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Digital containment and its discontents

Natasha Dow Schüll

ABSTRACT

This essay explores a set of existential risks that accompany digital storage capacities, devices, and promises: the anxious exhaustion of digital housekeeping; the disorientation of self-archiving; and the annihilating sense of loss that strikes when digital containment fails.

KEYWORDS

Data compression; container formats; digital hoarding; self-archiving; data doubles

Metaphors for information expansion in the so-called digital age tend to take an aqueous form: the sea of information is overtaking our shores; we are swamped by a rising tide of zeros and ones; we are drowning in a flood of data. Tech pundits assure us that the problem is not the volume of digital information but the dearth of effective containment devices for it; properly contained, it will free up (rather than overwhelm) space and time. The solution is to shore up informational floodgates, meaningfully pool streams of bits and bytes, and contain the data deluge.

Technologies of digital containment have flourished as more and more aspects of life are datafied – market transactions, social exchanges, reading and writing, listening and looking, even walking and eating. Hundreds of portable storage drives are available for consumer purchase, ranging from sleek 10 terabyte boxes costing \$549.99 to tiny plastic USB units on sale for \$6.99. Also available for purchase are ‘cloud storage’ service plans, in which one pays to upload files through the Internet and store them on hardware at a remote location, much like renting a storage unit for one’s physical property. Even more critical to the infrastructure of information containment than these material forms are the hundreds of formats and formatting scripts available for effectively holding digitized textual, visual, and acoustic content.

Digital containment begins with digitization itself – that is, the conversion of a given analog entity into a binary language of ones and zeros, or ‘bits’ (a contraction of ‘binary’ and ‘digits’).¹ While all entities thus rendered are reducible to these same elemental units, each is distinguished by its own unique *sequence* of bits. These sequences are stored in file formats – sometimes called ‘container formats’ – that not only hold the information but also allow it to be meaningfully read and delivered to human experience by digital devices. There exist a mindboggling array of file formats (bearing acronyms such as IFF, AIFF, TIFF, MPEG, JPEG and FFMPEG, HE-AAC and AAC-LD, and FAAC and FAAD2), each holding data compressed in particular ways.

Data compression, or ‘packing’, is a significant aspect of digital containment. Compression progresses via *codecs* – rule-based scripts that dictate how the raw digital

information is to be both encoded at the point of storage and decoded (or decompressed) at the moment of viewing or listening. Some codecs, like the popular mp3, are 'lossy', minimizing the size of the file but degrading content by eliminating bits of information deemed to be perceptually nonessential.² Sterne (2006, 828) writes of the mp3 and its transformative work: 'it is a container *for containers* for sound [...] Like an oven that holds a casserole and transforms its contents, the mp3 is a holder for sound recordings' (emphasis in the original). Other codecs are 'lossless', shrinking data in a way that is reversible, allowing it to decompress to an exact duplicate of the original digital sequence – an enchanting feat achieved by techniques of statistical redundancy and probability (see Figure 1).

Does digitization and its extensive buffet of mediating instruments³ succeed at containing unruly informational flows? Some answer in the affirmative, like Kelly Sutton, who in 2010 documented his personal quest to offload worldly encumbrances (via digitizing services such as iTunes, Hulu, Flickr, Facebook, Skype and Google Maps) to a hard drive on his website, CultOfLess.com. 'This twenty-first Century minimalist 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', reports a journalist (Danzico 2010). 'He says his new intangible goods can *continue to live on indefinitely* with little maintenance' (my emphasis). For Sutton, the loss of nuance that comes with the digitization of his belongings is an adequate tradeoff for their dematerialized persistence.

