

# Narcissus to a Man: Lifelogging, Technology and the Normativity of Truth

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**Abstract** The growth of the practice of lifelogging, exploiting the capabilities provided by the exponential increase in computer storage, and using technologies such as SenseCam as well as location-based services, Web 2.0, social networking and photo-sharing sites, has led to a growing sense of unease, articulated in books such as Mayer-Schönberger's *Delete*, that the semi-permanent storage of memories could lead to problematic social consequences. This talk examines the arguments against lifelogging and storage, and argues that they seem less worrying when placed in the context of a wider debate about the nature of mind and memory and their relationship to our environment and the technology we use.

## Introduction

The relationship between memory, representation and recollection is highly unusual and counterintuitive. In particular, memories can misrepresent past events in what would seem to be all key respects, and yet still facilitate immediate recognition of veridical representations (e.g. video footage of an event). Many psychologists, for example Elizabeth Loftus (Loftus and Palmer 1974, Loftus and Zanni 1975, Loftus 1979, Wells 1993), have been able to show that eyewitnesses can be deeply unreliable in recall, especially if misled by the forms queries are put, or by interfering information, yet this does not preclude accuracy in identification. The fact that a person was misremembered as having dark hair and a moustache does not mean that they might not be recalled with the shock of recognition: "yes, that's the fellow!"

There are many interesting issues in the philosophy of mind here. Clearly, the 'filing cabinet' metaphor of memory (that it contains a set of representations of the

past, organized to facilitate retrieval, such that exposure to a suitable cue will allow recall in some process analogous to the withdrawal of a properly-filed document from a filing cabinet) is as inappropriate as it is naïve (cf. Warnock 1987, 8-9). It is not the aim of this chapter to make any strong claim about what metaphor would be an appropriate replacement, but it is worth noting a few implications.

First, there are many different kinds of memory (Tulving 1985), including semantic memory (which includes fairly fixed notions such as meaning), and episodic memory (of events), and memories can be lodged temporarily in short-term, working memory, or become part of one's long-term memory. In this chapter, although I shall make no special assumptions about whether a memory is temporary or permanent, I shall broadly be concerned with long-term memories, and I will focus primarily on episodic memory.

Second, one's episodic memory is a memory *of* something – an event, which is referred to via some kind of representation. The representation can be veridical or not, and I shall assume that a human memory of a past event may misrepresent it in a number of crucial ways, yet is associated with it even so. As the old Maurice Chevalier song had it,

*We met at nine.*

- *We met at eight.*

*I was on time.*

- *No, you were late.*

*Ah yes, I remember it well.*

The joke here is that the two singers have completely opposite recollections of the significant event in their lives, and yet agree entirely on its identification. As Marcel Proust (still one of the most acute theorists of memory) argued, one's memories are coloured by one's present assumptions and mental models; an apparently insignificant event can appear significant in retrospect because it contained a first encounter with a person whom one later came to love.

Third, in this chapter I shall discuss the use of technology to support recollection. In particular, one often uses representations such as photographs to support recall. I shall make the obviously idealizing assumption that a photograph does not misrepresent the past in the way that a memory can; the camera was pointed and the image captured. Of course images can be Photoshopped, but that requires human intervention to cause the misrepresentation. Further, images can give a false impression, as for example when a trick of perspective makes a distant large object look near and miniature; again, the misrepresentation requires a human interpreter. As a matter of fact I do not think that mechanical reproductions are essentially veridical representations, but it will make the argument simpler and clearer if we pretend that they are, in contrast with human memories which may or may not be veridical.

Finally, although I make no assumptions about what a memory is (about whether, for instance, it is a mental state, or a brain state), I will assume that its nature is not necessarily constant. It may be that a memory is actually regenerated at recall time, and so doesn't 'exist' at all at other times. Or, it may be that when

exposed to veridical representations, a memory that has previously misrepresented the past can alter so as to provide a better representation. This isn't something I wish to go into detail about even if I were able, but the main point is that memory is constantly changing, in response to conversations with other people about events, constant narration of events by oneself and others, exposure to news reports, photographs, videos, and inference from the effects of the remembered event. My memory of an event may misrepresent an important character as having a moustache, but once I have seen a photograph of him, I realise that he had no moustache, and my memory adapts accordingly.

In this paper, I wish to consider the interactions between memory and the increasingly ubiquitous technology to support it. In particular, I want to focus on what is normative for memory, and shall argue that the use of technology has increased the prominence of truth in that role. This is not necessarily a bad thing, but it is a newish development, and as technological supports increase dramatically, will continue to drive important social and psychological change. These considerations should be used to help drive our reactions and regulations in areas such as privacy, deletion, data protection and informational self-determination.

Before I discuss the current state-of-the-art in the use of technology to support memory, I will set out three themes which drive much of the discussion in this area in the next section. The following section will describe memory technology. The final substantive section will look at some recent worries about the use of such technologies, which claim that it more or less subtly undermines human or social capacities. I shall argue that the issues that pertain to the normativity of truth for memory are the most serious.

### **Three Themes**

In this section I will set out three intellectual themes which have helped lay the ground for the widespread use of memory-supporting technology; in the case of the first two themes at least, the causal links go both ways, so that the use of memory-supporting technology has also given the intellectual positions more plausibility. The links between the ideas and the technology are meant only to be broad associations – the narratives which I outline are certainly not intended as serious intellectual history.

