DRAFT:
Hoarding the ethereal: How we have more things (and more problems) but with less clutter
By Gayle Gatchalian

"21st century minimalism" may find a metaphorical equivalence to Martin Luther's 95 theses, a radical reaction to the excess of information in the 21st century as much as the 95 theses were a reaction to the excesses of religious authority in the 16th. Our world is one of informational abundance. There are more books, television shows, websites, and all sorts of other media messages, created every second than we can process in ten lifetimes, so 21st century minimalism emerges as a counter to this deluge. Adam Boettiger, a digital marketing veteran is writing a book entitled "Digital Minimalism" and put the sentiment behind the movement quite aptly: "In a World of More, Better, Faster, Cheaper, Less is More. Less is Better"[1]. But *why* is less better? Kelly Sutton, founder of the website CultofLess.com which wasmade famous by a BBC News feature, said simply that "I've found that more stuff equates to more stress. Each thing I own came with a small expectation of responsibility"[2]. At bottom, the essence of 21st century minimalism is a simple attempt to simplify life, to recover a sense of control from the inundation of information. Now that Kelly Sutton has divested himself of his possessions save two boxes and two suitcases, is his life infinitely simpler than before?

While the project of reducing the clutter of one's property is a minimalist endeavor, it appears to skip an essential component of purging one's property.. The "encumbrances" of personal, identity-forming, memory-related artifacts such as music, photos and books, that notion of responsibility Sutton identified with the ownership of physical property appears not to apply to these digital artifacts, when in fact it was the ability to offload these encumbrances to a hard drive that allowed Sutton to do CultofLess.com at all: "he says he got rid of much of his clutter because he felt the ever-increasing number of available digital goods have provided adequate replacements for his former physical possessions" and that his "external hard drives and online services like iTunes, Hulu, Flickr, Facebook, Skype and Google Maps allow[ed] him to lead a minimalist life". It is interesting that while Sutton is able to *retain* ownership of media artifacts, albeit in digital form, he finds this liberating, when in fact his initial premise is that the ownership of anything at all is stressful. He even stated in the BBC article that with a "cutting down on physical commodities" means "replac[ing them with] digital counterparts"[3]. And indeed, of the few things he retained, it was his access points to his digital property that survived: an tablet computer, an e-reader and a laptop. Digitizing property, I would argue, is not the same as divesting, for it still allows you to have everything you used to… it is just neatly compacted into a hard drive, or, with the rise of cloud computing, distributed out in the cloud. It is an illusion of less while having more.

Another 21st century minimalist featured in the same BBC article was Chris Yurista, a DC-based DJ, who argued another point of appeal for subscribing to this lifestyle: "his new intangible goods can continue to live on indefinitely with little maintenance". Indeed, while vinyl records

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[1] "About", accessed March 13, 2011, http://digitalminimalism.com/about/.
[2] "Here We Go…", Cult of Less Blog, September 14, 2009, accessed March 13, 2011, http://cultofless.tumblr.com/post/187688510/here-we-go.
[3] Matthew Danzico, "Cult of less: Living out of a hard drive", BBC News, August 16, 2010, accessed February 15, 2011, http://www.bbc.co.uk/news/world-us-canada-10928032.

"snap and wear down over time…. mp3s don't". He did add a caveat, however, "worr[ying] frequently [that] hey may lose his new digital life to a hard drive crash or downed server"[4]. The lifestyle allows one to easily have it all… but also, to lose it all just as easily.

Sutton and Yurista's arguments point to the technological innovations that have allowed them to pursue this lifestyle: the digitization of media artifacts and cheap storage. But it also points to the contradictions therein: one ends up being a digital hoarder and life is more complicated, not simplified, by these technologies. In this paper, I first interrogate what makes 21st century minimalism possible and introduce the notion of 'liminal materiality'. I then argue that 21st century minimalism's principles actually contradict its purpose, discuss the implications of such a lifestyle and advance Viktor Mayer-Schönberger's argument to "delete" as a response to these developments.

Digitization and liminal materiality

The digitization of media artifacts is a subset of the digitization of information in general. It is the ability to represent material objects in binary code, "translating sensory information into discreet states"[5] that "all equipment is- at least in principle- able to handle". Prior to digitization, media had a one-to-one relation with the content they held, for instance, paper only held text or photos and vinyl records only held music. With the digitization of information however, media technology has become content-agnostic, having a one-to-many function in that "[a]s long as information can be digitized, it can be stored on a digital storage device, irrespective of… type"[6]. Referring to the functionality of media as a 'holder' of something speaks to the notion of media as "container technologies".

