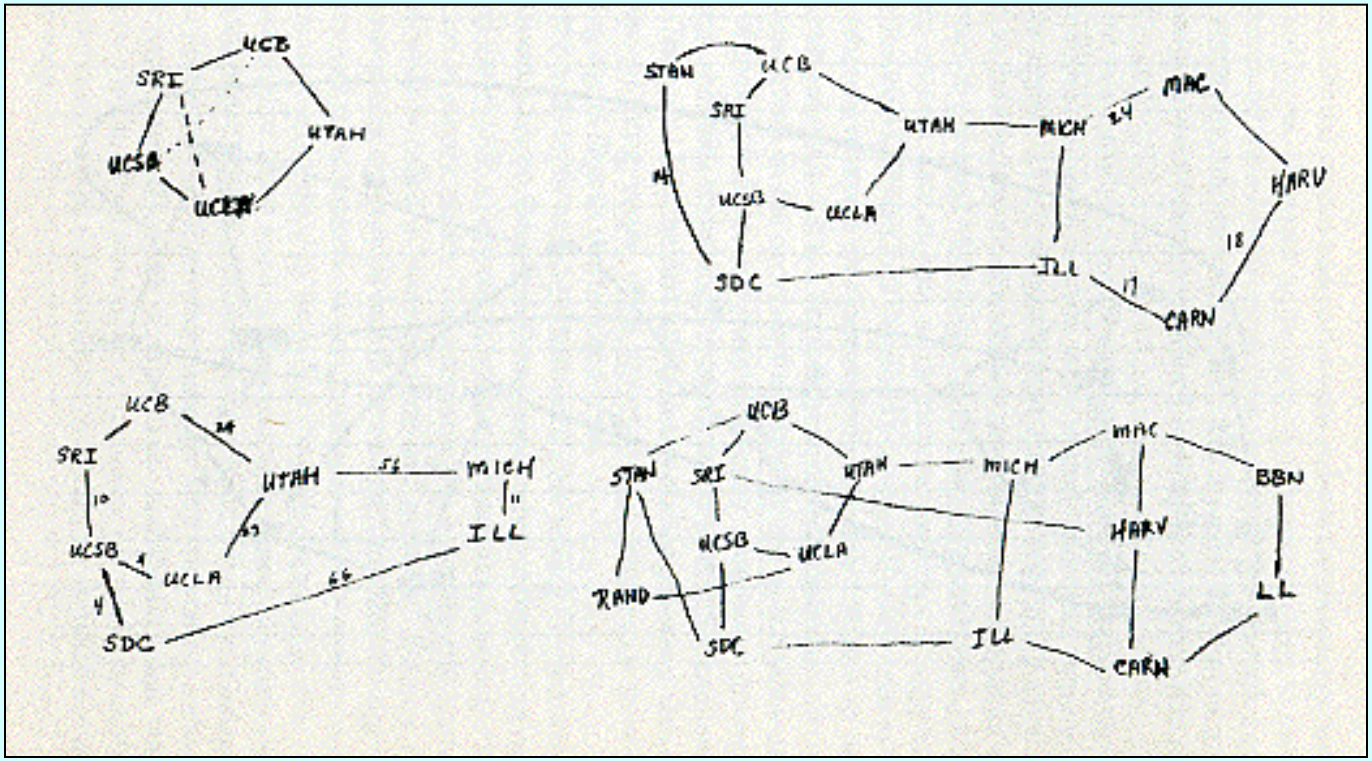
Internet History and Culture



Ethics and Policy in the news

- Police use a robot to kill
- http://edition.cnn.com/2016/07/09/opinions/dallas-robot-questions-singer/index.html
- Interesting ethical questions raised
- Rule of law, versus an inability to safely apprehend a suspect

Policy issues related to Airbnb

- http://www.nytimes.com/2016/06/30/technology/airbnb-sues-over-nasty-surprise-from-its-hometown.html
- http://www.nytimes.com/2016/06/29/technology/airbnb-sues-san-francisco-over-a-law-it-had-helped-pass.html
- SF is going to fine Airbnb $1000/day per host that is not registered
- Airbnb says they are not responsible for the content of their users (thus violating the Communications Decency Act). In other words, Airbnb should not be charged if their users post content without being registered

Changes to how Facebook provides news

- http://www.nytimes.com/2016/07/01/technology/feeling-stung-by-a-fickle-friend-named-facebook.html
    - FB has 1.65B users (all outside China!)
    - They are changing news feeds to focus more on pictures from family and friends at the expense of national and international news
    - Given that FB has the position that it has regarding social media, to what extent does FB have the responsibility to not change the news feed?
    - Also, less money going to FB business partners who provide the news. As the effective monopoly in the social media space FB occupies, it this acceptable?

