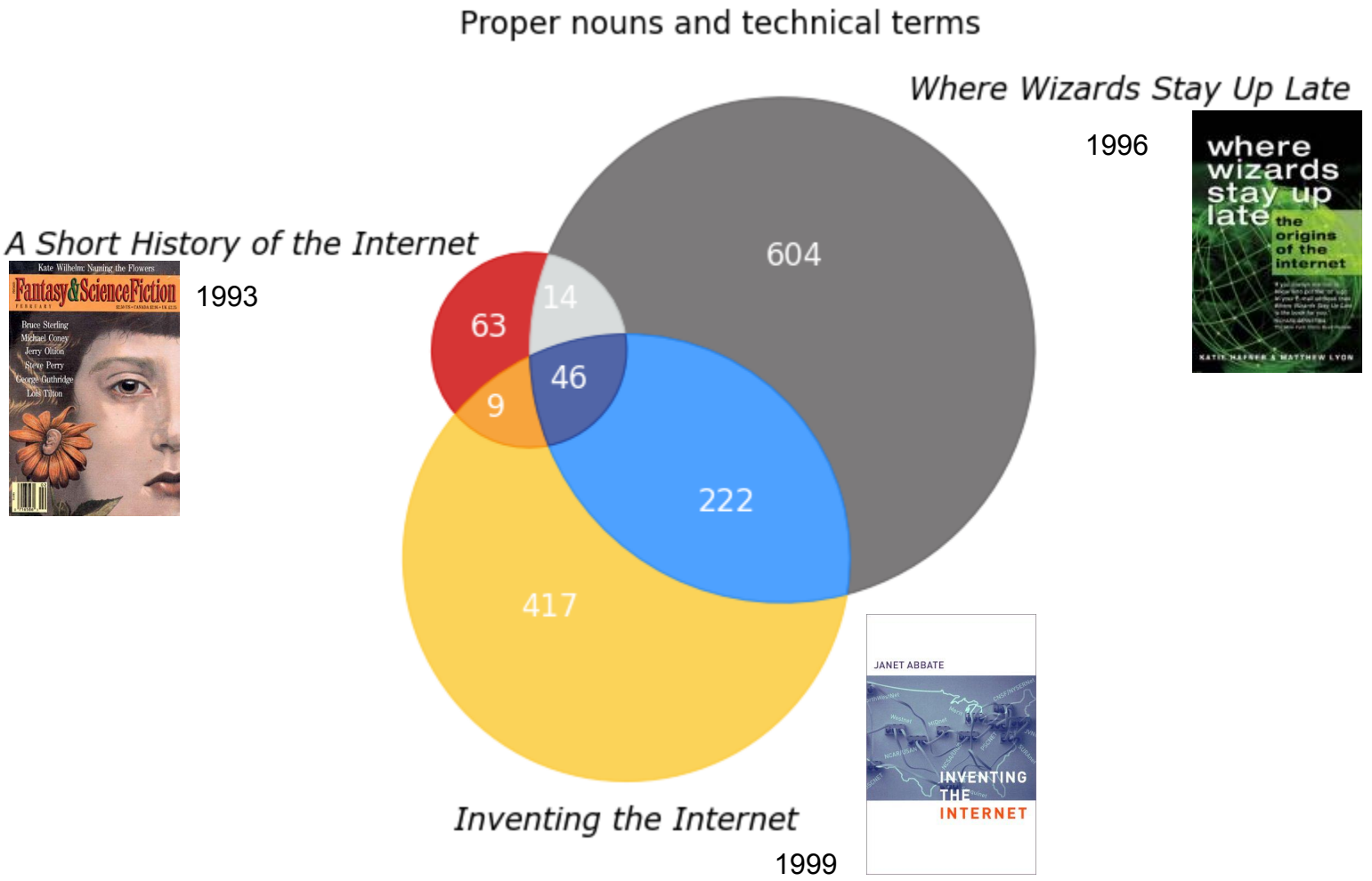
Recalling the Modem World: A popular history of social computing

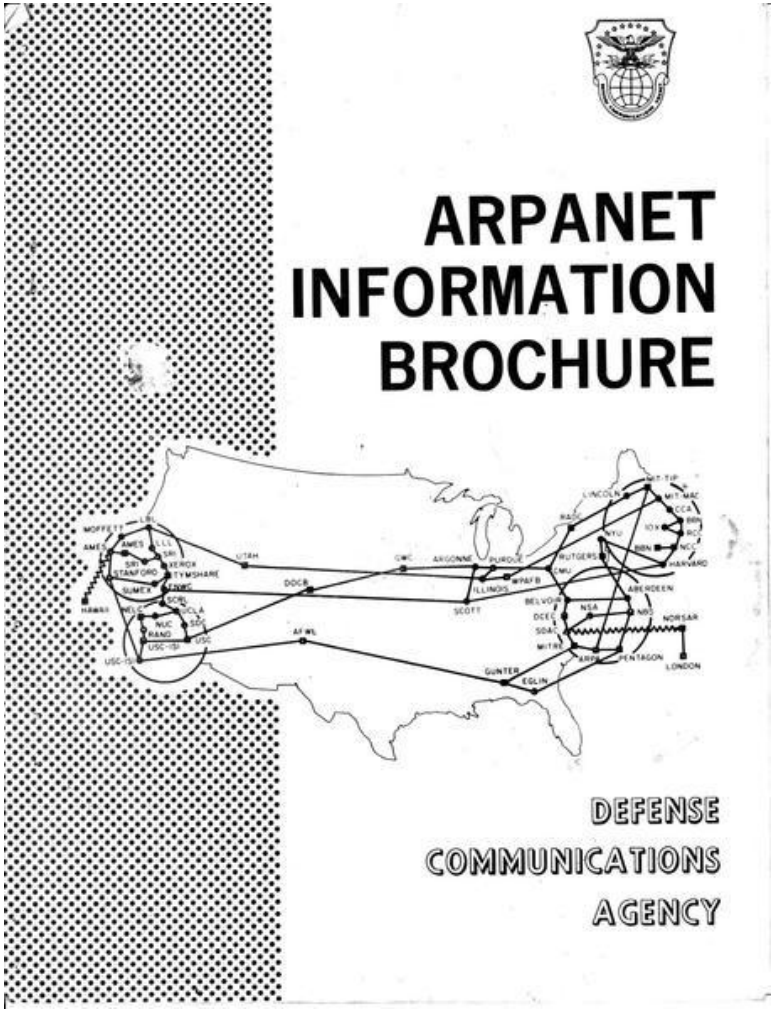
Kevin Driscoll
Annenberg School of Communication and Journalism
University of Southern California

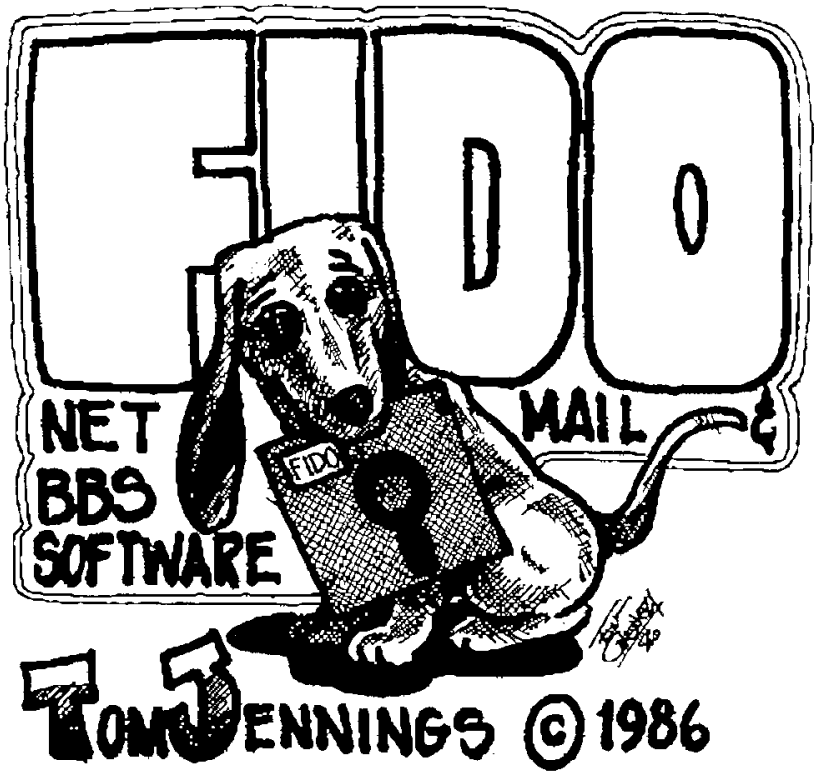
What is “the internet?”
Where did it come from?
How did we get here?

