

Searching for missing “net histories”

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Across time, space, and language, the meaning of “the Internet” is taken to be self-evident; appearing to both the scholar and the everyday user as a singular, homogeneous sociotechnical phenomenon. But the Internet, as it is generally known, is as much mythology as technology, a shared set of narratives that frame our expectations of the future. As we begin to write comparative, critical histories of the Internet, this seemingly stable object breaks apart, revealing a diversity of experiences, technologies, norms, and motivations. The epistemological problem at the heart of Internet history requires us to borrow creatively from other fields and develop new historical methods. To arrive at new operational definitions of the Internet, we advocate the pursuit of hidden histories, obscure sources, and less visible networks, stoking new life into vernacular terms such as “the Net.”

Keywords: internet, net, history, historiography, methodology, sources

Introduction

Finding what has not been found, patching holes in narratives, and acquiring new documentation are classic problems in modern historiography.¹ Unlike many other 20th century technologies, the Internet arrived to most users as simultaneously brand-new and already-historical. During the late 1990s, readers in the US were likely to encounter a history of the Internet before accessing the Internet itself. Indeed, the first edition of Katie Hafner’s bestselling *Where Wizards Stay Up Late* was published in 1996, the same year that the Pew Research Center estimated 77% of US adults were not Internet users (Hafner & Lyon, 1996; “Internet Use Over Time,” n.d.).

Two decades after the publication of Hafner’s book, the prevailing narrative of popular Internet history is still shaped by the direct influence of those sleepless wizards.

¹ The authors wish to thank the participants in the 404 Histories Not Found workshop at the 2016 Association of Internet Researchers conference in Berlin, Germany.

From the perspectives of these central players, “Internet history” follows a tradition of publicly-funded networking research in the US and Europe that produced ARPANET, TCP/IP, and the World Wide Web. In 2015, Thomas Haigh, Andrew Russell, and William Dutton raised three objections to this account. First, they argued, this history is teleological; built around an unresolvable dispute over “who invented the Internet?,” further fuelling a perception that conflicting accounts of history are competing to win a zero-sum game. Second, this narrative gives privilege to the “fittest” technologies that remain in use today while leaving out the political, economic, social, cultural, and geographic conditions under which technologies are adopted or abandoned. Third, the sources that give rise to the dominant narrative are primarily first-hand accounts and oral testimonies from a small coterie of networking researchers known as the “fathers of the Internet,” a nickname that reflects the intimacy and fraternity of the ARPANET community, as well as the normative conception of the Internet as primarily a technological achievement.

One immediate project for critical Internet historiography is to learn how to handle the vast pre-existing knowledge that has accrued around the dominant history of the Internet. Key figures from the ARPANET milieu, authorized by institutional affiliation and audience interest, began to produce first-hand histories as early as the 1990s. We must integrate these existing narratives with the voices of other populations whose experiences and contributions add dimension and complexity to our understanding of the Internet phenomenon. As Martin Campbell-Kelly and Daniel Garcia-Swartz argue in their critique of the dominant narrative, “the evolution of the Internet is a much richer story than portrayed in the standard histories” (2013).

In addition to representing a greater range of people and places, a richer account of internet history will also enable new analytic approaches. In the tradition of Michel

Foucault (1969), the epistemological reflexivity of critical historiography may reveal unacknowledged power relationships embedded in our knowledge of the Internet's past. We should raise doubt about the prevalence and ubiquity of the Internet as a "winner" by interrogating how we understand the process of technological diffusion and its narration. In order to reframe the Internet's past, we have to move away from thinking the Internet as an "it" in favour a plural approach.

The Internet has always been multiple. The afterlife of Amsterdam's public online service *De Digitale Stad* (DDS) exemplifies the value of thinking about the Internet in plural. Operating from 1993 to 1999, *De Digitale Stad*, or "the digital city," was a citizen-oriented network open to all Amsterdam residents through dial-in access points and public terminals. The city's vibrant squatter culture shaped the growing network by situating it within a pre-existing tradition of media appropriation, activism, and organizing (Nevejan & Badenoch, 2014). In recent years, researchers have revived the material history and social memory of DDS through classroom teaching, museum exhibitions, scholarly inquiry, and creative re-invention. These encounters with DDS reflect a number of historiographic challenges: the reworking of internet histories through the experiences of users, the attention to digital artefacts, the concern for different temporal and spatial histories, and finding ways to tackle these problems in the present.