Technology push to get girls educated

- http://www.bbc.com/news/technology-36734525
- Focus has been in Kenya, now moving to other sub-Saharan countries
- "The push will include smartcards that monitor attendance" as well as offering broadband Internet and other assistance, such as online education, for families to send their daughters to school.
- It will also deploy satellite broadband to improve connectivity in rural areas."

Privacy versus security

- http://www.bbc.com/news/technology-36683828
- Brazil is freezing FB funds over FB's refusal to provide the content of messages (through WhatsApp) sent by suspected drug dealers.

Troubles with anonymity

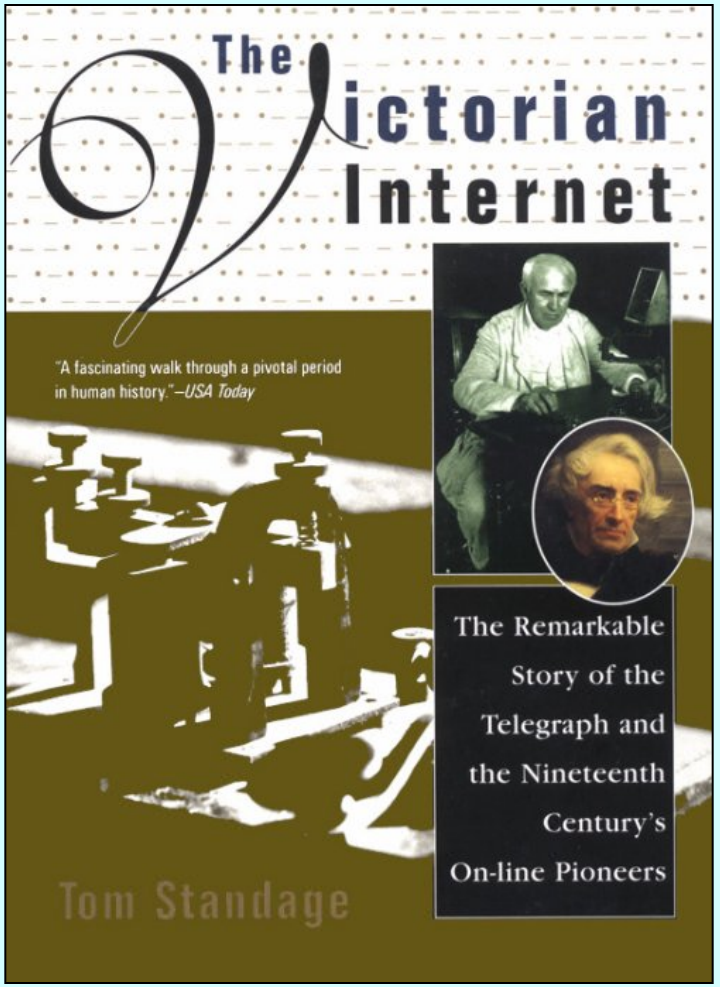
- http://www.nytimes.com/2016/06/09/technology/q-and-a-secrets-founder-on-the-problems-with-anonymity.html
- The founder shut down his company when he realized that bullies, trolls and other bad people were the primary users of his social messaging company, Secret.

Central Themes

- The Internet has a long history and did not spring to life fully-formed with the advent of the web in the mid-1990s.
- Despite much mythology to the contrary, the Internet and its predecessors were funded by public research funds for most of the history of the field.
- The Internet has evolved in ways quite different from those envisioned by its creators.
- The Internet is a hugely complex system, along the lines of those described by Charles Perrow in *Normal Accidents*.
- The Internet was designed for experimental flexibility, not as reliable infrastructure.

The Victorian Internet

Many of the ideas that seem so new in the Internet have deep historical roots. In 1998, Tom Standage wrote a fascinating book about the history of telegraphy. In his book, Standage describes how the telegraph gave rise to many of the social structures of the Internet, including chat rooms, online romances, and its own breeds of entrepreneurs, cryptographers, and hackers.



