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# Facebook Data Storage Centers as the Archive's Underbelly

**Mél Hogan**[1]

**Abstract**

As the quintessential digital archive, Facebook no longer requires an introduction; its user-base is currently estimated at one billion profiles. On the front end, it is the epitome of the postmodern living archive. Its underbelly, however, remains much less explored and theorized. What kinds of servers are required to host such large amounts of "free" information, offering up data so rapidly, across so many platforms? Taken together, these pragmatic questions inform an important theoretical intervention: these dislocated centers—existing in "enterprise zones" and arctic hideaways—not only effectively blind us to the potential environmental costs of our everyday obsession with self-archiving but also demand a serious revision of the preservation ideals that underpin the archive. This article offers up a series of provocations about data storage centers, as the archive's underbelly, with the intent of reconnecting Facebook to the bodies and machines that enable it and the ideals that inform it.

**Keywords**

culture, environment, Facebook, Internet, new media theory, technology

## Introduction to the Underbelly

As depicted in the film *The Social Network* (2010), the idea of Facebook emerged from a group of math and programming savvy friends, led by Mark Zuckerberg, with a desire if not desperation to connect and to have those connections serve as visible markers of their social ranking. That concept proved appealing to the college students it was first catering to, but it also quickly gained in popularity outside of the academic realm.

[1]University of Colorado, Boulder, USA

**Corresponding Author:**
Mél Hogan, University of Colorado, Boulder, 1032 Ridglea Way, Boulder, CO 80303, USA.
Email: info@melhogan.com

On February 4, 2004, Facebook shifted from a dorm-room pastime to a corporation: more people were hired to run the Facebook website, and space was leased to match the size of the enterprise and its ambitions. In less than one year, the site reached one million users, and by September 2012, that number of active members had multiplied a million times. As demonstrated by its unrelenting growth and near global reach, Facebook has become the de facto living archive, collecting perfect trivia from and for almost everyone. As *The Wall Street Journal* put it in 2012, "Mark Zuckerberg has just six billion more people to go" (Fowler 2012), a number that has dropped to five billion in less than one year later (Facebook 2013). This user-base generally measures the success of Facebook on its ability to connect billions of people across the world and the social networking it so easily enables. Conversely, Facebook's growth is rarely discussed in terms of a material network or material consequences. More specifically, the very machines used to manage perpetual user requests are seldom mentioned in relation to the social network: the servers (Bennett 2010; Berland 2009; Blum 2012; Chun 2013; Cubitt et al. 2011; Gabrys 2011; Maxwell and Miller 2012; Parikka 2012, 2011). This issue of materiality is often sidestepped on blogs and in journalistic writings in favor of stories that cover the platform's potential for advertising, predictions about its future (and the future of the Internet), and check-ins on Mark Zuckerberg (Locke 2007). The material impacts of Facebook's perpetual feed, as a streaming archive, also remain understated in academic research, addressing instead urgent policy, privacy, and surveillance concerns (Cohen 2008; Shepherd 2012)—the ownership of user-generated content and capitalization through "big data" (boyd and Crawford 2011), and identity and user behavior analyses (Marshall 2012) as few examples in a growing body of literature dedicated to the platform.

Facebook has not been carefully addressed as an environmental concern in media scholarship for a multitude of reasons. Dubbed as our "love affair with technology," Maxwell and Miller (2012, 4) argue that much of the critique within media and communication studies demands self-reflexivity; what facilitates our research is precisely the devices that are at our disposal, the very technologies scrutinized here, through Facebook. In other words, there is a privilege inherent to research that not only investigates new media as a site of inquiry but also draws from it as its main (if sometimes only) source of information and its most important tool and method (Mayer 2012). Within the realm of environmental media, ignorance becomes part of the equation largely because of the rapid obsolescence of technology, which not only serves to break the connection of users to "old" devices but also makes invisible the intergenerational effects and impacts both people and planet (Gabrys 2011; Maxwell and Miller 2012). Like the subject at hand here—computer servers—much of the how and who and why remain at the level of the sublime and the magical.