“The internet” is a moving target



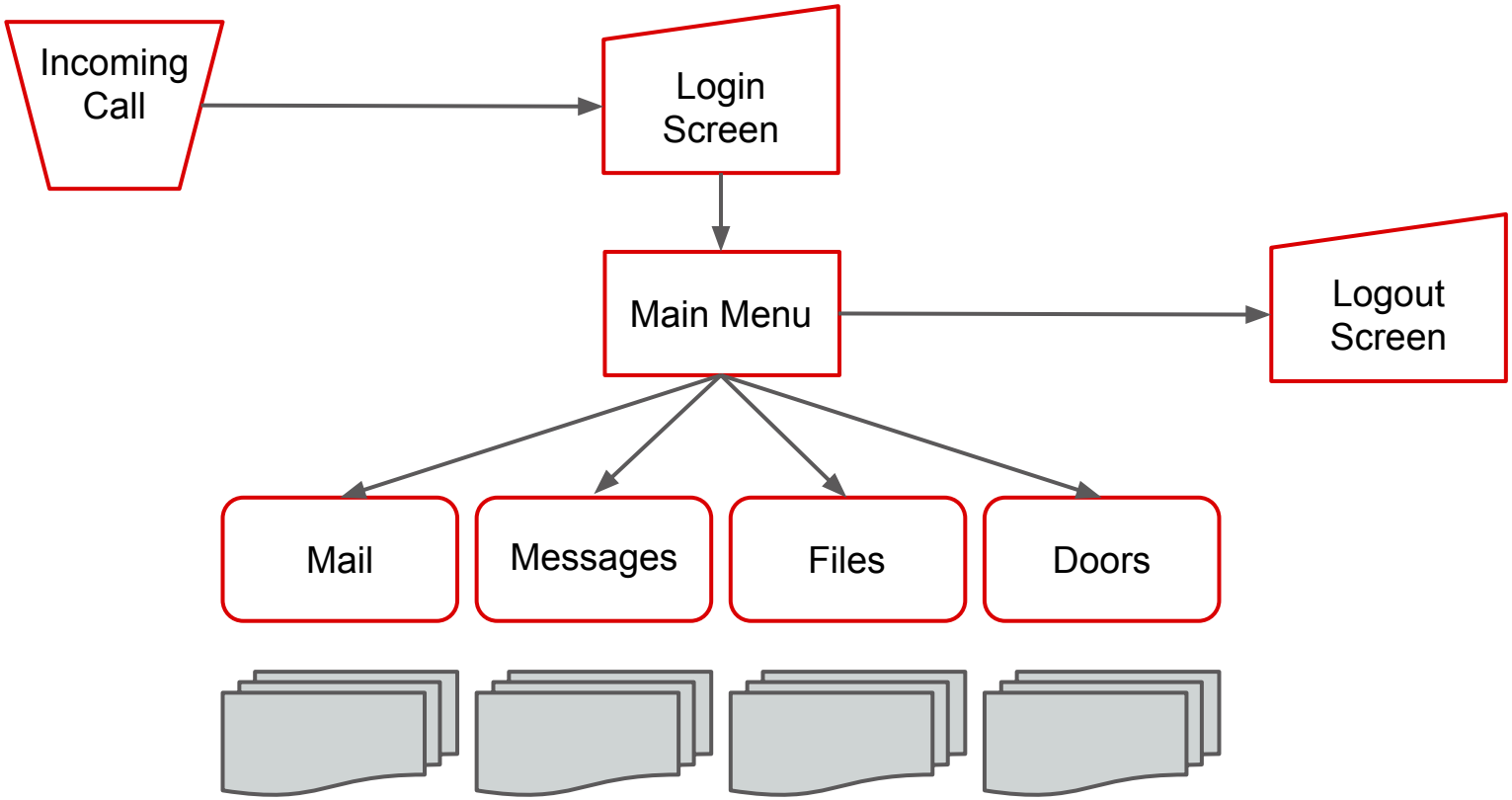
Expanding our internet imaginary beyond the “standard folklore”





BBSing 101:
Typical logical structure

"Computer Bulletin Board (CBB) is a term used to describe a service that remote callers can access using a telephone and a computer terminal to access various functions." (Myers, 1983)



Roadmap

- Amateur telecom
- Origin story for the modem world
- Methodological notes
- Four key features of the modem world
- Provocations for 2014

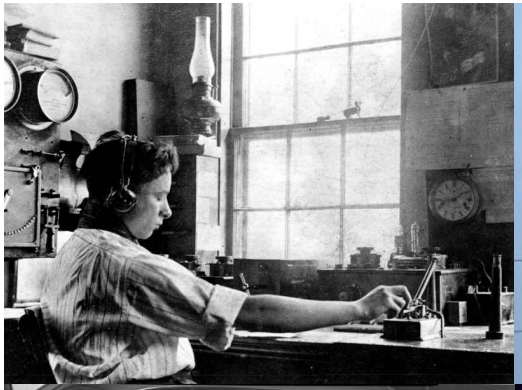
A tradition of amateur telecom

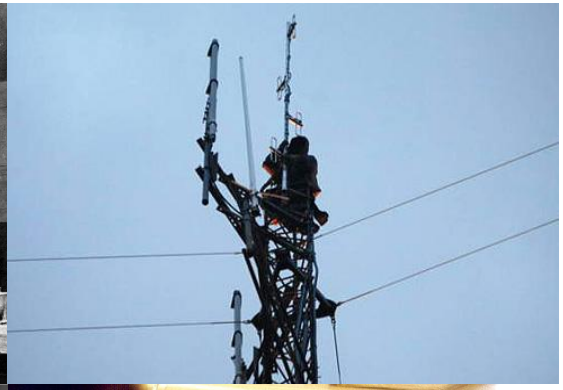
A tradition of amateur telecom

Store-and-forward network design

Local/regional community institutions

Amateur Radio Relay League (ARRL)





VHF/FM Repeaters

Citizens Band (CB)

"Loop lines"

Low barriers to entry

Unexpected uses for consumer tech

Amateur telecom + microcomputing

"A great many readers understand the impact that computers are going to have on amateur radio…"

"Two amateurs can use their [computers] to communicate by Morse, RTTY with Baudot code, RTTY with ASCII code, or any other agreeable system...Pity the old timer."

"An unusually high percentage of the computer hobbyists seem to also be radio amateurs, so you might find a [computer convention] fun."

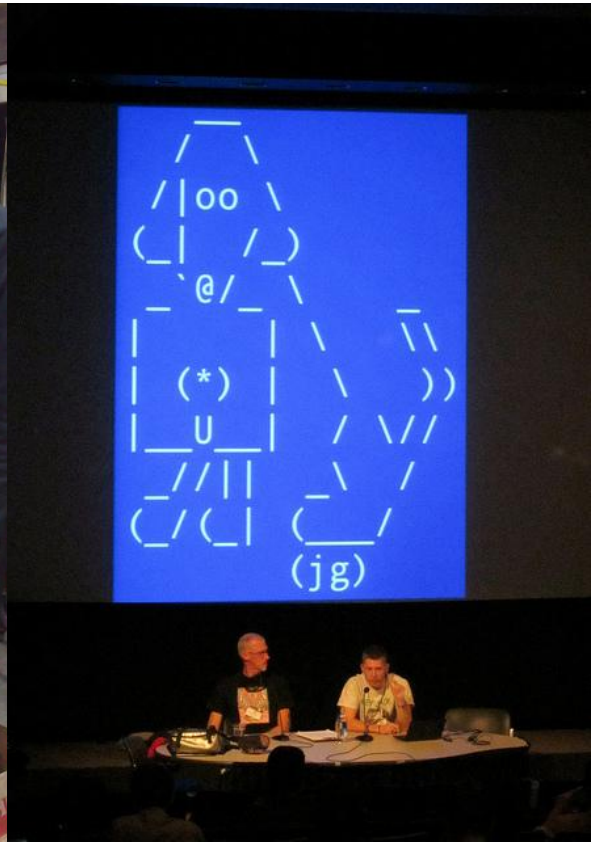
"Amateurs, by virtue of their head start in electronics will have a decided advantage if they want to get into the sales or service of small computer systems." (Green, 1976)

Methodological challenges

Methodological challenges

- Most BBS activity was ephemeral
- Old diskettes decay
- Memories fade
- Institutional archives just starting to emerge

