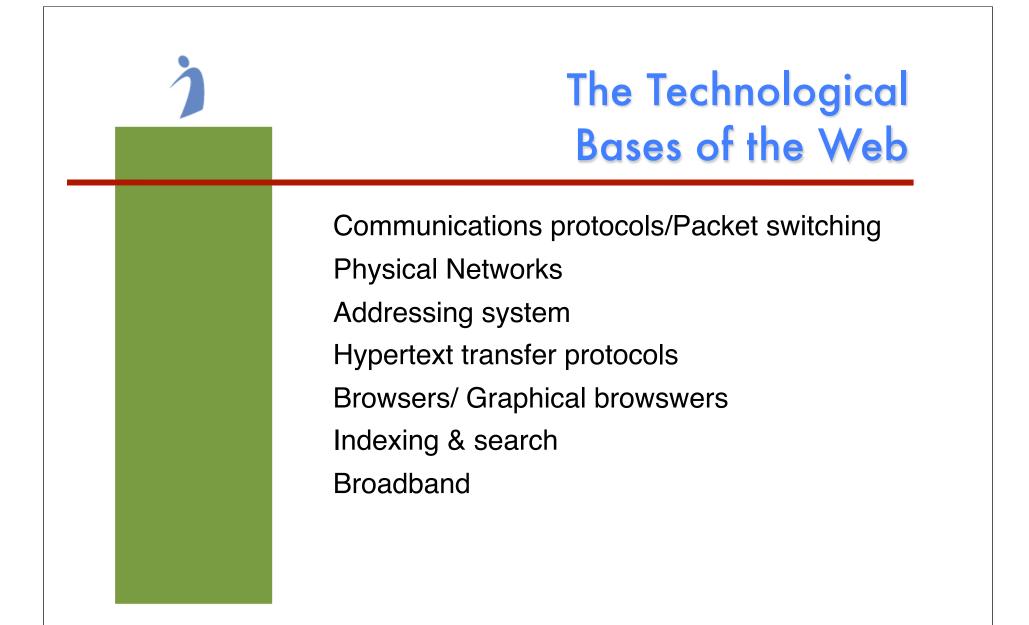


The Advent of the Internet

SIMS 103 History of Information Dec. 3, 2007 Geoff Nunberg

A Convergence of Causes

Technological developments Policy choices Economic forces Infrastructure e.g. Web presumes large number of pc's in place Social responses





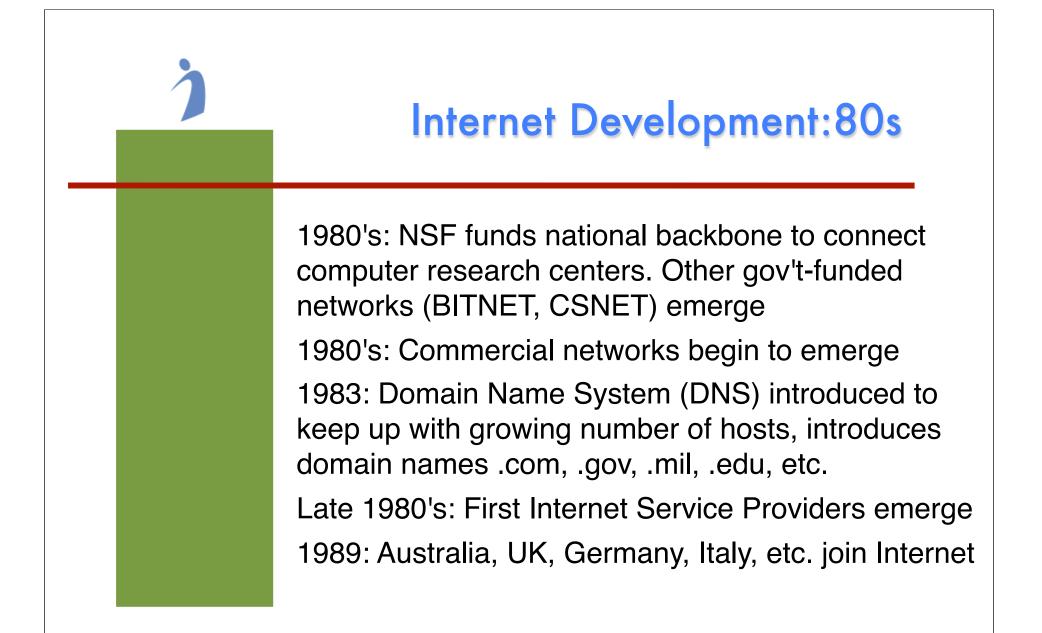
Technological Beginnings: 60s & 70s

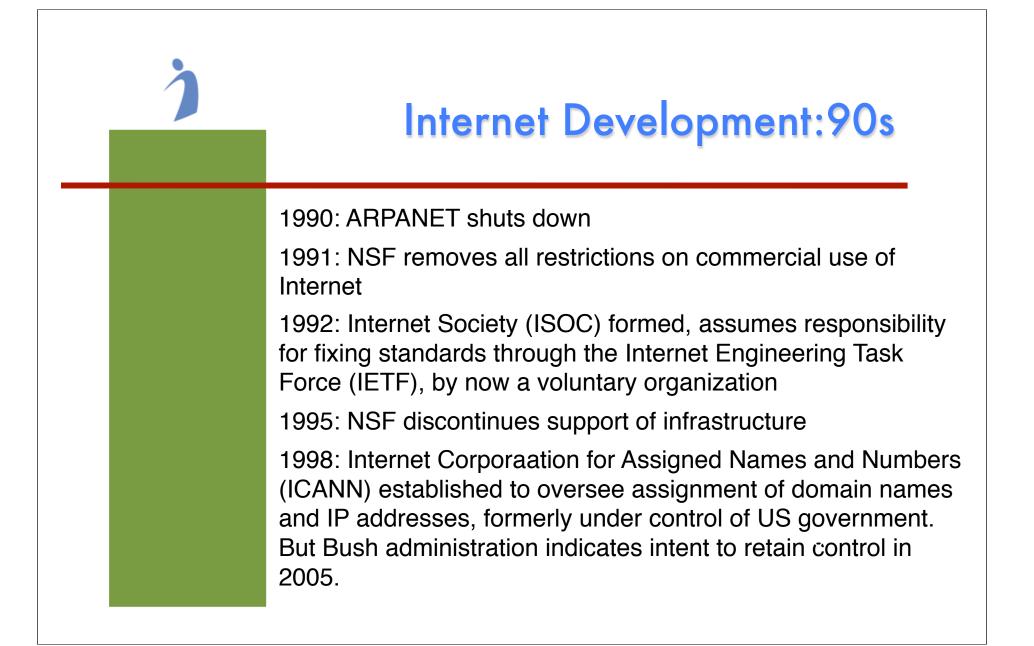
1969: ARPA (Advanced Research Projects Agency of DOD) (later DARPA) creates Arpanet, linking time-sharing computers at four research sites by telephone lines. Net makes use of packet-switching, rather than circuit switching, as with phone communication at the time.

