

Halt and Catch Fire Syllabus

Halt and Catch Fire Syllabus

<https://bits.ashleyblewer.com/halt-and-catch-fire-syllabus/>

Class 1 - People and Power // The Real World of Technology

Apéritif

- Joy Buolamwini, *The Coded Gaze: Unmasking Algorithmic Bias* (2016)

RFC as koan

- S. Bradener, RFC 2119: Key words for use in RFCs to Indicate Requirement Levels (March 1997)

Emulator as koan

- Easy 6502 Assembly Language

Themes

- Power and who holds it; history and who tells it
- Marginalized voices and their portrayal in (or erasure from) history

Prompts

- “Tell me one thing that will be true about computers ten years from now?”

Episode Summaries

Description

This first class is mostly about getting situated into a learning environment with a chosen group, getting ready to think about the history of technology, and about thinking about who has traditionally been left out of mainstream narratives about technology. This syllabus should inspire individuals to not just think about the past, but how it influences the present and what it means for the future.

“Computers aren’t the thing; they’re the thing that gets us to the thing.”

This series covers the history of computers from the late 1970s to the early 1990s. But more than just technical innovation, it manages to center the people in it, including power dynamics. There’s a lot that we can cover about gender, class, and race and how they interact with each other. Those ideas are important. Characters are important to talk about when they are generalizing these larger ideas. That being said, this syllabus does not intend to take a film theory approach to analyzing the intentions behind characters at a personal level, but takes the approach of how these behaviors are symptomatic of larger structural, societal issues.

Readings

- Ursula Franklin, The Real World of Technology, Part 1 (November 1989)
- Computer History Museum, Timeline of Computer History (Current)
- Rahul Zalkikar, The Gender Binary of Computing: Challenging Sexism in Technology (May 2019)
- Jennifer S. Light, Developing the Virtual Landscape (April 1996)

Class 2 - History of the Personal Computer

Apéritif

- Douglas Engelbart, “The Mother of All Demos” (December 9, 1968)

RFC as koan

- D. Libes, RFC 1178: Choosing a name for your computer (August 1990)

Emulator as koan

- Intel 8080

Themes

- PC histories
- IBM and the rest
- “cloning the BIOS”

Prompts

- What caused the rise of the personal computer?
- Is it a revolution or a war? What do we mean when we use those words?
- What “could have been” during this era? What kind of computing systems could we have had?

Episode Summaries

Description

Episodes: - S1E1 “I/O”, S1E2 “FUD”, S1E3 “High Plains Hardware”

The first three episodes introduce the characters and the relationships they have with computers. In 1983, the personal computer is not a totally new concept. IBM is the dominant force with a lot of smaller companies seeking to be the cheaper alternative model. This allows the series to start off under the guise of the “two men in a garage” cliché of U.S. technology history while actually situating it in a common small and boring tech company, like many others across the country.

Readings and references

- Brian McCullough, Internet History Podcast: How COMPAQ cloned IBM and Created an Empire (May 2014)
- Cory Doctorow, ‘IBM PC Compatible’: How Adversarial Interoperability Saved PCs From Monopolization (August 2019)
- Gregg Williams, Senior Editor, BYTE Magazine Volume 07 Number 01 - The IBM Personal Computer (Jan 1982)

- Laine Nooney, Kevin Driscoll, & Kera Allen, From Programming to Products: Softalk Magazine and the Rise of the Personal Computer User

Class 3 - Interfaces / Human-Computer Interactions

Apéritif

- 1984 Apple Macintosh Commercial

RFC as koan

- M. A. Padlipsky, RFC 491: What Is Free (April 12, 1973)

Emulator as koan

- Classic Macintosh

Themes

- software
- interface design
- history of floppy disk & related storage media
- the Macintosh (and its legacy)

Prompts

- Where's the line between software and hardware, and how has it changed over time?
- When did computers start having a personality? What are the implications behind having computers become “friendlier”?
- Why does the Macintosh continue to live so strongly in cultural memory?

Episode Summaries

Description

Episodes: - S1E4 “Close to the Metal”, S1E5 “Adventure”, S1E6 “Landfall”

This episode block starts with data loss, demagnetization, and data restoration. (And manipulation and press influence, too.) Where did memory used to be stored, and when did computers start storing data on detachable drives, like the 5 1/4” floppy disks featured in Episode 4?