In this essay, we reflect on the theoretical and methodological consequences of the Internet's inherent plurality. To this end, we argue that a bit of old slang, "the Net," offers some guidance for how to orient ourselves toward this emerging field of historical inquiry. While dominant histories of the Internet are organized around the interplay of technologies, standards, states, and enterprises, *histories of the Net* begin with the experiences of users. This shift in perspective is not without complications, of

course. For one, the definition of “user” is not self-evident. Users range from technical hobbyists, exploring the Net for novelty and pleasure, to knowledge workers, compelled to adopt this new technology as a condition of their employment. Each user renders the Net differently, a result of the circumstances within which their own encounter with this now-ubiquitous technology began.

Net histories also put researchers in contact with source materials that are difficult to interpret, rife with bias, and subject to rapid decay. The search for net histories will require us to get our hands dirty, developing new methodological techniques and theoretical frames for thinking about information and communication infrastructures of the past. What is our responsibility to find and document hidden histories, obscure sources, and less visible networks? Under that light, we suggest that a tighter focus on uncertain or inconsistent temporalities, archives, and software will be crucial to realizing a more diverse point of view in the study of historical computer networks.² Our aim is to encourage junior scholars not only to explore hidden net histories, but also to develop an “operational” notion of what the Internet is; a working definition in the context of an expanding and diversifying object of study.

An argument for “net histories”

The Internet is a deceptive object of historical analysis. At first, the Internet appears to be a singular, stable socio-technical phenomenon, in kind with “the television” or “the

² This essay calls for more diverse approaches to historiography without, for lack of space, detailing the critical diversity issues that will animate these histories, including differences in gender, race, and ability, as well as broader environmental challenges. Among the pioneering works lighting this pathway through the history of computing, see: Abbate, 2012, and Ensmenger, 2015.

automobile.” To the extent that we have been able to write histories of these other 20th century technologies, it seems like we should know how to write a history of the Internet. Based on previous experience, a determined researcher might document experimental networks, interview the designers of protocols, or trace the early interconnections that gave rise to the global information infrastructure.

But the Internet is as much mythology as technology. As a socio-technical phenomenon, the Internet is held together by a set of narratives and beliefs about how information and communication power ought to be distributed through a society (Flichy, 2007; Katz-Kimchi, 2015; Turner, 2008). As scholars have begun to write comparative, critical histories of the Internet, the Internet seems to break apart, revealing a range of experiences, technologies, norms, and motivations (e.g. Brunton, 2013; Driscoll, 2014; Hargadon, 2011; Mailland, 2015; Paloque-Berges, 2011; Russell, 2014; Schafer & Thierry, 2012; Schulte, 2013). Indeed, technology is just a small part of the Internet story.

Nor is the instability of the term “internet” common to information systems as objects of historical inquiry. Systems like De Digitale Stad and Geocities were discrete historical phenomena with beginnings and ends, clear boundaries from which to begin a diachronic analysis. The Internet offers no similar footholds. At its simplest, the internet is defined as a “network of networks,” a recursive puzzle that resists beginnings and endings.³ As the Internet grows, the network of networks swallows its constituent parts, growing larger and obscuring any boundaries that might have once existed.

³ The phrase “network of networks” is one of three definitions given by early Net chronicler Ed Krol in RFC 1462, along with “a community of people who use and develop those networks” and “a collection of resources that can be reached from those networks.” See: (Krol & Hoffman, 1993)

To address the historiographic challenges posed by the singular Internet, we suggest an alternative framing that foregrounds the plural, polysemous quality of the Internet. Consider, for a moment, *net histories*. Unlike the Internet, “the Net” is self-conscious about its ambiguity, and like “the Grid” in John Shirley’s cyberpunk novels or “the Matrix” in John S. Quarterman’s telecomputing atlas, “the Net” is a superset, inclusive of an ever-evolving complex of information systems and communication networks (Quarterman, 1990; Shirley, 2012). Social histories of the Internet will be composed of stories about *the Net*.