Many questions remain unanswered about Facebook's social, political, material, and environmental impacts. These questions are crucial to a scholarly investigation about Facebook and any or all analyses that attempt to address digital circulation through social media. The emphasis here is on the relationship between such vast data streams and their containers, and, more precisely, how the understated connection between personal data and storage demand a re-visioning of the so-called living

archive through data storage centers. The series of questions that launch my exploration are, "What kind of infrastructure and technologies are required to host such large amounts of 'free' information, offering up data so rapidly and across so many platforms?" "How does Facebook's advertising strategy inform how power is pulled from the grid? How do its servers function?" "How are they powered?" "How many are there?" "Where are they located?" "What are the database logics (and assumptions) that inform the relationship between Facebook and the archive?" "What is wasted?"

The intention of my intervention is to bring to light the questions themselves, and while some of them are answered in this piece, the scope and vastness of the issues that stem from the question themselves serve as a call to media scholars to take on and expand from what is raised here.

Taken together, these pragmatic questions inform an important theoretical intervention: these dislocated servers—existing in "enterprise zones" and arctic hideaways (i.e., the "Node Pole")—not only effectively blind us to the potential environmental costs of our everyday obsession with self-archiving but also demand a serious revision of the preservation ideals that underpin the archive (O'neill 2011; Srinivasan 2009). If, as stated by Jennifer Gabrys (2011, 39), "Information, in all its fleeting immateriality, bears a direct relationship to this landscape," then what choices are we making about how this so-called global online "archive" should run? What are our expectations? Who benefits? What are the costs? And (how) are these impacts measured? My reading of the issues raised by these questions has been that the disconnect between the materialities of the Internet and the culture that develops from it reveal a cycle of waste that is not only about devices and technologies but also about identity and meaning-making. Following this, the archival impetus that has long been instated to document and preserve stories and histories—even, and perhaps especially, through critiques of the archive (Arondekar 2005; Cvetkovich 2003; Spivak 1999; Takahashi 2007)—is seriously displaced by data repositories of this ilk. This is why the archive becomes an effective lens through which to explore data centers, by posing questions about what it—big data aggregation—disrupts about the way we can understand ourselves over and through time. The archival framework, insofar as it can allow for considerations of continuity and intergenerationality, also demands that the cycle of waste consider the relationship of data in relation to the means of production and disposal that flank the culture of use. All of this is contained, framed, and housed within the politics of data server storage. Where server farms are located, and how they affect those communities, is presented here against justifications based on efficiency as well as our growing reliance on the Internet to tell us who we are and who we are connected to.

In *Digital Rubbish: A Natural History of Electronics* (2011), Gabrys nuances the incarnation of digital information with a focus on the devices on and through which information travels. Countering new media hype, she brings attention to the cultural processes that make media fail, and in turn, the politics and ramifications of (often planned) technological obsolescence. Similarly, in *Greening the Media* (2012), Richard Maxwell and Toby Miller diagnose an increasingly wasteful culture, enhanced and encouraged by devices that are quickly replaced and put out of use. In this book, they also report on data servers that use the same amount of electricity as small cities,

and consequently, on the exponential growth of electricity consumption, and the invisibility of the damages incurred by the overconsumption of online data.

What follows is aligned with Gabry's, Maxwell and Miller's (and others'), challenge of weaving together the political, spatial, infrastructural, and social impetuses of the digital archive situated in an "always already material landscape." As such, this piece offers up a series of provocations about data storage centers—hidden in plain sight—as the archive's underbelly, with the intent of reconnecting Facebook to the bodies and machines that enable it, and the ideals that inform it. It also serves to demystify the materialities of the Internet as informed by emergent archival theory and as necessarily interlocked with environmental concerns—two fields of research that for now remain neglectfully separate.

## Dirty Data

In 2013, Facebook no longer requires a detailed introduction; an update of its user-base, which is currently estimated at one billion active monthly users (give or take a few fake accounts), is normally sufficient to make a point about its social impacts. On the front end, it is the epitome of the user-generated platform and of the living archive. Its underbelly, however, remains much less explored, theorized, or accurately imagined: "The architecture of data storage is inhuman. Servers don't need daylight, so the spaces are lit by blinking power lights or eery fluorescence instead of windows" (Chayka, 2012). Beyond the failed aesthetics of this inhuman yet pulsating underbelly, the reason intellectual and creative focus keeps to the front end is, for the most part, obvious: it is an addictive social network where everything exciting, funny, dramatic, and important is happening in real time, all the time. It is visible and interactive. The social network lets you reconnect with long-lost friends, becomes your virtual business card, and forces you to track your own life along a timeline (Wehner 2012). Facebook is so pervasive that it eats up anywhere from 9 percent (Protalinski 2012) to 25 percent (Van Camp 2010) of Canada's and the U.S.'s Internet traffic. In 2012, it accounted for one out of every seven minutes spent online (Protalinski 2011). We collectively "like" things two million times a minute (Leber 2012). We upload three thousand photos every second. We ingest more than five hundred terabytes of data every day (Chan 2012). Our usage seems infinite, if not humanly incalculable.