S1E6 starts to move from worrying about a PC’s hardware to worrying about the software that comes packaged with the machine. This is building up to the reveal (a few episodes from now) of the Apple Macintosh and its focus on interface design and making the computer have a “personality”.

Readings

- Ellen Ullman, The dumbing-down of programming, part 1 and Part 2, Salon.com (May 1998)
- Lori Emerson, From the Philosophy of the Open to the Ideology of the User-Friendly (Feb 2013)
- Keith More, Life in Computing: The Apple Mac (July 2011)
- Andrew Roach, Observations on Modern Computing (The Last 10 Years Were a Misstep) (April 2018)
- Raymond Chen, How did MS-DOS decide that two seconds was the amount of time to keep the floppy disk cache valid? (September 2019)
- Patrizia DiLucchio, Screen decor (April 1999)

Class 4 - Material // From Physical to Abstraction

Apéritif

- American Artist, Black Goopy Universe

RFC as koan

- G. Malkin, T. LaQuey Parker, RFC 1392: The Internet User’s Glossary (January 1993)

Emulator as koan

- Apple II

Themes

- computer industrial design
- supply chains
- toxins produced by the tech industry

Prompts

- What's the relationship between the material world and the digital world?
- Where were computers being manufactured in the early 1980s? Where are they manufactured now?
- What has the tech industry done to the planet?

Episode Summaries

Description

Episodes: - S1E7 "Giant", S1E8 "The 214s", S1E9 "Up Helly Aa"

During these episodes, the characters are mostly in the throes of wrapping up production for their computer: the design of a case, the stealing of the important parts that make the computer significant, the OS, and presentation of the final product at COMDEX. We get to see the creative thinking around computer production, but not the stories of the hands that created and shaped plastic, assembled the microprocessors together, and prepared pretty much everything else related to computer production and distribution.

Computers allow us to forget about tangible objects, but they are still part of larger material supply chains.

Readings

- Ursula K. Le Guin, A Rant About "Technology"
- Miriam Posner, See No Evil, Logic mag, Issue 4 (April 2018)
- Ingrid Burrington, Light Industry: Toxic Waste and Pastoral Capitalism, e-flux Journal #74 (June 2016)
- Sharon Begley with John Carey, Toxic Trouble in Silicon Valley (May 1984)
- Lisa Nakamura, Indigenous Circuits: Navajo Women and the Racialization of Early Electronic Manufacture (Dec 2014)

Class 5 - Warez // Culture of Hacking

Apéritif

- Museum of ZZT

RFC as koan

- RFC 1438: Internet Engineering Task Force Statements Of Boredom (SOBs) (April 1 1993)

Emulator as koan

- KIM-1

Themes

- definitions of hacking
- code modification
- sharing
- The Demoscene
- warez scene hierarchy
- “copying is not a crime”

Prompts

- What is a hacker, and how has that term changed over time?
- How has open architecture and source code availability influenced tech history?

Episode Summaries

Description

Episodes: - S1E10 “1984”, S2E1 “SETI”, S2E2 “New Coke”

The last episode in this block features someone being accused of being a hacker – through hacking into the network, hacking by changing the source code of a game, and hacking by distributing it freely, via copied floppy disks. There are

other characteristics of “hacking” in the previous two episodes, too, except they have more to do with “social engineering” practices than changing computer bits.

“Hacking” on games is essential to the culture doing this time, and led to the prominent and influential demoscene and warez scenes.

Readings

- Allison Parrish, Programming is Forgetting: Toward a New Hacker Ethic
- Gabriella Coleman, “Hacker” (2016)
- Jason Scott A Demoparty in a Browser (May 10 2016)

- Sinclair Target How Much of a Genius-Level Move Was Using Binary Space Partitioning in Doom? (November 6 2019)
- Wilkie, Preserving Digital Art and Games for 100 Years!, !!Con (May 2016)
- Hacker test explainer

Class 6 - Pre-web internet history

Apéritif

- BBS Resource Site

RFC as koan

- A. Bhushan, RFC 69: Distribution List Change for MIT (September 22, 1970)

Emulator as koan

- Minitel page editor

Themes

- pre-WWW online communication
- BBS history and culture

- Usenet, teletext, FIDOnet
- Communities

Prompts

- When did computing move from mostly work tasks to personal usage?
- What is community?
- Who was online before September 1993?