The Net is also a vernacular term of art, calling forth a memory of computer networks as sites of exploration and play. Rather than technologies or infrastructures, a historiography of the Net begins with users. Histories of the Net are concerned with the everyday experience of living and working among computers and networks. From this perspective, “the Net” might refer to any number of systems: a campus network, Usenet, a local BBS, a commercial online service, or some combination of all of them. The Net arises out of the imaginations of its users.

Adopting a net perspective draws attention to two shortcomings in our prevailing histories. One is spatial, and has to do with cartography, defining borders and territories; the other one is temporal, putting things in diachronic perspective. The need for non-US net histories is clear. Emerging efforts to broaden the geographic scope of the history of digital computer networks include the *Routledge Companion to Global Internet Histories*, edited by Gerard Goggin and Mark McLelland (2017), the *Asia Internet History Project*, edited by Kilnam Chon (2013-2016), and this very journal. Not all work in global internet histories takes a net historical perspective, however. For pragmatic reasons, new research often grows out of existing histories, attending to the perspectives of individuals and organizations affiliated with well-known “pioneers” in

Europe and the US, such as CSNET and the IETF. We should not simply jump from region to region, re-writing the same tales of a first modem, first email, first ISP, etc. So how do we conceptually frame net histories from different parts of the world while including the variety of user experiences?

Historical maps of the net reveal relations of authority—who or what is authorized to be connected—and hierarchy—who or what is more visible or central than others. Across the academy as well as in the popular culture, digital networks are imagined as global and transnational infrastructures, open to the world’s computer owners despite their origins in the “closed worlds” of surveillance and containment (Edwards, 1997). Indeed, across many histories of the Internet similar landmarks appear—for instance, UUCP networks played a recurring role connecting new regions to the emerging Net (Salus, 1994, Paloque-Berges, 2017)—but these similarities are offset by richer stories of domestication and adaptation. In the pursuit of geographically diverse net histories, we must learn how global standards are negotiated locally (Russell, 2014, Negro and Bori, 2016); as well as how culture comes into play when a digital network is appropriated. In the case of Amsterdam’s DDS, the “digital city” was “portal” to both a global network as well as a local virtual community, “rooted” in a specific place and marked by Dutch society, style, norms, and language (Nevejan and Badenoch, 2014, p. 190). To complicate matters, not all networks follow standards or seek interconnection, and yet, their users may still think of them as “the Net.” How do these isolated networks challenge the meaning of being “on the Internet”?⁴

⁴ There is actually a Request for Comments from Network Working Group member David Crocker that proposes a definition for “on the internet.” Although Crocker’s definition adopts the point of view of “users,” it is based on the arrangement of protocols, platforms, and gateways (Crocker, 1995).

In addition to being user-centered and geographically diverse, histories of the Net also require a spectrum of temporalities. Time is a defining quality of the Net experience, from the hard limits of a modem's transfer rate to the subjective experience of feeling like a "n00b."⁵ Time zones, timelessness, microprocessor cycles, and automated billing cycles are all rolled into the temporal fabric of the Net. Likewise, familiar temporal structures such as the ten-year decade do not fit easily onto the Net. We should not expect to find coherent memories of "the 90s" across systems, spaces, and socio-economic groups. Net historiography will therefore need to accommodate the simultaneous unfolding of multiple, incompatible temporalities as users from across the globe encounter, adopt, modify, and abandon new information and communication networks.

Popular histories of the Internet tend to focus on either the 1970s or the 1990s; on experimental networks and fundamental concepts such as dynamic routing and packet switching, or the creation and implementation of now-familiar systems such as the World Wide Web. The gap in this disjoint chronology reflects the messiness of inter-networking. In Europe and North America during the 1980s, thousands of networks were built under a variety of social, technical, and political-economic conditions. Store-and-forward mail systems, commercial X.25 networks, UUCP links, and packet radio mailboxes each contributed to the emergence of a global infrastructure

⁵ An archetypal example of an Internet evolving and reflecting within and out of network time is the aptly named "nettime" mailing list, whose administrators recent started to compile a collaborative history for the 20th anniversary of the list. Ted Byfield and Felix Stalder initiated the first version on November 1st, 2015 at <http://nettime.org/Lists-Archives/nettime-1-1511/msg00001.html>.

that enthusiasts began to call “the Net.” In contrast to the direct hop from ARPANET to the Web, the plurality of the 1980s Net resists narratives of linear progress.