1971: File Transfer Protocol (FTP permits easy exchange of files between sites.

1974 Bob Kahn and Vin Cerf ("Father of the Internet") demonstrate Transfer Control Protocol, which enables machines to route & assemble data packets.

1974: Ethernet developed at Xerox Palo Alto Research Center (PARC), allowing communication among machines on local networks.





The Origins of Email



1971: First network email program created by Ray Tomlinson at Bolt, Beranek & Newman (BBN), with "USER@hostname.domain" addressing system. First message sent between 2 machines that are side-by-side.

But most email is restricted to proprietary networks until 1988, when MCI mail is linked to the Internet

ATLAS

The Emergence of the WWW

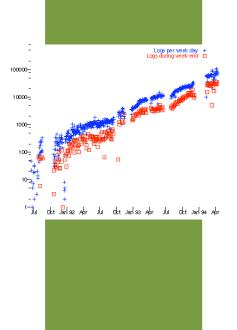
1945: Vannevar Bush writes "As We May Think" in *The Atlantic*; envisions Memex machine to follow links between documents on microfiche

1965: Ted Nelson coins the term "hypertext" to describe "compound documents" formed by links among documents

1990: Tim Berners-Lee of CERN coins the term "World Wide Web"; develops HTTP protocol for transmitting hypertext documents between clients and servers and and first Web browser making use of hypertext links.

Ca. 1990-: Pay-based online services like AOL, Compuserve, and Prodigy market connectivity + proprietary content (games, chat rooms, e-commerce, instant messaging etc.) to users unfamiliar with computers, first for hourly and then for monthly fee. By 1998, AOL has 15m. members.

The Growth of the WWW



1993: Mark Andreessen's Mosaic browser released by NCSA, which runs on Windows and permits easy integration of graphics in Web pages.

CERN announces that W3 technology will be available free to everyone.

1994: Over 200 HTTP servers; traffic on CERN server has grown 1000-fold since first launched. From the mid-90s on, Internet use roughly doubles every year.

1994: Andressen, now in private sector, releases Netscape Navigator browser.

1995: Microsoft releases Internet Explorer bundled with Windows 95 to compete with Netscape, which rapidly loses market share. Win95 also bundles dial-up software to make connection easy.

1995 AOL makes Internet available to all subscribers

The Addition of Search

1991: Gopher, developed at U. Minnesota, creates searchable index of FTP sites

infoseek[.]

altavista

Google

1994: Infoseek and Lycos search engines launched. Jerry Yang and David Filo introduce Yahoo!, a directory of Web sites.

1995: AltaVista launched by DEC; company regards it as showpiece for its hardware

1997 Larry Page and Sergey Brin launch Google, which makes use of Page Rank algorithm to rank pages according to popularity.

1998: Goto.com (later Overture, later Yahoo! Search) introduces pay-per-click advertising

The Web Takes Off

1994-2005: Internet use increases rapidly, driven by email, E-commerce, news & information, pornography & gambling. By 2005 there are an estimated 100m Web sites.

— Hostname — Active

102000000

91800000

81600000

71400000 61200000

51000000

40800000

20400000

~2000- Growth of broadband enables exchange of audio & video content; blogs and social networking sites proliferate, etc.

2005: 68 percent of American adults and 90 percent of American teenagers have used the Internet.