## ***Theme #1: Extended Cognition***

### **Personal and Public**

A memory has both personal (private) and public aspects, and recollection and reconstruction of past (and present) require deep interactions between these aspects. Our memories are not necessarily photographic representations of the past, nor are they any the worse if they are not; conversely, photographs are not memories. As Proust put it in *Time Regained*:

An hour is not merely an hour, it is a vase full of scents and sounds and projects and climates, and what we call reality is a certain connexion between these immediate sensations and the memories which envelop us simultaneously with them – a connexion that is suppressed in a simple cinematographic vision, which just because it professes to confine itself to the truth in fact departs widely from it – a unique connexion which the writer has to rediscover in order to link for ever in his phrase the two sets of phenomena which reality joins together. (Proust 1983, 924)

Proust's point here is that memory is a creative capacity, which has developed *not* in the context of positivist scientific analysis and truth-telling, but rather as an evolutionary adaptation. The 'simple cinematographic vision' against which Proust railed assumes that the 'purpose' of a memory is simply the accurate representation of the past event, whereas of course memory and other types of representation, such as art, have many other valuable functions. Yet the basic representative role can take over; as Baudelaire fumed in 1859:

During this lamentable period, a new industry arose which contributed not a little to confirm stupidity in its faith and to ruin whatever might remain of the divine in the French mind. The idolatrous mob demanded an ideal worthy of itself and appropriate to its nature – that is perfectly understood. A revengeful God has given ear to the prayers of this multitude. Daguerre was His Messiah. From that moment our squalid society rushed, Narcissus to a man, to gaze at its trivial image on a scrap of metal.

Not all roles of memory pertain to the individual. As our social conventions have developed, so has memory's role in them; the practices of storytelling, narration and conversation involve the social construction of a past event in ways that may differ very much from both the individual's (private) perspective, and publicly accessible representations such as photographs or written accounts (cf. Olick 1999, Nelson and Fivush 2000, Misztal 2003, Cubitt 2007). For example, memories of a childhood event, told and retold as a family story, may interweave private sensations and parts of the narrative; even the person most involved in the original event may be unable to disentangle his own private recollection and the timeworn reconstruction of the story, with its favourite moments and recurring themes.

### The Importance of Abstraction

In Jorge Luis Borges' famous story 'Funes, his memory', also translated as 'Funes the memorious', Funes is an ordinary young man who suffers a head injury and becomes incapable of forgetting. Many commentators have emphasized the ways in which Funes is disabled by this prodigious happenstance, but in fact Borges' emphasis, correctly, is on the rich picture of reality that he is able to achieve.

Funes ... was virtually incapable of general, platonic ideas. Not only was it difficult for him to see that the generic symbol "dog" took in all the dissimilar individuals of all shapes and sizes, it irritated him that the "dog" of three-fourteen in the afternoon seen in profile should be indicated by the same noun as the dog of three-fifteen, seen frontally. (Borges 1999, 136)

Funes' real disability is his inability to abstract, although in his ironic way Borges does not portray it as a disability. The point of an abstraction is to support artificial representation, a useful substitute, inevitably and admittedly inaccurate in some respects, for the full record, enabling action and communication for the boundedly rational.

It also allows us to jump the semantic gap between the private sensations of different agents; two people can use abstraction as a mechanism to share thoughts and communicate their ideas. The imperfection of memory is essential to support communication. We do not need abstraction *only* because we are boundedly rational, and therefore need a shortcut to describe past events; we need the shortcut to communicate at all. As Borges' story emphasizes, even if our psychological capacities were not bounded (as Funes' memory is not), then failure to abstract leads to difficulties in testing, confirming and falsifying one's own thoughts and recollections. One would fall foul, in other words, of Wittgenstein's private language argument.

A definition surely serves to establish the meaning of a sign. – Well, that is done precisely by the concentration of my attention; for in this way I impress on myself the connexion between the sign and the sensation. – But "I impress it on myself" can only mean: this process brings it about that I remember the connexion *right* in the future. But in the present case I have no criterion of correctness. One would like to say: whatever is going to seem right to me is right. And that only means here that we can't talk about 'right'. (Wittgenstein 1958, §258)

In this famous passage from the *Philosophical Investigations*, Wittgenstein is arguing against a fictitious interlocutor, who might be Funes, insisting that concentration of attention does the important psychological work; he argues instead that publicity is vital not only for communication, but also for one's own interpretations of memories. Funes may believe that he has a clear recall of the dog seen frontally at 3.15, but without the processes of abstraction he doesn't have even a theoretical possibility of checking that he is right – and so the 'perfect' memory is much more flawed, from the point of view of truth and veridical representation, than that of the boundedly rational person who forgets and misrepresents.

## **Cognition and the Environment**

It is also worth pointing out in this context that increasingly many psychological theories have followed Wittgenstein's lead and insisted that the content of psychological states cannot be determined solely by reference to states of the individual, that mental states (and thoughts, memories etc) are irredeemably world-involving. In particular, the idea of *extended cognition*, that our cognition depends crucially on our being embodied creatures and exploits aspects of our embodiment in real-world environments, is of relevance here. A range of relevant respects of the environment have been highlighted by theorists, all of which have a claim to essential involvement in the description of cognitive states. In the field of artificial intelligence, Rodney Brooks has emphasized the physical aspects of the world in his biologically-inspired robotics (Brooks 1991), while in this tradition Andy Clark has placed particular emphasis on the constructed environment (Clark 1997). Going further, Harry Halpin, together with Clark and others, has argued for the special importance of the virtual environment (particularly the World Wide Web) given our current technological capabilities (Halpin et al 2010). The grandfather of this philosophical tradition is of course Edmund Burke, whose 18<sup>th</sup> century conservatism posited the sociocultural environment, particularly traditions and institutions, as being essential to understanding our psychology (Burke 1968, O'Hara 2011).