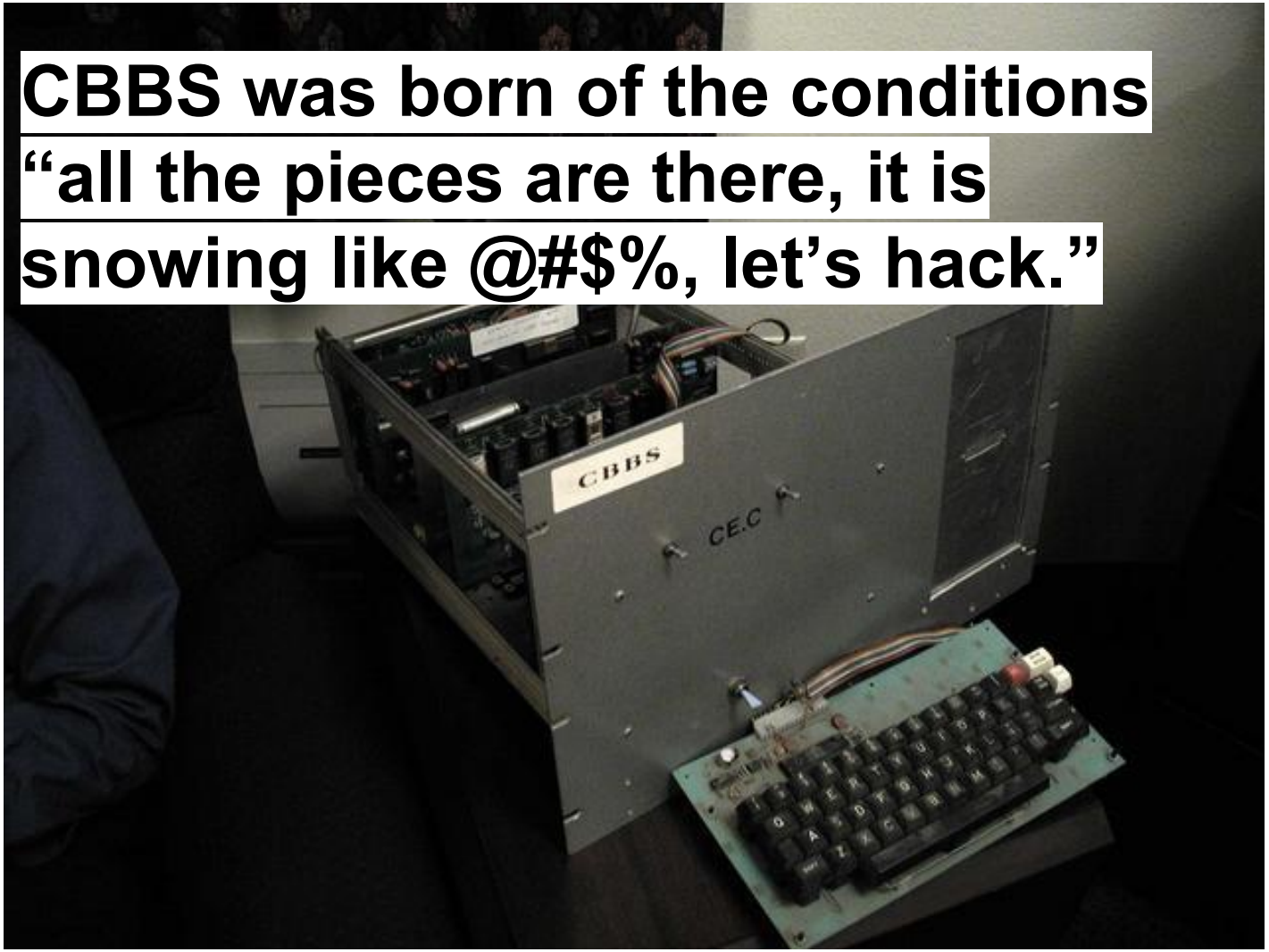
Methodological opportunities



Origin story for the modem world

CBBS
Chicago, IL
1978-1994

Modem world origin story:
Emerging out of a technical culture



Modem world origin story

Amateur values in practice

Hobbyist Computerized Bulletin Board

Ward Christensen
688 E 154th St #3D
Dolton IL 60419

Randy Suess
1930 Bradley
Chicago IL 60613

Bulletin board systems could become nodes in a communication network.

Note:

This project was a collaboration of Ward Christensen and Randy Suess. Each had a particular part to uphold. The first part of this article describing the purpose of the bulletin board is written by Ward. The part describing the hardware details is written by Randy. . . .RGAC

The Computerized Hobbyist Bulletin Board System is a personal computer based system for message communication among experimenters. People with terminals or computers equipped with modems call in to leave and retrieve messages. It was conceived, designed, built, programmed, tested, and installed in a 30 day period (January 16 1978 to February 16 1978) by the two of us. In an effort to generate material for our computer club's newsletter, I first thought of the idea and discussed it with Randy on January 16 1978.

We laid out the hardware requirements: an 8080 processor with 24 K bytes of memory, single floppy disk, modem interface, and some sort of local keyboard and display. Randy scoured the computer stores and purchased a mother board and two 4 K byte memory boards at a reasonable price. I talked with Lloyd Smith and Bill Bassett, who operate DMA Inc, a manufacturer of floppy disk drive systems based on the Tarbell controller and the Innovex (now Innotronics) floppy disk drive. DMA offered to donate 40 percent of the cost of a controller and floppy disk drive to the project. I purchased the floppy disk drive, controller and CP/M license, and loaned 24 K bytes of memory to the project, pending receipt of 16 K bytes offered by DMA. Randy donated his D C Hayes modem board, PolyMorphics VTI, SwTPC keyboard, power supply, chassis, IMSAI 8080 processor card and Vector memory board.

We started with the monitor for the system, but found that it was difficult to make the VTI keyboard port work because the VTI keyboard data bus shares the bus carrying the characters being displayed. To solve this, Randy bought a Processor Technology 3P+S board and interfaced the keyboard to it. This also allowed us to have a sense switch port using the 3P+S. Since this board has a serial port, Randy later decided to add a Teletype to the system for logging incoming data. This completed the configuration.

Programming

In the first week of the project, I wrote a mock-up of the software using MITS 8 K BASIC. The input/output (IO) drivers could be switched to my modem under sense switch control, so I had people call in and critique the system. Many good suggestions were made.

By now Randy had the computer far enough along to need some programming, so a monitor was put into read only memory. Since the system was to run under CP/M, a Teletype compatible scroll routine was also put into the read only memory for both the monitor's and CP/M's use. Additions were made later to support the 3P+S board for keyboard input.

After the BASIC mock-up of the system was close to what we wanted, programming started on the assembler version of the software.

Assembler language was chosen over BASIC for the implementation language because of size and speed efficiency, and to maintain control over such functions as *control-K* to terminate (kill) the current function and return to the main menu. The program now consists of the pieces of assembler source, shown in table 1, which are combined to produce the final assembler source program.

In addition to this application program, a modified BASIC IO system (BIOS) for CP/M had to be written. We wanted the system to be able to be started from a "cold boot" bootstrap program and come up running the bulletin board program, not CP/M. This would make the system more crash resistant since the ringing of

Extended the sociality of a pre-existing organization

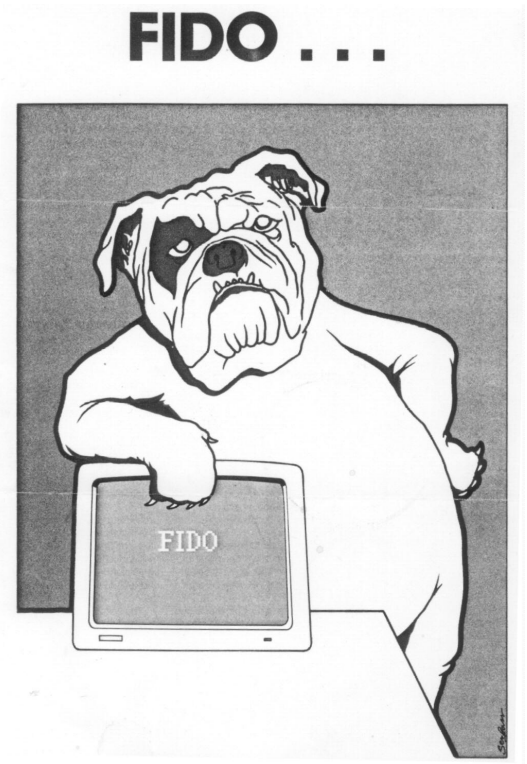
Minimized long distance tolls

Prioritized ease of implementation

Shared results with peers

Modem world origin story:
Diffusion of the BBS idea

Four modem world features in detail



Low barriers to entry

- BBSes flourishes among niche communities
- Diffusing beyond hobbyist technical culture