Episode Summaries

Description

Episodes: - S2E3 “The Way In”, S2E4 “Play with Friends”, S2E5 “Extract and Defend”

As Mutiny grows, the significance of communicating online plays a bigger and bigger role in the success of the company – through playing games and also through online chat. As emphasized in previous episodes, users are thrilled to have a place to talk to other people, favored over all other features provided by modem connections.

Readings

- Claire L. Evans, Untitled (“Broad Band”), XOXO Conf (September 2018)
- Howard Rheingold, What the WELL’s Rise and Fall Tell Us About Online Community, July 2012
- Katie Hafner, The Epic Saga of the Well, Wired (May 1997)
- Kevin Driscoll, Social Media’s Dial-Up Ancestor: The Bulletin Board System, IEEE Spectrum (October 2016)
- Michael Hauben, Ronda Hauben, On the Early Days of Usenet: The Roots of the Cooperative Online Culture (August 1998)
- Janelle Brown, A kinder, gentler usenet (Sept 1998)

Class 7 - Infrastructure // Timesharing, networking, and people

Apéritif

- Robert Adrian, The World in 24 Hours (1982)

RFC as koan

- C. Finseth, RFC 1439: The Uniqueness of Unique Identifiers (March 1993)

Emulator as koan

- EDSAC

Themes

- timesharing and network sharing
- network infrastructure and data transmission
- infrastructure + people
- maintenance

Prompts

- When did computing move from mostly work tasks to personal usage?
- What's the relationship between business and the internet?
- Who has control over your data?

Episode Summaries

Description

Episodes: - S2E6 "10Broad36", S2E7 "Working for the Clampdown", S2E8 "Limbo"

This story arc prominently features the concept of time-sharing and network-sharing, and the infrastructure that allows these pieces to all come together. The larger question looming for the characters is around infrastructure and control. Owning a mainframe means having full control of one's data; leasing it means risking losing that control.

Readings

- Mar Hicks, Built to Last (August 2020), Logic Mag Issue 11
- Lori Emerson, What's Wrong With the Internet and How We Can Fix It: Interview With Internet Pioneer John Day (July 2015)

- Anne Helmond, Michael Stevenson, Legacy systems: internet histories of the abandoned, discontinued and forgotten (May 2017)
- Walt Mankowski, A Punch Card ate my Program!, !!Con (May 2017)
- Gabe Goldberg, The mainframe mindset, Increment Mag (August 2019)

Class 8 - Safety // physical and emotional health

Apéritif

- Amiga Graphics Archives

RFC as koan

- J. Reynolds, RFC 1135: The Helminthiasis of the Internet (December 1989)

Emulator as koan

- Commodore 64: Survivor

Themes

- information security
- juxtaposition of computer virus fears vs AIDS crisis fears
- lack of safety in how we use computers (e.g. leaving traces of ourself in the data we produce)
- stress from working

Prompts

- Who is missing? Who gets sick, dies, or has to quit their no/low-pay startup job because they need to earn a living? Who in tech gets left behind?
- What do the concerns represented or ignored by technology tell us about their creators? Examples?

Episode Summaries

Description

Episodes: - S2E9 “Kali”, S2E10 “Heaven Is a Place”, S3E1 “Valley of the Heart’s Delight”

Some strife is a normal part of life (e.g. marrying Joe MacMillan despite all the red flags), some of it is compounded by the stress of working within the tech industry (the now-stereotypical culture of Silicon Valley workaholism), and some of it is directly a result of the work (Gordan’s health issues attributed to lead and cocaine). How did we get here then, where are we now, and where are we going?

This is a good opportunity to pause and think about what stories are not being told within the histories of technology.