However, critics have been many to question Facebook's raison d'être. A quick Internet search reveals that everything from its shady terms of use to its dubious advertising models has been openly picked apart by technologists, scholars, and users alike. Ironically, the platform is so ubiquitous that it itself sometimes becomes the vehicle, mobilizing agent, and tool for dissemination for these causes (*Greenpeace: Unfriend Coal* 2012). While much has been done to identify and problematize the ways in which this kind of ongoing activity can be constituted as free labor (Terranova 2004) or immaterial labor (Hardt and Negri 2000), even these important scholarly contributions have failed to draw attention toward other kinds of invisibilities—those that facilitate, and literally power, our nonstop networking on and through various interconnected devices. To the point of my intervention, the central problem revolves around how

these invisibilities are conveniences that facilitate the blind and perpetual archival machine and, in turn, inform or distort the politics of preservation on which the archive is built.

According to a Greenpeace (2011) report—*How Dirty Is Your Data?*—the Internet servers consume upward of one and a half percent of our global electricity. Understood in more concrete terms, this means that if the Internet (i.e., cloud computing) were its own country, it would rank fifth in global electricity use (Greenpeace Blog 2011). According to the same report, Facebook's U.S.-based data centers are each consuming the electricity of approximately thirty thousand U.S. homes. While at the quintessential hub, pulse, and record, of the action, Facebook alone can hardly be made responsible for the collective consumption and data-sharing it enables. Users participate in this mass exchange. They are consumers of both the data and the electricity it requires to flow bits down the tubes. That being said, Internet flows are not all equal; Facebook carves out the means by which its current is consumed. As one blog commentator points out, "Facebook is a bandwidth hog; it forces frequent reloads of complex, data-heavy pages so as to increase its ad presentations (and, hence, its revenues)" (Higginbotham 2012). Another blog comment reinforces this idea by suggesting that "Facebook is an advertising company, with a social media platform built in" (Shoebridge 2012). Considering the strategy that informs this potentially excessive use of electricity—bandwidth, content reloading, and refreshing—what are the politics of this kind of power purging? Could Facebook reduce its pull from the grid by devising an alternative, "green," advertising strategy? Users have reported using AdBlock (a browser extension) to diminish their bandwidth use from Facebook ads, but this falls short of elucidating the complexities of the concerns it raises (PC Help Forum 2012). This example serves not the explicit intention of debating ongoing ecological and ethical choices made by the company but rather to point to one instance that suggests that our interactions with data, and the movement of data online, are imbued with a rarely discussed push/pull politic. Arguably, this politic is about the archive as it will increasingly be understood and defined.

What constitutes the archive has been a topic of much debate, especially with the advent of user-generated sites, which often bypass traditional processes and yet supplant archival institutions in terms of both size and technologies (Stalder 2008). Internet Archive's Wayback Machine, which collects snapshots of the Web's past; YouTube's incomparable video collection; and Google's scanned book project are each examples that have opened up the idea of large-scale online repositories as archives. As a continuation of this (still disputed) (re)definition, attention should be drawn to the invisibilities of the archive surfaced by Facebook and its underbelly. Comparable assessments could be made for Apple, Google, YouTube, Amazon, and so on, all of which share attributes of this growing archival conundrum around storage and electricity that sidesteps access at a very material, concrete level.

Everything we do online, and on Facebook, triggers servers as a means to locate and return data.