Store-and-forward inter-networking

- Enables trans-regional communication
- Lowers system-wide costs

Regional communities form around local systems

- Unique local cultures
- Opportunities for conflict resolution

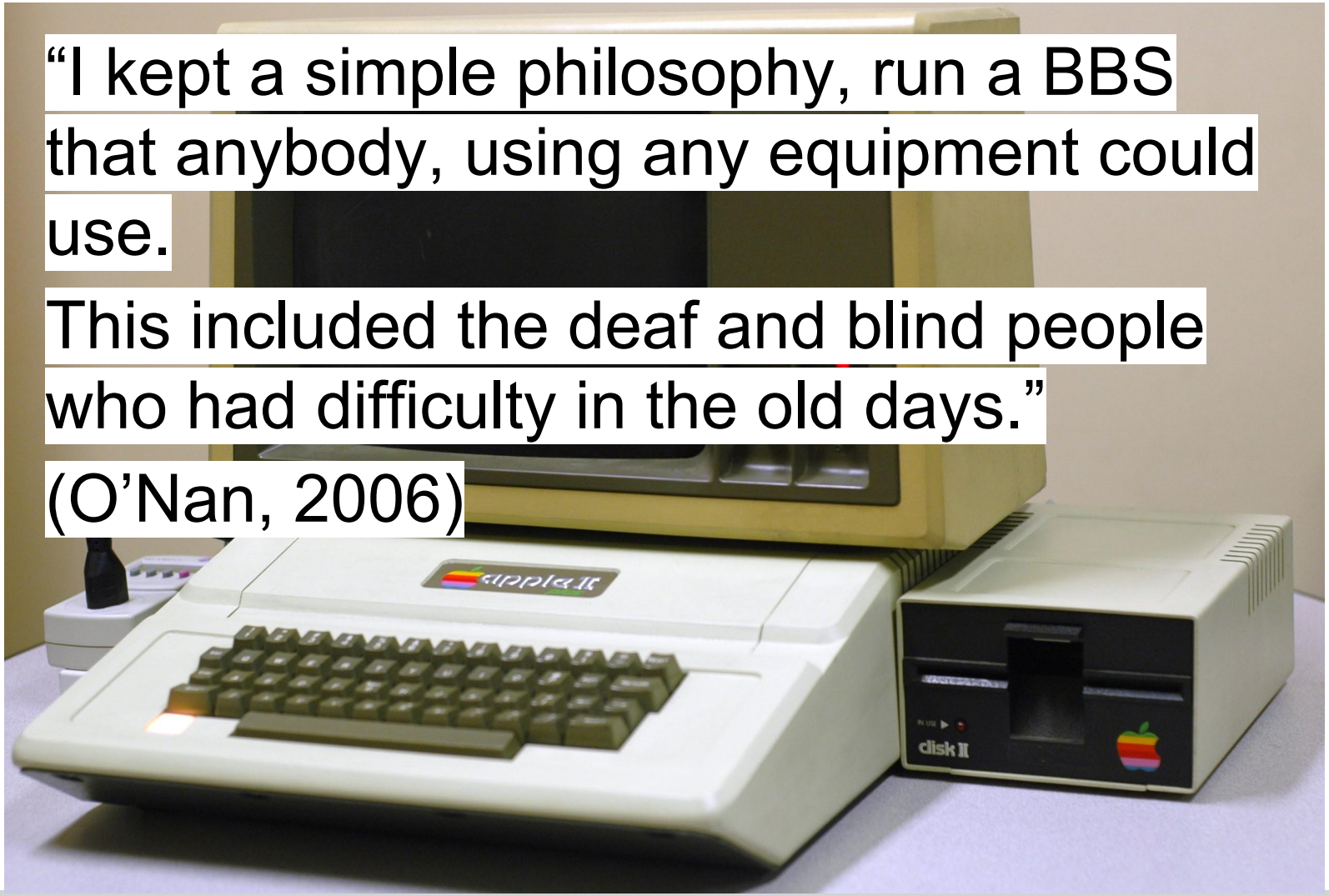
Gateways and interconnection

- Public access to transnational e-mail, news
- BBSes become local ISPs

Low barriers to entry

T.A.R.D.I.S. BBS
Indianapolis, IN
1985-1992

Low barriers to entry:
Focus on community-building



Low barriers to entry:
Microcomputer ecology

$699 (1984)

$159 (1985)

$250 (1985)

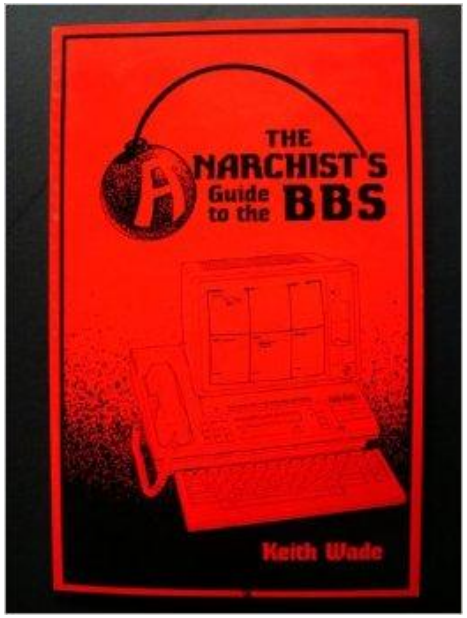
$1600 (1981)

$219 (1984)

But significant longevity...

Low barriers to entry:
"The $500 Anarchy Machine"

"You don't need a lot of bells and whistles. Amber letters read as nicely as red, blue, and purple letters, and a monochrome system is much cheaper than a color system.



"Find bargains at your local computer shop. Products are often 'orphaned,' made obsolete by new products."

(Wade, 1990, 26-27)

Low barriers to entry:
"Ladies-only" messaging areas

"During the BBS years when a female got on a BBS it was usually a nightmare with all sorts of people hitting on you…

Doc provided something different, a ladies only section that was really for the ladies only, I mean he let us run that part of his board, even he stayed out of it, he had a couple of other ladies who were cosysops who ran the ladies board."

-- Tilly M.

"To this day, I don't know what went on in that room!"

-- Thomas "Doc" O'Nan

Low barriers to entry:
Active moderation and "co-sysops"

"The neat thing was that I had 3500 users able to log in at the end, 750 of them were regulars, about 40 were more than daily callers. I became friends with many of my users and still keep contact with them today using iChat and e-mail. My co-sysops were all wonderful people and the community that grew around the TARDIS was something I will always cherish.