The concept of "container technologies" can be traced to Lewis Mumford, who, in his 1961 book, *The city in history; Its origins, its transformations, and its prospects*, identified containers such as baskets or jugs, as an oft-ignored technology. A close reading of his 1967 book, *The myth of the machine I: Technics and human development*, led Strate and Lum to conclude that writing itself is a container technology, one that did not however, contain material objects such as fruits or water…it contained ideas[7]. Zoë Sofia expanded on this notion, extending the categorization of container technologies to all communication media technologies in general such as "books, photographs and albums, the television, the stereo, cassettes and CDs[8]. She pointed to these container technologies as functioning like human memory, perhaps anticipating the concerns Mayer- Schönberger will, almost a decade later, raise: "[w]orking analogously to the holding functions of memory… these electronic and print media are storage technologies for other spaces and experiences"[9]. Her observation that "the computer… is basically a storage technology for data"[10] sets the stage for the next usage of container technologies and anticipates

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[4] Ibid.

[5] Viktor Mayer-Schönberger, Delete : the virtue of forgetting in the digital age, (Princeton: Princeton University Press, 2009): 54.

[6] Ibid., 55.

[7] Lance Strate and Casey Man Kong Lum, "Lewis Mumford and the ecology of technics", Atlantic Journal of Communication 8.1 (2000): 68, 71.

[8] Zoë Sofia, "Container Technologies" Hypatia 15.2 (May 2000): 189-190.

[9] Ibid., 190.

[10] Ibid., 188.

a time when the term "data" will come to encompass media that were once distinct, i.e. the computer does not distinguish between song, photo, or document files. Writing in an era of now-pervasive digitization, Jonathan Sterne picked up on the notion of "container technologies" to argue particularly for digital media technology, exemplified by the mp3, which is a container for recorded sound[11].

Indeed, from the perspective of the evolution of the notion of container technologies, one sees that the history of media artifacts as cultural objects is essentially a history of media/communication container technologies, from the **analog container technologies with a one-to-one functionality** of stone or paper holding text and images, photography, vinyl recording, audio/video recording on magnetic tapes[12] to **digital container technologies with the one-to-many functionality** of floppy disks and disk drives, from magnetic, to flash, to solid-state and beyond. Digitization's conflation of once-separate media artifacts into indistinct "data" hints at a fundamental change occurring at the level of media's 'thingness'. In arguing for the status of the mp3 as a cultural object, Sterne hits upon this key transition, from materiality to what I call 'liminal materiality'.

As observed by musician/DJ Philip Sherburne in his review of a DJ computer program: there is an "ongoing dematerialization (or perhaps a better terms could be 'micromaterialization' since even mp3s live in silicon, invisible as they may seem)"[13]. It is not dematerialization because the object still exists in some accessible form, though mediated through an access point such as the computer. Micromaterialization is a slightly better description because the artifact does get miniaturized in that it occupies a negligible volume in physical space, however it does not quite capture the state of ethereality that digital media artifacts have. What digitization does to cultural objects such as books or photographs is take them from the graspable material world and plant them in the 'liminal' space *between* the material and the immaterial, thus creating liminal artifacts.

It is the term 'liminality' that best captures the <mark>unique</mark> existence of digital media artifacts. Writing on rituals, British anthropologist Victor Turner explored the condition of liminality in a tribal rite of passage, that condition where the individual is "betwixt and between space", not belonging to the segment of society whence they came yet not yet belonging to the next segment of society they are supposed to join[14]. Merriam-Webster defined liminal as "of, relating to, or being an intermediate state, phase, or condition: in-between, transitional"[15], while Oxford emphasizes how it is "occupying a position at, or on both sides of, a boundary or threshold"[16]. It is precisely this condition of *transition*, of liminality, that the materiality of digital media exists in: it is not material, yet not immaterial either. It is right in the middle, occupying the space of the boundary. In liminal materiality, the bulk of thingness that was once a heuristic for excess, the historical indicators of "too much" in human perception, are dissolved. This problematizes

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[11] Jonathan Sterne, "The mp3 as cultural artifact", New Media & Society, 8.5 (2006): 825.

[12] Note: telegraphy, telephony (immaterial! – must be excluded because these are processes, operations, activities, not artifacts), not broadcast like radio/TV because like telegraphy, its an operation,

[13] Sherburne, cited in Sterne, "mp3", 831.

[14] Victor Turner, The forest of symbols; aspects of Ndembu ritual. (Ithaca, N.Y: Cornell University Press, 1967).

[15] "Liminal", accessed April 27, 2011, http://www.merriam-webster.com/dictionary/liminal.

[16] "Liminal", accessed April 27, 2011, http://www.oxforddictionaries.com/definition/liminal?view=uk.

the purpose of 21st century minimalism for it makes property invisible and untouchable, bringing to question whether these 'objects' should be a target of minimization.