Although the argument of this paper does not depend on the ideas of extended cognition, it gains a great deal of resonance in that context. If cognition was extended in the sense championed by Clark and others, then one would expect episodic memory to make ineradicable reference to publicly-available event traces and records, as well as what we might characterize as private, internal states. If, on the other other hand, one's governing philosophy was something like Fodorian methodological solipsism (Fodor 1980), then the questions generated by our sometimes fraught relationship with event traces and records would be all the more puzzling.

## ***Theme #2: The Normativity of Truth***

### **Outsourcing Memory**

We (and other animals) have memories because they help the organism survive. Our bodies have mechanisms that allow the world outside to change some of their states, allowing recall of significant episodes. There is no need for those episodes to be represented exactly or accurately; it may be that the value of a fear reflex is greater if it is triggered more often than need be (in other words, that the 'memory' of an organism is more effective if it tends to generate falsely positive identifications of threats). Proust also pointed out (as had Freud) that forgetting

had its own adaptive value when the past event was traumatic (for Proust, cf. e.g. Maurois 1962, 221-223, Flieger 1980). Memory is a servant to the self, and on the smooth functioning of the self does its utility depend, as the Irish novelist Sebastian Barry suggests:

It wasn't so much the question of whether she had written the truth about herself, or told the truth, or believed what she wrote and said were true, or even whether they were true things in themselves. The important thing seemed to me that the person who wrote and spoke was admirable, living, and complete. (Barry 2008, 309)

The use of external objects and constructed aspects of the environment to support memory is relatively recent and has tended to colour our perceptions of what is important about memory. Studies of oral cultures, which lack recourse to permanent representations, show that memory and the reconstruction of the past can have very different properties than we are used to in our technological world (Goody 1998, Ong 1982, esp.57-67, 95-99, 136-152).

In such cultures, verbatim recall of lists or words is rare – unsurprisingly, as it has very little obvious function in such a society. Early anthropologists occasionally dismissed the memories of ‘primitives’ as flawed because they had difficulty in regurgitating lists of words – yet of what use is that ability when one has no examinations to pass? Recollection becomes a performance, a creative act. History, for instance, becomes indistinguishable from politics, so that when an elder recites the ancestors of a chief through an implausibly large number of generations, what he is really doing is placing the chief in a political context which makes sense. The ‘ancestors’ that are mentioned allow connections to be made between important dynasties, and so the elder is not performing an impressive feat of memory, but rather reflecting current power structures. As those structures change, then so will the family tree.

Memory of past events, or of a complex ceremony, is distributed across the participants of the discourse; someone will chip in with his own ideas about a narrowly circumscribed area. The aim of any mnemonics is to stimulate, not to aid recall. All communication is face-to-face, and so there is no need to leave records for others to use in the future, or to ‘speak’ to people remotely.

In an oral culture, the whole notion of ‘misrepresentation’ is up for grabs. What is the truth here, when there is no permanent certified ‘truth’ or record available for comparison? The ‘fact’ that the chief’s great-great-great-great-great-grandmother is such-and-such will be a matter of the completest indifference to him, and so there will be no attempt to keep any kind of record of it; hence when the elder announces a family connection that everyone accepts, what counts is that it is acceptable. The permanent truth that literate cultures get used to is replaced by a social truth founded in acceptability.

The development of literacy gradually provided that certified record against which individual memories could be compared for accuracy. Written words supported recall, but they also furnished an independent standard. Memory remained creative for a long time; for example, when Montaigne wrote phrases all over the beams in his tower, this was not to remind him of their content (he had a prodigious

gious memory for classical literature). Rather, they were there to provoke new and interesting thoughts of his own.

Adjustment to the literate world took time. In Plato's *Phaedrus*, Socrates took issue with those who relied on the written word; writing, he argued, introduces "forgetfulness into the soul of those who learn it: they will not practice using their memory because they will put their trust in writing, which is external and depends on signs that belong to others, instead of trying to remember from the inside, completely on their own. You have not discovered a potion for remembering, but for reminding; you provide your students with the appearance of wisdom, not with its reality (Plato 1997, 551-552).

Socrates' own position dramatically illustrates the changes that literacy brought in; he wrote nothing himself (quite possibly because of the arguments set out in the *Phaedrus*) and exists for us only because of the many written representations of him and his practice by Plato, Xenophon, Aristophanes and Aristotle. It is a simple mistake to confuse Socrates' own philosophy with that of Plato, who expounds his own ideas through Socrates' mouth. Socrates' position not only points up the disadvantages (from the point of view of longevity of ideas and facts) of oral culture, but also makes it clear that having an objective record is hardly a panacea. For the austere military man Xenophon, Socrates emphasizes duty and self-reliance, while for the satirical Aristophanes, he provokes rebellion while spouting nonsense. Plato's Socrates differs radically from dialogue to dialogue, sometimes a freedom-loving sceptic, sometimes a proto-fascist.

### **The Public Record and the Intrusion of Truth**

With the assistance of technology, writing and later photography evolved from being simply supports of memory. The inheritances of Gutenberg and Daguerre were the fixed objective records that were widely understood and shared through all levels of society. In such an environment, a new aspect of memory became possible. Memory could be held to account against the public record, and could be held as 'wrong' if it contradicted it. Truth became normative for memory.