As long as we conceptualise the Internet in the singular, we will find ourselves entangled by its polymorphism. Histories of the singular Internet will always be written against the backdrop of what Thomas Streeter calls “the standard folklore” of the Internet: ARPA, TCP/IP, and Silicon Valley (2011). By adopting a *net histories* perspective, however, we de-center the “standard folklore,” making room for new origins, side quests, counterfactuals, and net mythologies. So where do we look for evidence of the Net? What sources will give rise to a historiography of the Net? What new conceptual and methodological challenges do these sources present?

What do (new) sources hide?

As historical inquiry grows within Internet studies, critical methods for handling historical sources—particularly, “born-digital” materials—will become necessary skills for scholars in the field. Native to digital environments, born-digital sources do not present wholly new problems for the historian accustomed to reflecting on the epistemological centrality of archives and sources, in both intellectual and material terms. Following Lisa Gitelman, the digital is “always already new”: what we consider “sources” are also structures and instruments through which history is framed “newly” with every study (2006). Furthermore, born-digital sources should not be restricted to a new generation of technologies with their unique emergent qualities, just like there is nothing natural in “web-native” culture, as Michael Stevenson recalls: they both take their meaning as positions in a field of strengths and powers (2016). Today, born-digital sources are being acknowledged in the public sphere, and how this acknowledgment actually works reveals obvious power at stake. All eyes are on big data and email leaks;

seemingly novel forms of informational power. In the context of research, however, the newness and bigness of born-digital sources are merely superficial. Instead of focusing of what is new or newly accessible, we might find that a fruitful approach is to uncover what born-digital sources hide behind the fascination to which they subject us.

First, there is digital data, which, as Geoffrey Bowker rightly reminded us, is never raw, always structured (in Gitelman, 2013). The predominant debate among researchers about big data concerns what's left out and what's not interpreted when mining very large data sets, with a plea to consider smaller, contextualised data (boyd and Crawford, 2012). Several other issues are not on the forefront of these debates, yet they are no less crucial when handling born-digital sources: formats, documents, and archives. Because of data structuration, it is very hard to consider data outside of its digital document frame—its format. On the complex and ever-changing border between data and document, there lie many variations on the problem of what's not found: obsolete standards, constraints, rewritability, unreadability. When everyone and everything computes data, how do we read it?

Media that are hard to read or hard to reach tend to be forgotten. In one recent example, Hilde Van den Bulck and Hallvard Moe confronted historical neglect in their study of teletext (2016). In spite of being adopted by TV broadcasters throughout Europe, the teletext medium is difficult to collect and archive, and even more difficult to consult and analyse beyond an immediate live broadcast. Teletext tells the story of a failure, not the failure of the technology itself, but the failure of the conditions for explanation and value-creation in memory and history. A second example of data formatting and historical failure is the Usenet collection scattered across Google and the Internet Archive. Partly due to impractical formatting, these data are of little use to researchers and lay unexamined even as Usenet remains among the most prevalent

systems in the social memory of the Net (Paloque-Berges, 2017). Attending to format thus helps us to consider not only what sources are available but also the conditions in which they are made readable and even desirable to potential researchers.

Second, there is software itself, and its family members, code, algorithms, programs, applications. What historiographic problems does software hold? First, and foremost, there is no automatic “authenticity,” in the historiographical sense, when recovering, compiling, and running old source code on new machines. As researchers began to re-build De Digitale Stad from a preserved snapshot of source code and data, they found it “almost impossible” to recreate the original system, turning again and again to informed guesswork and improvisation (Went *et al.*, 2016, p. 17-18, 23). Critical code and software studies offer guidance for analysing source code and databases, revealing issues of cultural and political power in the design and operation of these technological systems (Fuller, 2008; Mackenzie, 2006; Marino 2006; Manovich, 2001). But one peculiar question is seldom raised: what happens when the program doesn’t work? How do we make historical sense of software failure as programs move from their “original” contexts into states of recovery, emulation, and reproduction?