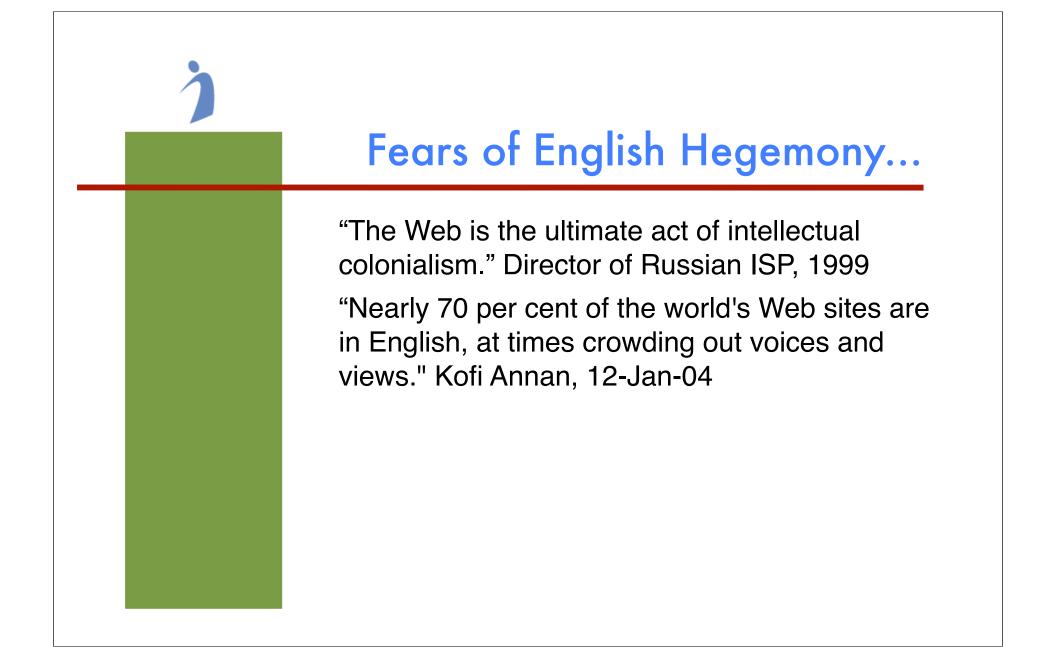
The Internationalization of the Web

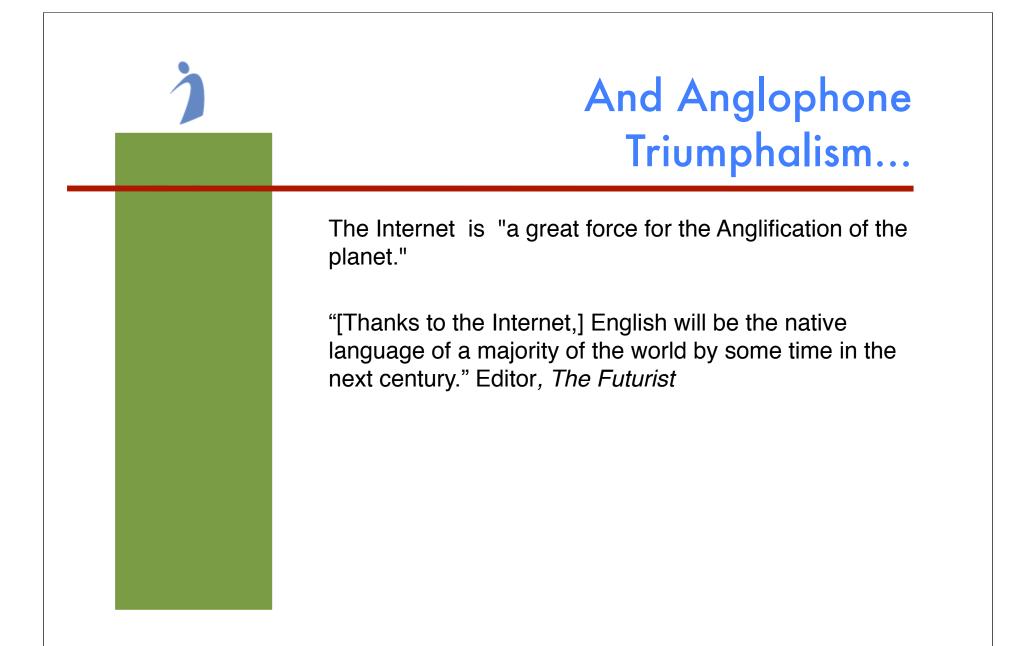
Initial prevalence of English on the Web

1997 -- Nunberg & Schuetze survey of 2.3 million pages from Web crawl: 85 percent of content is in English, including about 35 percent of content in non-English speaking domains.

Eng. Most common in N. Europe, less-developed nations

2000: Jack Xu Excite@Home; survey of around 600 million pages: 72% are in English





The Polyglot Web

Proportion of English is dropping sharply, aided by widespread adoption of unicode, first developed in 1991 to enable rendering of non-Roman writing systems Relatively slower growth in N.America, Europe as opposed to Latin America, East Asia Relative proportion of English is dropping in non-English-speaking domains as usage widens

Top Ten Languages Used in the Web (Number of Internet Users by Language)					
TOP TEN LANGUAGES IN THE INTERNET	% of all Internet Users	Internet Users by Language	Internet Penetration by Language	Internet Growth for Language (2000 - 2006)	World Population 2006 Estimate for the Language
English	29.7 %	322,600,837	28.7 %	135.2 %	1,125,664,397
Chinese	13.3 %	144,301,513	10,8 %	346.7 %	1,340,767,863
Japanese	7.9 %	86,300,000	67.2 %	83.3 %	128,389,000
Spanish	7.5 %	81,729,671	18.7 %	231.1 %	437,502,257
German	5.4 %	58,854,682	61.3 %	113.2 %	95,982,043
French	4.6 %	49,660,498	13.0 %	307.1 %	381,193,149
Portuguese	3.1 %	34,064,760	14.8 %	349.6 %	230,846,275
Korean	3.1 %	32,372,000	45.8 %	78.0 %	73,945,860
talian	2.7 %	28,870,000	48.8 %	118.7 %	59,115,261
Russian	2.2 %	23,700,000	16.5 %	664.5 %	143,682,757
TOP TEN LANGUAGES	79.5 %	863,981,961	21.5 %	166.7 %	4,017,088,863
Rest of World Languages	20.5 %	222,268,942	9.0 %	500.0 %	2,482,608,197
WORLD TOTAL	100.0 %	1,086,250,903	16.7 %	200.9 %	6,499,697,060

The Polyglot Web

Clear that proportion of English is dropping Relatively slower growth in N.America, Europe as opposed to Latin America, East Asia Relative proportion of English is dropping in non-English-speaking domains

... But the *perception* of English dominance persists

One reason: English still by far the most widely used single language...

Millenarian Visions

Predictions that Internet/Web will:

Ensure the dominance of English as a world language

Dematerialize online content ("end of the book")

"Disintermediate" commerce & discourse (eliminate the middleman, like retailers & wholesalers)

Decentralize authority & permit ground-up social & political organization.

Destabilize the "old media"

Millenarian Visions

Predictions that Internet/Web will decentralize authority & permit ground-up social & political organization and the development of "virtual communities"

Inspections Work War Won't.

> Cf the "virtual corporation," "smart mobs," moveon.org, etc., which are said to facilitate direct democracy



The Rise of "Virtual Communities," I

1978-79: Early MUDS (Multi-User Dungeons) enable players of text-adventure games to interact & team up.

Later, MOOs (MUD Object Oriented), developed at Xerox PARC, provide model for online collaboration & interaction. Many of these offer online chat.

1979 > Early BBS's (Bulletin Board services) allow users to connect via modem to a common server & post messages.

1980: USENET is conceived as "poor man's ARPANET" to allow users to exchange email & software. Introduction of hierarchically organized newsgroups facilitates general discussion on various topics.

Gives rise to terms like FAQ, spam, & trolling -- origins of internet etiquette.