Memory unmediated by technology has various functions to enable our coherent interaction with the world. Such a memory presumably involves some veridical representations of past events, but need not always, or even usually, conform to the standard of comparison with a rich, permanent and objective record. When technology comes to mediate memory, then the permanence of the traces it leaves behind, via the artefacts that individual technologies produce, it is a natural (though, historically, not an immediate) progression to regard those artefacts as objective truths. Once the content of representations is understood as being caused by external events, then the role of the representation as an objective standard for memories of those events becomes available.

This, of course, is a caricature of a number of complex psychological, social, technological and philosophical developments; it is not meant to be a potted histo-



ry of memory. The point in this section is to argue that the spread of use of technologies as memory supports has created a situation in which truth is normative for memory in ways that it was not, and could not be, before those technologies existed, and that to treat truth as normative is to downplay other aspects of memory that could have been and no doubt were important in the evolution of the faculty in both non-human animals and human societies.

### ***Theme #3: The Effects of Moore's Law***

Printing and photography revolutionized the technological support of memory, as many have argued. Digital technologies have speeded up the process still further. In particular, the consequences of Moore's Law, that computing power per unit of silicon will double every 18 months (a 'law' that has remained true for some 40 years, resulting in an increase since the mid-1960s by a factor of an astonishing  $2^{30}$ ). This massive increase in power has had three vital effects on society's relation to information. First, information is much easier to collect, for example by miniaturization and mass production of devices and sensors. Second, it is easier to store, because memory capacity has increased. Third, it is easier to retrieve, as the increase in computing power has enabled more effective algorithms for search and data mining.

### **The Technology of Memory**

If we put these three themes together, we find ourselves in a world where it is deemed increasingly respectable to outsource cognitive function (not only memory) to increasingly powerful and decreasingly expensive machines, which then have the broad effect of socializing our individual cognitive functions and, in the extreme case, bringing objectivity into personal psychology, the traditional realm of the subjective. Human memory has always been a rich source of inspiration and metaphor for computer memory (O'Hara et al 2006a), but our understanding of human, machine and social memory is converging in ways that are more than metaphorical (O'Hara et al 2006b). Memory-supporting technology, which at least initially was conceived as a medical resort, is becoming prominent (Garde-Hansen et al 2009). The development of prosthetics for the memory-impaired (certainly an important area of research), has branched out into the areas of leisure, social networking and self-improvement.

The basic premise of memory-supporting technology is that one can outsource episodic memory to digital storage devices. The three effects of Moore's Law have taken such technology out of the medical arena and into the social. The fact that one can more or less store anything one likes means that recording requires a

very low cognitive overhead – one needn't worry about the extremely tedious tasks of choosing what information to store, or deciding what to delete when the memory gets full (consider, for example, how boring it is to keep an email inbox well-organised, and then imagine that task multiplied across every machine and modality in which one might wish to preserve information). Meanwhile, improved search and retrieval techniques mean that one can find what one needs relatively straightforwardly. One can, in short, use memory technology indiscriminately – which makes it usable (O'Hara et al 2009).

Furthermore, the indiscriminate use of such technology chimes in with the associative ways that human memory works. We store all sorts of pieces of 'useless' information, precisely because we do not know at storage time what will be useful in the future. The guesses we make about what memories are likely to be important in the future are unlikely to be right all the time, so the more raw material that is present in our records of the past, the more likely we are to have everything that is useful (Bell and Gemmell 2009). That does not mean that one should spend the whole of one's life reviewing the whole of one's life. Rather, one has the resources to remember associatively, because associative memory requires a rich picture of the past to work effectively. No doubt most of what is stored will actually be, as anticipated, completely useless; data tends to have a long-tailed structure, where some pieces of information are used all the time, while most of the rest is hardly ever consulted. The cheapness and ease of digital information storage make it possible to preserve records without the need to consult them.

It has been calculated that it would be straightforward to store 70 years of high quality video taken from a lifetime (Dix 2002); this has prompted the United Kingdom Computing Research Committee<sup>1</sup> to propose 'Memories for Life' as a Grand Challenge for computing research (Shadbolt 2003, O'Hara et al 2006b) – in other words, a potentially epoch-making area for research where breakthroughs would promote not only computer science, but also social well-being in a wide population (<http://www.ukcrc.org.uk/grand-challenge/current.cfm>). As a Grand Challenge, research groups have been coalescing in this area, looking for example at the use of machines to act as companions for humans (Wilks 2010, O'Hara 2010a), or the difficulties for archivists in curating the digital records of noteworthy people.<sup>2</sup> Elsewhere, special-purpose tools have been helping communities use websites as collective memory resources.<sup>3</sup>

Prosthetic memory has been a major area of research. For instance, one device, the SenseCam developed by Microsoft,<sup>4</sup> is a small digital camera designed to take photographs passively, without user intervention, while it is being worn around

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<sup>1</sup> An expert panel of the British Computer Society, the Council of Professors and Heads of Computing, and the Institution of Engineering and Technology to promote computing research in the UK (<http://www.ukcrc.org.uk/about/index.cfm>).

<sup>2</sup> <http://www.bl.uk/digital-lives/>.

<sup>3</sup> See e.g. <http://www.bbc.co.uk/dna/memoryshare/> or <http://www.livememories.org/Home.aspx>.