Beyond the materiality of software and source code, media scholars seem to agree that algorithms themselves are “ubiquitous” in society, have a “purpose” and “shape social phenomena” (to quote a recent symposium on the topic).⁶ There are interesting and weird questions about agency, responsibility and anthropomorphism underlying these formulations—even if actor-network theory taught us to consider the role non-human actors beyond a critique of anthropomorphism (Latour, 2005). But the

⁶ Summer School of the International Algorithm Studies Network - Date: 4-8 July, 2016.

Stockholm, Sweden. <http://algorithmnetwork.org/summerschool/>

nascent field of algorithm studies also seems to take for granted that algorithms “work,” that is, algorithms are rarely thought to breakdown, crash, or fail. The implementation of any algorithmic process is based on a network of conditional branches, each with a narrow range of possible outcomes, a 1 and a 0. Let us say that meeting the 1 condition subjects the user according to the primary goal of the program. Code studies tend to focus on the social, political, economic consequences of this outcome, this subjection. However, there are other dimensions to the experience of programming and/or being subjected to computer programs. When the condition for the initial purpose of the program is not met, i.e. when the program reaches 0, what happens to user experience? How do the conditions laid out by the program meet the contextual conditions of use? What other *scenarii* are forecast by the machine or invented by users? It is possible for programs to act outside of the expectations of their programmers/designers. Efforts to re-create old net systems, such as DDS (Went *et al.*, 2016) or the Everything Engine (Stevenson, 2016), show that failure is fundamental when working with old software. Indeed, the limitations that come with broken, incomplete, unreliable, or out-of-date software may have shaped the cultural contexts of their use (e.g., Davison, 2015). In writing net histories, we will need to characterise the autonomous and unpredictable behaviour of software agents—independent of both human programmers and users. Tales of resistance, such as users challenging or undermining the planned execution of software, should be treated with the same critical care as the dominant stories of engineering heroism, not only as celebrations of hackers’ exploits.

Third, and following the previous argument about the autonomy of born-digital sources, how do computerized artefacts themselves materialise social contexts? The physics and logics of the machine, the merits of which engineers love to argue about, tend to obscure its sociality, its economics, its politics. What do people think, do and

feel when there is a machine around? How do computer artefacts materialise these interactions with social structures, conventions, habits? How is the use of a machine constrained or framed by economic or political choices? Beyond the deterministic debates around technologies shaping behaviours, or techno-discourse inventing the future while predicting it, we should also not forget that networked computers encode what's already there, an imperfect reflection of existing social conditions. From a temporal perspective, this means that studying the inscriptions lingering in old machines may reveal sensitive information about the human beings who lived among them.

Net histories raise ethical questions that may be new to historians of technology. The materials that survive in the personal collections of former users were created with different expectations regarding privacy and publicity (McKee & Porter, 2009). The users of earlier networks may have assumed a greater level of privacy simply because the Net was not accessible to a vast majority of their peers; security through obscurity, as the saying goes. In the case of the experimental re-construction of DDS, researchers found a surprising amount of personal information preserved in a backup from the 1990s. Former users may have been harmed if their old data were simply put back online, suddenly linked to databases and search tools that did not exist in the past (Went *et al.*, 2016). Of course, this risk was not unknown to early Net users, some of whom pioneered the very idea of “the right to be forgotten” as soon as the late 1990s, long before it was formalised by research or law (Paloque-Berges, 2017). But net histories requires us to rethink archival studies in terms of human subjects research. A willingness to share personally identifying information in the past should not be taken as a license to identify private persons in the present.