-- Thomas "Doc" O'Nan

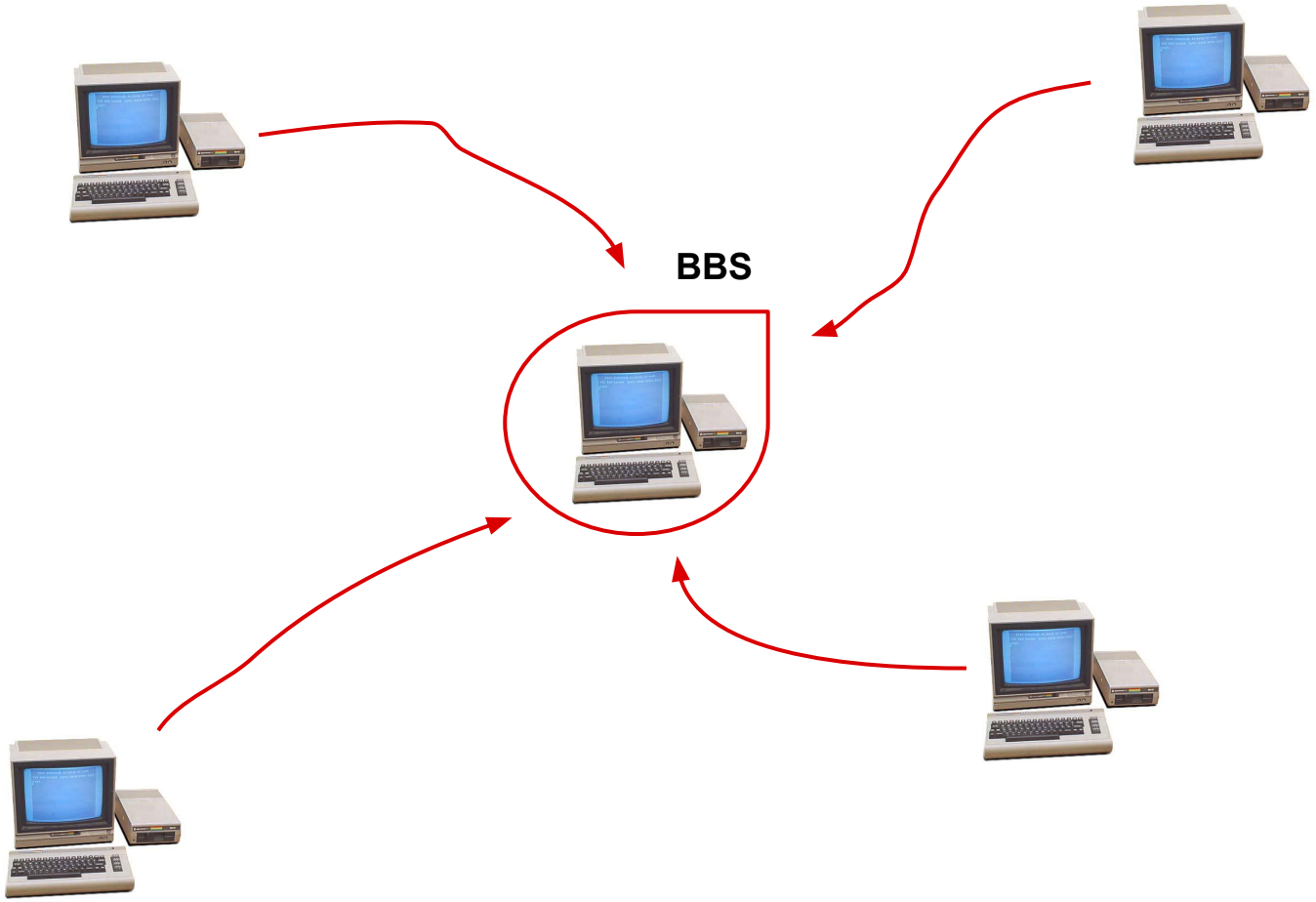
Hobbyist inter-networking

FidoNet
North America, Europe
1984-Present

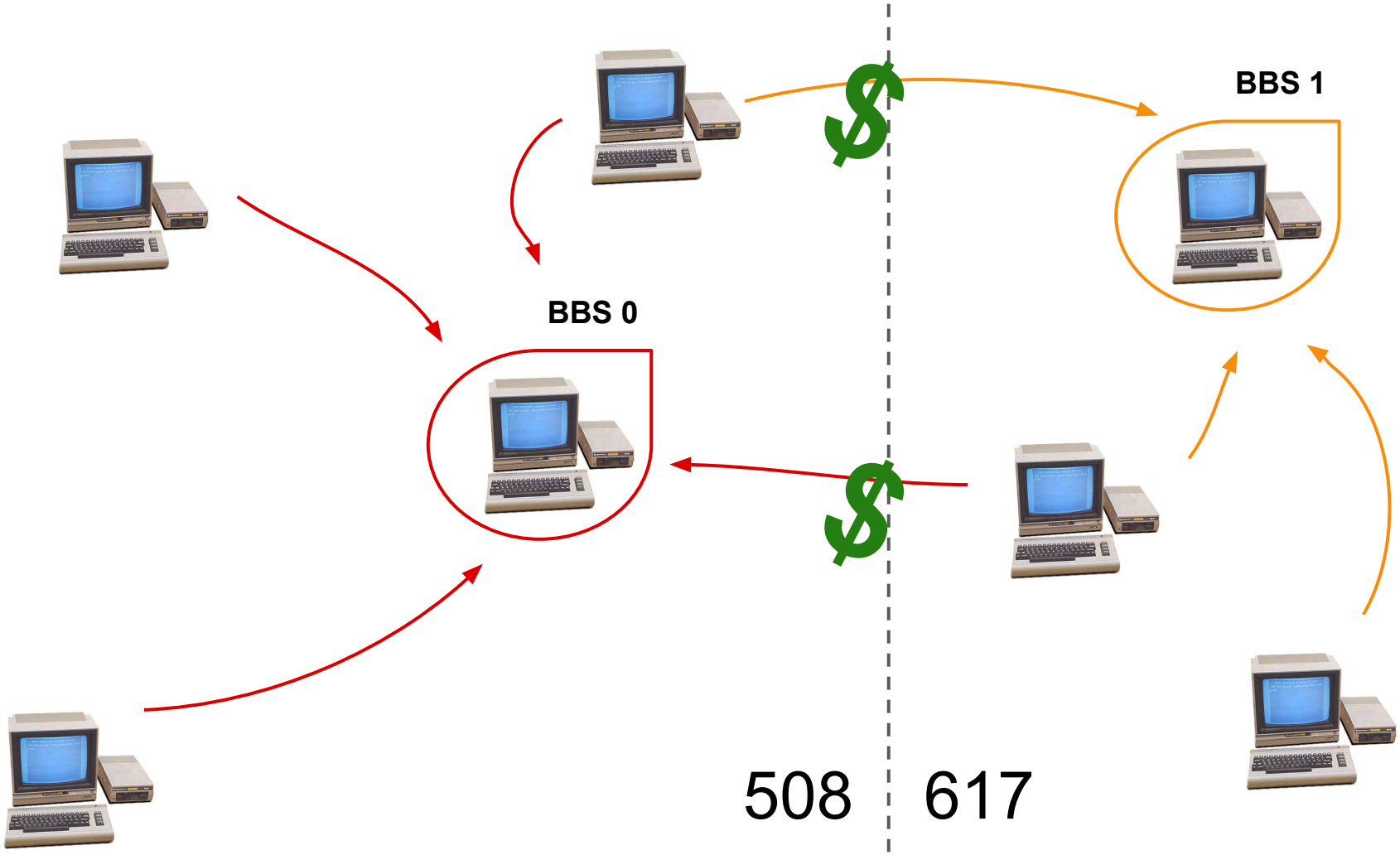
Hobbyist inter-networking:
From BBSing to FidoNet

"FidoNet is a true electronic mail system supported by the Fido Bulletin Board System software, under MSDOS version 2. It's function is to transfer textual messages, and binary files, between physically seperate computers on an automatic, unattended basis." (Bush, 1993)

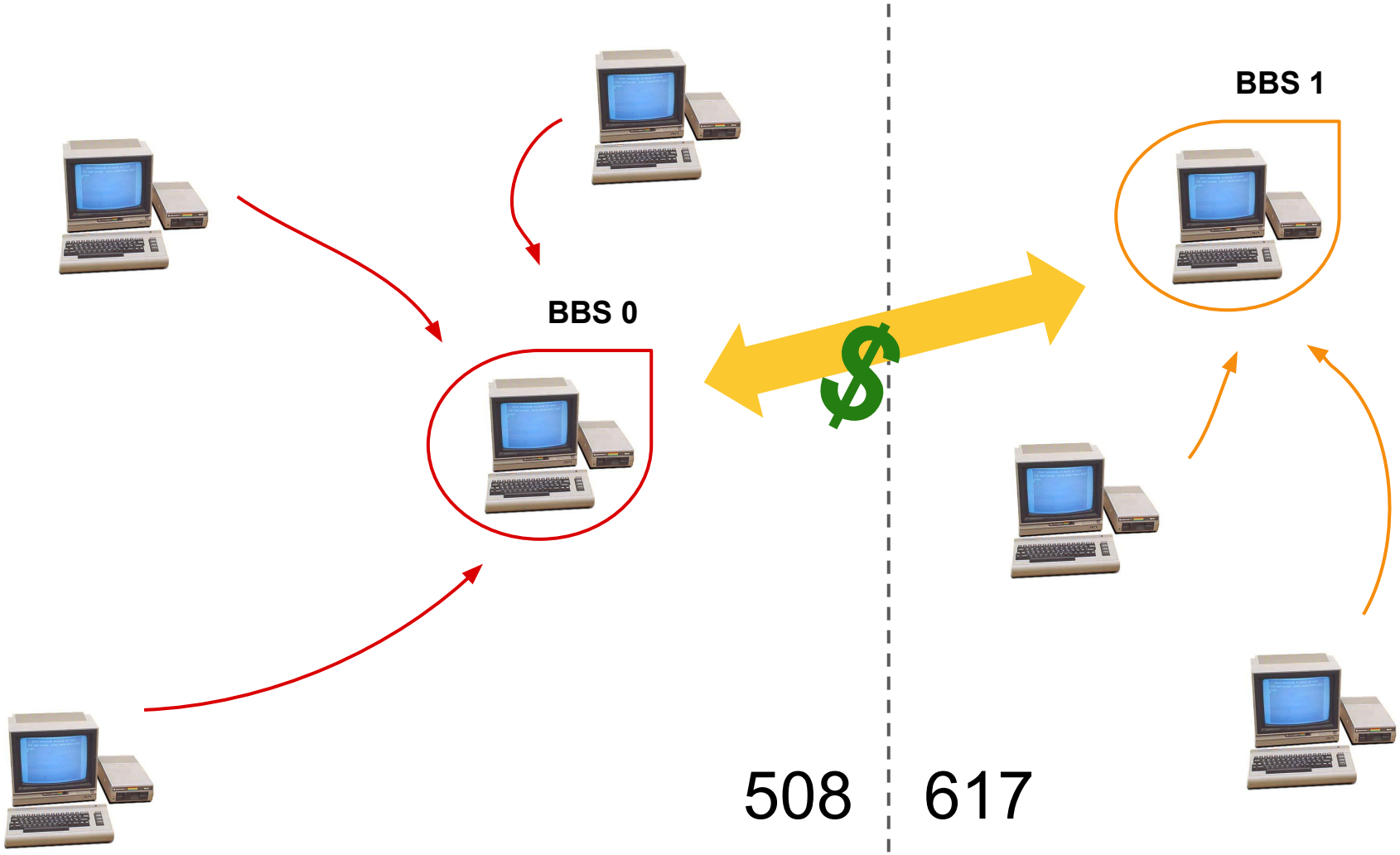
Hobbyist inter-networking:
Each BBS is a network



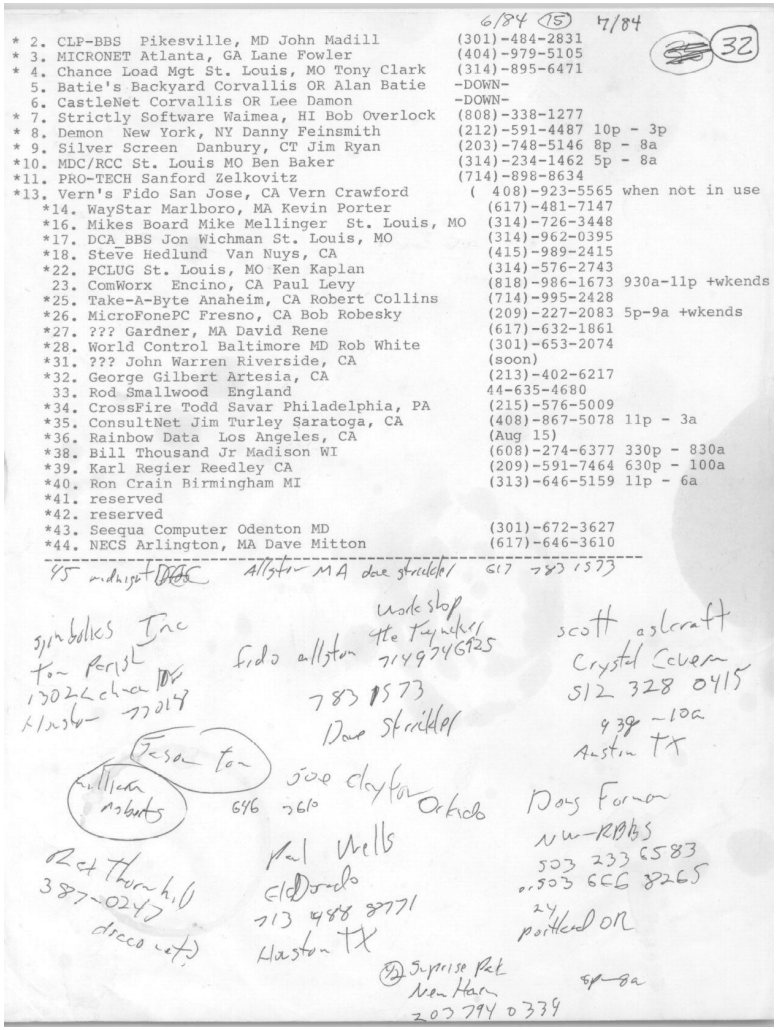
Hobbyist inter-networking:
Nearby BBS networks overlap