<sup>4</sup> <http://research.microsoft.com/en-us/um/cambridge/projects/sensecam/>.

the neck. It has no viewfinder or display to frame photos, but instead is fitted with a wide-angle lens that maximizes its field-of-view, ensuring that nearly everything in the wearer's view is captured. It also contains a number of different electronic sensors, including light-intensity and light-colour sensors, a passive infrared (body heat) detector, a temperature sensor, and a multiple-axis accelerometer, which are monitored by the camera's microprocessor, and certain changes in sensor readings can be used to automatically trigger a photograph to be taken. Hence a significant change in light level or the detection of body heat in front of the camera can cause the camera to take a picture. Alternatively, the user may elect to set SenseCam to operate on a timer, for example taking a picture every 30 seconds (Hodges et al 2006). To review the SenseCam output, it is remarkably effective to run the resulting set of pictures as a speeded-up movie (De Bruijn and Spence 2002).

SenseCams have been shown to have remarkable positive effects on the memories of at least some sufferers of severe memory impairment; those who use and review SenseCam images of significant events can often recall them better than those who have taken records more actively, for instance by keeping diaries (Berry et al 2007). However, these and similar devices are also used more and more frequently to record the behaviour of those with non-impaired memories, either to achieve an objective picture of real-life behaviour (of great value, for example, in market research – cf. Byrne et al 2008), or simply to record the quotidian details of daily life. Research by Alan Smeaton, Cathal Gurrin and others at Dublin City University has provided the tools to allow daily use of SenseCam in this way. Gurrin in particular has worn a SenseCam around his neck almost daily for a period of years, and has amassed a personal record of several million images (Lee et al 2008, Doherty et al 2009).

The SenseCam has evolved from a research tool to a consumer device. The practice of using such devices to record daily life in an indiscriminate way is called *lifelogging*. The lifelogger simply uses devices that amass information, and then stores the results. The SenseCam is a recording device, but of course one does not need to use special-purpose devices like that; mobile phones, Web browsers, email programs, social networking sites and medical sensors all generate information that is of potential interest to the lifelogger (especially among younger people with their greater tendency to integrate digital and connected technology into their daily lives – O'Hara et al 2009).

There are many important pioneers in this space, including Steve Mann who has for many years worn devices to record his daily life,<sup>5</sup> and Jennifer Ringley, who achieved notoriety in 1996 for broadcasting the output of a camera in her bedroom across the Web (the so-called JenniCam – Jimroglou 1999). Perhaps the most committed is Microsoft executive Gordon Bell, who has developed a suite of technologies and practices to deal with the giant quantities of information one can generate in a normal life, and who has written about the potentially transformative

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<sup>5</sup> <http://www.eecg.toronto.edu/~mann/>.

effects of such technologies for work, health and learning, as well as in everyday life (Bell and Gemmell 2009).

The present author is no enthusiast for such technologies, and has no intention of using them (and hence should not be regarded as a cheerleader for them). Nevertheless, that does not mean that they will not become more ubiquitous; if they do, then they will have social effects with which we all will have to deal. A lifelogging world would be characterised by *universality*, both in terms of a high proportion of people owning extensive records of their lives, and of those digital records covering a high proportion of people's activities, so that more people would have access to more of their past lives. Such records are likely to be relatively *durable*; even though there is always a danger of file formats becoming outdated and unsupported by present-day machines, the greater awareness of this problem in the computing industry means that more adaptable general-purpose standards for representational formats are likely to emerge. There is a strong likelihood that lifelogging records would be *shared*, not only because of the relative ease of copying and transfer compared to non-digital formats, but also because of a greater willingness to use the World Wide Web as a sharing format, for instance on social networking sites (O'Hara et al 2009). The power of a great deal of information amalgamated from several of one's own devices, the lifelogging stores of others, information from social networks (e.g. Facebook or Flickr) and publicly-available information (e.g. using Google or Wikipedia) could be immense in the provision of a rich picture of one's own life (and, as a by-product, of other people's too).

If a large percentage of an influential stratum of society (say, college kids) began to use them, then it is possible that lifelogging will achieve critical mass, and the effects would ramify beyond their original pockets of use. In such circumstances, Bell's prediction would seem far less hyperbolic.

The coming world of Total Recall will be as dramatic a change ... as the digital age .... It will change the way we work and learn. It will unleash our creativity and improve our health. It will change our intimate relationships with loved ones both living and dead. It will, I believe, change what it means to be human. (Bell and Gemmell 2009, 4).

Certainly, if sufficient human ingenuity was devoted to trawling through digital records, it would be reasonable to go along with Bell's claim that 'E-memories reveal the meaning of your life' (Bell and Gemmell 2009, 225), although the result may not be as positive as Bell anticipates.

## The Backlash

As noted, the author of the present chapter is a neutral observer, but several commentators have argued that the widespread use of memory-supporting technology (particularly beyond medical applications) will be a bad thing, either because it will have deleterious effects on society, or because it will be a frivolous misuse of resources. In this section I shall review a number of recent influential critiques; I

do not expect, in the space available, to refute or confirm any of them conclusively, but I do hope to contextualize these negative arguments with respect to the three themes outlined above, and to argue that the most worrying of them are connected with the increasing normativity of truth for memory.

### ***Six Worries About Memory-Supporting Technology and Lifelogging***

The recent literature has thrown up six particular persistent worries, which I shall review in this subsection. This is not to say that these are new worries, but that they have either been presented in new guises, or alternatively have been felt more urgent as a result of recent technological developments.