There is however, a contradiction between the reality of digital media's liminal materiality and people's perception of these artifacts. People understand digital media as cultural objects that can be owned and collected, even they live in this liminal, inaccessible state. For instance, "the mp3 has been ascribed the status of a thing in everyday practice, even though it is nothing more than a format for encoding digital data"[17] and "are supposed to be the most radical form of mediated disembodiment"[18]. Sterne cited popular notions and marketing materials about mp3s that analogize them to record or book collections, highlighting the "number of 'songs' that each device can hold" as well as the mp3's "objectifi[cation] as articles of intellectual property" in the US, Canada and several other countries[19]. He suggested that this misconception is perhaps due to people being "used to handling recordings as physical things"[20], a misconception that I believe allows people to continue *regarding* digital media artifacts as property while not *counting* them as such[21], counting them instead as part of one's hard drive or cloud storage account. Indeed, CultofLess.com's Sutton lists no mpeg, video file or mp3 on his list of things he owns… its understood that its in his hard drive.

Thus, the liminal materiality of digital media, in destabilizing the thingness of media allows users to believe that they are divesting themselves of property and 'simplifying' their lives when in fact, they are keeping it all for theft, wear and tear, or sheer clutter are irrelevant in this platform. Instead of excising the 'responsibility' of property (in Sutton's terms), users just 'offload' this responsibility of physical property into a liminal form. This however, is only the beginning. With the advent of cheap storage, I argue that combined with liminality of digital artifacts, what has happened is not 21st century minimalism but digital hoarding instead, what Mayer-Schönberger called the shift from the default of forgetting to remembering[22].

Cheap storage

Indeed, for all the reduction in 'size' that digitization does to media artifacts, it is not until the prevalence of cheap and extremely large storage devices that keeping everything becomes a possibility. It wasn't twenty years ago that graduate students marveled at how a single floppy disk could hold their dissertation. Now a single USB stick can hold not only a dissertation, but all its previous versions, plus other loose documents. Prior to large storage devices, people were still compelled to choose which among their digital artifacts were worth saving on their hard drive, or, if they chose to save everything, still saw some 'bulk' through floppy disks, diskettes or writable CDs. There were still limits, no matter how micromaterialized these digital artifacts were. However, as digital storage devices have kept growing and growing in capacity, selective

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[17] Sterne, "mp3", 830.

[18] Ibid., 838.

[19] See *supra* 17 [sterne, 830]

[20] Sterne, "mp3" 832. This comment begs the question of whether the ascription to digital media of the status of cultural will hold for the next generation of purely digital users that never had to handle media such as songs, movies and photos as tangible objects. Will the terminological metaphor of 'songs' and 'albums' be enough to sustain this conception?

[21] Just imagine what 20GB of music in one's iTunes library looks like if they were in CD form.

[22] Mayer-Schönberger, *Delete*, 68. Though he argues that easy information retrieval and the global reach of information networks are also part of the reason why this occurred, they are less relevant here.

ownership has become unnecessary and the perception of excess has been completely <mark>removed</mark>. Furthermore, "[d]igital storage has gotten so cheap that storing information—even full-screen videos—on digital memory is cheaper than the analog information storage counterparts of paper, film and tape". This is possible through a positive feedback loop of supply and demand: the continuous improvement of production processes which eventually reduced cost of production through economies of scale. This then increased demand by lowering of the cost of storage devices, which in turn fed into development of more digital information that increases demand for the devices. For example, the digital camera… has fueled demand as digital camera users store photos on general-purpose hard disks[23]. In fact, the technology has progressed so far that it is more cost-effective to keep everything than spend time thinking about whether these artifacts are important or not:

> "The truth is that the economics of storage have made forgetting brutally expensive. Assuming it takes only three seconds for a person to look at an image and decide whether to preserve it or not, and that she values her own time at a current average wage, the "cost" of the time alone that it takes to decide exceeds the cost of storage (including having a second copy on a backup device)"[24].

In sum, digitization and cheap storage, speeded up by capitalist production mechanisms, has not only undermined the purpose of 21st century minimalism but has enabled its exact opposite, digital hoarding.

Not so minimalist

Taking into consideration the aim of 21st century minimalism as the reduction of property as well as the simplification of life and contrasting that to the reality of what the essential technologies these minimalists use to achieve this actually do, I argue that the movement actually contradicts itself for in the course of 'disposing' of their property by digitizing them, in fact, they just made it even more pervasive, permanent and perplexing.

First of all, in terms of ownership of discrete media artifacts, the individual ends up owning more because of the ability to store files to scale and thus not only enable, but promote hoarding (even if there is less 'clutter'), as discussed above. Thus, the minimalist becomes a hoarder. Under the Diagnostic and Statistical Manual of Mental Disorders (DSM) VI, hoarding or the "[inability] to discard worn-out or worthless objects even when they have no sentimental value"[25] is listed as a symptom of obsessive-compulsive personality disorder, though the Obsessive-Compulsive Spectrum Sub-Work Group for the DSM V thinks it "may merit classification as a separate disorder" and so existing literature is being examined to determine if it provides adequate support for this change and hoarding is also being considered for a field trial for the DSM V"[26].

