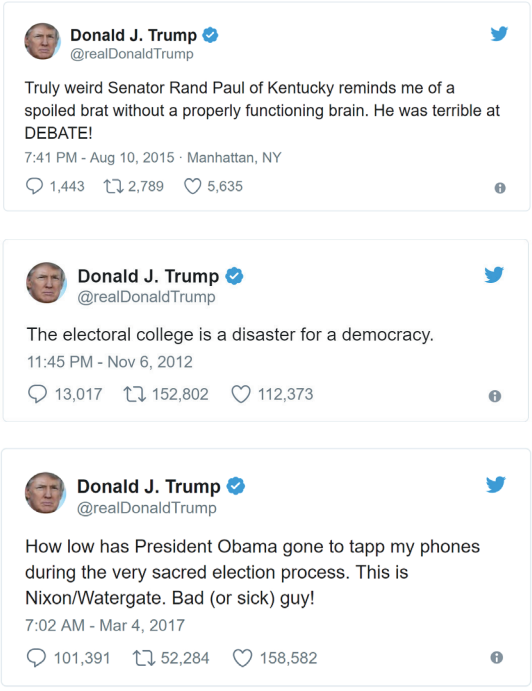
**Fig. 13**
Examples of the criteria which Mechanical Turk Requesters may implement to filter their poll-takers for more accurate data.

*A process of scraping data from existing websites and user-activity

makes a banana, but what makes a Trump supporter. In addition to this sophisticated data analysis, CA even managed to snag the poll-takers Facebook data in a more "underhanded" way.[10] In order to take the survey, and ultimately receive their payments (which are notoriously low), the turks logged into their Facebook accounts— giving CA instant access not only to their data, but the data of their immediate friends.

Through Facebook's advertisers portal, CA— along with Trump's own technical director, Brad Pascale— could then target specific people with "unpublished page posts". These unpublished posts, or "dark posts", are paid ads visible only to the targeted individual users— constructed by the user's data for maximum efficacy in converting a click, procuring a donation, or suppressing a vote for the opposing candidate. This technique has been referred to as "micro-targeting", with CA using as many as 175,000 unique iterations of the same advertisement to elicit a given reaction among unique targets with a diverse set of psychographic profiles.[11]

**Fig. 14**
A sample of the nearly 37,000 tweets Trump has sent since 2009. At the time of writing, Trump has over 46 million followers on Twitter's platform. [12]




While previous presidential candidates have generally appropriated mass media, President Trump surrounded himself with some of the most powerful players in media and analytics. Leveraging his network to become wholly pervasive across every platform, Trump effectively generated a viral personal news ecosystem. Trump's hoarding* of our digital information along with the modern tools of machine-learning and data-analysis, allowed his team to execute a truly unrelenting— often shameless (Fig. 14)— digital campaign.

Given the earlier predictions on the amount of data we're expected to produce in only the next few years, there is no doubt of these tactics recurring in future elections— with still further accuracy and intensity. The simulated dependency on Google, Amazon, Facebook, and their subsidiary platforms, has stealthily converted the majority of citizens into dedicated data-mines. Without transparent knowledge of this collection, an unsuspecting America has been psycho-

*There is no evidence that precludes Trump's continued possession of this data, if not outright ownership.

logically persuaded by their own self-tailored propaganda.