Readings

- Cynthia Joyce, Race Matters in Cyberspace, Too (June 1997)
- Jamie Zawinski, the netscape dorm (July 1994) (the disclaimer is also worth reading)
- Jamais Cascio, The Ecology of Computer Viruses (April 1999)
- Jennifer New, ain’t gonna work on billg’s farm no more (Sept 1997)
- Sumana Harihareswara. Pipeline and blog with context (May 2015)
- Warren Brown, Jobs Growth in ’80s Linked to Computer, Washington Post (December 1981)

Class 9 - Places // Silicon Valley

Apéritif

- Prelinger Archives, Electronic Computers Improve Management Control

RFC as koan

- RFC 1087: Ethics and the Internet (Jan 1989)

Emulator as koan

- Spacewar! for the PDP-1

Themes

- Silicon Valley
- war/defense funding in academia
- company “acquisitions” practice
- worth estimation

Prompts

- How much of the internet has been funded through war/defense budgets?
- How has defense budgets changed the way the internet works?
- How has commercialization and capitalism changed the way the internet works?

Episode Summaries

Description

Episodes: - S3E2 “One Way or Another”, S3E3 “Flipping the Switch”, S3E4 “Rules of Honorable Play”

Over the past few episodes, the characters are thrown into the pressures of Silicon Valley – pitching to venture capital, buying/selling companies, government contracts, ousting of executives, overworking, and so on. The San Francisco Bay Area wasn’t the only major “innovation hub” for U.S. technology, but it has had the largest staying power and impact. The physical damage caused by Silicon Valley was largely covered in #4: Material; this covers the economic, structural, and emotional impact.

Readings

- Paulina Borsook, How the Internet ruined San Francisco
- Kim-Mai Cutler, The Unicorn Hunters, Logic Mag Issue 4: Scale (April 2018)
- Jack Poulson, Reports of a Silicon Valley/Military Divide Have Been Greatly Exaggerated (July 2020)
- Julie Polito, Stoking the Net’s Growth: Interview with Ellen Hancock (October 1999) [note: 2 pages]
- Megan Finn, Quinn DuPont, From closed world discourse to digital utopianism: the changing face of responsible computing at Computer Professionals for Social Responsibility (1981–1992}
- Denise Caruso, 10 years of a wonderfully bad attitude (July 1991)

Class 10 - Information // The promise of the web

Apéritif

- Olia Lialina, Some Universe (“The Most Beautiful Web Page”)

RFC as koan

- R. Callon, RFC 1925: The Twelve Networking Truths (April 1 1996)

Emulator as koan

- IBM PC

Themes

- promise of the free and open web
- open source, open sources
- sharing

Prompts

- How do you know what progress looks like?
- Is the next web better or worse than what we have now?

Episode Summaries

Description

Acknowledgement that the episodes reviewed during this class focus on stress and emotional health, and suicide. This topic was intentionally covered in Class 8, although this class ties the Ryan character with the late Aaron Swartz. It is in honor of Aaron's legacy that this class focuses on the free and open internet. This class should shine light on Aaron's beliefs and massive, positive impact on the world, not the way through which he left it.

Episodes: - S3E5 “Yerba Buena”, S3E6 “And She Was”, S3E7 “The Threshold”, S3E8 “You Are Not Safe” cw: [suicide] (FOUR this week)

The narrative told about the early web, immediately after the embargo on commercialization was lifted, was this story about how the web is a free and open “superhighway” with unprecedented access to all of the world’s information.

Readings

- Aaron Swartz, Full Text of “Guerilla Open Access Manifesto” (July 2008)
- Aaron Swartz, On Picking Winners, American Library Association Mid-winter meeting (Jan 2008) (*Note: audio/video out of sync*)
- Cory Doctorow, How to protect the future web from its founders’ own frailty (June 2016)
- Michael Hauben, Ronda Hauben, Proposed Declaration of the Rights of Netizens (August 1998)
- Tim Berners-Lee, The Next Web (2009)

Class 11 - World Wide Web / FYI on “What is the Internet?”

Apéritif

- Twin Peaks on the Internet...in 1990 (an alt.tv.twin-peaks archive)

RFC as koan

- E. Krol & E. Hoffman, RFC 1462: FYI on “What is the Internet?” (May 1993)

Emulator as koan

- CERN, CERN 2019 WorldWideWeb Rebuild

Themes

- The WWW
- web standards
- IETF, W3C
- hyperlinks

Prompts

- How did a portal for physics papers end up as all of this?
- How have standards shaped the web?
- What is the internet for (then and now)?