Hobbyist inter-networking:
Reducing costs throughout the system



Hobbyist inter-networking:
From inception (1984) to peak (1993)



6/84 (15) 7/84 (32)

* 2.	CLP-BBS Pikesville, MD John Madill	(301)-484-2831
* 3.	MICRONET Atlanta, GA Lane Fowler	(404)-979-5105
* 4.	Chance Load Mgt St. Louis, MO Tony Clark	(314)-895-6471
5.	Batie's Backyard Corvallis OR Alan Batie	-DOWN-
6.	CastleNet Corvallis OR Lee Damon	-DOWN-
* 7.	Strictly Software Waimea, HI Bob Overlock	(808)-338-1277
* 8.	Demon New York, NY Danny Feinsmith	(212)-591-4487 10p - 3p
* 9.	Silver Screen Danbury, CT Jim Ryan	(203)-748-5146 8p - 8a
*10.	MDC/RCC St. Louis MO Ben Baker	(314)-234-1462 5p - 8a
*11.	PRO-TECH Sanford Zelkovitz	(714)-898-8634
*13.	Vern's Fido San Jose, CA Vern Crawford	(408)-923-5565 when not in use
*14.	WayStar Marlboro, MA Kevin Porter	(617)-481-7147
*16.	Mikes Board Mike Mellinger St. Louis, MO	(314)-726-3448
*17.	DCA_BBS Jon Wichman St. Louis, MO	(314)-962-0395
*18.	Steve Hedlund Van Nuys, CA	(415)-989-2415
*22.	PCLUG St. Louis, MO Ken Kaplan	(314)-576-2743
23.	ComWorx Encino, CA Paul Levy	(818)-986-1673 930a-11p +wkends
*25.	Take-A-Byte Anaheim, CA Robert Collins	(714)-995-2428
*26.	MicroFonePC Fresno, CA Bob Robesky	(209)-227-2083 5p-9a +wkends
*27.	??? Gardner, MA David Rene	(617)-632-1861
*28.	World Control Baltimore MD Rob White	(301)-653-2074
*31.	??? John Warren Riverside, CA	(soon)
*32.	George Gilbert Artesia, CA	(213)-402-6217
33.	Rod Smallwood England	44-635-4680
*34.	CrossFire Todd Savar Philadelphia, PA	(215)-576-5009
*35.	ConsultNet Jim Turley Saratoga, CA	(408)-867-5078 11p - 3a
*36.	Rainbow Data Los Angeles, CA	(Aug 15)
*38.	Bill Thousand Jr Madison WI	(608)-274-6377 330p - 830a
*39.	Karl Regier Reedley CA	(209)-591-7464 630p - 100a
*40.	Ron Crain Birmingham MI	(313)-646-5159 11p - 6a
*41.	reserved	
*42.	reserved	
*43.	Seequa Computer Odenton MD	(301)-672-3627
*44.	NECS Arlington, MA Dave Mitton	(617)-646-3610

Year	Nodes
1984	100
1985	600
1986	1400
1987	2500
1988	4000
1989	6500
1990	9000
1991	11000
1992	16000
1993	20000

(Bush, 1993)

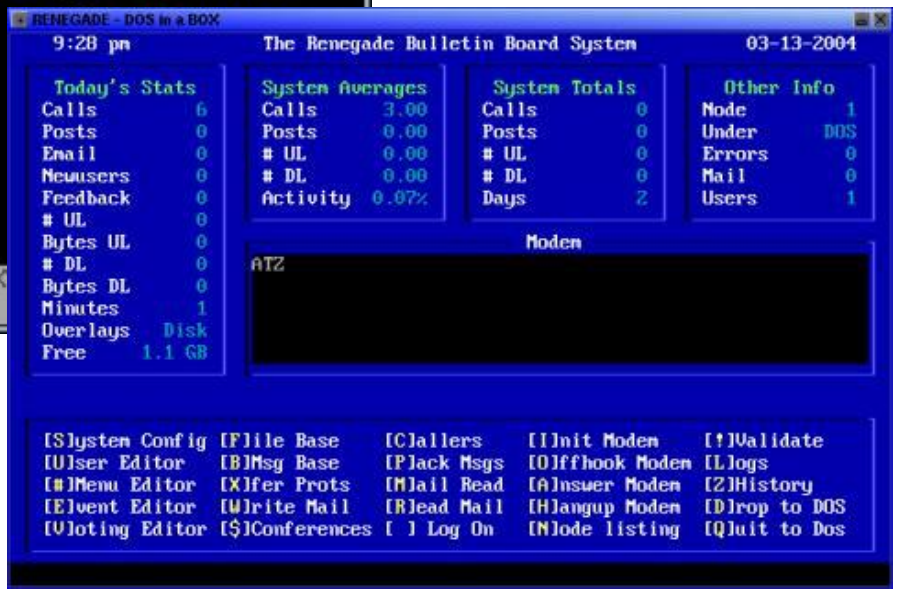
Regional communities and identities

The Crossover Net
Phoenix, AZ
1992-1996

Regional communities:
Unique local preferences, expertise

"[Phoenix] had nearly 1000 boards of a variety of types. The group that I belonged to was the RG group...running Renegade software-- the easiest to use and most popular in the city."

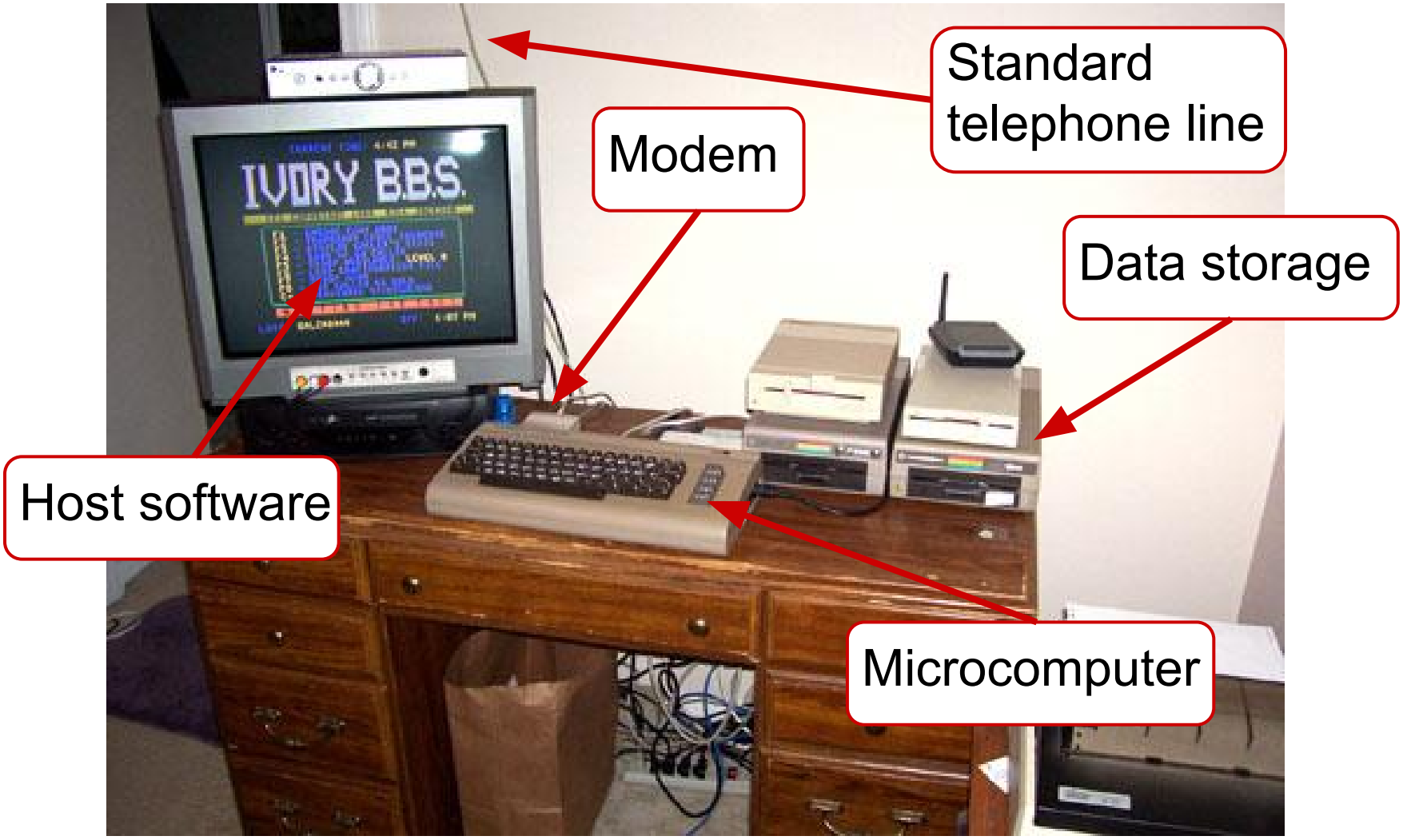
-- Mirage (2004)