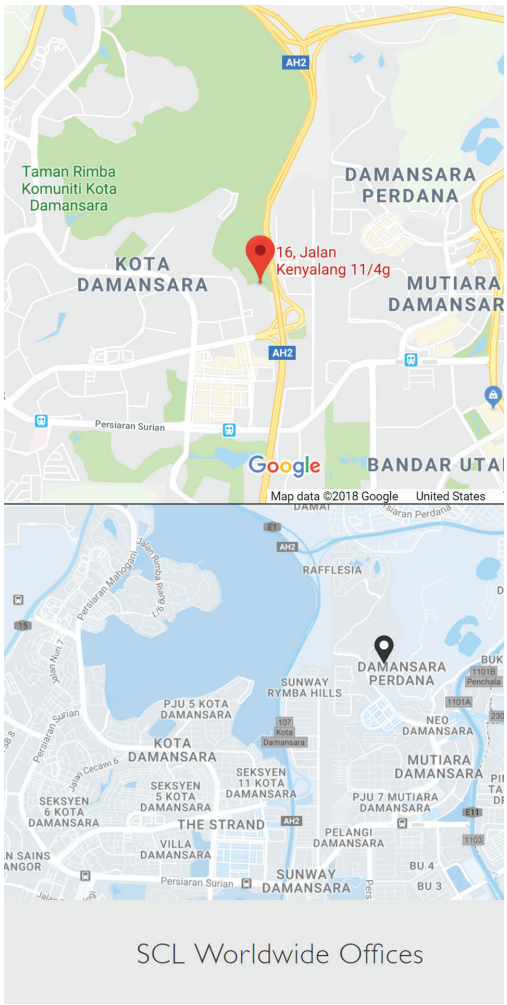
Yet even as the true nature of these looming corporations candidly illuminates the screens of our devices, the expectation is overwhelmingly that *they* will change. However, I expect if they are not entirely replaced or abandoned; if our own habits and values do not change; or if there continues to be such blatant disregard for digital privacy in the US, then the implications of the current trends on our democracy are catastrophic.

**Internet:** Technopolitical Warfare

Cambridge Analytica (CA), the firm behind Trump's massively successful political campaign, has demonstrably similar techniques to its parent company (Fig. 15), the Strategic Communication Laboratories Group (SCL). SCL has provided services for both the UK military as well as NATO in the past; and, in fact, shortly after the election the company has been awarded two contracts with the US State Department (amounting to nearly $500,000).[1] Using techniques not at all unlike those deployed by CA, SCL is known to have influenced political change on a massive scale in a number of international operations.

Essentially, SCL is a team of technical "psyops"— contracted agents of the government or military using psychometrics to influence a target audience. To date, SCL has seemingly eluded most public scrutiny or in-depth coverage by a popular press. However, on a strangely transparent website, the group outlines their portfolio of services— including defense, intelligence, federal/civilian, and international. Here is an excerpt from a section labeled "Military Recruiting":

> *Recruiting, sustaining, and deploying the world's most advance* [sic] *military requires deep insights to resource the military services reflecting the diversity and talent of the Nation's eligible population. SCL employs advanced data analytics to understand both the macro and micro targeting of the eligible population informing precise modeling to fulfill the broadest and niche military occupations specialties. Precision modeling paired with tailored media*




SCL Worldwide Offices

**Fig. 15**
Neighboring Malaysian offices of SCL (bottom) and CA (top)

> *engagement reduces acquisition cost, enhances talent quality, and increases contract efficiency.*[2]

Under the projects page on SCL's website, they list a number of successful past operations, including:

. *Effective engagement in Afghanistan*
. *Courses of action for failed states in Libya*
. *Counter terrorist recruitment - pan-Pacific*
. *Data-driven strategy & operations in Ukraine* [3]

Seemingly, the only safety-net in avoiding some persecution for providing these services (which can scarcely be described as anything other than meticulous, targeted digital propaganda) appears to be a distinction of nationality— "us" and "them".

Since these psyop campaigns are supposedly deployed only on foreign soil* there hasn't yet been any significant American or British backlash. In fact, privacy laws in Britain would have prevented many of the same tactics employed in the United States elections.** However, as more and more of their activity surrounding the 2016 American election cycle comes to light, there may be further recourse.

Altogether, this research appears to have the makings of some vast conspiracy theory. However, the technology that's at play is very real— as is its use-value for socio-political manipulation. It's unquestionable that data has effectively driven a digital gold rush— and major corporations and governments, including the United States, are buying up the mines and bringing in the shovels.