This is becoming ever more the case with the shift to apps and streamed content, which favors constant connection to a decentralized database in the cloud, over local

(i.e., saved to your computer or hard drive) media collections. Data storage exists as clusters of clusters: rows of stacked servers inside stadium-like data centers, and increasingly, in zones reserved for these facilities to proliferate as "enterprise zones" (Esteve 2012). The size and location of these data centers are directly correlated to our digital demands: Web searching, profile updating, poking, liking, watching videos, making purchases, file sharing, messaging, and so on. These perpetual demands—doubling globally every eighteen months (Walton 2012)—require a lot of energy from servers, which in turn generate a lot of heat. To avoid a meltdown—literally—energy is, therefore, also required to cool down the computers (Teicher 2012). While the ecological impact of these transactions—heating and cooling—is certainly at the heart of any critical analysis of Facebook such as this one, it is the justifications themselves (for the energy spent) that offer the richest theoretical terrain to explore.

Facebook does not reveal how much energy it needs to maintain its estimated 180,900 servers, but electricity remains the company's largest expense (Gruener 2012). Facebook's data storage centers are among the tens of thousands of data centers that have been constructed to support the explosion of digital information in the last few years, lifting power from the largest power grid in the world, most of which is derived from burning fossil fuels (Martin et al. 2013). These costs have pushed companies with large data sets, such as Facebook, to develop more "efficient" data centers, though this efficiency has only slight resonance with ecological thinking, as most data centers remain coal-powered (and therefore further increasing fossil fuel use), despite the plausibility of carbon emissions free alternatives (Cubitt et al. 2011; Kaufman 2010). For companies who rely on storage centers of this ilk, efficiency is, instead, a matter of speed; to deliver data more effectively is by logic a reduction of the energy used to achieve the same task. As such, the Facebook archive is adapting to increasing demand not by measuring its ecological and physical impact but rather by investing further in its ability to do more within the same facilities, by upgrading its technology (as exemplified by its Open Compute initiative, sharing plans for storage center architecture and best practices).

## Faces of the Archive

This upgraded archive is always "on" and always able to deliver content. But by the same token, it exists in a state of constant potential. Facilities operate at their full capacity at all time, regardless of the actual demand, which means that an incredible amount of energy is reserved for idling.

The entire process—much of it redundant—is constantly backed up (often using polluting generators), in case of a power outage, activity surge, or glitch in the system, to ensure immediate and seemingly uninterrupted service. Systems are monitored around the clock; engineers are on hand to analyze and resolve production issues twenty-four hours a day, seven days a week; and staff remain on call to respond to problems, simultaneously generating and dealing with a poverty of excess (Rossiter 2012).

This may be the single most telling insight about the archive—the ideal of instantaneity imparted onto it by users who are simultaneously creating and subjected to such an unsustainable modality. The cost of such instantaneity is that almost all the energy that goes toward preserving that ideal is, literally, wasted. As documented in *The New York Times*, more than 90 percent of servers is reserved for and used for standby only, while the remaining 10 percent is used for computation (Glanz 2012). These figures continue to grow in tandem as demands multiply: but to what end?

As Cubitt et al. (2011) argue, in an inquiry into Google servers similar to mine with Facebook servers, sustainability is very much connected to our understanding of how the Internet works and how digital artifacts circulate. Both rely on material infrastructures. Information online in not, in fact, green, weightless, and immaterial. As other natural resources previously underestimated and mismanaged—oceans and forests, for example—markets and digital information are new, and perhaps more ephemeral confrontations about excess, pointing to a limit in terms of growth. Rationing information will become a necessary step given the current expansion rate of data, a model currently set to fail because it denies its own limitations. Data collection in storage centers like Facebook is based on the idea that we can continually match the growth of data to physical storage centers.

Data centers manage not only the constant streams of data but also "past" data, including bytes upon bytes of user data that lies dormant, abandoned blogs and cached e-mail, filling server upon server. In 2010, Facebook was storing more than 135 billion messages per month to parse volatile temporal data from rarely accessed data. This means that copies of the data are optimized for the age of the content (Essers 2012) and that not all data are considered equal in the archive's fabric. As Cubitt et al. make obvious, archivists have known for decades that appraisal is a political and intentional gesture of filtering important information within a specific context. It is explicitly about not accumulating everything. That problem of the mentality of Facebook (and more recently, the NSA's plea to "collect it all") is that it "spills out of libraries and media archives into public space" (Cubitt et al. 2011, 155; Greenwall 2013). For Facebook—straddling the corporate archive and public space—this preservation concern is about perfecting the ability to quickly respond to live data demands by storing older data in a more cost-effective manner, a solution said to be located in layers of software rather than one drawing from theories of appraisal or frameworks to establish value.