"I first started BBSing in 1990 at a friend's house. I moved to Phoenix in 1991 and found a listing of local boards in a computer magazine. I found the boards run by people like myself: geeks, punks, hippies…"

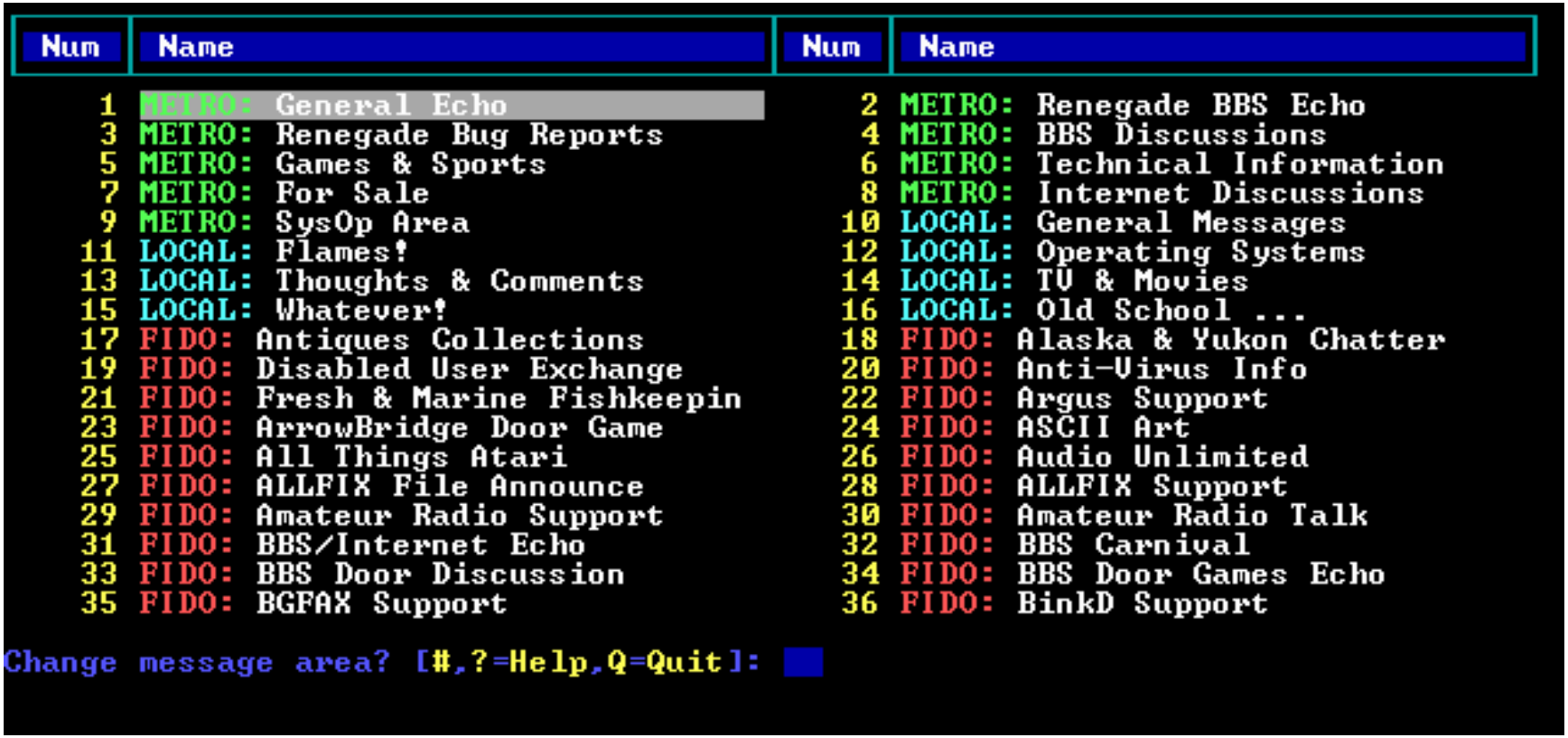
Regional communities:

The typical hobbyist "one-liner"



Regional communities:

Venues for local interests, issues



Regional communities:
Opportunities for conflict resolution

"Between 93-96, there was almost always at least one GT a month, sometimes two."

"One good thing about [Phoenix] was a standing rule that we had: whatever was said on the boards *stayed* on the boards. So you could slam the shit out of someone online, but if you saw them at a GT, everyone was cool to each other."

"In all the years, I can only recall one fight ever occuring at a GT, and that was between a regular user and a NOB (not-on-boards) person who was a friend of a friend."

"Another good thing about GTs was: if you were a new user and you went to a GT and physically *met* everybody, then they were far more likely to be cool (or at least cooler) to you on the boards." (Mirage, 2004)

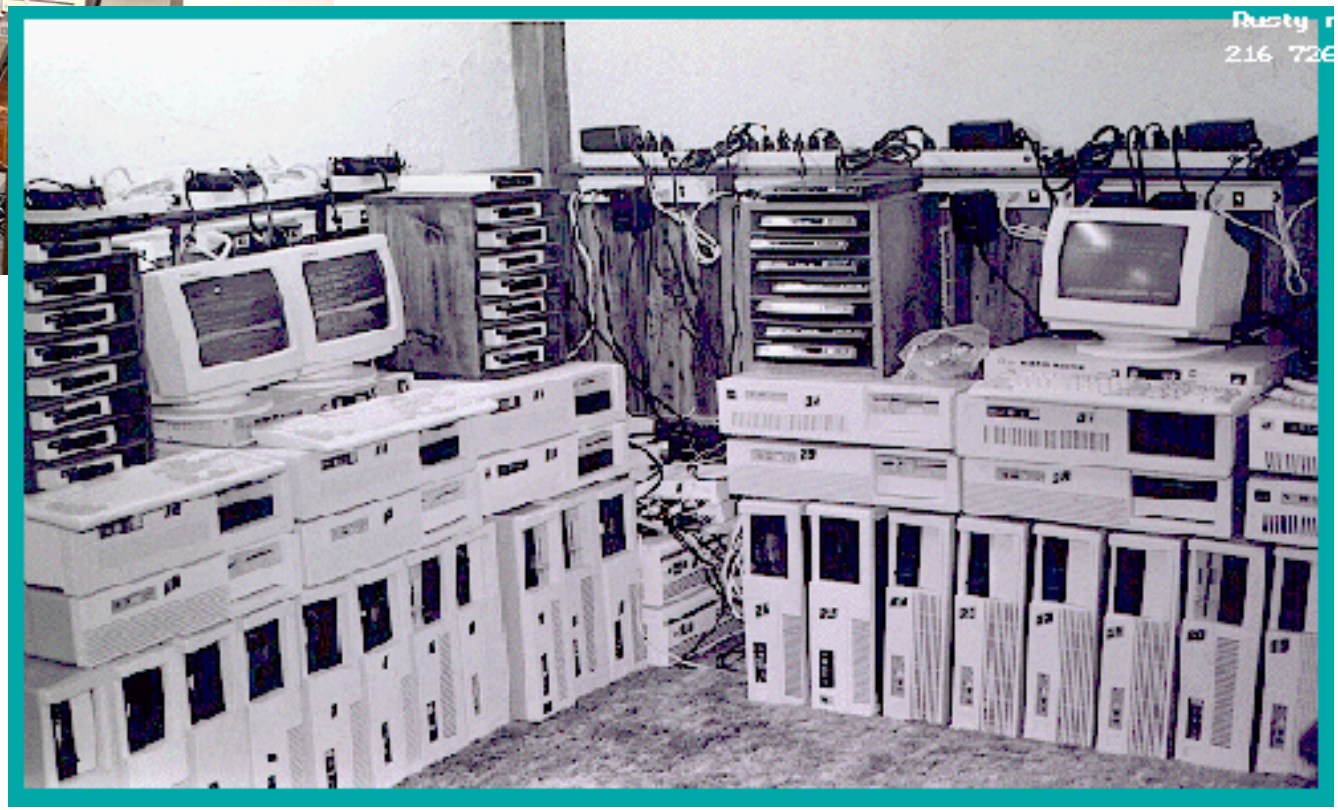
Gateways and interconnection

Crazy House BBS
Port Charlotte, FL
1989-1999

Gateways and interconnections:
From 2 to 16 lines in 3 years

"The chat room was by far the most used feature"

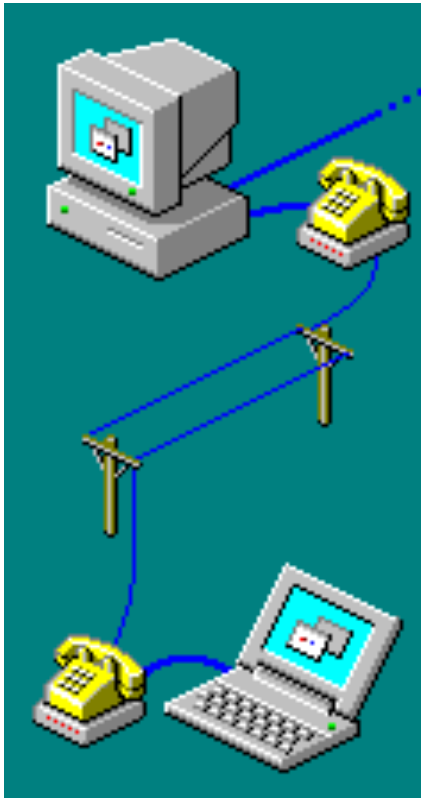
-- Sysop Tim Grzechowski (2004)



Gateways and interconnections:

"Florida Network Technologies, Inc."