The Rise of "Virtual Communities," II

1985: Stewart Brand & Larry Brilliant found the BBS The Well (Whole Earth 'Lectronic Link), which becomes an influential "virtual community" providing email, forums, etc.

WELL participants go on to found Craigslist, Electronic Frontier Foundation, Salon, com, etc.

1986: Matchmaker dating service begun as text-based BBS, adding to groups like soc.singles, etc. By 2003, US Web-based online dating services draw 40m annual visitors.

1995 Craig Newmark founds Craiglist in San Francisco for posting of local events; by 2000, expanded to 9 cities.



The Rise of "Virtual Communities," III

1997: Slashdot created to provide user -generated "News for nerds." Becomes wildly popular antecedent of blogs.

1997 Sixdegrees.com founded, social networking site that achieved 1m members and anticipated Friendster, MySpace, LinkedIn & FaceBook etc.





1998 Moveon.org founded to militate for moving past Clinton impeachment hearings. In 2003, becomes important channel for opposition to Iraq war, major source of funding for antiwar candidates.

2002 Meetup.com founded to facilitate offline meeting and networking of interest groups. During buildup to campaign, it becomes an important source of grassroots political organization for Howard Dean campaign, later for Kerry & Edwards.

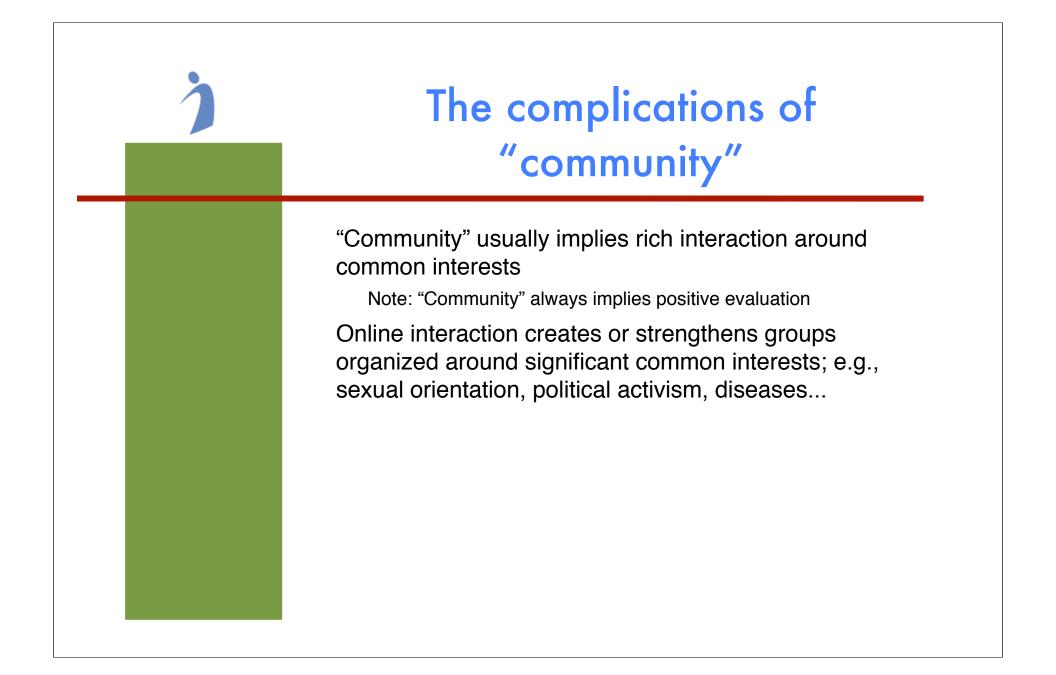
The Triumph of Social Networks

2003: myspace founded, rapidly becomes largest soc. networking site. Complaints about stalking, exploitation, spam, etc. lead some schools to block site. 2005: bought by News Corp for \$580m.

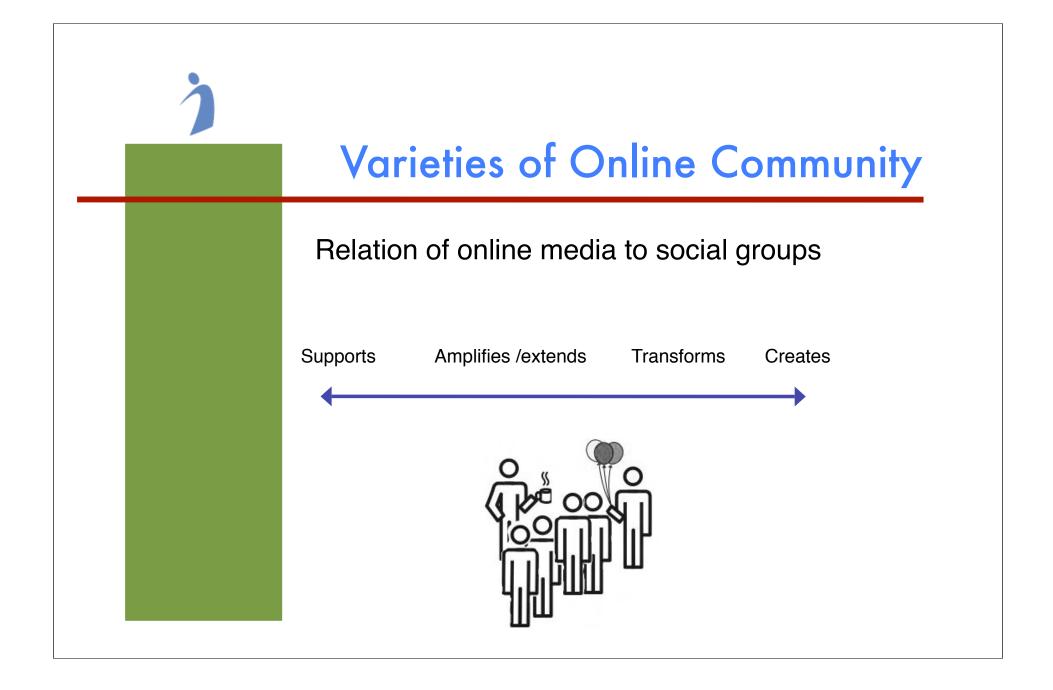
2003: Second Life launched by Linden Labs.