Vannevar Bush and Hypertext

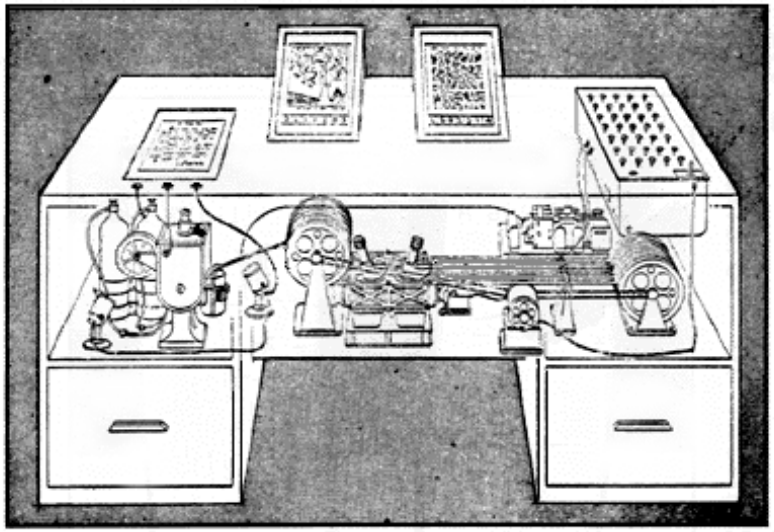
One of the earliest proponents of developing a global information network of the form we have today in the web was Vannevar Bush, President Roosevelt's Director of the Office of Scientific Research and Development. In a 1945 article in *Atlantic Monthly* entitled "As We May Think," Bush anticipated many of the ideas that are central to the modern Internet, including the idea of hyperlinked documents.

Vannevar Bush (1890-1974)

Vannevar Bush and the Memex

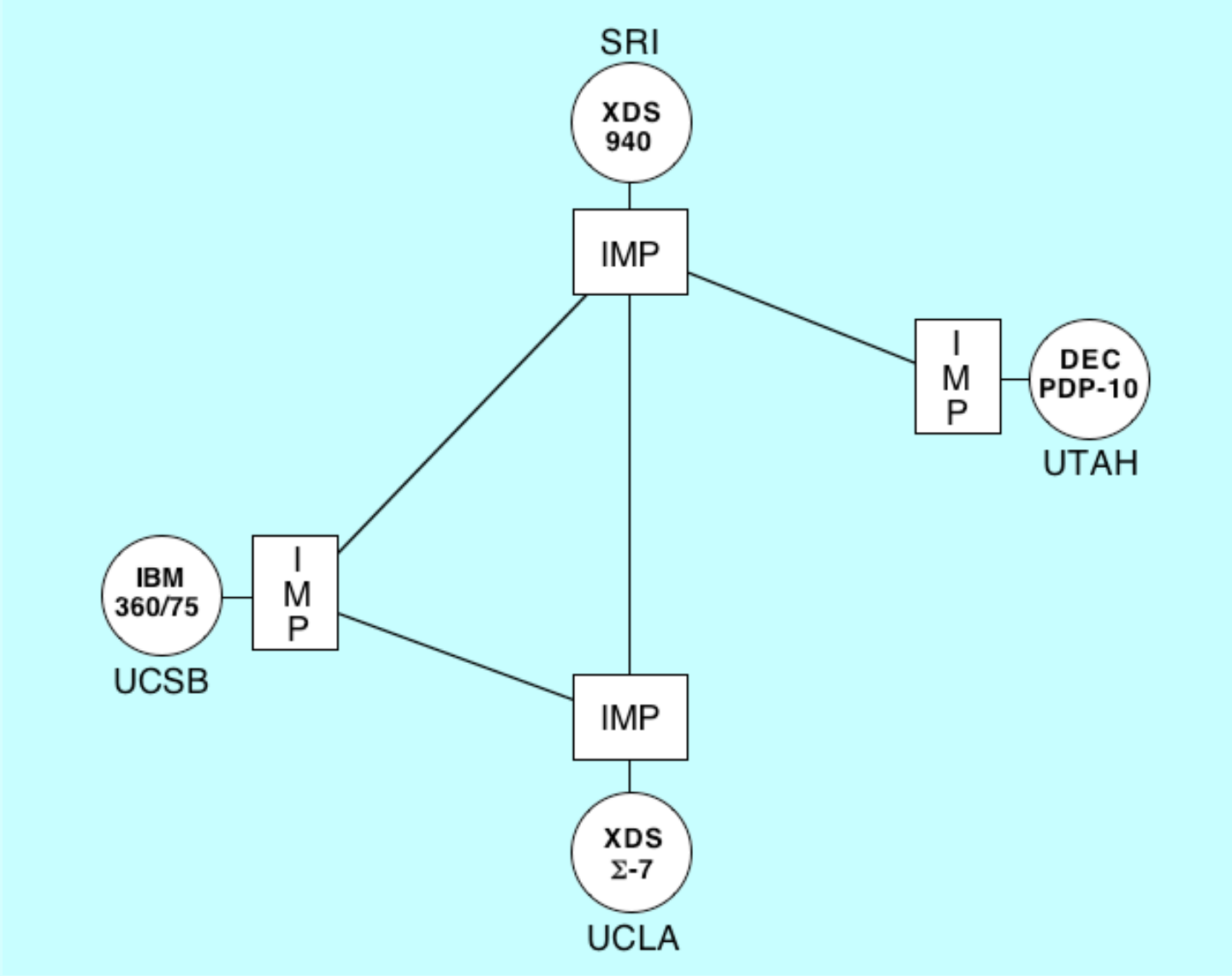
All this is conventional, except for the projection forward of present-day mechanisms and gadgetry. It affords an immediate step, however, to associative indexing, the basic idea of which is a provision whereby any item may be caused at will to select immediately and automatically another. This is the essential feature of the memex. The process of tying two items together is the important thing.

