# Forgetful or Bad Memory?

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## Abstract

*Although individuals and organizations forget, the ideal organizational memory is not forgetful.. This paper explores the role of organizational and individual forgetting. I posit that forgetting allows coping in an information-rich world and may be the most important process to design into OMSs to provide adequate support to managers and the organization.*

## 1. Introduction

It is almost a truism that forgetting is "bad" and remembering is "good" [26:5]. One promise of Organizational Memory Systems (OMSs) is that an organization will have unlimited access to information about its history [31]. Supporting human memory with OMSs and, particularly with computer technology, is increasingly being advocated to overcome the limitations of individual memory (i.e., forgetting) in organizational settings [12].

Huber's [12:60] view that "everyday experience and some research suggest that human components of organizational memories are less than satisfactory" is seen by Bannon and Kuutti [3:158] as "a rather standard view of the human as the fallible element in the system, and the possibility of supplementing or even replacing the human element with computers". According to this "standard" view, human memory is "poor memory" [12:60]. On the other hand, an ideal OMS never forgets [19]; it is temporally and spatially integrated [31]; and, it can be the "prosthetic" that provides perfect recall [6].

However, Norman [20:152] cautions: "Beware: Using artifacts — technology — to help overcome the frailty of human memory may move us in undesired directions and swamp us with excessive amounts of excessively precise information. The question 'What can technology do to help?' is almost always the wrong question." Clearly, according to some, one major human "frailty" is that we forget [12].

Norman [20:152] posits that "The whole solution is wrong because the problem is wrong. The correct approach is to structure the world so that we do not have to remember such mindless trivia. Then the question of technological aids would never have been asked."

If, however, technology can be structured to retain the "mindless trivia" that Norman [20] posits could overwhelm the individual, then, as Linger and Burstein [16:202] observe, OMSs can provide processes for reminding: "It is in this sense that information systems can be seen as 'systems of forgetting'; recording information externally makes it possible for an actor to forget the stored information because it is available through the process of collective remembering." An OMSs chronicling of [16:202] "organisational knowledge provides a memory, which accommodates individual forgetting in the context of organizational remembering."

Given the view that humans are the fallible and forgetful part of an organization's memory that can be supported, if not replaced by computers, this paper's purpose is to examine the role of individual and organizational forgetting and its relationship to OMSs. The paper begins with a review of the literature on forgetting and OMSs.

## 2. OMSs and Forgetting

The OMS literature has not overlooked the notion of forgetting. Tuomi [34:150] asserts: "The fundamental question about organizational memory support is, what should be remembered and what not." Walsh and Ungson [37:80] observe that: "As a design issue, the recognition of organizational memory entails understanding how past events are acquired, retained, retrieved, and even forgotten within the organization." They [37:75] go on to posit that change agents must "promote what the cognitive psychologists call retroactive interference," a form of forgetting. Stein and Zwass [31:105] believe a significant issue is how an OM

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system "selectively forgets." Sandoe and Olfman [22:127-8] are concerned about limiting "organizational amnesia" and countering "much unwanted organizational forgetting." Finally, Morrison [19] posits that "none of the information in an organization's memory should be permanently 'forgotten.'"

Engestrom, et. al [8:143] identify two paradigms for defining forgetting related to collective memory: "In Cartesian and cognitivist terms, forgetting is understood as a technical failure in the storing and retrieving of information into or out of mind. The psychoanalytically inspired view regards forgetting as repression of the unpleasant, as 'social amnesia' (Jacoby, 1975)." Both of these paradigms are employed in the organizational literature to explain forgetting (see [11]).

For the purposes of this paper, forgetting[1] is defined as "an inability to recall" and includes the notions of encoding failures[1], unlearning[2] and amnesia[3]. Memory loss may be intentional or unintentional, internal or external, functional or dysfunctional, permanent or temporary, or conceptual or behavioral. For example, Huber [11:147] notes that "the use of the word 'unlearning' serves primarily to emphasize a decrease in the range of potential behaviors, rather than to indicate a qualitatively different process that is part of learning.

## 3. Individual and Organizational Forgetting

Sandoe and Olfman [22:135] ask: "Is organizational forgetting ever beneficial?" Several authors directly address this question. Huber [11] posits that organizational forgetting provides a possible motivation to find new knowledge to be assimilated as organizational routines are "unfrozen." Organizational "unlearning" implies discarding existing knowledge to improve performance. Walsh and Ungson [37] posit that when information is not forgotten and organizations rely on rules or "encased learnings," it may lead to inappropriate use or misuse of organizational memory.

In applied settings, the concern for relying on inappropriate action schemas has fostered the notion that forgetting may be a critical component of business process re-engineering [6] and innovation [21]. One so-called "guru," Tom Peters [21:75], in his recent book, *The Circle of Innovation*, begins Chapter 3, "You Can't Live Without an Eraser," with the following:

> (Very) hot management topic, circa 1994-7: Organizational learning. Great idea … SORTA. What word—in 1998—is more important than learning? Easy: ORGANIZATIONAL FORGETTING!
> What is much tougher than … learning? Easy: FORGETTING!

Rather than considering the benefits of organizational forgetting, Weick [38:224] asks:

> Has an organization ever failed to survive because it forgot something important? More likely is the possibility that organizations fail because they remember too much too long and persist too often doing too many thing the way they've always done them (Hermann 1963). Organizations seldom fail because their memories fail.