One telling anecdote that challenged the way Facebook determined layers of data and user access to the past is that of law student Max Schrems, of Vienna, Austria, who under EU law was entitled to request his data set from Facebook (O'Brien 2012). In December 2010, after using the social network for three years, he demanded from Facebook a copy of all the information they had collected through his profile: he was sent a 1,222-page PDF (O'neill 2011). This PDF outlines "records of when Schrems logged in and out of the social network, the times and content of sent and received messages and an accounting of every person and thing he's ever liked, posted, poked, friended or recorded" (Donohue 2011; Europe vs. Facebook 2012). In this same

article, Schrems is said to have remarked his amazement at the time about "how much *it* remembers" and "how much it knows"—deleted posts or posts that are set to "private" fall into the same data bank as public posts in the Facebook archive (Cheng 2009). In this way, Facebook forcibly collects not only media assets but also—and more importantly—it tracks data on the minutia of our habits, locations, and connections, which begin to shed some light on the potentially darker and more evasive and contradictory value(s) of the social network. Facebook recently removed the option to download "wall" posts (Delta 2013). They argue for a "shared knowledge" economy in their "Is Connectivity a Human Right?" document, where they write, "If you know something, that doesn't stop me from knowing it too. In fact, the more things we all know, the better ideas, products and services we can all offer and the better all of our lives will be" (Facebook 2013). They are using an argument that normally pushes progressive solutions to knowledge management (Lessig 2004, 2007; Murray 2004), a "non-rivalry in consumption" position that suggests that unlike material objects, sharing is not limited to a number of copies available. However, in a context where privacy is completely overlooked, sharing means something utterly different. Yet, for Facebook, there is no difference between data; no notion public and private.

Facebook has since made it much more difficult for users to access their data in the manner Schrems was able to, according to *Europe versus Facebook*. Users can now gain access only to their own profile archive, and thus a fraction of the information collected, without a turnaround-time delay imposed by law. Facebook considers its user data as its intellectual property and retains, among other things, face recognition data as a trade secret. However, data collection is not contained to use within the platform: even when users are logged out of Facebook, its cookies continue to crawl and gather data on users' clicks (Cubrilovic 2011). By simply reading an article on the Web, or listening to a song online, for example, that content can be shared on behalf of the user through Facebook, without their explicit consent (Hacker News 2011; Hill 2011). On January 15, 2013, Facebook announced a tool called Graph search, which according to Zuckerberg, puts data back in the hands of its users, allowing them to dig through years of data collection from friends: "It knows which parks your friends like to take their children to, or which pubs they like to visit, and who among their network is single and lives nearby" (Sengupta 2013). The problem with this archive is that aggregation says more about us than we consciously know we are making available. Tracking at all these levels demonstrates the extent to which the social network itself generates a parallel archive, of movement, recording the interactions of the network itself, as a simultaneous—but exponentially bigger—living archive. This parallel archive may come to make correlations about ourselves about which we are not yet aware. But, given the distance from our data and the kind of storage afforded by mobility and the cloud, users remain detached from the contradictions, which, I argue, are embedded in the process itself. Framed this way, the living component reemerges with the framing of Facebook as archive with a particular point of emphasis: permanent exchange between nodes, rather than storage (Ernst 2003) or, as Chun (2013) proposes, technological memory as a "technological organ," collectively (re)constructed (and recontextualized) in the present rather than collected and preserved from the past.

## From Crook County to the Node Pole

Most users are unaware of the processes involved in being online, where a simple Facebook status update can travel thousands of kilometers in Internet conduits through numerous data centers, processing tens of thousands of individual pieces of data, before "arriving"—in a matter of seconds—to its (various) destinations. With these processes, the Internet has completely thwarted our notion of time and of space. The fact that the essence of Facebook exists in undisclosed and highly protected storage centers only heightens the idea that this distance between users and the data they generate (in terms of content, habits, and networks, etc.) is necessary to maintain the archival illusions of continuous uninterrupted access.