—Vannevar Bush, "As We May Think," 1945

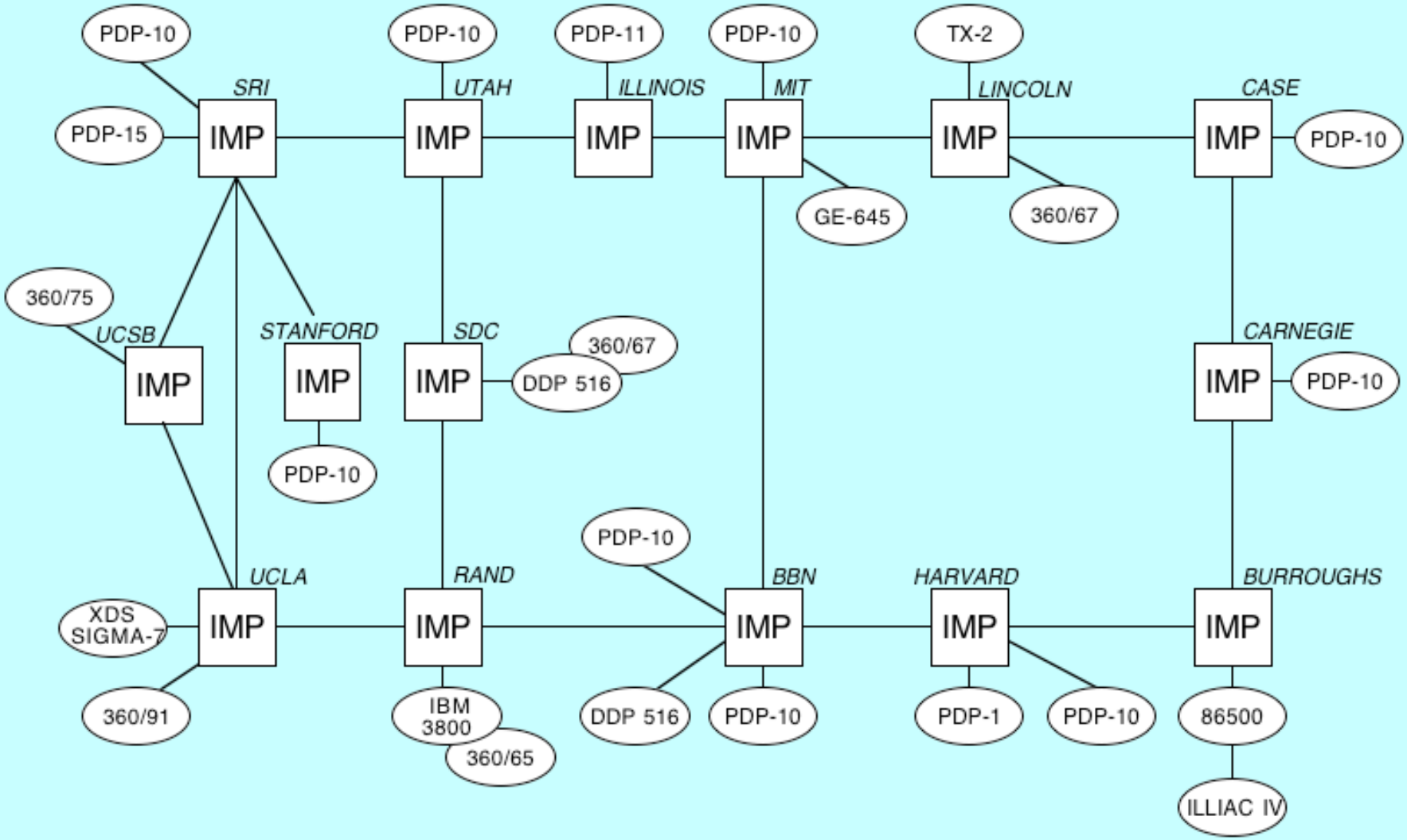


Memex in the form of a desk would instantly bring files and material on any subject to the operator's fingertips. Slanting translucent viewing screens magnify supermicrofilm filed by code numbers. At left is a mechanism which automatically photographs longhand notes, pictures and letters, then files them in the desk for future reference (*LIFE* 19(11), p. 123).

Initial ARPANET Configuration (1969)



ARPANET Logical Map (1971)



Internet Timeline—1960s

1965 ARPA sponsors a study on "A cooperative network of time-sharing computers"

Ted Nelson describes his vision of a hyperlinked network

1967 Larry Roberts proposes construction of a network to ARPA

1968 ARPA issues request for proposals (July)

Contract awarded to Bolt Beranek and Newman (December)

1969 IMP1 begins running at UCLA (September)

Four nodes connect to form first ARPANET (December)

Internet Timeline—1970s

1970 Unix operating system developed at Bell Labs

1971 ARPANET grows to 23 hosts

1973 ARPANET adds first international connections (England and Norway)

1974 ARPANET grows to 62 hosts

Vint Cerf and Robert Kahn begin design of TCP/IP

1977 ARPANET grows to 111 hosts