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[23] Ibid., 67.

[24] See *supra* 22 [VMS, 68]. For instance, I myself have over ten GB of music I never listen to in my iTunes library, music kept from my childhood or some music I once liked but don't anymore. I keep wanting to 'clean it out' but the prospect of going through all those files, as well as the time it would take and the struggle of whether to let something go or not, is enough of a disincentive.

[25] "301.4 Obsessive-Compulsive Personality Disorder", *DSM5.org*, accessed April 12, 2011, http://www.dsm5.org/ProposedRevisions/Pages/proposedrevision.aspx?rid=22#.

[26] Katharine A. Phillips, M.D. "Report of the DSM-5 Anxiety, Obsessive-Compulsive Spectrum, Posttraumatic, and Dissociative Disorders Work Group." *DSM5.org*, April 2009, accessed April 12, 2011,

Hoarding has captured the popular imagination, exhibited best in the success of cable network A&E's popular spin off on the concept. In the aptly named *Hoarders*, the drama of forcing hoarders to let go of their possessions is juxtaposed with disturbing and oftentimes disgusting states of these people's homes where old newspapers, discarded potato chip bags serve as ornament and furniture. It is that image of hoarding that exists in the public mind—messy, overwhelming, but most of all, excessive.

Does the 'digital hoarding' that digitization and cheap storage allows us to do equate with 'material hoarding'? Some might argue that many of the things we keep on our hard drives are songs and photos, things that we keep anyway, things that can be considered collections. Jessie Sholl, author of the book "Dirty Secret: A Daughter Comes Clean About Her Mother's Compulsive Hoarding" spelled out the difference: "While a collector finds beauty and value in one type of thing—porcelain statues of Chihuahuas, vintage Star Wars figures, flags from every country—the hoarder finds beauty, and thus a reason for keeping, almost everything"[27].

She cited Randy Frost and Tamara Hartl, from where the generally accepted definition of "compulsive hoarding" derives: "(1) the acquisition of, and failure to discard a large number of possessions that appear to be useless or of limited value; (2) living spaces sufficiently cluttered so as to preclude activities for which those spaces were designed; and (3) significant distress or impairment in functioning caused by the hoarding"[28].

In terms of the first component of the definition, acquisition and failure to discard possessions that are of limited value, digital hoarding fits. Just limiting the scope of artifacts to mp3s and jpegs, with digitization and cheap storage, there is a 'keep everything' mentality that pervades, where the default question is "why not keep it?" Every song ripped or downloaded, every photo taken, whether or not it is ever listened to or looked at, is kept somewhere in a digital folder, invisible. Is it this invisibility of the digital artifact that dissipates that physical and mental costs of property[29]?

It is the liminal materiality of digital artifacts that undoes the debilitating effects that material hoarding would otherwise have, especially under the second definitional component. Movies, songs, photos, newspaper articles are compactly saved in the neat little rows of the ever-shrinking microchip. Especially as we turn to the third component of the definition, distress or impairment, it would seem that the argument for digital hoarding falls apart. Are we significantly distressed by the increasing number of digital artifacts we own? As I mentioned above, perhaps the invisibility of these artifacts makes distress imperceptible along with it (going back to the example of Sutton, he does not list his digital properties as stuff he owns, thus the stress that goes along with property does not exist?). Viktor Mayer-Schönberger would however, argue that in fact, the ubiquity of digital artifacts, information in particular is stressful, just not in the ways people have associated with property. While he does not couch the issue in terms of pathology as

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http://www.dsm5.org/progressreports/pages/0904reportofthedsm-vanxiety,obsessive-compulsivespectrum,posttraumatic,anddissociativedisordersworkgroup.aspx.

[27] Jessie Sholl, "What is the Difference Between Compulsive Hoarding and Collecting?" Psychology Today.com, December 17, 2010, accessed March 28, 2011, http://www.psychologytoday.com/blog/dirty-secret/201012/what-is-the-difference-between-compulsive-hoarding-and-collecting).

[28] Ibid.

[29] Just imagine if these digital artifacts were manifested materially.

I do here and his analysis addresses more the issues of personal information, the concerns are identical, and will be discussed in the next section.

Second, the back-up requirement of storage actually multiplies the 'amount' of the artifact. The technological development of cloud storage has exacerbated the drive for data preservation made possible by the increasingly cheap and available hard drives. But 'backing up' is a concept that predates the cloud.

Humanity's desire and sometimes need, to remember is inscribed in the history of communication technologies, from language, to writing and all its myriad forms of audio and video today: "[a]ware of, and perhaps overly awed by how superior information recall can improve one's decisions and thus enhance one's chances of survival, our ancestors have long appreciated a human's ability to remember"[30]. It wasn't enough to be able to record ideas or events. It also became a priority to preserve it for posterity. One of the ways that humans can ensure the longevity of an artifact is to have multiple copies of it made.