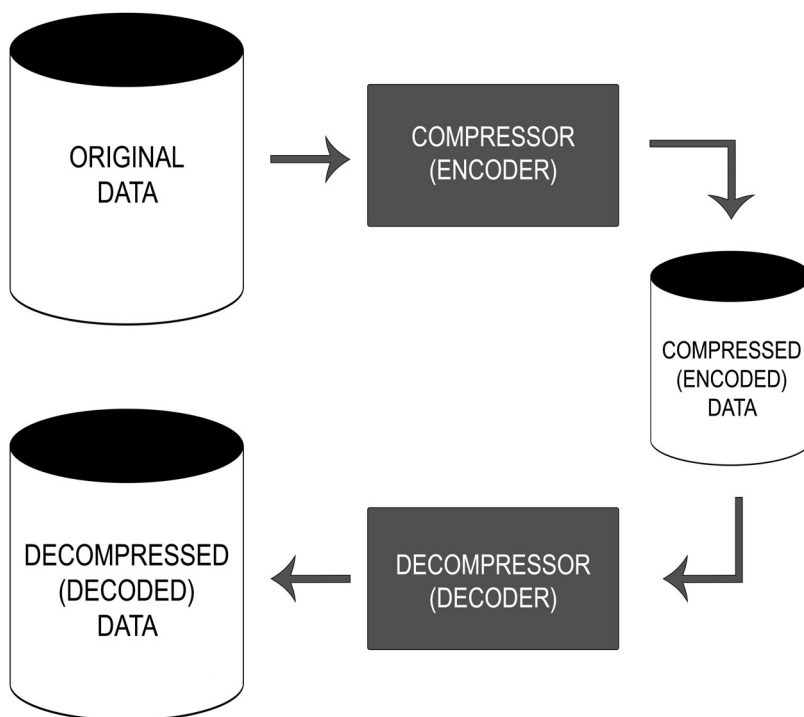


Figure 1. Illustration of lossless compression. Sketch by the author.

Others view digitization and its accessories as a dubious solution to the excesses of contemporary life, observing that even as these containment tools free up physical space by dematerializing analog content, they afford indiscriminate, sometimes excessive *keeping* of content. 'In the analog era', writes futurist blogger Basulto (2014), 'you would have donated used books to charity, hosted a garage sale to get rid of old albums you never listen to, or simply dumped these items in the trash'. While the material world provides a natural check on stockpiling and hoarding by asserting itself as a problem to contend with when it swells in size, the swelling of informational stuff is invisible enough to render discarding more cost-intensive than retaining.

This begs the question: If the space taken up by digital artefacts is virtually nil, then why would retention be a problem? One answer is that digital storage, as weightless as it may be, nonetheless consumes massive amounts of energy and other worldly resources (Hu 2016). Another is that data industries are known to engage in troubling surveillant and data-trafficking practices, for instance buying and selling personal information to pharmaceutical companies and online businesses. What I want to address here, however, are the less-explored *existential* discontents associated with digital keeping: first, the anxious sense of *entropy* that can arise for keepers of an ever-expanding virtual archive; next, the disorienting sense of *vertigo* that accompanies the task of collecting and containing the bits of one's life; and finally, the annihilating sense of *loss* that strikes when personal information archives crash, inexplicably disappear into the ether of the so-called cloud, or become mysteriously corrupt and inextractable.

Entropy

If metaphors for informational overload in contemporary society invoke flooding, within the context of individual lives people speak in terms of material accumulation and a crowded domestic space. 'Keeping everything in your inbox is like having a huge junk drawer in your kitchen', writes an online blogger; 'The walls will start to close in', warns another; 'the Internet isn't an attic', cautions a third. Although digital information does not physically obstruct, its accretion is increasingly understood as an entropy-threatening kind of clutter, and those with a lot of it as 'hoarders'.

Digital hoarding – also known as e-hoarding and e-clutter – describes the excessive saving, archiving, and storing of digital artefacts, along with a reluctance to delete, even when the content in question is redundant, irrelevant, or no longer valuable to the owner. As in the material hoarding discussed by Newell in this forum, unwillingness to get rid of data is linked to a feeling that it *might one day be useful*, as well as to a subjective identification with it, such that deleting it risks self-dissolution. (Containment, Zoe Sofia suggests, is about 'what we put our stuff into, and thereby identify with; what of ourselves we can and cannot contain' (2000, 185).)

Despite the rhetorical parallels drawn in public discourse between material and digital hoarding, discussion of the two part ways when it comes to parsing blame: while the former is typically understood as psychologically driven, the latter is more readily understood as jointly psychological and technological – a problem for which machines, as much as people, are responsible. It is routinely alleged that technologies of digital containment afford and even encourage hoarding – by making it easy for individuals to never discard, in that 'it takes less time to capture a piece of information and store it than it takes to throw

that piece of information out' ('Digital Hoarding'); and by seducing us with the promise of physical insubstantiality. 'Electronic devices are now larger on the inside than they are on the outside'; one can 'add more and more information to a hard drive, server or device without it getting heavier' (2000, 185) (see Figure 2). Ease, invisibility, and the promise of indefinite continuance lead us to believe that digital containment will free us of burdensome attachments when, in fact, it allows these attachments to persist and even grow – and brings a new burden: the growing social pressure to keep our digital domain as tidy as our physical dwelling spaces. As we become dependent on digital containers for their entropy-solving capacities (Hodder 2014), we are caught up in a never-ending struggle against the entropic risks they themselves pose.