Internet Timeline—1980s

1980 CSNET founded by NSF

1981 TCP/IP formalized

1983 TCP/IP required for ARPANET
ARPANET/MILNET split

1986 T1 Internet backbone formed
Most ARPANET traffic moves to Internet

1988 Merit wins NSFNET contract
NSFNET T3 backbone becomes operational

1989 Number of hosts passes 100,000
Tim Berners-Lee proposes the idea of the World Wide Web

Internet Timeline—1990s

1990	ARPANET completely decommissioned
1991	Programmers at CERN release the first browser
1992	T1 circuits decommissioned
1993	Release of Mosaic brings World Wide Web into public use
	Internet Society founded
1995	NSF subsidies end
	Rules prohibiting commercial traffic eliminated
	Number of hosts passes 3,000,000
	Sun releases Java thereby enabling web applets

Internet Timeline—1990s - 2

1995 IPv6 proposed

1998 Internet Corporation for Assigned Names and Numbers (ICANN)

1998 Google Search

1999 Napster peer-to-peer file sharing

Internet timeline – 2000s

2000 Baidu

2001 Wikipedia

2003 Skype

2004 Facebook

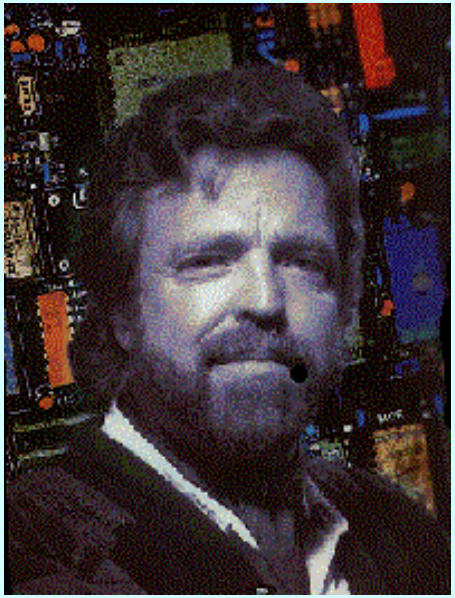
2008 Airbnb

2009 Uber

Whenever I talk to anyone involved in the Information Infrastructure Task Force, the one thing they're sure of is that they don't want the government to be involved.