Locating the specific sites of Facebook's data centers is next to impossible for researchers, as companies do not disclose this information and the sites themselves—often in innocuous and far away buildings—are heavily protected. Images of these recent data storage centers are also, as of yet, not part of the Google Maps and not yet "surveillable" via Google earth. This guarded distance between users and their data is painfully provocative.

To support the growing activity of its social network since 2004, Facebook has built several data centers, including its first non-U.S. facility. This offshore storage center is made to metaphorically accommodate the 70 percent of Facebook users who live outside the United States. Facebook also leases server space in nine or so data centers bicoastally (Miller 2011).

In 2010, Facebook built its first data storage center in Prineville, Crook County, Oregon, at the cost of 210 million dollars (Bacheldor 2012; Van Allen 2012). The storage center in Prineville was built on vacant grounds, on a high plain above the small town, exposing its 147,000 square feet of beautiful architecture, while remaining conveniently out of sight. The facility created fifty-five jobs at Facebook proper, while the construction and initial setup have been said to have reinvested seventy-five million back into the local economy (Cascade Business News 2012; Laycock 2012). The power used at this storage plant to power the social network matches the power used by all of Crook County (twenty-eight megawatts of power). In terms of electricity consumption, the requirements of virtual life are matched to those of surrounding lived realities. However, according to journalist Andrew Blum, the trade-off seems entirely justified given the efficacy of these storage centers in the services they provide (2012).

Crook County is an industrial zone—and this becomes one of the favorable sustainability arguments as these are areas are themselves recycled from energy-intensive industries that once occupied the grid "so there was excess capacity on the grid to be tapped and no new power plants were required to serve their energy needs" (Ecotrope 2012). This, along with huge tax breaks, makes it highly affordable for expansive "nonutility" companies like Facebook to sprawl out. The justification for the location of the center in Crook County is, however, a supposed concern over seismic risks and temperature: a cool climate makes the operation less costly as cooling servers remains a huge problem. Despite this, Facebook also at this time designed servers that could withstand more heat (nine or so degrees more) so as to require less cooling.

Even before putting this first Prineville center online, Facebook announced in November 2010 the construction of its second storage center—this one twice as large—in Forest City, Rutherford County, North Carolina. This center—which will see forty-two new jobs created at Facebook—replaces a former factory overtaking the now unraveled textile industry, demolished and cleared for the construction of the new 450-million-dollar storage facility, designed much like the previous one in Prineville. Also, in keeping with the "industrial zone" notion in Oregon, Rutherford County, Governor Bev Perdue hopes that Forest City will refurbish these power ruins to become "a global business destination" (Crowley 2010) where special tax breaks crafted specifically to appeal to "data-centric companies like Facebook" are meant to encourage others to follow suite (Bracken and Pittman 2010). Not all were in favor of its development. Ellie Kinnaird, a Carrboro Democrat, voted against the data center bill summer 2010 because, as she puts it, "This is just an outpost for big servers . . . Have we brought that stimulating, intellectual talent here? No" (Bracken and Pittman 2010). In this sense, Facebook storage centers seem to function more as gated islands than integrated facilities, but the profile page dedicated to the center contradicts this perception for the virtual world looking in: it boasts of its ecological awareness, community involvement, and local developments. In this example, if we apply the same logic as Schrems anecdote, of Facebook as an archive that tracks itself and generates its own timeline and set of correlations, the Forest Hill data center's history will be fully imbued with ecological awareness, and Facebook will have the data to "prove" it. The histories created by Facebook data are significant, especially if and as it serves as the most visible, most widely accessible, and the most detailed public record, or to what Parikka (2013) might refer to as a form of pollution of and within a media ecology. Media ecology, in this example, serves to shift the largely reinforced dichotomy between nature and consumer, of nature. It further demonstrates the extent to which our very understanding of the ecological crisis is mediated and mitigated through technologies, limiting if not posing a challenge to the tools at our disposal to counter platforms that have come to dominate the media landscape, such as Facebook.