The foundation of this *Internet of Anxiety* was established decades prior and accelerated by the bloated data economy and its sudden infrastructural explosion. Commercial tech companies have plucked this low-hanging fruit by the bushel— pushing for social media traffic in order to secure swaths of consumer data. The mentality that this data is

*SCL has 17 offices worldwide, with their head office located in Arlington, VA— a 20-minute drive from the CIA headquarters in Langley.
**Headquartered in London, CA has been a registered American business since 2013 with offices in New York City and Washington D.C., enabling their participation in the US elections. They also have offices in Mexico, Brazil, and Malaysia.

theirs to take, however, has long been reinforced by government agencies' wanton disregard for American digital privacy.

Beyond the data consumed by the frightful five and their coalition of big data vendors, the United States has developed a proficient toolbox of all-around data espionage. In addition to raking in your data, they've given every three-letter agency the means to compromise your devices— often constructing any gathered intelligence into a cohesive case after the fact (termed "Parallel Construction").

At the event Still Hacking Anyways (SHA2017)— a popular hacker camp/conference in the Netherlands— former technical director at NSA, Bill Binney, illuminated the United States' extensive investments in data surveillance and collection. In his hour-long presentation, Bill flashed through dozens of leaked, or declassified, top secret documents and slides (Fig. 16) from internal American agencies— detailing the vast empire of surveillance strategies and their organizational ties. Though much of his long-standing claims have been disputed or dismissed, other whistleblowers— such as the expatriated Edward Snowden— have come forward with similar evidence to corroborate Bill's presentation.[4]

Altogether the mass of PowerPoint slides highlights— in addition to a nauseating lack of design skills— a series of programs, namely: PRISM, SIGINT, TREASUREMAP, and Five Eyes.[5] In addition to tapping undersea fiber-optics— recording *everything* that passes through, these operations (most notably, PRISM) have partnered with members of the frightful five, and other tech companies, to decrypt the data used by their clients and lend direct access to their servers. The logos for Apple, Yahoo, Gmail, Google, AOL, Facebook, YouTube, and others appear at the top of Bill's slides; yet, many of these companies have denied any association or prior knowledge of these activities.[6]

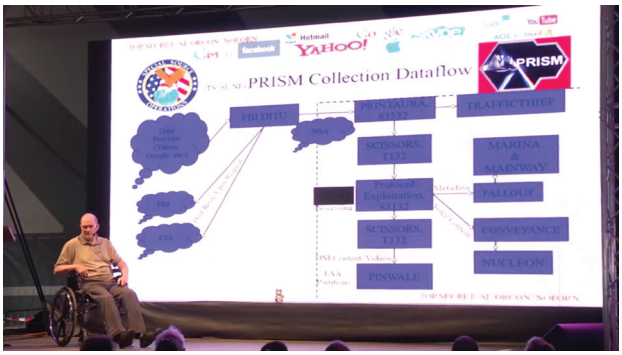



**Fig. 16**
Bill Binney's talk on NSA surveillance programs at SHA2017

Remarkably, coverage of these operations has been available to the public for nearly 5 years— their technical foun-

dations set into place long prior; yet public opposition has done little to drag down this insatiable information machine. Many Americans, in fact, have scarcely demonstrated any opposition to this revelation at all. Even those who are aware that their digital privacy means little to their nation's leaders seem to feel that— though undesirable— it is a necessary evil: "I'll never be a target; so, I have nothing to hide."

If the mentality is that becoming a "target" implies an immediate, physical disruption to their lives, then perhaps they're right— they have nothing to hide. In reality, this disruption has proven to be deceitfully quiet and slow, and the majority of Americans *have* become targets. With tacit consent they've been led to assist in their democracy's own unmaking by the friend who knows them best, the algorithm.