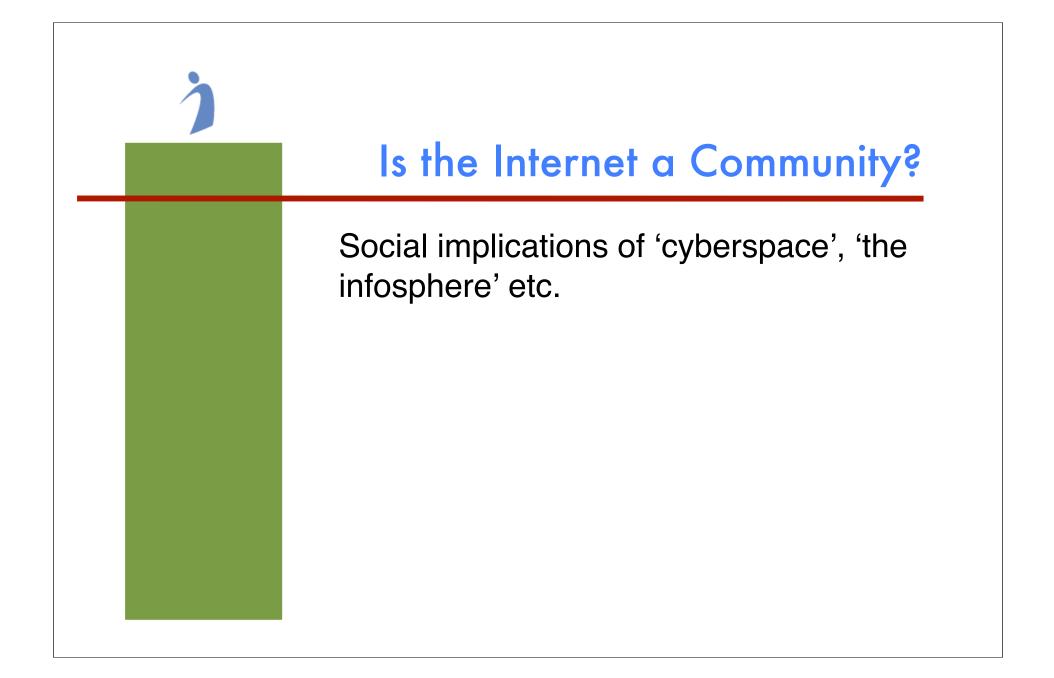
2004: Facebook launched by Harvard undergrad Mark Zuckerberg, extended to other colleges, high schools, & general public. BY 2007, claims 60m members.

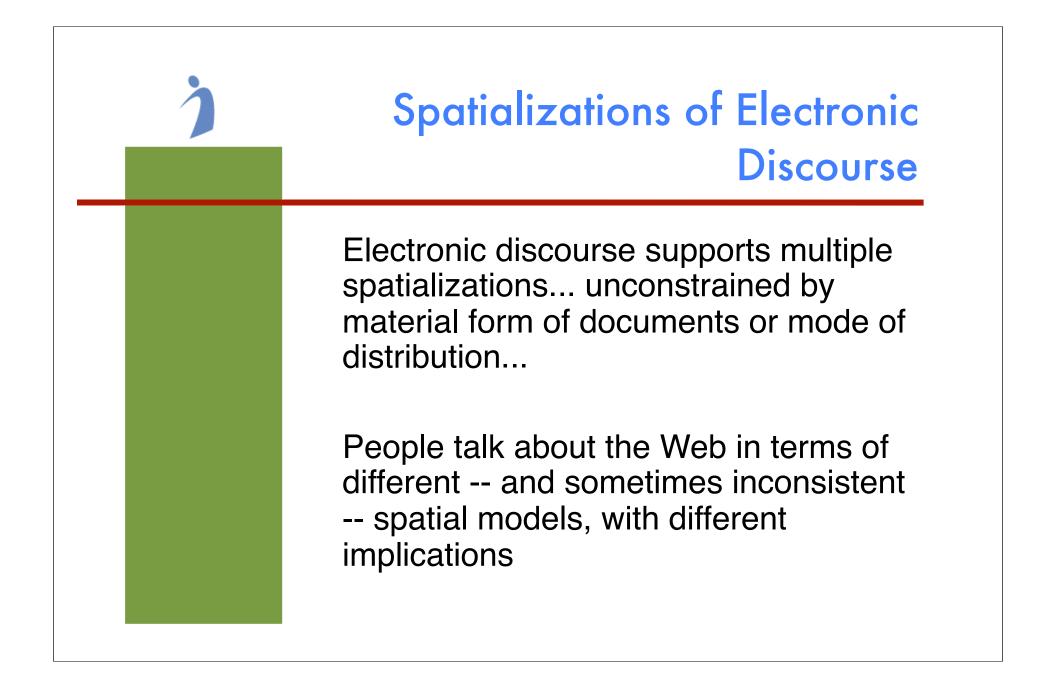


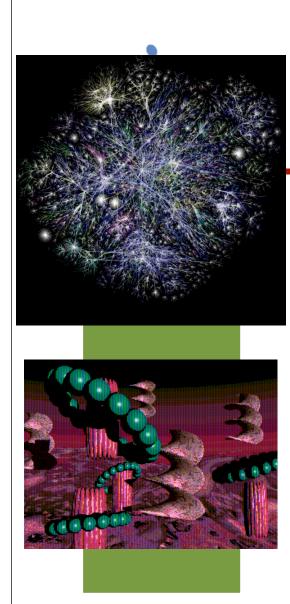










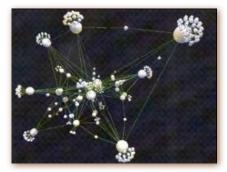


Spatial Models of Electronic Discourse: "Cyberspace"

The New Jerusalem, ca. 1992

Cyberspace: A world in which the global traffic of knowledge, secrets, measurements, indicators, and alter-human agency takes on form: sights, sounds, presences never seen on the surface of the earth blossoming in a vast electronic night. . . . From vast databases that constitute the culture's deposited wealth, every document is available, every recording is playable, and every picture is viewable. The realm of pure information, filling like a lake.