1. Outsourcing leads to atrophy. In a recent work, Nicholas Carr has argued that digital technologies are changing the ways in which we think, read and remember, both as individuals and in our culture. ‘The offloading of memory to external data banks doesn’t just threaten the depth and distinctiveness of the self. It threatens the depth and distinctiveness of the culture we all share .... Outsource memory, and culture withers’ (Carr 2010, 196-197). This train of thought is familiar from Socrates’ complaint in the *Phaedrus* (Plato 1997).
2. We won’t remember the right things. Abigail Sellen and Steve Whittaker give a powerful critique of lifelogging, arguing that the total recall advocated by Gordon Bell will be less valuable than selective capture of information that can provide cues for more effective use of human memory, and that ‘rather than trying to replace human memory with digital systems, system designers should look to capitalize on the strengths of human memory and help overcome its weaknesses’ (Sellen & Whittaker 2010, 77).
3. Uselessness. The first worry is that the information gathered will be useless. ‘Rather than unfocused efforts to ‘capture everything’, system designers should channel their efforts more fruitfully by identifying the situations where human memory is poor or targeting the things users most want to remember. These situations are where the systems would provide their greatest utility’ (Sellen & Whittaker 2010, 77). Why bother capturing a load of stuff that humans can already remember, or alternatively aren’t interested in remembering.
4. Too much information. ‘Capturing vast arrays of data might overwhelm end users maintaining and retrieving valuable information from large archives; it also ignores the burden huge amounts of data impose on system designers and developers’ (Sellen & Whittaker 2010, 75). Viktor Mayer-Schönberger (2009) has also argued that we should be more prepared to delete information because there is too

much of it available for comfort, while Carr maintains that tools like the Web are bad for our health, because ‘the influx of competing messages that we receive whenever we go online not only overloads our working memory; it makes it much harder for our frontal lobes to concentrate our attention on any one thing. The process of memory consolidation can’t even get started’ (Carr 2010, 194). Information overload has been perceived as a problem for a long time.

5. Unbalanced images and self-images. Legal scholar Anita Allen argues that an ‘unredacted lifelog could turn into a bigger burden on balance’ because ‘electronic memory enables destructive reminding and remembrance’ (Allen 2008, 56-57). We would be more prone to dredging up horrible memories from the past. ‘The lifelogging concept is insensitive to the therapeutic value of forgetting the details of experience’ (Allen 2010, 64). ‘The technology will enable excessive rumination by persons experiencing unipolar or bipolar depression’ (Allen 2010, 64-65). Mayer-Schönberger agrees that the consequences of this technology are that stupid adolescent mistakes can take on disproportionate significance in later life (2009).
6. Privacy. Mayer-Schönberger argues that ‘comprehensive digital memory represents an even more pernicious version of the digital panopticon’ so that ‘the future has a chilling effect on what we do in the present’ (Mayer-Schönberger 2009, 11-12). Allen sets out in some detail the argument that saving information about oneself would leave one open to invasions of privacy. Not only could one find oneself under surveillance (or, as it is sometimes termed, ‘sousveillance’) from lifelogger friends and acquaintances (Dodge & Kitchin 2007, 434-437), but also ‘a government that has traditionally enjoyed access to communications and correspondence will want access to lifelogs’ (Allen 2008, 67).

The purpose of this chapter is not to argue that these worries are unfounded. Quite the opposite; I am sympathetic to most if not all of them, although I do think that they are often overstated. My main aim is to show that we can understand these claims best in the context of the three themes set out above, and that once we do this we can best prioritize and if required address the problems.

### ***Worries Concerning Theme #1***

The first two worries, that outsourcing memory leads to atrophy and that we won’t remember the right things, are connected with the theme of extended cognition. When stated baldly, the two worries share a similar form: that the human mind does some things very well, and that replacing those functions with technology

will undermine the mind. This form presupposes strict dualisms between mind and world, and between authentic cognition and technology.

However, as the work of Clark, Halpin, Brooks and others has suggested, these dualisms may be misleading. The philosophical idea of extended cognition implies that technologies are not transplanted, complete and fully-formed, into psychosocial situations, but rather that we should expect the co-constitution of technological devices, social institutions and relations, and individuals' psychology. We make, and are in turn made by, the artefacts that we construct. We can certainly expect to be significantly altered psychologically and socially by new technologies, but that does not necessarily mean the alteration would be for the worse (indeed, since the embedding of new technology will result in our psychosocial resources being adapted for a world containing that technology, it is not entirely clear what 'for the worse' would even mean here).

These worries also assume a level of technological determinism that is unwarranted. It is quite likely that memory-supporting technologies will be appropriated opportunistically and unpredictably by different sectors of society, and that those technologies not perceived to have psychosocial value for users will wither on the vine in a kind of device Darwinism. If the information such technologies gather is widely perceived to be useless, then they will not be used. If, on the other hand, it is not perceived that way, then why should we not take that perception of interested users as veridical? And why should we not let device Darwinism, rather than philosophical or psychological argument, clear the field of unhelpful research?

In short, memory-supporting technology will adapt to us, and we will adapt to it. If the adaptation is no fun, or not useful, then the technology will not be used. We will remain the boundedly rational beings we have always been, although perhaps less bounded and maybe even more rational. If the worries of Carr, Sellen and Whittaker are well-founded, then the technologies are much less likely to thrive.

### ***Worries Concerning Theme #3***

The third and fourth worries, about the collection of useless information and information overload, can perhaps best be appreciated in the context of theme #3, Moore's Law. As noted, the increase in computing power over the last decades has been colossal, and has led to all sorts of unpredictable consequences, of which the feasibility of memory-supporting technology is just one. In general, statistics and number-crunching have time and again proved more useful than cleverer ways of processing information, because theorists constantly underestimate what computers will be able to do by way of brute force. It may be that *today's* computers cannot cope with a deluge of information, but in, say, 6 years' time, Moore's Law tells us that they will be 16 times more powerful.