**Communist Cuba Saving American Democracy**

At the height of the Soviet Union, the Communist empire was supporting Cuba's economy with an estimated "$4 to $5 billion annually", in addition to providing raw materials such as lumber and oil.[1] Soon after the collapse of the USSR in 1991, Fidel Castro declared "El Período Especial"— literally, "Special Period". Stripped of their main economic benefactor, the Cuban economy crashed. Exacerbated by the US trade embargo, famine spread across the island and medical supplies were utterly scarce. For the Cubans who believed in the revolution— in Fidel Castro— this put their faith through a trial by fire.

*Cuba and the Cameraman*, a remarkable documentary by private journalist, Jon Alpert (through which he sparks a relationship with the Cuban dictator himself), depicts a truly devastated Cuba; however, it's people are resilient. Recognizing that the survival of their hard-won independence was at stake, Fidel made a strategic decision to expand Cuba's tourism industry. This saved Cuba from starvation and lifted the depression; however, as Fidel grew older (and was succeeded by Raúl), their economic model has increasingly

emulated that of China: More independent small-businesses have emerged, but the most vital industries are still run by the state.

During the Special Period, the Cuban culture underwent an incredible transformation. Nurses washed and re-used latex gloves; water was moved to rooftop-barrels so they could still shower and wash their hands; and community gardens sprang up in urban centers to battle food-shortages. The Cuban people learned to value the potential of every scrap. This cultural shift— and tourism's dose of capitalism— ultimately saved their country from total collapse.

**Fig. 17**
Widely available aluminum meal trays have commonly been converted into radio antennas in Cuba.

An artist by the name of Ernesto Oroza, born in Havana in 1968, lived through the Special Period. In fact, the collapse of the Soviet Union occurred only shortly after he'd graduated from the state-run Instituto Superior de Diseño (Higher Institute of Design). With a degree in industrial design in a country with no industry, Oroza began collecting the do-it-yourself (DIY) artifacts of the Special Period with fellow artist, Diango Hernandez. In these collections, Oroza romanticizes the Cuban's desperate self-sufficiency, dubbing this creative necessity "Technological Disobedience":

> *Technological disobedience, understood as a technopolitical critique, operates, on the one hand, as a way of altering the cycle of circulation and the use of technology as imposed by neoliberalism; and, on the other hand, as an instance of possible appropriation and elaboration of those devices — qualifications different from the logic of consumption as prescribed or obsolete, but that contain potentials as practical as knowledge and critical reflection.*[2]
>
> (Translated from Spanish)

Nowadays, walking the streets of Cuba, this cultural legacy is evident in the 1950s and '60s American cars that have been kept running for decades. Most of the country's engineers had left for the States; so, fabrication was difficult or crude. All technological resources needed to be carefully maintained and repaired; and everything could be used for something.

It was this same mentality— an intelligent understanding of the usefulness of the unused— that led to creation of

the “Cuban Internet”. Today, Cuba is said to be among the “most restrictive media environments in the world.”[3] However, in analyzing the threats to democracy posed by the American-made *Internet of Anxiety*, the Cubans may have unintentionally devised an antidote in their own version of the Internet. “La Red de la Calle”— or “Street Network” (SNET)— is arguably one of the most profound testaments to Cuban resilience and creativity.

Access to the Internet is limited and expensive— and the connection is often unreliable and slow. The only fiber-optic cable coming into the country (apart from the US-owned lines going into Guantanamo) is ALBA-1.[4] Introduced in 2012, and routed from Venezuela, ALBA-1 has unfortunately done little to affect the country’s digital connectivity. The fastest connections are available in hotels serving tourists, and in the offices of government officials who’ve obtained a license from the Ministry of Communication or gained approval from ETECSA (the state-run telecom company).

For the actual citizens living in Havana— the most popular tourist destination in Cuba— access to the WorldWideWeb is available, but unlikely. The public hot-spots— implemented by ETECSA— are expensive and crowded. Scratch-off cards give you a connection code; but a couple of hours is almost a quarter of the average Cuban monthly salary of $20.[5] Yet, with dozens of people still crowding around each access-point to connect with family and friends abroad, a stable connection is rare.