- Michael Benedikt, Introduction to Cyberspace, MIT Press, 1991





Visualizing Cyberspace

Double Space

by Graham Burchell

Cyber space – rather like real space, but without stars or moons.

It's warmer – a tang of electricity and a nose of new plastic hangs in the void.

It's a space more graphite than black; a perfect emptiness riddled with energy

where the occasional line of hypertext, scrambled into glyphic goo

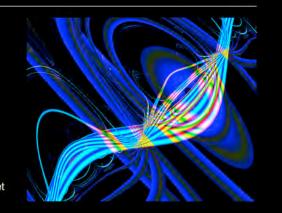
may stream into view with a rush of non-existent air, as a train, a tailed comet

hauling a long poem or snippet of prose along invisible band-width.

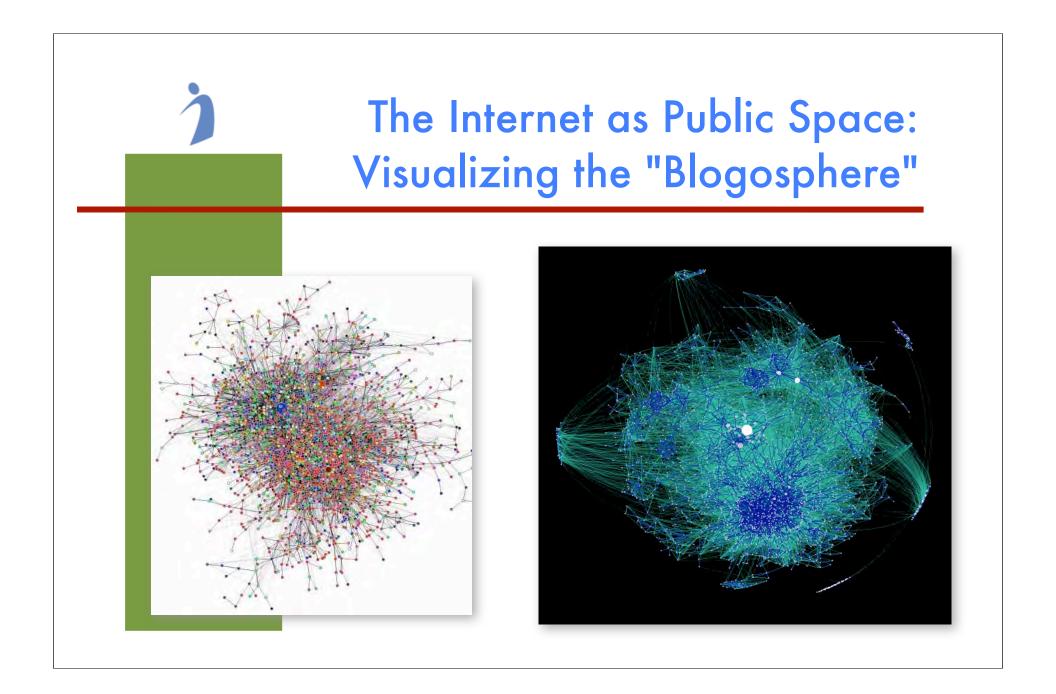
Mutated phish with murderous teeth burp bubbles of sewered gas

sounding bubble you, bubble you, bubble you into the cosmos of no depths or shallows.

In that same space, cookies rotate slowly like lost cells in an ocean,







The Emergence of "The Collective Mind"

Cf. James F. Moore (Berkman Center), on "the global consciousness of the second superpower":

The Internet and other interactive media continue to penetrate more and more deeply all world society... The collective power of texting, blogging, instant messaging, and email across millions of actors cannot be overestimated. Like a mind constituted of millions of internetworked neurons, the social movement is capable of astonishingly rapid and sometimes subtle community consciousness and action... the emergent democracy of the second superpower is alive with touching and being touched by each other, as the community works to create wisdom and to take action....

Should "Internet" be capitalized?

Cyberspace: The Morning After

The virtual Bowery

BusinessWeek

IGH TECH

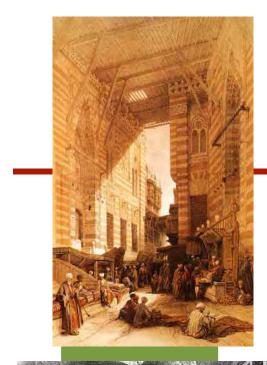
EMC'S BATTLE TO DEFEND ITS TURF

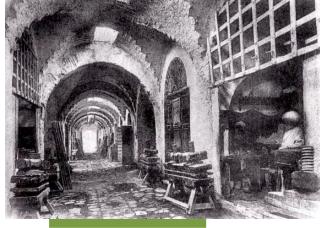
S COMPLEX

PRISE

SOME HEALTHY NET STOCKS [The Internet is] a place where crime is rampant and every twisted urge can be satisfied. Thousands of virtual streets are lined with casinos, porn shops, and drug dealers. Scam artists and terrorists skulk behind seemingly lawful Web sites. And cops wander through once in a while, mostly looking lost. It's the Strip in Las Vegas, the Red Light district in Amsterdam, and New York's Times Square at its worst, all rolled into one -- and all easily accessible from your living room couch.

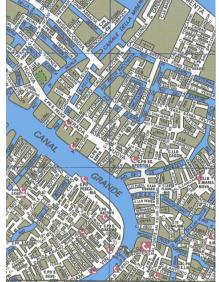
"The Underground Web," *Business Week*, 9/2/02





The Internet as an Inner City





The vitual rialto

The Internet as Public Space

A 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.

... I declare the global social space we are building to be naturally independent of the tyrannies you seek to impose on us. ...

...You have not engaged in our great and gathering conversation, nor did you create the wealth of our marketplaces. You do not know our culture, our ethics, or the unwritten codes that already provide our society more order than could be obtained by any of your impositions.