Episode Summaries

Description

Episodes: - S3E9 “NIM”, S3E10 “NeXT”

As better articulated by Jason Kottke in his essay/review, WWW: The Way We Were, it’s during these two episodes that the main characters discover the potential of the web – “the amazing possibility to be able to go anywhere within something that is magnificent and never-ending.” Class #10 focuses on that awe and glory, while this class can focus on the work and pieces that fell into place for the web to become the thing that we know it is today.

The characters have a strong business mindset, focused on how to monetize this technology, but the history behind the world wide web is based on public funding, academic research, and noncommercial goals for communication.

Readings

- Anne Helmond, A historiography of the hyperlink: Periodizing the web through the changing role of the hyperlink (2018)
- Cory Doctorow, What the Internet is For (November 2018)
- Richard Wiggins, Al Gore and the creation of the Internet (October 2000)
- Megan Sapnar Ankerson, Celebrating 25 years of Global Hypertext: World Wide Web! (March 2014)
- David Weinberger, Small Pieces Loosely Joined: Preface (2002)
- Zack Bloom, The Languages Which Almost Became CSS (August 2017)
- Paul Ford, The Group That Rules the Web (Nov 2014)
- Dariuz Kazemi, The land before modern APIs (August 2020)

Class 12 - Users and their Internet Service Providers

Apéritif

- Living Worlds (reproduction)

RFC as koan

- D. Crocker, RFC 1775: To Be “On” The Internet (March 1995)

Emulator as koan

- Windows 95

Themes

- the ISP business era
- users
- “Welcome to my Home Page”

Prompts

- What are the different histories of the net?
- What does it mean to be “on” the internet?
- When did we shift from a “read-only” internet to a “read/write” internet? What kind of internet are we on now?
- What’s the difference between “community” in the pre-web, the early web, and the modern web?

Episode Summaries

Description

Episodes: - S4E1 “So It Goes”, S4E2 “Signal to Noise”, S4E3 “Miscellaneous”

Jumping in 1993, the ISP business is in full swing – many small companies and networks connecting people, yet to be eaten by AOL and other existing, massive companies. Meanwhile, everyday users are increasingly diving into the web, creating “weird” and “cool” and “pointless” websites. We get to live this experience through Gordon’s daughter, Haley.

This is the beginning of the internet that looms large in cultural memory: open and exciting, unstructured, chaotic. There’s a sense of no walled gardens (which is not completely true), just a new frontier where anyone can set up their own personal online homestead just to say “hey! I’m out here!”.

Readings

- Olia Lialina, Give me time/This page is no more (2015)
- Cynthia Joyce, Parental Advisory Warning (Jan 1998)
- Kevin Driscoll and Camille Paloque-Berges, Searching for missing “net histories” (March 2017)
- Janelle Brown, There Goes the Neighborhood (Jan 1999) [note: there are 3 pages]
- Joanne McNeil, The Community of Everybody and Nobody, MCA DNA (August 2018)
- Paulina Borsook, The Anarchist (March 1996)
- Megan Sapnar Ankerson, How Coolness Defined the World Wide Web of the 1990s (July 2014)
- Denise Caruso, Take away corporate influence on the Web and what do you have? Original fun. (Dec 1996)

Class 13 - Search // Where do you want to go today?

Apéritif

- Yahoo Commercial - Snow People

RFC as koan

- C. Weider, P. Deutsch, A Vision of an Integrated Internet Information Service (December 1994)

Emulator as koan

- Windows 98

Themes

- the “search engine wars”
- search algorithms
- mapping the internet
- searching versus portals

Prompts

- How has the concept of “web search” changed since 1993?
- How would you find something on the web now if search engines didn’t exist?

Episode Summaries

Description

Episodes: - S4E4 “Tonya and Nancy”, S4E5 “Nowhere Man”, S4E6 “A Connection is Made”

Search versus curation starts to become the next big thing. There is tension between whether it’s more valuable to offer a complex search algorithm versus having experts curate useful links: quantity versus quality. Rover and COMET represent these two perspectives. Although not given as much hype as the Browser Wars (See #14), this tension between the size and complexity of the web and how to provide a portal with meaningful access is an important one.