Fourth, people also exist independently to machines. Who is talking has a tremendous importance on how we build our narratives. The “fathers of the Internet,”

with their prominence in popular media, leave little room for alternative accounts (Bory, Benecchi and Balbi, 2016). But sometimes “a challenger appears,” as in the case of the on-going email invention controversy. In short, an engineer named Shiva Ayyadurai registered a software system called “EMAIL” with the US Copyright Office in 1982 and is now running a professional media campaign to be recognized as the sole inventor of e-mail. Beyond the accuracy of Ayyadurai’s claims, this situation raises interesting questions as to how to include voices other than the ones producing the official narrative. Along with the compulsory biases coming with oral histories, it seems important to give attention to “wrong discourses”—that is, stories about the past that appear to be inaccurate to the pragmatic historian or researcher.⁷ For instance, nostalgia is frowned upon as a form of techno-fetishism, but it may also provide an opportunity for the rediscovery of alternative histories and motivate the amateur preservation of source material (Ankerson, 2012). In memory and in the use of old artefacts, nostalgia surfaces stories of decline and endurance that challenge narratives of linear progress. Nostalgia also introduces hidden dimensions. For instance, the same modem sound that conjures a feeling of nostalgia among former users provides evidence of the social, technological, and economic considerations of using dial-up Internet. Memory is not objective, memory is inconsistent and unreliable, but memory will also be an invaluable resource for net histories.

To sum up, the sources that give rise to histories of the Net require the same critical methods developed in other areas of social and cultural history. Crucially, one

⁷ A search in the mailing list archives of the Special Interest Group for the History of Computer and Information systems (SIGCIS) reveals how professional and amateur historians of the field reacted, often with a strong protective stance, to the Ayyadurai’s affair.

<http://lists.sigcis.org/pipermail/members-sigcis.org/>

should never trust one source or one archive, but should confront it with other documents, keeping in mind what each source obscures, leaves out, or misrepresents. With the help of auxiliary sciences, critical methodologies devote much effort to looking into the problems raised by sources, beyond what they tell at the surface. Thus, the instability of born-digital sources or the biases prevalent in nostalgic accounts of the Net are not obstacles but resources for a critical historiography of the Net.

Net.things: lost and found

The range of Net histories that will be possible to write in the future depends on the preservation work performed in the present. One reason for the predominant focus on networks sponsored by public institutions is that modern bureaucracies demand documentation. Grants must be renewed, receipts filed, initiatives proposed, and proceedings published. This trail of paper provides a detailed, if skewed, account of organizational work over time. In contrast, the networks assembled and maintained by activists, artists, community groups, and entrepreneurs are seldom subject to such a strict documentary regime. The material evidence of these nets suffers from a combination of neglect, decay, and self-destruction. Their survival depends on the labour of amateurs and enthusiasts working outside of traditional archival institutions. If we wish to write net histories in the future, we must also be engaged with net preservation in the present.

Neglect and decay are twin threats to material history of the Net. By and large, the dominant ideology of the Internet values novelty over memory, a preference that manifests in both active and passive forms. On one hand, old versions of software are not only devalued, but seen as a liability thanks to intellectual property disputes and

unpatched security flaws. On the other hand, online services often age poorly, descending slowly into a tangle of dead links, broken images, and 404 errors.

The problems of neglect and decay are further exacerbated by the enclosure of large segments of the Net by private enterprise (Helmond, 2015). The corporations of the net industries have proven poor stewards of cultural heritage. In 1999, Yahoo! took ownership of tens of millions of homepages from Geocities, and in 2001, Google acquired a large archive of Usenet posts from DejaNews. Within a decade, neither Google nor Yahoo! continued to maintain the public accessibility of these archives, a failure to meet their responsibility to early net culture.

Public archival initiatives for born-digital material make long-term preservation a central concern. Faced with the frantic evolution of net technologies, these efforts struggle not only in terms of curation, but also with methods, tools, and uncertain legal regimes. National libraries and other institutions tasked with a mission to maintain national web archives are caught between short-term demands and long-term priorities. One paradox is the invisibility of collected material, for legal and technical reasons—such as the fabled Twitter archive announced by the Library of Congress in 2010, yet still inaccessible today. Another paradox is the sense of emergency that motivates the collection of cultural materials.⁸ They meet similar predicaments faced by pioneering amateur archivists of born-digital heritage who have developed emergency collecting strategies for moments of crisis, such as the “just-in-time grabs” of Geocities pages coordinated by Jason Scott and the Archive Team. A third paradox can be called the “time-capsule” effect: when one institution or one group decides to create a rough

⁸ The French National Science Foundation has commissioned in 2015-2016 research projects focusing on terrorist attacks. One of them, ASAP, studies institutional web archiving in time of emergency. <https://asap.hypotheses.org/>

archive (sometimes called “dump”), leaving the future users to make sense of it. Such a solution was adopted by the city of Amsterdam to preserve the DDS project. With an operation called “the FREEZE”, a snapshot of the municipal network was intentionally captured for the benefit of “archaeologists of the future” (Went *et al.*, 2016).