Arguably, the existential and moral weight – and the risks – of one's digital archives intensifies when *self-data* is the content at stake; that is, when the targets of collection, conversion, and compression are not music albums, books, or movies but, rather, are generated by one's own lived experience. Such artefacts include not only photographic 'selfies', personal voice memos, and text messages but, increasingly, tracked data about one's bodily states, movements, and actions in time (Schüll 2016a, 2016b). In 1998 the self-professed 'lifelogger' Gordon Bell, then a computer scientist at Microsoft Research Labs, conceived of MyLifeBits – a sort of outboard self that recalled Vannevar Bush's Memex, imagined in 1945 as a card-deck-sized box 'in which an individual stores all his books, records, and communications' (1945, 101), constituting 'an enlarged intimate supplement to his memory'. As of 2016, Bell's archive had grown into a 261-gigabyte trove of emails, documents, web pages, and pictures as well as real-time bodily data collected by 'an assortment of tiny, unobtrusive cameras, microphones, location trackers, and other sensing devices' (Bell and Gemmel 2009, 4).

Thanks to the widespread adoption of the smartphone since 2007, which puts Memex-like devices into the pockets of consumers around the world, Bell's all encompassing, exhaustive mode of self-containment seems less extreme today than it did even a



Figure 2. Image used in an advertisement for digital archiving service (<http://www.digitalarchive.media>).

decade ago. 'The combination of the sensors in the phone, the connected smartwatches and fitness wearables, the location tracking, the apps that harvest data and, above all, the social media oversharing, together constitutes a lifelog', notes a journalist (Elgan 2016). The subjective ramifications of this life-logging infrastructure are significant, for it puts us constantly in the position of managing our self-data. 'You become the librarian, archivist, cartographer, and curator of your life', write Bell and Gemmel (2009, 5). This role becomes increasingly ethically freighted: to be a good citizen, and to live a good life, one must keep track of one's data and curate it well.

Some resist, ignoring their data as it accumulates; others rise to the task yet feel harried, implicated in a Sisyphean scramble to keep disorder at bay; still, others embrace the work of self-archiving and even find themselves frustrated at what they cannot (yet) capture and store. ('The more it can contain, the more apparent are the things it cannot contain', writes Lemov of the digital self-archive (2016, 264).) Whether in resistance to, capitulation to, or embrace of self-curation labor, *keeping* becomes the default way to handle one's data – and, with keeping, comes further dependency on containers.

Vertigo

Those like Bell who actively self-digitize claim it leads them to new self-understandings and possibilities for self-care and self-fashioning; rendered in binary code, formerly distinct aspects of their lives – sleep, mood, steps taken, minutes on the phone, eating schedule, pulse – are made commensurate and mined for revealing correlations (Wolf 2010). Kelly (2012), a founder of the Quantified Self community, regards the resulting archive as an 'exoself'; others speak of 'Homo Digitalis' (Harcourt 2015), 'data doubles' (Haggerty and Ericson 2000), and 'digital doppelgängers'. 'Disembodied exhaust gives rise to a data-proxy, an abstracted figure created from the amalgamation of data traces', writes Smith (2016, 110). These informational self-containers are conceived, in Heideggerian terms, as 'standing reserves' of potential insight – ordered data archives ready to disclose hitherto hidden patterns of action at play in our day-to-day lives (Schüll 2016a; see also Sofia 2000).