—Larry Lessig, Harvard, 1994

The Electronic Frontier



John Perry Barlow
Retired rancher and author
Cofounder, Electronic Frontier Foundation
Lyricist for the Grateful Dead
Contributing writer for *Wired*
Author:
Coming into the Country;
Declaration of Independence in Cyberspace

The Declaration of the Independence of Cyberspace

Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.

We have no elected government, nor are we likely to have one, so I address you with no greater authority than that with which liberty itself always speaks. I declare the global social space we are building to be naturally independent of the tyrannies you seek to impose on us. You have no moral right to rule us nor do you possess any methods of enforcement we have true reason to fear.

Governments derive their just powers from the consent of the governed. You have neither solicited nor received ours. We did not invite you. You do not know us, nor do you know our world. Cyberspace does not lie within your borders. Do not think that you can build it, as though it were a public construction project. You cannot. It is an act of nature and it grows itself through our collective actions.

When people like John Perry Barlow talk about the Electronic Frontier, they imagine that they are the pioneers who settled the West without any help from a useless government in Washington. It may turn out that the metaphor of the American West will be relevant to the information infrastructure, but it is worth remembering that the original settlers were the Native Americans. In that world, we have a Bureau of Internet Affairs that offers no freedom for those original settlers.

—Judith Perrole, Northeastern, 1996

Cyberspace and the American Dream:
A Magna Carta for the Knowledge Age

Esther Dyson
Entrepreneur

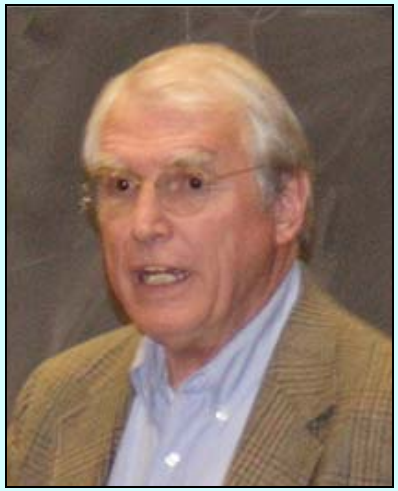
President, EDventure Holdings
Editor of *Release 1.0*
Past President
Electronic Frontier Foundation
Author:
Release 2.0: A Design for Living in the Digital Age

George Gilder
Chicago School economist

President
Gilder Technology Group
Author:
Wealth and Poverty
The Spirit of Enterprise
Microcosm
Speechwriter for Richard Nixon

George Keyworth
Scientific advisor

President
The Keyworth Company
Progress&Freedom Foundation
Science adviser to Reagan
Former director of physics
Los Alamos National Labs
Former member of HP Board



Alvin Toffler
Futurist

Author:
Future Shock
The Third Wave
Powershift
War and Anti-War

http://www.pff.org/issues-pubs/futureinsights/fi1.2magnacarta.html

Cyberspace and the American Dream: A Magna Carta for the Knowledge Age

The central event of the 20th century is the overthrow of matter. In technology, economics, and the politics of nations, wealth—in the form of physical resources—has been losing value and significance. The powers of mind are everywhere ascendant over the brute force of things.

In a First Wave economy, land and farm labor are the main "factors of production." In a Second Wave economy, the land remains valuable while the "labor" becomes massified around machines and larger industries. In a Third Wave economy, the central resource—a single word broadly encompassing data, information, images, symbols, culture, ideology, and values—is actionable knowledge. . . .

But the Third Wave, and the Knowledge Age it has opened, will not deliver on its potential unless it adds social and political dominance to its accelerating technological and economic strength. This means repealing Second Wave laws and retiring Second Wave attitudes. It also gives to leaders of the advanced democracies a special responsibility—to facilitate, hasten, and explain the transition.

Cyberspace and the American Dream: A Magna Carta for the Knowledge Age

The Nature and Ownership of Property

Clear and enforceable property rights are essential for markets to work. Defining them is a central function of government. Most of us have "known" that for a long time. But to create the new cyberspace environment is to create new property—that is, new means of creating goods (including ideas) that serve people. . . .

The dominant form of new knowledge in the Third Wave is perishable, transient, customized knowledge: The right information, combined with the right software and presentation, at precisely the right time. Unlike the mass knowledge of the Second Wave—"public good" knowledge that was useful to everyone because most people's information needs were standardized—Third Wave customized knowledge is by nature a private good.

If this analysis is correct, copyright and patent protection of knowledge (or at least many forms of it) may no longer be unnecessary. . . .