Even when the material artefacts of net history are accessible to researchers and enthusiasts, there remain significant costs associated with caring for and maintaining these collections. In many cases, maintenance costs are borne by people working outside of traditional archival institutions. Vital resources for net history such as Textfiles.com, Minitel.org, and the Softalk Apple Project are maintained without the benefit of formal support. To sustain the practice of net history into the future, we must find models for collaboration between researchers and enthusiasts that ensure a fair distribution of resources, labor, and credit.

Beyond having to deal with urgency, accessibility, neglect and decay, some networks are ephemeral by design. In the early 1980s, BBS software for the Commodore 64 was designed to run without a mass storage system such as a hard disk drive. To make efficient use of the spare memory on a floppy disk, these systems maintained a small queue of recent messages, routinely deleting their own histories. Decentralized messaging systems such as Usenet and FidoNet presented a different sort of anti-memory design. Without a central hub to maintain an authoritative archive, the material histories of these networks survive in bits and pieces. Usenet’s customs have relied for a long time on servers’ administrator choices to keep or delete their newsgroup archives—which, in times of scarce server space, could be no longer than a week. Newsgroups listings and content were sometimes printed by the labs connected to the network, allowing researchers to retrace micro-histories of Usenet users even with no born-digital sources. Finally, we must consider areas of the Net designed to evade

surveillance, such as the encrypted social media systems described by Robert Gehl as Dark Web Social Networks (DWSN) (2016). Secret, secure systems from the past leave a void in the material record in the present. Thus, researchers need to be resourceful at finding new methods, sometimes highly technical, to retrieve hidden data or supplement lost documents.

Conclusion

Internet Histories represents a new field of scholarly inquiry, a transnational network of researchers attempting to understand how this network of networks diffused through so many different social, political, geographic, and technological domains. One of the key challenges facing this emerging field is the elasticity of the term “Internet” itself. How can one history contain the experiences of ARPA-funded researchers at Stanford in 1976 and an elderly mobile phone user living in Beijing in 2017? In the face of the essential plurality of the Internet, we propose the researchers adopt an alternative approach to internet historiography rooted in the experience of users. Rather than pursue a strictly defined, singular Internet, we argue that the notion of “net histories” allows for a broader array of computer-mediated social worlds, unstuck from the narrow definition and US-centric history of the Internet.

To arrive at new operational definitions of the Internet, we advocate the pursuit of hidden histories, obscure sources, and less visible networks, stoking new life into vernacular terms such as “the Net.” Taking a net historical approach is no easier than taking a traditional route, of course. Net histories depend on a diverse array of sources, many of which challenge our conventional methodological tools and theoretical frames. In the absence of institutional collections and formal archives, we will dig through the detritus of lives lived online, engage with the complexity of social memory, and learn to

make peace with absences, silences, and deletions. Just as the Net was imagined as an infinite expanse of gateways, login screens, file repositories, and systems to explore, Net history is without clear boundaries, a tussle of meaning and mechanism.

Finally, the notion of net histories recalls a time when the cultural meaning of the Internet was still uncertain. After their first encounters with the net, many enthusiasts believed it to be a communication technology that was always-already counter-cultural, somehow readymade with an “alternativeness” to broadcast media (Tréguer, Antoniadis & Söderberg, 2016). As naive as these early notions may seem today, amid mass surveillance by states and startups, net historiography will require us to find empathy with those who enlivened the early Net with dreams of freedom and openness. What was it about these modems, servers, pseudonyms, and stories that so many thousands of people, across so many diverse contexts, could come to believe that a singular, unified “Internet” connected them all?

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