'The reason it works is that it gets you away from yourself; it objectifies you – it's a projection or objectification of your habits', said K. of her self-tracking data. 'You're the reference point and *it puts you in this other format*' (personal communication, March 15, 2015, my emphasis). Speaking to a darker side of this objectification effect, Chris Dancy, who spent years collecting metrics on his pulse, mood, sleep, temperature, and more, admitted that he found it disconcerting to look upon his digitally formatted self: 'I could see too much. ... I was coming slightly unhinged with the amount of information I had about myself. It started to make me feel slightly detached from reality' (as quoted in Lemov 2016, 248). K. herself confessed that she became something of a slave to her own self-containment system. 'It was an addiction, a little bit', she told me of her daily food tracking with the mobile phone app Calorie King. 'I had to do it every day. It got really *granular* for me' (my emphasis). The more she tracked, the more she felt she needed to track; it began to seem that she was recording and curating life at the expense of living itself – self-hoarding, as it were. Zealous self-trackers come to see themselves in aggregate sums and sequences of bitified life, trend lines, and algorithmic predictions, their attention absorbed by witnessing their own patterns.

Today, as more and more of us are drawn – willing or not – into the task of ‘laying ourselves up’ as digitally formatted persons comprising diverse forms of contained and containing data, we risk losing ourselves in a ‘vertiginous loop of self-absorption’ (Lemov 2016, 248). As our digital doubles gain greater and greater resolution over time, we look to them not only for information about who we are but guidance about who we should become; our habits cease to be their ‘reference points’ and instead become objects of their reformatting (Schüll 2016a).

Loss

After becoming pregnant, K. changed her target weight goal on the Calorie King app, whereupon she was dismayed to discover that this act had reset her profile and erased its past data: all her meticulously recorded bits of life had been instantaneously overwritten by the blank slate of her future self and its new goal. ‘It was like the app assumed I was a new person and zeroed out my whole history, like it wouldn’t matter to me’. Despite numerous calls to customer service and attempts to reverse this fatal mistake, years of detailed information were gone. The sense of annihilation K. experienced was not that of being blown up or smashed down but, rather, emptied out. In a kind of sympathetic resonance with her digital container, she felt herself bereft, a container that had lost its contents. In her awakening to the inherent fragility of a data-driven, digitally contained life, she stopped tracking altogether. ‘Knowing it could just go “poof” again is too unsettling’.

That possibility – which every day becomes a reality for some unlucky denizens of the digital world – exposes as a vain hope Sutton’s cheerful claim that his possessions would acquire immortality through digitization. Arguably, the motivation behind his ‘cult of less’ was not only to preempt loss by shrinking and containing his belongings but, more generally, to shrink and contain the possibility of *loss itself* – not only that of his possessions but of himself. K.’s experience starkly undercuts Sutton’s optimism, revealing the failure of digital containment and its promise of binary permanence. Whether ‘lossless’ or ‘lossy’ in their mechanisms of information-compression and decompression, digital formats and their storage systems have no ultimate failsafe. To invest more and more of herself into a digitally formatted container, K. came to recognize, was to up the ante on the risk that her data double, her digital doppelgänger, her exoself, might irrecoverably cease to exist, leaving her feeling empty in a sea of digital plenty.

Most of us never reach that point; instead of radically breaking with our data selves (in the fashion of addicts who, having hit rock bottom, must live by abstinence), we abide, if discontentedly, with the entropy-containment devices we have invited into our lives and upon which we have become dependent.

Notes

1. Digitization happens by ‘sampling’ a given analog entity. In the digitization of sound, a continuously variable electrical signal is sampled in time through a recording process, generating a non-continuous series of numbers that represent the original; the higher the rate of sampling, the higher the fidelity of the digital product. The digitization of an image involves sampling its surface through a scanning process; the higher the pixel resolution of the sampling, the truer the digital version will remain to the analog original.

2. There are various lossy methods of data compression. To compress sound, some codecs remove the less audible of two sounds that co-occur or overlap; some remove bits of information that are extremely high or low; some remove every other bit of information. Depending on the method used, the size of a digital file can be reduced by up to ninety percent. For a clear technical description of how information is eliminated to shrink a file's size in the case of the popular mp3 codec, see Sterne (2006, 833).
3. The historian of technology Lewis Mumford ([1934] 1962) made a point to distinguish machines and tools from technologies of containment – including *utensils* like baskets and pots; *apparatuses* such as kilns and dye vats; *public utilities* like roads, reservoirs, and buildings; and *power utilities* such as railroad tracks and electric transmission lines – whose significance, he believed, had been underemphasized by scholars drawn to flashier, seemingly more active devices. The suite of digital containment media sketched above can be usefully regarded as technologies of containment rather than machines: they constitute a critical part of the 'background relations' (Ihde 1990) of our contemporary lifeworld.

Disclosure statement

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