For instance, the carbon copy became an important part of the Prussian administration, which "supplant[ed] the draft"[31] and what is actually "filed" or enshrined in the record is not the original document but the carbon copy[32]. The importance of replicated media artifacts rose to prominence in the massive bureaucracies of Europe in the early 20th century: the Second Reich had a problem with "the unstoppable proliferation of files" and dealt with it by "periodically rid[ding] itself of its old files"[33]. But even the act of deletion was backed up: "[o]nce files had been cleared for pulping, an official certificate attesting to their complete annihilation" was produced, the act of discarding files "gave birth to new files dealing with discarded ones"[34].

This need to preserve has been engineered into modern data storage systems. In 1988, computer scientists of University of California, Berkley, introduced the notion of Redundant Arrays of Inexpensive Disks (RAID) (since renamed "Independent") as a response to disparity between the rapidly increasing processing power of computers and primary memory capacity with the modestly increasing speed of magnetic storage[35]. Foreseeing a crisis that would stagnate the development and speed of computers in general, Patterson et al proposed RAID as a way for magnetic storage to keep up with the pace of computer processing and primary memory. RAID is built on the idea that by linking up cheap storage disks together, one can lower cost and power consumption, add scalability and improve reliability of storage. They found that a number of relatively inexpensive disks (at least compared to larger disks such as single large expensive magnetic disks or SLEDs) have the same capacity as a SLED but with more bandwidth and at a lower power consumption and cost. However, since magnetic disks were known to be reliably unreliable, something unavoidable within the technology, disks could not be trusted to preserve the information contained within. Patterson et al's solution was redundancy shared among additional disks—by using extra disks to contain backup information in the event of expected

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[30], *Delete*, 22.

[31] (Paprtiz, cited in Cornelia Vismann, *Files : law and media technology*. (Stanford, Calif: Stanford University Press, 2008): 128.

[32] Vismann, *Files*, 129.

[33] Preigske, cited in Vismann, *Files*, 125.

[34] Vismann, *Files*, 126.

[35] David A. Patterson, Garth Gibson, and Randy H. Katz. 1988. A case for redundant arrays of inexpensive disks (RAID). SIGMOD Rec. 17, 3 (June 1988):109.

disk failure—the redundancy—RAID works around the inherent unreliability of disks. It is this notion of redundancy in a digital storage system that underlies modern digital data storage or distributed file systems schemes today. It was the concept that, slightly modified in the 'Google File System'[36], allowed the Internet technology giant Google to expand and scale up its operations, that quickly. It is the concept that is at the heart of cloud[37] storage.

Cloud storage is a form of digital data storage where users, be it individuals or companies, can essentially rent or buy memory space on the large data centers or servers of hosting companies, either directly or through an intermediary. The servers are housed in various locations and can be accessed via the Internet, through a web-based interface or an application programming interface or API. Two of the most popular storage space services (as opposed to email, document, photo or video cloud hosting by for instance, Google through Gmail, Google Docs, Picasa and Youtube respectively), intermediary and hosting company respectively, are Dropbox[38] and Amazon S3. Redundancy for the sake of data preservation is prominent feature in this service. In fact, Dropbox, with its 25 million users[39] in over 175 countries and 5 languages[40] uses Amazon S3 to provide its services: "Dropbox and Amazon keep multiple *redundant* (my emphasis) backups of all data over multiple locations to prevent the remote possibility of issues occurring in data centers"[41].

Amazon clearly explains what happens to data when it is uploaded to its S3 web service:

> "Objects are redundantly stored on multiple devices across multiple facilities in an Amazon S3 Region. To help ensure durability, Amazon… synchronously store[s] your data across multiple facilities... Once stored, Amazon S3 maintains the durability of your objects by quickly detecting and repairing any lost redundancy. Amazon S3 also regularly verifies the integrity of data stored using checksums. If corruption is detected, it is repaired using redundant data. In addition, Amazon S3 calculates checksums on all network traffic to detect corruption of data packets when storing or retrieving data"[42].

Amazon S3 clearly emphasizes data preservation through the language of protection [develop?] Through multiple redundancies, it ensures the fidelity and longevity of one's digital artifacts, even in the process of creation: "You can use Versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. This allows you to easily recover from both unintended user actions and application failures"[43]. Even their Reduced Redundancy Storage (RRS) feature offers "400 times the durability of a typical disk drive"[44]. Indeed the system is "[d]esigned to provide 99.999999999% durability… of objects over a given year."

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[36] Sanjay Ghemawat, Howard Gobioff, and Shun-Tak Leung. 2003. The Google file system. SIGOPS Oper. Syst. Rev. 37, 5 (October 2003): 38.