Gateways and interconnection:
Crazy House BBS **was** *"the internet"*



"Crazy House was local to callers over more than a 75 mile north/south distance along Florida's Gulf Coast with a population of more than half a million people. Not bad for a BBS in rural America!

"[But by 1997], I saw the writing on the wall. The big ISP's were taking over, Mom-n-Pop ISP's like mine were becoming a dime a dozen. There was little room for the little guy...I reluctantly sold."

Re-calling the modem world

Seven provocations from the modem world

1. Microcomputer platforms stayed in service for over a decade

2. Connections were only as fast and as long as needed

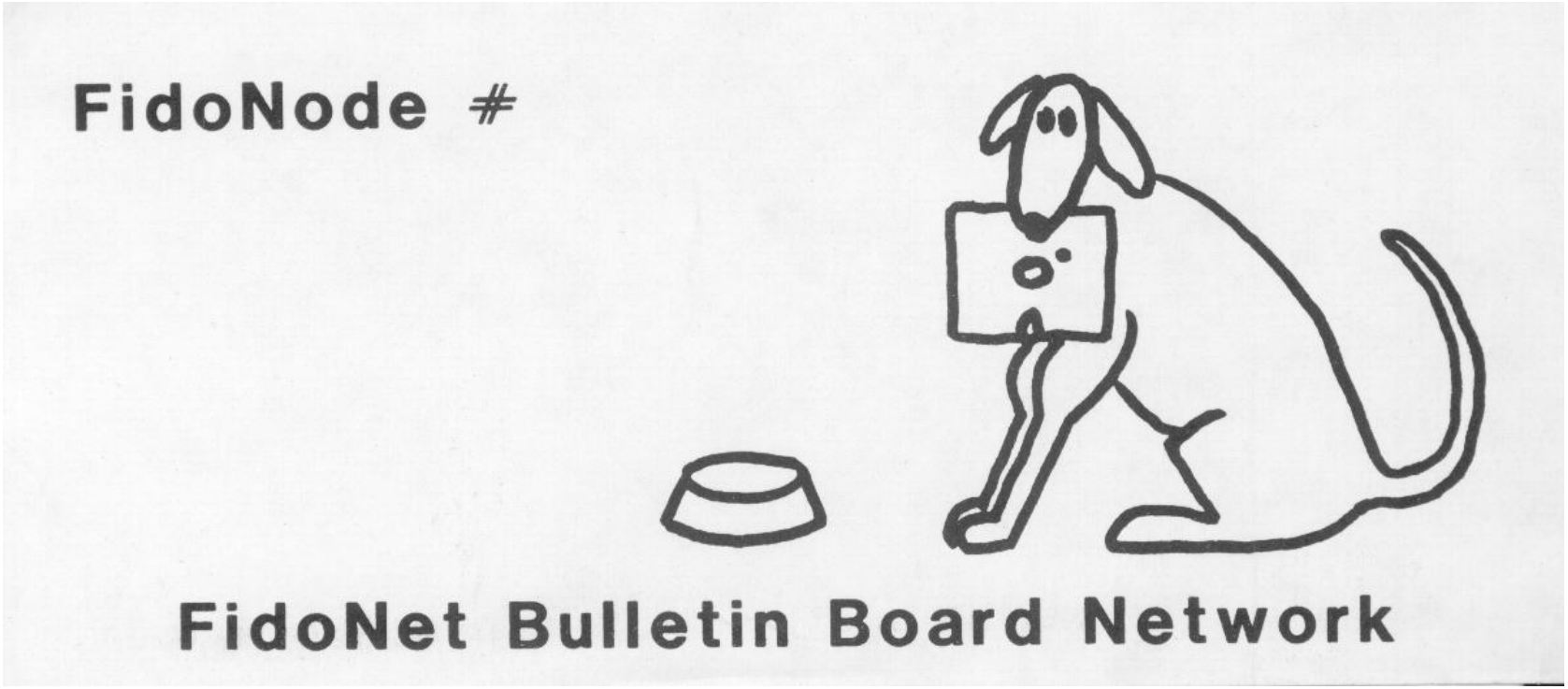
3. FidoNet enabled trans-local communication, rather than universal

4. Users knew where their data was stored

5. Users knew their sysops and the sysops knew their users

6. The cost of quitting a BBS was quite low

7. Every user could start their own BBS/FidoNet node



Thank you!

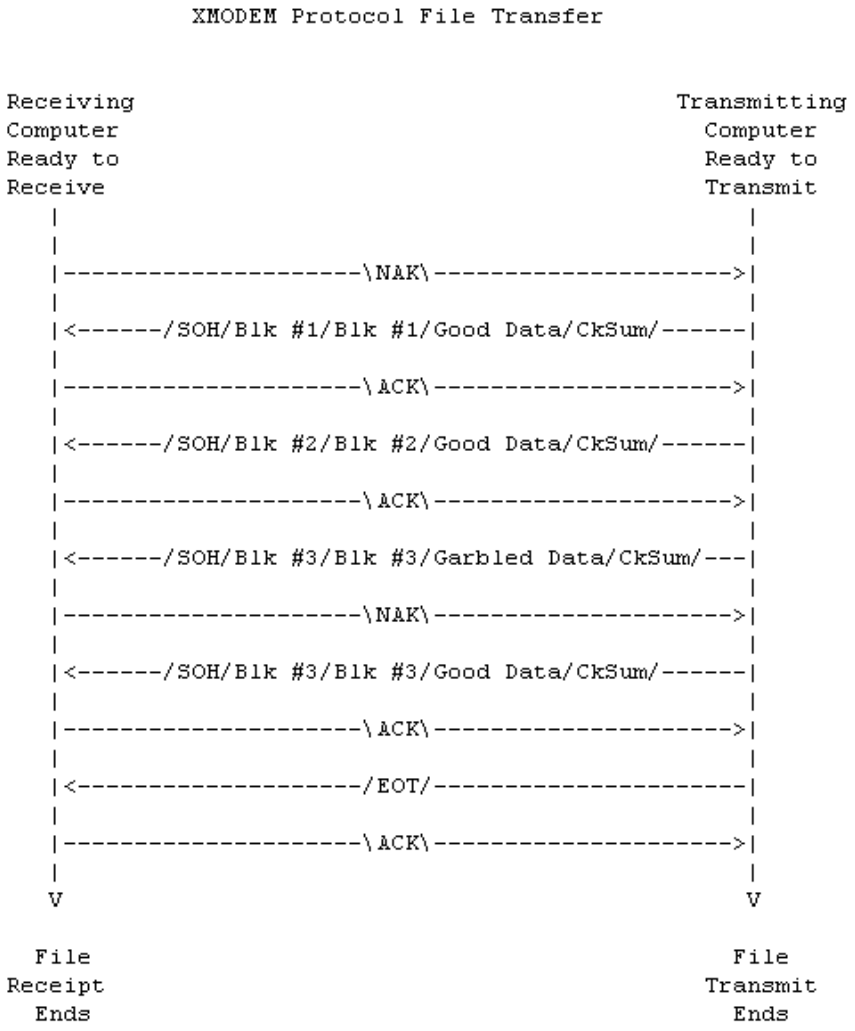
Kevin Driscoll, kedrisco@usc.edu

Academic v. Amateur Inter-networks

	Academic, ARPA, NSF	**Amateur, BBSes, Fidonet**
Hosts	Minicomputers, mainframes	Microcomputers
Clients	Terminals, workstations	Microcomputers
Infrastructure	Leased lines, persistent, high throughput	Plain old telephone lines, intermittent, low throughput
Institutional affiliations	University depts, military and industry research labs	Individuals, community orgs, small businesses
Costs	Centralized in institutions	Distributed among users
Access	Affiliated researchers	General public
Paradigm	Time-sharing	Peer-to-peer

CBBS origin story

Defending low barriers to entry



"People who suggest I make SIGNIFICANT changes to [XMODEM] don't understand that the incredible simplicity of the protocol is one of the reasons it survived to this day in as many machines and programs as it may be found in!"

(Christensen, 1985)