**Fig. 18**
An SNET “NanoStation” — a computer cluster supporting the underground Cuban Internet

The SNET originates in Havana as early as 2001. Teenagers strung Ethernet cables between their homes with the intention of establishing a stable connection between fellow gamers— playing popular multi-player titles like “World of Warcraft” and “Call of Duty” (most video-games are illegal in Cuba). As it expanded, however, the SNET was developed to support peer-to-peer (P2P) chatting as well as file-sharing. Wireless was adopted, and more and more “nanos”— slang for “NanoStations” (Fig. 18)— were implemented across Havana.

Gradually the SNET had grown to over 9,000 of these nanos; though, it appears to be localized to Havana and the immediate surrounding area.[6] For many young electrical engineers and computer scientists, with exceptional technical knowledge and expertise (not to mention avid Cuban gamers), their options were to contribute to the thriving tourism economy, or use their skills to encourage a connected Cuba. What they've achieved is essentially Cuba's first wireless "mesh" network. Using what's known as an "ad hoc" routing protocol, the nodes of a network (in this case, Havana's nanos) can dynamically re-route— sending data to its destination by hopping across the shortest path or the strongest connections, node-to-node.[7]

This is not, by any means, new technology: In 2003, the Community Wireless Network (CWN) group at University of Illinois received a grant from the Threshold Foundation (and later the Open Society Initiative, as well as $500,000 from the National Science Foundation in 2006) to develop a proof-of-concept for these routing protocols.[8] MIT and other universities have since expounded on this topic as well. A mesh (also distributed, decentralized, or ad hoc) network transfers data in a much different way than is common today.

Over time, the data-infrastructure of the United States has become entirely centralized. Whenever a website is accessed, your device sends a request to retrieve that website's data from a specific IP address. The frightful five (co-opting the centralized infrastructures of ISPs) have built massive physical data-centers across the world to cache the most frequently accessed content on the Web, as well as to promote their own privately hosted services. This dramatically increases speed, since you might otherwise be attempting to connect directly to a private server on the other side of the world.


**Fig. 19**
Map of worldwide servers owned by the frightful five (minus Amazon), circa 2014

One of the problems with this hierarchy is that it builds a dependency on these centralized authorities. Many of the cloud-based services require a connection to data that is physically hundreds of miles away. A mesh network could place similar services just down the road. In the event of a power outage, or an attack on these centralized servers, a section of the world would be left without access to the Internet. To further grasp this urgency, one could look at the recent 2011 outage in Egypt, when the government was able to cut Internet traffic by 90% in a country with 80 million people.[9]

**Distributed Redemption**

The developers and technicians that maintain the SNET have demonstrated that it *is* possible to exist in a digital economy independent of corporations and governments. Though the SNET is strictly moderated by its developers to discourage political and religious content, it remains a credible model for a truly popular media ecology.

The SNET has provided a platform for the development of its own functional facsimiles of Google, Facebook, eBay, and other popular services available on the WorldWideWeb— as well as its own unique services, applications and content. By establishing a small-scale, independently-moderated mesh network at a city-wide scale, the SNET has demonstrated the possibility of a thriving new digital sphere that has entirely departed from the *Internet of Anxiety*, while retaining (through community-driven development) the benefits that have coerced its habitual use.

SNET is illegal in Cuba, but the government has continually turned a blind eye as it hasn't yet been deemed a significant threat to the regime. Its restrictions on political or religious speech may seem alarming to an American; but it also refuses pornography and obscenity— and it is completely free of charge.[1] This is the only way the SNET can remain undisturbed; and, to those who frequent this network, these rules are perhaps more indicative of its *idealism* than oppression.

The apparent success of this "technosocial" typology would be difficult to predict within a capitalist market. However, there are several groups that have already begun to deploy mesh networks within communities across the United States. The *Red Hook Initiative* (RHI)— a non-profit based in Brooklyn, NY— has an ongoing effort to expand its own community-driven network, providing a platform for localized applications, digital services, news, and more.