[37] In thinking about the thingness of digital media, one must wonder about the status of these massive servers, as things, as containers, and the space *they* occupy.

[38] Dropbox is a back-up service for individuals and businesses, a middle-man service that mediates between users and cloud hosting companies. Files exist in the user's computer as well as in the cloud, the first level of redundancy.

[39] "About Dropbox", https://www.dropbox.com/about, accessed April 23, 2011)

[40] "Press", accessed May 2, 2011, http://www.dropbox.com/press.

[41] "Security Overview," http://www.dropbox.com/terms, accessed April 23, 2011.

[42] "Amazon Simple Storage Service (Amazon S3)", http://aws.amazon.com/s3/, accessed May 2, 2011.

[43] Ibid.

[44] Ibid.

What this means is that your digital artifacts are in more places and in more copies in cloud storage. But since even this durability-centered service cannot be entirely relied upon, given the Amazon S3 cloud storage services outage in April, IT journalist Robert Dutt recommends that businesses (perhaps even individuals invested in this) "make sure [their] cloud environment is at least as redundant and disaster-ready as is [their] on-location network, server and storage infrastructure"[45], reiterating the underlying philosophy of digital preservation: 'the more redundancy, the better'.

The excessive replication of digital artifacts however need not involve something as complex as these dedicated cloud services, though the act of emailing a file to oneself or uploading it to a website are examples of cloud usage as ell. Files in one's hard drive are saved on flash drives, written on CDs and printed as hard copies.

Therefore, because of digital media artifacts' liminal materiality and availability of storage, instead of cutting down on our property, we can own more things, and because of redundancy, *we own more of the same things.* In fact, Zoe Sofia argued that the abundance of information necessarily results from existence of these container technologies: "as I have suggested by way of both Mumford and Heidegger, the functions of containers… to ensure supply loom large in the modern technics that mobilizes resources to be on call as standing-reserve"[46].

But aside from the contradiction of quantity, perhaps the more important issue underlying the issue of 21st century minimalism/ digital hoarding is the irony of simplicity. For all the marketing language about how cloud storage simplifies life, indeed "Simplify your life" is the tagline used by Dropbox, all this data 'offloading' for the sake of hoarding actually complicates life. Not only do you offload the burden of digital artifacts… you also <mark>offload (/surrender)</mark> your control (and security via loss of control?] privacy and autonomy.

Not so simple

Digital hoarding is linked to many of the problems, especially in the realm of privacy, facing the increasingly web-based lifestyle of many people, particularly in developed nations. The offloading of digital artifacts to the cloud especially complicates one's relationship to these artifacts for it adds contingency after contingency to the user in order to access them… all for the impression of a mobile, clutter-free, *freer* life. In fact, the more physical 'freedoms' one acquires from offloading, the more shackles one adds to his/her digital life. The following are just some of the implications of this ability to store artifacts digitally and perhaps, for all eternity.

First is the loss of control. What was once a straight financial transaction of purchasing say, a CD from a music store, and 'owning the music', cloud storage now makes access to the same music, digitized and stored in the cloud, contingent on access to a computer, an Internet connection and most importantly, the availability of the cloud storage. Even though it is designed for " 99.99% availability… of objects over a given year"[47], as well as durability, the technology

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[45] Robert Dutt, "What Your Business Can Learn from the Amazon Cloud Outage", *PC World*, April 26, 2011, accessed April 28, 2011, http://www.pcworld.com/businesscenter/article/226327/what_your_business_can_learn_from_the_amazon_cloud_outage.html.

[46] Vismann, *Files*, 198.

[47] "Amazon Simple Storage".

is not fool-proof. Plenty of businesses and individuals were hit with this reality recently with the aforementioned Amazon S3 four-day 'Cloudgate' debacle in April 2011, which, unfortunately, was not the first time.

Even though the system is designed for such outages *not* to occur, clearly these things can still happen. Amazon's web services had previously suffered an outage in February 2008, downing many web 2.0 start-ups, including Twitter[48] and again in July 2008, leading GigaOm writer Om Malik to conclude then that "cloud computing still has a long road ahead when it comes to reliability"… which is interesting because this is an essential prong of their business. This is an additional complication—one chooses to be on the cloud because it is cheap[49], but most importantly, especially for web-based businesses, you can count on it to be there when you need it, at least you are supposed to: "[t]he S3 outage points to a bigger (and a larger) issue: the cloud *has many points of failure* (my emphasis) – routers crashing, cable getting accidentally cut, load balancers getting misconfigured, or simply bad code"[50]. During the outages, dependent individuals and businesses were helpless and had to wait until Amazon could get a handle on the situation. Control was effectively out of their hands.

