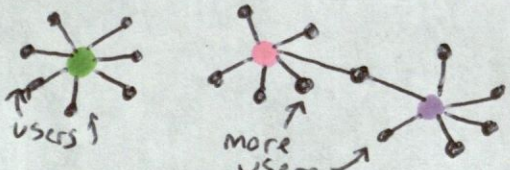
JONATHAN ZITTRAIN TALKS ABOUT THE INTERNET

← JZ (not to be confused with Beyoncé's husband)

he works at the Berkman Center for Internet & Society (in fact he co-founded it) and does a lot of Internet/law/policy work.

proprietary network model

if you had phone line & compuserve subscription, you could access proprietary compuserve services. essentially no 3rd-party tinkering. Model = lots of proprietary networks (centralized) w/ little to no interconnectedness.



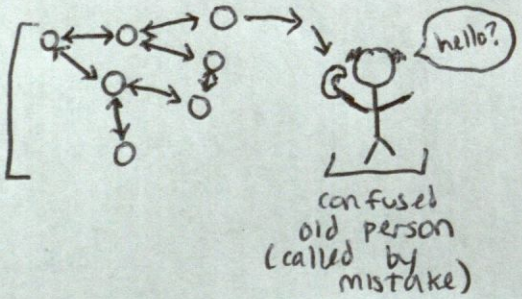
(the colored dots are the mainframes belonging to compuserve & its ilk)

it's weird to think about an online experience w/o user-generated content- a huge fraction of content on the internet today is generated by the "regular people"- not news outlets, corporations, or famous (Internet or IRL) people.

PC-to-PC networks

BBS- bulletin board software. any computer can run it. callers to the computer hosting the board can both provide & consume info. only 1 user/line → users try to minimize time connected.

↳ until FIDOnet - every PC w/ FIDOnet is part of distributed network - posts eventually distributed to all network. didn't scale well (misdials to very confused old people) but demonstrated how effective amateur innovation could be.



legal provision for generativity

AT&T has a monopoly on both phones and phone network in early 1900s.

↳ sues maker of Hush-a-phone (prevents eavesdropping); court rules that customers can physically alter phone handsets if those alterations don't harm phone system itself.

↳ 1959- Carterfone (hook up radio to telephone) - invented; AT&T sues; ~~court~~ FCC rules it's legal to create/modify devices that hook up to the network itself ⇒ DIAL-UP MODEM LEGAL (much later).

★ FCC & other gov't regulation of telecom is very important to openness, neutrality, & generativity of the Internet

← this is me

this is where I rant about my summer job.

→ on the flip side, Internet speeds are pretty terribad in some places in the U.S. Unlike say, South Korea, we haven't invested in broadband infrastructure (fiber backbones & last-mile connections are good examples) on a national level. Because of explicit legislative regulation, municipalities in Mass. with iffy Internet can build & administrate their own fiber networks. Part of the difficulty in getting this to happen is getting the governments of small towns in western Mass. to see the Internet as vital infrastructure. it's arguably something we haven't figured out yet on the national level yet either.

→ yay end-to-end-ness? it means (here) that the person browsing the Internet has to be the arbiter of their own experience - not compuserve. or its ilk. which means you scroll through a lot of the same meme on Tumblr, but it also means (theoretically) anyone can get heard on the Internet. Even the Time Cube guy.

the Internet

cobbled together from university networks, US gov't research units, telecom researchers. purpose was to connect anyone on the network to anyone else.

since creators & were the people they were designing for,..

↳ rough consensus in disputes (Jon Postel advocated for a "hum of consensus" in the room when making a decision)

↳ little concern about malicious users

↳ people didn't want to work on making/maintaining things until actually necessary.

wow design is hard

tradeoffs are a function of how accessible endpoint device is to 3rd party coding.

less openness to 3rd party software → simplicity, optimization to a purpose, but hard to adapt to new uses.

more generative → easier innovation; simpler initial platform; "broad range of applications" but must trust end user & inconsistent user experience.

↑ John Perry Barlow again.

Internet was made simple & generative because:

↳ procrastination principle: problems w/ network can be solved later or by people who are not me. network shouldn't concern itself w/ things users can deal with

↳ '84 Clark, Reed, Saltzer end-to-end paper

★ modularity & generativity.

↳ trust for users (because of roots of Internet as built by engineers for engineers?) - low barrier to access; all data packets equal but hard to identify wrongdoers or guarantee timely packet delivery

↳ can ISPs prioritize packets? book written in '08 - foreshadows net neutrality debate.

1991 - Internet begins to accept commercial interconnections.

- Initially PCs didn't have functionality to connect to Internet, but Peter Tattam released Trumpet Winsock for point-to-point connectivity.
- as people got onto the wider Internet, proprietary model died. The companies switched to ISP model - "on-ramp" to Internet.

Design assumptions of Internet included the assumption that the users had pretty much the same background & values (Declaration of Independence of Cyberspace). used to be a norming period ("eternal September") when college freshmen would get on the Internet & the people who were already there had to deal with their derpiness. Once influx of people into Internet became constant & unrelentingly large, this wasn't feasible. Norms exist in smaller communities, but not so much on the wider Internet, I think. How do communities enforce norms? even ec-discuss has something approaching implicit rules of engagement, I think...

→ how did the Internet not collapse under its generativity & unrestricted sharing? is it still true to its roots?

Ogres have layers & so does the Internet

↙ ogre (I can't draw)

I'm not going to recreate the pictures because I'm lazy, but partitioning the network or the computer into layers with nicely defined boundaries means that someone making a thing doesn't have to know how everything in every layer works - they just need to worry about 1 layer.

IP (Internet protocol) means that it's easy (device & medium-wise) to get an Internet connection. Can even use carrier pigeons to transmit info. (RFC #1149)

maximizes flexibility for users the people who built it couldn't envision