John Perry Barlow, Electronic Frontier Foundation, 1996

Search and the Conception of Web Community

PageRank relies on the uniquely democratic nature of the web by using its vast link structure as an indicator of an individual page's value. ...But, Google looks at considerably more than the sheer volume of votes, or links a page receives; for example, it also analyzes the page that casts the vote. Votes cast by pages that are themselves "important" weigh more heavily and help to make other pages "important." Using these and other factors, Google provides its views on pages' relative importance.

http://www.google.com/technology/

When Google Supports the Notion of Internet Community Advanced Search Preferences Language Tools Search Tips

Images Groups Directory News hed the web for for d

Official Ford Site www.forddirect.com Get Fast Quotes on Ford Car & Truck Qustomize Options - Find a Dealer

ford

Google Search

Ford Cash Rebates BuyingAdvice.com Learn how to pay 1,400 below dealer cost for your next Ford.

Category: Recreation > Autos > Makes and Models > Ford

(-000)

News: <u>Motorsport: Ford out in front</u> - New Zealand Herald - 6 hours ago <u>As expected</u>, <u>TJ Ford announces hell enter</u> NBA draft - Austin American Statesman - May 1, 2003 Try Google News: <u>Search news for ford</u> or <u>Frowse the latest headlines</u>

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> Ford Motor Company Home Page The corporate website for Ford Motor Company and its vehicle (car and truck) and service brands, featuring investor, career, news and media information. www.ford.com/en/default.htm - 14k - <u>Cached</u> - <u>Similar pages</u> More results from www.ford.com

Ford Foundation FAQs Policies Site Map Search For Grant Seekers Newsroom, photograph by Bi Reichmany, photograph by Antonio Mari, Who We Are Our mission ... Description: The foundation's goals are to strengthen democratic values, reduce poverty and injustice, promote... Category: Society > Philanthropy > Grants > Grant-Making Foundations www.fordfound.org/ - 12k - Cached - Similar pages

Ford Deutschland

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Ford Vehicles: Home

Research Shop Own News From Main Street to mountain trails. Ford has engineered a way to get you there and back with confidence and in amazing comfort.... Description: Official site for Ford's cars and minivans, trucks, and SUVs. Includes in-depth information about.. Category: <u>Becreation > Autos > Makes and Models > Ford</u> www.fordvehicles.com/ - 25k - <u>Cached</u> - <u>Similar pages</u>

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Results 1 - 50 of about 529,000 for sinatra disc

Web Music Books

Sinatra By: <u>Frank Sinatra</u> Including: I've Got the World on a String, My Kind of Town, Goin' Out of My Head, and more...

More music results for sinatra discography »

When rankings "Work"

Chronological list of singles and albums recorded by Frank Sinatra ...

Where a song is listed as (by X), or (instrumental), **Sinatra** does not feature. Number indicates highest chart position on combined Billboard charts. ... en.wikipedia.org/wiki/Chronological_ list_of_singles_and_albums_recorded_by_Frank_**Sinatra** - 90k - Cached - Similar pages - Note this

Frank Sinatra Discography

Find the best Frank Sinatra Discography on the Internet. www.starpulse.com/Music/Sinatra, Frank/Discography/Index/P3150/1/ - 41k -Cached - Similar pages - Note this

Nancy Sinatra Discography

Find the best Nancy Sinatra Discography on the Internet. www.starpulse.com/Music/Sinatra,_Nancy/Discography/Index/P14258/1/ - 25k -Cached - Similar pages - Note this

Frank Sinatra Sessionography

I like Frank Sinatra's music - who doesn't! I used Brian, my discography ... A real Sinatra discography is a tremendous undertaking that I am not up to. ... home.earthlink.net/~steveja7/Frank.html - 5k - <u>Cached</u> - <u>Similar pages</u> - <u>Note this</u>

Frank Sinatra : Discography : Rolling Stone

Frank **Sinatra** music review, the latest videos, photos and music news about your favorite artists. www.rollingstone.com/artists/franksinatra/discography - 186k - Cached - Similar pages - Note this

Frank Sinatra Discography and Music at CD Universe

Low prices on Frank Sinatra discography of music at CD Universe, with top rated service, Frank Sinatra songs, discography, biography, cover art pictures, ... www.cduniverse.com/search/xx/music/artist/Sinatra,+Frank/a/Frank+Sinatra.htm - 17k - Cached - Similar pages - Note this

... Or Google returns the views of the generally validated subcommunity



When Google "Fails"

USAF F-16 **fighters** ordered from Langley to **intercept** American Airlines ... www.911timeline.net/censorship.htm - 12k - <u>Cached</u> - <u>Similar pages</u> <u>911Timeline.net - The Most Comprehensive Minute By Minute ...</u>

... between 9:03 and 9:26 to intercept American Airlines ... 66) 9:11 am: The two F-15 Eagles from Otis Air ... vectored to Washington DC Why were these fighters headed to ... www.911timeline.net/-101k - <u>Cached - Similar pages</u> [More results from www.911timeline.net]

The Stand Down That Is Not Acknowledged. 2 July 2002 ... less than credible, but a plane can intercept even without ... saying that half the scramble-ready fighters were taken off readiness three days before 9/11? ... www.ratical.org/ratville/JFK/ JohnJudge/standdownNA.html - 6k - <u>Cached</u> - <u>Similar pages</u>

Pt. 12: Broadening Our Perspectives of 9/11 - min-by-min Timeline ... and that a "NORAD spokesman, said its fighters routinely intercept aircraft" (Boston ... the standard operating procedures were not adhered to on 9-11.... www.ratical.org/ratville/CAH/AOPof911p12.html - 68k - <u>Cached</u> - <u>Similar pages</u> [More results from www.ratical.org]

Were Stand-Down Intercept Orders Given On Morning Of 911? ... to make the decision to shoot down flight 77 on 9-11-01 Corps Major Mikel Snyder, the NORAD spokesman, said its fighters routinely intercept aircraft ... www.rense.com/general/T/werestanddown.htm - 31k - <u>Cached</u> - <u>Similar pages</u>