The recent outage affected hundreds of sites including *The New York Times*, social news site *Reddit*, and social geolocation service *Foursquare*[51]. The issue was limited to "a single Availability Zone within the US East Region" (Virginia in particular) of the service but had widespread ramifications, given the networked nature of the cloud. It was caused by a "network configuration change" that is supposed to be pretty standard and intended to upgrade network capacity[52]. In thinking about the reliability of cloud services, Robert Dutt compared Amazon S3's redundancies to multiple water-tight compartments of ships that ensure a ship would continue to float despite acquiring damage, but added a warning: "[h]owever, history has shown us no "unsinkable" ship is truly unsinkable, and to believe so is folly"[53]. As this example showed, the convenience of offloading is matched by the complication of loss of control.

Second is the loss of privacy, one that occurs in the use of free services, such as social networking sites. As in these services, the use of cloud services necessitates the exchange of one's personal information for access to these services. Below is list of all data the above-mentioned cloud services collect on their users:

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[48] Om Malik, "Amazon S3 Storage Service Goes Down, Still Not Up", *GigaOm*, February 15, 2008, accessed April 28, 2011, http://gigaom.com/2008/02/15/amazon-s3-service-goes-down/.
[49] The low cost of server ownership and maintenance is the main draw of cloud storage, especially for startups.
[50] Om Malik, "S3 Outage Highlights Fragility of Web Services", GigaOm, July 20, 2008, accessed April 28, 2011, http://gigaom.com/2008/07/20/amazon-s3-outage-july-2008/.
[51] Derrick Harris, "The Good, the OK & the Ugly of Cloud Architecture", GigaOm, April 25, 2011, accessed April 28, 2011, http://gigaom.com/cloud/the-good-the-alright-and-the-ugly-of-cloud-architecture/.
[52] "Summary of the Amazon EC2 and Amazon RDS Service Disruption in the US East Region", Amazon Web Services, accessed May 1, 2011, http://aws.amazon.com/message/65648/.
[53] Dutt, "What Your Business".

Information explicitly collected	Dropbox	Amazon
Name	X	X
Phone Number	X	X
Credit Card/ billing information	X	X
Email address	X	X
Postal address: home/ business	X	X
Information implicitly collected through cookies or tracking		
IP address	X	X
Browser type	X	X
Websites visited prior to and after session	X	X
Information searched within service or through third-party seller	X	X
Preferences and Interests	X	X
Address and address of people products are shipped to, people listed in 1-Click settings		X
Email addresses of Amazon Friends and others		X
Content of reviews, discussion board, emails, other communication with service		X
Personal description (Amazon only: and photo) in profile	X	X
Financial information such as Social Security and driver's license number		X
Wish lists, gift registries		X
Notifications and reminders		X
Employer information when opening corporate account		X
Information from other sources		
Updated delivery and address information from third-parties		X
Account information, purchase or redemption information and page-view information from partner businesses or serviced businesses		X
Search terms and results from subsidiaries		X
Search results, links, paid listings		X
Credit history information from credit bureaus		X

Table 1[54]

All this information is collected for the sake of providing better service for their users: for instance, Amazon's privacy notice states quite simply that "[t]he information we learn from customers helps us personalize and continually improve your shopping experience at Amazon.com"[55]. Dropbox spells out seven:

> "(i) to provide and improve our Site, services, features and content, (ii) to administer your use of our Site, (iii) to enable you to enjoy and easily navigate the Site, (iv) to better understand your needs and interests, (v) to fulfill requests you may make, (vi) to personalize your experience, (vii) to provide or offer software updates and product announcements, and (viii) to provide you with

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[54] While some of these don't apply to Amazon S3, especially the purchase data, this is the same privacy policy that applies to S3. "Amazon.com Privacy Notice", accessed May 2, 2011, http://www.amazon.com/gp/help/customer/display.html?nodeId=468496 and "Dropbox Privacy Notice", accessed May 2, 2011, https://www.dropbox.com/terms#privacy.

[55] "Amazon.com Privacy Notice".

further information and offers from us or third parties that we believe you may find useful or interesting"[56].

This information is shared to third-party sellers, affiliated business partners, service providers etc. as the company deems necessary and is considered an asset in mergers, acquisitions, business transfers and bankruptcy. Furthermore, one's personal information and files will be provided to governments or other bodies, should there be a legal justification for it, according to Dropbox' and Amazon's privacy policies[57]. A blogpost that went viral in the security community also alleged that Dropbox, in order to cut costs on the amount of storage space it was leasing on Amazon S3, was not saving users' own files, but instead determined if a similar file already existed in their servers. If there was, the filepath stored on the user's computer was one that is, unbeknownst to the user, shared with other people. It could be used as a method by law enforcement to track people that infringe on copyright or possess illegal documents[58].