Today, google reigns supreme in search (and search advertising) to the point of government lawsuit, but social sites have created an evolved form of the curated access to information (even if not the ‘quality’ of experts, as misinfo runs rampant).

Readings

- Jon Penland, The History of Web Search Engines: What Came Before Google? (April 2020)
- Richard E. Peterson, Eight Internet search engines compared (February 1997)
- Safiya Noble, Google Has a Striking History of Bias Against Black Girls (March 2018)
- Rose Martelli, Getting Smart, the Stupid Web Way (Nov 1999)
- Vanessa Fox, Schema.org: Google, Bing & Yahoo Unite To Make Search Listings Richer Through Structured Data (June 2011)
- Wikipedia, Timeline of web search engines

Class 14 - Browser // Dawn of the mosaic-eating monster

Apéritif

- The Torjan Room Coffee Machine

RFC as koan

- L. Masinter, RFC 2324 Hyper Text Coffee Pot Control Protocol (HTCPCP/1.0) (April 1 1998)

Emulator as koan

- oldweb.today

Themes

- “Browser wars”
- our primary portal to the web

Prompts

- What are the pros and cons of having a single dominant web platform?
- How did this “Browser War” change how we interact with the web today?

Episode Summaries

Description

Episodes: - S4E7 “Who Needs a Guy” [cw: death], S4E8 “Goodwill”, S4E9 “Search”

Earlier episodes feature characters working to develop their own browser, but for the most part, the series stays out of this industry while focusing on web search. But the fight over becoming the dominant software for web browsing was an intense one, with its own tumultuous and dramatic history. This time period

involves the rise of Mosaic, sort of a “World War I” a few years before the all-out brawl between Internet Explorer, Netscape, and everyone else. And they’ve been religious wars, bigger than just browsers. They involved the altruistic fight for software freedoms versus free market capitalism, and signifying more than just visuals and methods of rendering CSS.

Similar to Search, we now have a very small Browser ecosystem, with Google Chromium dominating the market and powering not just Chrome, but other browsers and desktop applications.

Readings

- Brian McCullough, Internet History Podcast 173. Netscape’s Rosanne Siino (June 2018)
- Janelle Brown, From beta to bonafide (Sept 1999)
- Denise Caruso, Netscape’s decision to give away code could alter the software industry (Feb 1998)
- Laura Lemay, Consider the Source (April 1998)
- Project Code Rush - The Beginnings of Netscape / Mozilla Documentary
- Scott Rosenberg, 21st: Microsoft to world: Remove our browser and your system will crash (Dec 1997)
- Scott Rosenberg, Microsoft’s Halloween scare (Nov 1998)

Class 15 - The Next Big Idea

Apéritif

- Nathaniel Stern, The World After Us (2020)

RFC as koan

- V. Cerf, RFC 1607: A VIEW FROM THE 21ST CENTURY (April 1 1994)

Emulator as koan

- Apollo Guidance Computer (AGC)

Themes

- the next big thing
- alternate histories
- where we were and where we are going

Prompts

- Again: “Tell me one thing that will be true about computers ten years from now?”
- What is the next big idea? What is the next big social change? How do these compliment or contrast with each other?

Episode Summaries

Description

Episodes: - S4E19 “Ten of Swords” (Series finale)

And that’s a wrap! This final class should cover the gap between the last episode and where we are today, what has changed, and what will change. What is our role in being that force for change?

Readings

- Claire L. Evans, Mother Internet, The Open Mind (March 2018)
- Janet Abbate, How the Internet lost its soul (November 2019)
- Jessa Lingel, The gentrification of the internet (March 2019)
- Jessica Ogden, et al, This is For Everyone? Steps towards decolonizing the Web (2015)
- Marianne Bellotti, Marianne Bellotti - We Killed These Things With Fire: economics, society and system design (Nov 2019)
- Geert Lovink, Cyberselfishness Explained: Interview with Paulina Borsook (December 2001) and Paulina Borsook: Cyberselfish 15 years after, Part I (Jan 2015)

Halt and Catch Fire Syllabus

<https://bits.ashleyblewer.com/halt-and-catch-fire-syllabus/>