> *Red Hook WIFI, a project of the Red Hook Initiative, is a community-led effort to close the digital divide, generate economic opportunity, facilitate access to essential services and improve quality of life in Red Hook, Brooklyn via the deployment of a wireless Internet network. In partnership with local businesses and residents, Red Hook WIFI is providing access to the Internet and the resources it provides to residents of our neighborhood, where broadband adoption rates are lower than the city average. Additionally, each time a user signs on to the network, our splash page displays local events, places of businesses, local news, jobs listings and more. Red Hook WIFI is completely free to users.*[2]

In the aftermath of Hurricane Sandy, when Red Hook was left without power, water, and heat, the RHI Wi-Fi network was able to relay emergency responders and community aid without a connection to the Web. Moreover, RHI has provided an opportunity for the promotion of technical learning and political activism among high school students and neighborhood residents as they construct their network together.

A similar project, undertaken by the *Equitable Internet Initiative*— who's members self-identify as "digital stewards"— are also bridging the digital divide, providing gigabit connections to struggling communities in Detroit.[3] By creating one or two access points that still connect to the World-WideWeb, these efforts have even been able to bypass the prices of dominant Internet Service Providers (ISPs)— bringing free Internet to neighborhoods that could not have otherwise afforded these costs. Lastly, by using these nodes as proxies— intermediaries through which the community can connect— they've increased their data-security and

privacy, as well as the ability to cache data and speed up the network.

Whereas many of these projects are built on the principle of physical decentralization (i.e., a local network of servers, transmitters, and receivers) other initiatives— focusing more heavily on software— have even sought to create a *digitally* decentralized web. One such project, the *InterPlanetary File System* (IPFS)— proposed by Juan Benet, displays extraordinary potential in tandem with a physically decentralized network.

Essentially by breaking down every file hosted on a network into a set of cryptographic "hashes"— mapping an arbitrary amount of data to a fixed amount of data— IPFS deconstructs those files into a symbolic version of themselves, like digital DNA. This DNA, the building blocks of the file, is then split across the network— hosted by any number of computers or servers. The cryptographic key to reassembling this DNA is also stored within a publicly available digital ledger. When your computer reads this ledger, it can then be used to read that digital DNA and recreate the file from its constituent parts into a usable format for viewing on any individual machine.

**Conclusion:** Digital Self-Preservation

Beyond the obvious pragmatisms of a decentralized and distributed network, its most profound value is the vast cultural ecosystem it sustains. The key difference decentralization provides is media freedom— the power to control how we connect and evolve digitally. This version of the Internet would be people-oriented, not profit-oriented. It wouldn't gather, sell, or otherwise manipulate personal data. Its scale would be comparatively minuscule in the face of big tech; but it would be driven by popular demand and collective support.

The evolution of technology has, in every historical context, paralleled a dichotomy of freedom and control. In the 21st

century, the role of *technopolitics*— the "strategic practice of designing or using technology to constitute, embody, or enact political goals"— has, at an international scale, become ever more pervasive and influential.[1] In the United States, deep within the state of media-driven unease and apprehension, the technopolitics upholding the *Internet of Anxiety* have steadily sapped away the liberty of American thought.

There are many origins to American anxiety: the daily touted threat of terrorism, loss of privacy, corruption... However, the determined root of this condition may in fact be *dependency*. When an event is dependent upon an external and uncontrollable entity— an entity which thrives within the *Internet of Anxiety*— there is no certainty. Generated by even the most granular processes and multiplied through more prominent, national and corporate apparatuses, these dependencies have never before been made to seem so vital to American livelihood.

The paradoxical willingness to be ruled— to trust in an authority that has repeatedly failed— simultaneously propels our anxiety while demanding forgiveness and renewed trust in that sovereignty when it again satisfies our needs. This manifests itself in the fluid relationship between citizenship and the rights it entails; smartphones and access; or, social media and connectivity. However, most of the benefits are no longer stable enough to encourage these relationships.

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