The fact that one's digital artifacts, be it cultural objects or personal information, is *out there* makes it much more accessible to you… and everyone else. This is the concern that most troubles Mayer-Schönberger, the third complication of digital hoarding: a loss of autonomy. He says the fact that "information can be accessed, and for different reasons, by others than the original recipients restraints how [we will] expres[s] [her]self—*in general*", generating "chilling effects" that would restrain individuals from doing what they will. The effect of the pervasiveness of information, the access to it and what may be done with it calls to mind the same chilling effects that were the aim of Jeremy Bentham's panopticon. This time however, it not only has the traditional "spatial" dimension in that there is a fear of constantly being watched everywhere, but also a "temporal" one, where one's transgressions are saved and available for posterity, thus refraining one from action for fear of future retribution[59] for moderns data storage systems are designed to preserve data indefinitely. Furthermore, the replication of data necessarily replicates its access points.

Value of the purge

Here, I enlarge the scope of what is 'hoarded' into every digital artifact that we can store, not just songs and photos but including email exchanges (especially with the advent of Gmail and its free, ever-expanding storage capacity), old documents, notes etc. Mayer-Schönberger noted that all this 'digital remembering' is troubling for it makes data more persistent and durable.

In his book, *Delete*, Mayer-Schönberger engages with the deeper societal and individual issues that gratuitous remembering implies and argues ultimately for reintroducing 'forgetting', by for instance, attaching expiration dates to information, for the sake of our society and our very humanity[60]. His justifications are multi-pronged and are summarized below:

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[56] "Dropbox Privacy Notice".

[57] Dropbox was criticized for the changes it made to its privacy policy, however the company argued that their terms were similar to Apple, Google, Skype and Twitter, four of the most popular web services. See Dan Moren, "Dropbox addresses privacy concerns", *MacWorld,* April 21, 2011, accessed May 1, 2011, http://www.macworld.com/article/159370/2011/04/dropbox_security.html; "Amazon.com Privacy Notice" and "Dropbox Privacy Notice".

[58] Citation needed. Account known from interview with NYU computer science PhD.

[59] Mayer-Schönberger, *Delete*, 109-111.

[60] Mayer-Schönberger, *Delete*, 171.

First, "forgetting may be instrumental for the process of learning", citing research from organizational learning expert William Starbuck. Having to keep track of all our knowledge may inhibit one's ability to learn[61] and may "undermine human reasoning" by reminding one of information the brain had "forgotten"[62]. The human brain has a "tendency to forget information that is no longer important or relevant"[63], so if one is faced with all sorts of digital memories, it is encumbering him/her with information that he/she does not need[64]. Further, it "may exacerbate the human difficulty of putting past events in proper temporal sequence"; "confront us with too much of our past and impede our ability to decide and act in time"; and may cause us to lose our trust in remembering"[65].

Second, digitized information is more easily alterable than analog information, thus, it is easy for almost anyone to alter the past or include erroneous information on the record[66]. Third, digital remembering is biased towards information or artifacts that can be digitized. You can't store what you were thinking or more importantly, feeling at a certain time on Dropbox, biasing your digital recollections exclusively to "information that can digitized and the disregard of everything analog cannot"[67].

Lastly, and it is perhaps his most compelling argument, "[b]y recalling forever each of our errors and transgressions, digital memory rejects out human capacity to learn from them, to grow and to evolve"[68], for instance, "societal forgetting gives individuals who have failed a second chance… try out new relationships… bankruptcies are forgotten… criminals have their convictions expunged"[69].

His proposal of the digital data expiration date was "designed to confront us with (and thus remind us of) the 'finiteness of information'… that information in inexorably linked to a point (or period in time) and that over time, most information loses its informational value"[70]. This might be a point of contention for as both commercial data-miners and social scientists would be to differ, the careful records of browser cookies or the painstaking record-keeping by ancient peoples are infinitely useful sources of information, now and into the future.

The impending arrival of the Google Chrome notebook[71] will be rich test case for examining the tensions between the idea of mobile, uncluttered, unattached 21st century minimalism and the realities of the digital hoarding it permits, the attendant losses of control, privacy, autonomy and for lack of a better word, humanity. If Luther sparked a revolution that rocked systems of authority in the medieval world, how will digital hoarding change the face of our society? As much as 16th century observers could not have predicted the effect Luther's 95 theses could have, the ramifications of perfect remembering technologies are thus far unimaginable.

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[61] Ibid., 118.
[62] Ibid., 119.
[63] Ibid., 123.
[64] Here, Mayer-Schönberger valorizes human memory a bit too much, in my opinion, for the brain can forget information that in retrospect might be useful in the future.
[65] Mayer-Schönberger, *Delete*, 119.
[66] Ibid., 121.
[67] Ibid., 156.
[68] Ibid., 125.
[69] Ibid., 13.
[70] Ibid., 171.
[71] "chrome os", accessed May 3, 2011, http://www.google.com/chromeos/index.html.

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