Who will define the nature of cyberspace property rights, and how? How can we strike a balance between interoperable open systems and protection of property?

Cyberspace and the American Dream: A Magna Carta for the Knowledge Age

The Role of Government

Eventually, the Third Wave will affect virtually everything government does. The most pressing need, however, is to revamp the policies and programs that are slowing the creation of cyberspace. Second Wave programs for Second Wave industries—the status quo for the status quo—will do little damage in the short run. It is the government's efforts to apply its Second Wave modus operandi to the fast-moving, decentralized creatures of the Third Wave that is the real threat to progress. Indeed, if there is to be an "industrial policy for the knowledge age," it should focus on removing barriers to competition and massively deregulating the fast-growing telecommunications and computing industries. . . .

The reality is that a Third Wave government will be vastly smaller (perhaps by 50 percent or more) than the current one—this is an inevitable implication of the transition from the centralized power structures of the industrial age to the dispersed, decentralized institutions of the Third.

Cyberspace and the American Dream: A Magna Carta for the Knowledge Age

Recommendations

1. Create an open path to interactive multimedia access
2. Promote dynamic competition
3. Define and assign property rights
4. Create pro-Third-Wave tax and accounting rules
5. Create a Third-Wave government

Cyberlibertarianism

Langdon Winner
Professor of Political Science
Rensselaer Polytechnic Institute

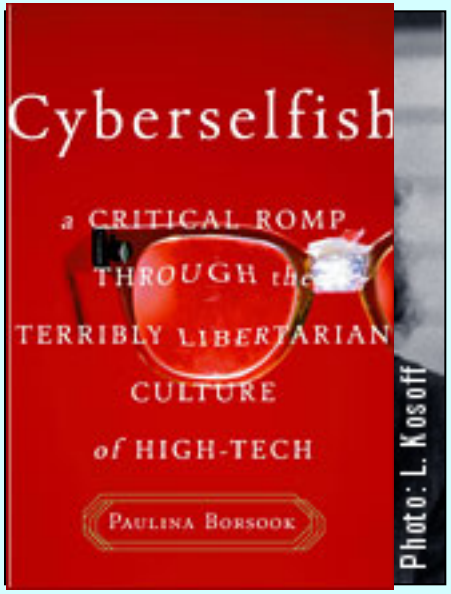
Columnist,*Technology Review*
Author:
Autonomous Technology
The Whale and the Reactor
Democracy in a Technological Society
Consultant for *Koyaanisqatsi*

Before we forge ahead with our inquiries, it is worth noting that, in fact, a philosophy of sorts has already taken shape in this domain, a widely popular ideology that dominates much of today's discussion on networked computing. A suitable name for this philosophy is ***cyberlibertarianism,*** a collection of ideas that links ecstatic enthusiasm for electronically mediated forms of living with radical, right-wing ideas about the proper definition of freedom, social life, economics, and politics in the years to come. Any attempt to philosophize about computers and society must somehow come to terms with the wide appeal of this widespread perspective, its challenges and shortcomings.

What would a cyberlibertarian say about:

- Free speech & online child safety
- Privacy policy & online advertising
- Net neutrality
- IP issues

Cyberselfish



Paulina Borsook
Author, journalist

Columnist,*WIRED*
Author of *Cyberselfish*

So it came as a shock [when] I stumbled into the culture of Silicon Valley. . . . Although the technologists I encountered there were the liberals on social issues I would have expected (pro-choice, as far as abortion; pro-diversity, as far as domestic partner benefits; inclined to sanction the occasional use of recreational drugs), they were violently lacking in compassion, ravingly anti-government, and tremendously opposed to regulation.

These are the inheritors of the greatest government subsidy of technology and expansion in technical education the planet has ever seen; and, like the ungrateful adolescent offspring of immigrants who have made it in the new country, they take for granted the richness of the environment in which they have flourished, and resent the hell out of the constraints that bind them. . . . These high-tech libertarians believe the private sector can do everything—but, of course, R&D is something that cannot by any short-term measurement meet the test of the marketplace, the libertarians' measure of all things.

Thought Question

1. From the birth of the ARPANET in 1969 to the end of NSF subsidies in 1995, the Internet was conceived, developed, funded, and maintained largely by the U.S. government. Today, however, there is a widespread belief among Internet users that the government can play no positive role in developing the networks of the future. How do you explain this seeming contradiction?