In other words, Moore's Law can look after itself. It may be that the problems of redundancy, uselessness and overload will be made to seem paltry by developments in hardware in the short to medium term. Of course, it may be that they are not; Moore's Law is hardly a law of nature. The point is merely that the costs of uselessness or overload may be overestimated.

### ***Worries Concerning the Normativity of Truth***

The above considerations are not intended to imply that the first four worries are not real, but rather to point out that developments in social norms, mores, laws and technology could change their context completely. The same is not true of the last two worries, about self-images and privacy, which are connected with the second of the three themes, that of the increasingly prominent role of truth as normative for memory. The danger, broadly, is that we will be confronted with the truth and nothing but the truth – but not necessarily (in fact, probably not) the *whole* truth. That context is not, unlike those of extended cognition and Moore's Law, subject to change, and therefore, all things being equal, these two worries seem to be the most trenchant of the six outlined above.

The development of memory-supporting technology will result in a great deal of reliable information swilling around, relatively easy to access, from all sorts of sources including surveillance, sousveillance, social networking and lifelogging. Our social norms seem to be developing too slowly to keep pace; we live in a world of what we might call 'Intimacy 2.0', where rights to privacy are constantly neglected, eschewed, ignored or undervalued by a society that is increasingly exhibitionist and archival (O'Hara 2010b). One danger of a situation where there is social upheaval while social norms fail to keep pace is that there will be pressure to conform; lifelogging is currently a fringe activity, and if all lifeloggers are voluntary then it may be unproblematic even if they become a majority. Allen anticipates the possibility that we might reach a situation where someone who wishes to retain control of the information about them (the traditional conception of informational privacy) comes to be seen to be abnormal; in that case, the fact that one does not keep a lifelog may itself be seen as suspicious (Allen 2008, 74). In such a world, our reasonable expectations of privacy (an important aspect of common-law protection of privacy) will decline (McArthur 2001, Bailey and Kerr 2007), with potentially deleterious effects across society.

There is an additional danger of seeing this sort of problem as exclusively a technological one. Not only could memory, which as Sellen and Whittaker argue (2010, 77) is a complex, multi-faceted set of concepts, come to be seen in an impoverished way as Proust's 'simple cinematographic vision', but also that what may be sociotechnical problems come to be seen as amenable to technological solutions.



Entirely technical solutions are very unlikely to work. As has been noted in many quarters, the use of complex privacy controls merely confuses users; privacy-enhancing technologies generally suffer severe usability problems (Sasse and Flechais 2005). The point of lifelogging is that one does not have to think too hard about collecting, storing and retrieving information (O'Hara et al 2009); one of the ways that social networking sites like Facebook can get people to share information in more lucrative ways (for advertisers) is to set privacy defaults at a low level. Security techniques are similarly flawed; of course good security is a fine thing, but in a socio-technical system it is not just the technology but the way it is used that needs to be made secure. There is no point getting someone to create and regularly change a complex password if they end up having to resort to sticking it onto their computer screen with a Post-It (Ingelsant and Sasse 2010).

Mayer-Schönberger suggests the use of sell-by dates for information, so that stored information has associated with it a deletion date (Mayer-Schönberger 2009, 171-181). One creates one's Word file, say, and as part of the settings it might include a date when the file deletes itself (say, one year after the last edit). One could reset this at any time (as one can reset other metadata parameters, such as read and write permissions or filenames).

This idea has severe usability difficulties associated with it. The idea that one's old essays, letters or whatever might disappear because one forgot to set the delete-by date properly, is disturbing. It is hard to see it catching on; it seems a recipe for irritation (another box to think about before I can start editing my file), misunderstanding (particularly in a corporate context when files may have multiple editors with different ideas about this sort of thing), confusion (how does one calculate the time when information will become useless?), neglect (as one more and more often resorts to the default) and finally horror (oh my God my teenage novel/pictures of Grandpa/bookmarks relating to my old research have disappeared).

In general, philosophies of deletion seem to throw the baby out with the bathwater; the advantages of abundant information seem clear and overwhelming, even if there will be associated difficulties. Information is clearly valuable, and is obviously perceived to be so because so many people spend so much time and effort trying to gather it. Storage and retrieval are incredibly cheap, certainly by historical standards, in which case the germane question is not 'why are we doing this?' but rather 'why *not*?'

Dodge and Kitchin (2007) suggest that we might subvert the aims of those who wish to breach our privacy by a process of randomized falsification. Lifelogs might be programmed to change a small number of pieces of information so that they misrepresent reality. This is an interesting suggestion, as it uses the normativity of truth to undermine threats to privacy or self-perception; because truth is normative, and because it is possible that information retrieved from the lifelog is false, then the information, or what Bell calls the e-memory (Bell and Gemmill 2009), is that much less valuable.

This solution, though clever, is I think too clever by half. The problem is that although the normativity of truth is a problem, the value of the lifelog is its truth.

Randomized falsification undoes some of the worries about memory-supporting technologies at the cost of rendering them less useful. In general, making them less useful will address all the worries given above, because if they are less useful they are less likely to be used, and therefore the anticipated problems with them are less likely to occur. The lifelog's creator wants access to information that is true; he is not interested in having false memories (the pro-lifelogging literature harps on at great length about the fallibility of memory – e.g. Bell and Gemmell 2009, 51-56). So a system that serves up potentially false information seems not to fit the bill at all.