The third and most recent storage center to be built by Facebook is to be in Lulea, Sweden, a town of fifty thousand residents. Here, again, and perhaps more believably, Lulea is an ideal location with its cold climate serves with the hopes of working off electricity derived entirely from renewable sources. Its regional power grid is said to be extraordinarily reliable—no disruption of service since 1979—leading Facebook to cut out seventy percent of the generators it relies on for backup at the U.S. facilities, which in turn means less diesel fuel storage on-site and fewer emissions. At all locations, the backup generators are generally tested monthly, so the reduction is important. The ultimate goal is, presumably, to follow Google's and Yahoo!'s lead and use the network itself to reroute data in case of a power outage at a particular facility (Miller 2011). This strategy requires major network capacity and multiple data centers and so remains a possibility only for very large-scale operations.

With arctic temperatures, the area has a natural way to cool servers, and, according to *CNN*, the town has "cheap and plentiful electricity" (Mann and Curry 2012). As with the previous two sites, in addition to cheap electricity, cool temperatures, and tax

breaks, Lulea also has few inhabitants and fewer prospects still for economic growth, beyond the enticing option of opening up the "Node Pole" to Facebook and other data centric companies. In all cases, desperation seems to be a locative factor, mitigated only by the fact that the clusters of storage centers are out of sight and out of mind. This third Facebook facility—which is in itself three complexes—is estimated to be fully operational by 2014. Each of the three complexes is equal to the one in Forest Hill, which was itself double the size of the previous one in Prineville. Like the data growth itself, the storage centers are proliferating at exponential rates, in size and speed.

## Living Archive

Facebook's data storage centers are recent innovations. An early exploration offers a vantage point that allows for reflections on the matter that informs the history of the Internet at a time when data growth is starting to become, among other things, an issue of control and containment. As demonstrated in this short article, the consequences are at once immaterial and material. This duality reminds us of the ways in which digital culture functions: largely because of the metaphorical distance we afford it (from our mobile/wireless devices) and due to the ways in which we justify our needs for connectivity despite the complexities with which we are passively confronted. In this way, data storage centers are the hidden monuments serving as perfect metaphors for our current priorities.

If we imagine Facebook as a prototypical global archive in the face of mass data creation and circulation—as our billion plus participation seems to indicate (Vance 2012)—we are faced with the "always on, always available" connections it enables through us (and perhaps our own desire to always be on). By looking at the politics of these data centers, we come to understand the material space of the Facebook archive, the electricity that powers the machines, and a virtual ethersphere that produces bigger records than the lived realities it records, as a politic of preservation that is, on the one hand, successfully inhabited and, on the other hand, dangerously reconfigured and protected as such. This brings us back to the notion of the living archive, beyond the metaphysical hope of becoming immortal by being someday wholly uploaded into a computer (Lanier 2006). Lanier's metaphor, in dialogue with Geert Lovink and Wolfgang Earnst, serves to conjure up insightful interventions into how the living archive distorts time. A present time, against which a past time is compared, displaces and dissolves the emphatic in favor of the flow, the context in favor of what connections allude to. However convincing the tie between the living archive and life itself seems to be, for media scholar Lovink (2013)—in conversation with Ernst—what is embodied is no more alive or dead in terms of the ability to trigger memory. He argues that outside of institutions mandated to deal with knowledge management and preservation, the archive can increasingly be understood as embodied and as built into social networks if not in people themselves. For Lovink, we are the "living" entities of the archive, rather than stale and static documents. To this, Ernst adds "in this hegemonic ideology, knowledge only exists if it

is up-to-date and can operate strategically, not hidden somewhere in a database," further invoking, in light of Facebook, both the urgency to reconnect bodies to machines and data, and to draw attention to the machines that risk making sense of data, to then organize bodies accordingly. The Facebook archive can easily be framed as panopticon, an archive of surveillance that can make finally tuned predictions serving specific ends. Framing Facebook as an archive then, as opposed to mere storage or container, is important in that it brings to surface the political connections between data and the ideals about the past and future that underpin and continuously reshape what we mean by life, death, bodies, and memories and their preservation.

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## Author Biography

**Mél Hogan** is a postdoctoral fellow in digital curation in the Department of Journalism and Mass Communication at the University of Colorado, Boulder. Her research to explore the failures of the (promise of the) archive, feminist media archaeologies, and the politics of storage and memory. She is also the art director of online and print-on-demand journal of arts and politics, nomorepotlucks.org; on the Advisory Board of the Fembot collective; on the Administrative Board of Studio XX; a Research Design Consultant for archinodes.com; and a Faculty Fellow at the Media Archaeology Lab.