NORAD 911 Stand Down Math by Mark Elsis

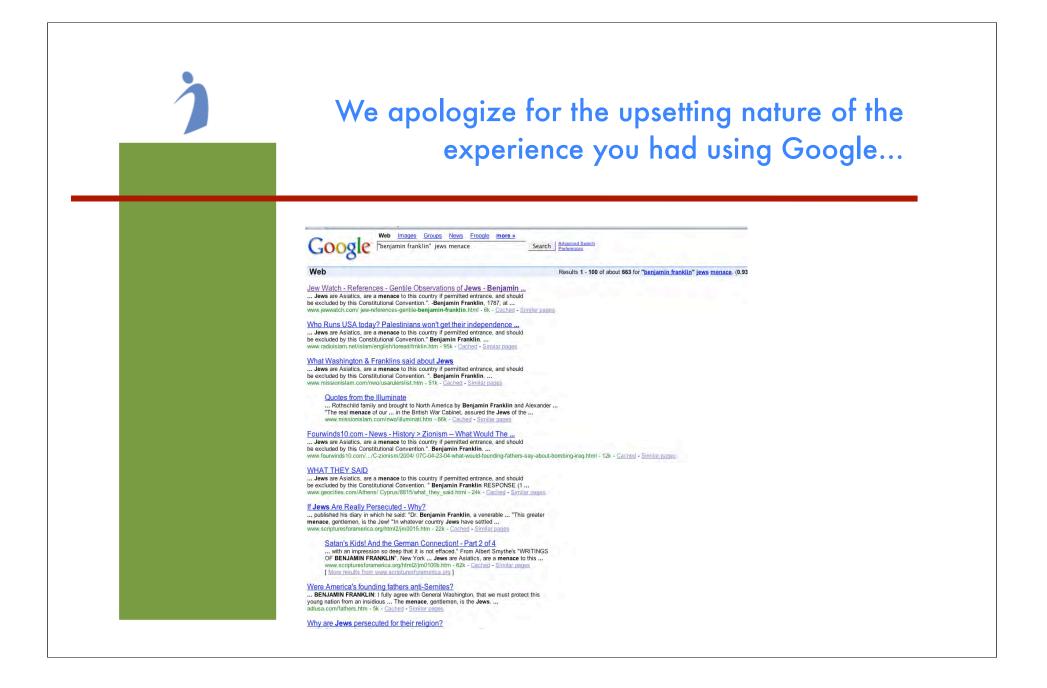
NORAD 911 Stand Down Math. Wednesday, September 11, 2002 NORAD'S Response Times (Official) Fighters Were 8 ... of their top speed in trying to intercept UA 175. ... www.mycountryrightorwrong.net/NORAD911StandDownMath.htm - 9k - <u>Cached</u> - <u>Similar pages</u>

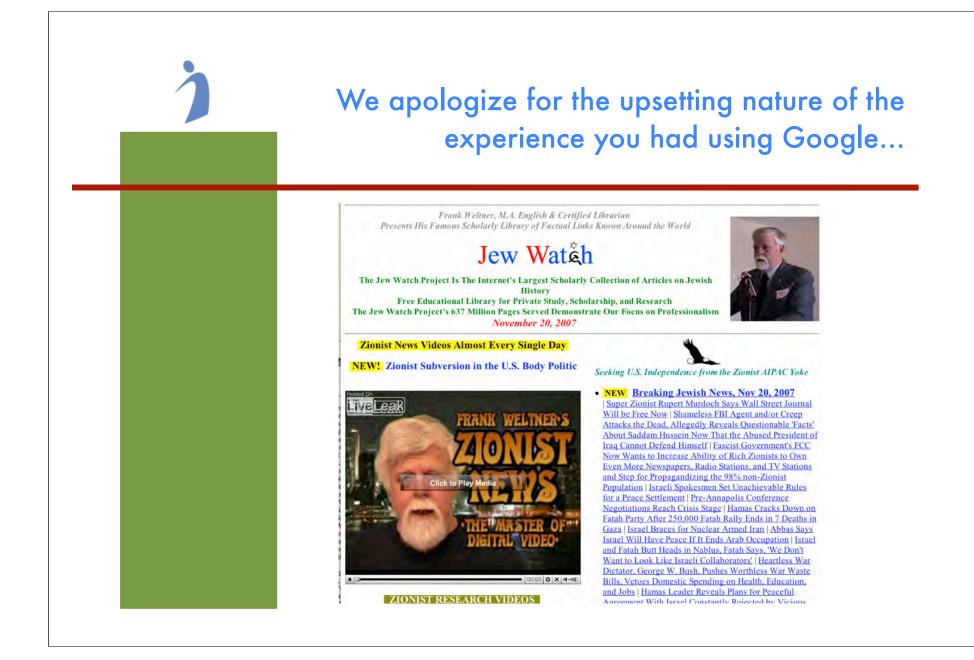
[PDF]Were Stand-Down Intercept Orders Given On Morning Of 911? File Format: PDF/Adobe Acrobat - <u>View as HTML</u>

... only TEN MILES from the Pentagon -- on the morning of 9-11. ... Major Mike] Snyder, the NORAD spokesman, said its fighters routinely intercept aircraft. ... www.natural-person.ca/pdf/Stand-Down_Orders_Given_911.pdf - <u>Similar pages</u>

The Lie Won't Stand

... 11. For 50 minutes on 9-11, in direct contravention of established policy, no fighters were scrambled to intercept two outstanding ... www.fromthewilderness.com/free/ww3/051802_liewontstand.html - 63k - <u>Cached - Similar pages</u> Search on "9/11 intercept fighters "stand down": What is going wrong?





A search-engine breakdown? Why is the "jew" result disturbing? Is the search engine doing "the right thing"? Where does the problem lie? Assumptions about: Algorithms & intentionality How Google's algorithms work What a high Google ranking means How the Web is organized...

Lower-Casing the Internet?

Effective with this sentence, Wired News will no longer capitalize the "I" in internet. At the same time, Web becomes web and Net becomes net. Why? The simple answer is because there is no earthly reason to capitalize any of these words. Actually, there never was... a change in our house style was necessary to put into perspective what the internet is: another medium for delivering and receiving information. That it transformed human communication is beyond dispute. But no more so than moveable type did in its day. Or the radio. Or television. Wired, 8/16/04

(Cf "the Shire," "the Coast") (Cf also earlier capitalization of "the Radio" and "the Cinema.")