### **Conclusion: The Perils of Rich Representations**

In the *Phaedrus*, Socrates warns not only on the atrophying effects of writing on the memory, but also of its effects on discourse.

You know, Phaedrus, writing shares a strange feature with painting. The offsprings of painting stand there as if they are alive, but if anyone asks them anything, they remain most solemnly silent. The same is true of written words. You'd think they were speaking as if they had some understanding, but if you question anything that has been said because you want to learn more, it continues to signify just that very same thing forever. When it has once been written down, every discourse roams about everywhere, reaching indiscriminately those with understanding no less than those who have no business with it, and it doesn't know to whom it should speak and to whom it should not. And when it is faulted and attacked unfairly, it always needs its father's support; alone, it can neither defend itself nor come to its own support. (Plato 1997, 552)

The written is pathetically unequal to the spoken; spoken discourse can include interrogation, clarification, self-defence and discrimination, because rather than simply being presented automatically, it has to be presented by an experienced speaker who has an interest in ensuring that his or her words are maximally effective.

Given the usefulness of writing, it seems that Socrates' complaints were overdone; few would advocate a return to an oral culture, even as an Edenic fantasy. However, his point is well-made in so far as the shift from orality to literacy required corresponding shifts in norms to regulate our expectations with respect to discourse in general. It may be, if lifelogging and the use of memory-supporting technologies take off as its advocates, like Bell, predict, that an analogous shift will also be required. We have been used to our pasts decaying from scrutiny at predictable rates; no doubt our e-memories will degrade, but not in a smooth way. One might lose last week's photographs while the ones of that embarrassing party thirty years ago remain stubbornly current (one is reminded, for instance, of the notorious photograph of the Oxford Bullingdon club in 1987 containing the future Prime Minister of the United Kingdom David Cameron and Mayor of London Boris Johnson, which somewhat undermines the images that they try to foster in their voters). This is a new circumstance, where one's past cannot be expected simply to erase

itself, and it is one to which we need to adapt. Like the texts that Socrates decried, a past lifelog will have a presence, and we will need to understand what it is saying – and what it is not. This is preferable to Mayer-Schönberger's Canutian idea of building deletion into the technology, or to Dodge and Kitchin's randomized falsification.

In the greatest work of art yet created about lifelogging, Samuel Beckett's play *Krapp's Last Tape* (Beckett 1959), Krapp has two obsessions: recording every detail of his life, and listening to his old recordings. In the play we see his elderly self listening to a recording of his middle-aged self who has just listened to a recording of his youthful self. The dislocation shouts at us, as Beckett undermines our notions of the unity and continuity of the self. 'Just been listening to that stupid bastard I took myself for thirty years ago, hard to believe I was ever as bad as that.'

The point is not about good and bad technologies, but rather their use and misuse. We need to guard not against information processing and storage power, but rather what comes with them, particularly in the context of the normativity of truth.

First of all, we need to guard against the closed world assumption. In computing and knowledge representation, this is the assumption that whatever cannot be asserted on the basis of a knowledge base is false – in other words, the assumption that the knowledge base is complete. With respect to a lifelog, or even all lifelogs put together, or even the whole of the World Wide Web, this is a very dangerous assumption. To assume that all useful, interesting or germane information has been digitally recorded, or to assume that 'if I can't find it with Google it can't be important' is extremely worrying in a world which is partially recorded by digital technologies, but where major inequalities of access correlated with age, educational achievement or nationality are evident. The recording angel in the Book of Ezekiel may be exhaustive but the World Wide Web could not function with such a centralized structure – and we should not behave as if it does.

Second, we must guard against the assumption of, or demand for, consistency. If truth is normative for memory, then inconsistency is symptomatic of a false memory somewhere. Yet given the shades of meaning and understanding underlying memories, it is not only plausible but commonplace to find different people with entirely different memories of an event, created and curated in good faith. A future world where one's testimony was automatically assessed as of less worth than, say, the records of one's Web browsing clickstream, or one's email inbox, or one's camera, would be a very worrying one. Even if truth is normative for memory, the e-memories of browser, email program and camera are subject to interpretation too.

Third, we must guard against hindsight. Decisions made under uncertainty may seem to be poor, yet it is extremely easy to underestimate the complexity of such decision-making when we are in possession not only of the record of how the consequences of a decision unfolded, but also a richer picture of the context of that decision than could possibly have been available at the time.

Fourth, as many commentators have noted, there is an increasingly lack of interest in, and respect for, the distinction between public and private space. In part, this is the result of a lack of care in society as a whole, as I have argued elsewhere. One blatant misrepresentation that is often passed around is that privacy is in the interest of the individual, while publicity is in the interest of wider society ('the community'). Nothing could be further from the truth; abundant information and transparency are often in the interests of the individual, while privacy is in many respects a public good (O'Hara 2010b). Its neglect can often be seen as a tragedy of the commons (Anderson and Moore 2006).

Broadly speaking, our autonomy demands informational self-determination. That is not an easy thing to define or protect, and cannot simply be assimilated to our preferences for sacrificing privacy for material gain. In particular, even though the growth of lifelogging and memory-supporting technologies continues, we should be careful that this does not undermine our reasonable expectations of privacy. We should not be seduced by the richness of the lifelog into accepting all its assumptions, assertions and details.

We should, at all costs, retain the right to be a mystery.

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