At least for individuals, who can be members of organizations, it is possible that Churchland and Sejnowski [5] would agree with Peters [21] since they [5:295] observe that:

> Weeding the irrelevant from our long-term recollections is one of the things we accomplish without effort and generally without conscious decisions, yet it must be one of the most sophisticated things the nervous system does. As anyone in housekeeping mode knows, pitching out everything in a cupboard is easy; saving the important things requires broad knowledge of the past as well as predictive intelligence.

Also, without a process for forgetting the affective component of our lives would be diminished. Langer [13:84] observes: "Forgetting pleasure allows us to re-experience it." For example, we may not engage in social activities because we have no need to re-experience the feeling of being in a group [13]. In an organizational context, imagine the difficulty of motivating someone who can immediately call up the positive and negative affect associated with any previous event — "Been there, done that!". Forgetting may liberate us, allow us to forgive others, and release us of from past "bad" experiences [26]. Forgetting allows us to be in the present and thoughtful about the current situation [14,15].

On the other hand, a loss of memory — a failure to remember the past — deprives individuals and organizations of their identities, guides for action, and future goals. It is for these and other reasons the we may have a fear of forgetting [26].

Overall, benefits may accrue when organizations and individuals forget. Also, no harm may come if one fails to remember. However, the actual loss of memory and the concomitant loss of identity may create a fears that drive us to remember. A point to consider is "What would be the outcome of having a perfect memory or complete amnesia?"

## 4. Perfect memory and complete amnesia

If an OMS provides a perfect memory what are the consequences? Luria's [17:159] seminal study, *The Mind of a Mnemonist*, suggests that a perfect memory may hinder an individual's normal functioning because of the subject's inability to distinguish reality from imagined worlds: "Indeed, one would be hard put to say which was more real for him: the world of imagination in which he lived, or the world of reality in which he was a temporary guest."

The subject of Luria's study [5:295] "remembers all the humdrum details of every experience, … [his] brain is handicapped by a mountainous clutter of irrelevancies saved right along with the relevant information; he is paralyzed by an unceasing deluge of associations as he tries to make his way in the world." Put another way, the subject is suffering from information overload, albeit internally generated.

Similarly, when organizations find ways to reliably and, possibly, automatically retrieve information from their OMSs, the information does not necessarily reflect the different frames of reference or preferences that exist [15]. Decisions may be subject to "encased learnings" that may not be valid or responsive to environmental changes [37]. The perfect memory of an ideal OMS could, like Luria's subject, overload individuals and decouple the organization from the current reality.

Can an individual or an organization function without a memory? When an individual looses his or her memory of the past events (i.e., retrograde amnesia affecting episodic memory), Schacter [24:149] describes it as a life that "is psychologically barren—the mental equivalent of a bleak Siberian landscape." Loss of semantic memory, "the bedrock of the general knowledge of the world" [24:152], leaves a person without the ability to retrieve attributes of objects or recall details and the knowledge of one's life may be quite impersonal. Taken together, the loss of events and facts, leaves a person in the present, sometimes without the ability to communicate and unaware of deficiencies, without a need to plan for the future since there is no past [24].

Sandoe and Olfman [22:130] hypothesize that an organization lacking a memory may exist but would "in essence, be paralyzed by social amnesia, bracketed off from authentic temporal existence." When an organization does not have mechanisms to provide temporal integration, the organization [22:99] "exist[s] only in the present moment. Organizations at this extreme continually recreate themselves and are incapable of learning from experience."

Schaef and Fassel [25:145; emphasis in original] associate the loss of individual memory and the loss of organizational memory to addictive behaviors.

> *Loss of corporate memory, or forgetfulness*, is an outstanding characteristic of the addictive organization. People have said of addicts that they cannot learn from their past behavior, because they have no memory. This is one of the aspects of the disease. Addictive organizations have the same problem.

Put in terms of organizational learning, the members responses to current circumstances are inappropriate since they respond [2:145] "in a single-loop fashion to the errors which can only yield to double-loop learning: or, without realizing that they are doing so, they may oscillate for a long time between incompatible values which are horns of a dilemma."

Luria's subject was constantly remembering a multitude of facts that overloaded his capacity to appropriately respond to his "real" situation. Eventually, after the loss of many jobs and suffering in a awkward existence, Luria's subject became a mnemonist. At the collective level, we have created organizations that are mnemonists — libraries, data bureaus, archives, and copy centers to name a few. The memory industry is a vital aspect of our social and economic existence [26].

But being a mnemonist in a dynamic world may not provide the adaptability needed to survive. One reason that humans forget is that our mental capacity is "bounded." To be adaptable we "forget" the trivial and mindless aspects of our day-to-day existence to prevent overload and use generalizations to handle novel situations. Put another way, we "economize" by not attending to the vast information richness of our changing environment.

Consider the manager who must make a decision in a dynamic environment [37:88]: "Remembered facts are likely to be considered true. Yet truth often changes depending on context and over time. Forgetting allows us to arrive at better solutions because the new solutions are based on more experience and take into consideration the present context."

In summary, neither a perfect memory nor a lack of memory are without problems for either the individual or the organization. A perfect memory overwhelms the current situation with past details; a loss of memory destroys the entities' identity and removes the ability to quickly draw on appropriate responses for a given situation.

## 5. Forgetting and OMS Design

Since it is plausible that many OMSs designers and researchers see the loss of memory as being detrimental and something to avoid, understanding forgetting relative to OMS functionality is central to designing effective information systems [29]. This section examines the theories of forgetting, posits relationships with OMS mnemonic functions and physical circumstances, and

suggest OMS design principles that incorporate forgetting.

### 5.1. Theories of Individual Forgetting

Several theories of individual forgetting are widely accepted and form the basis for this section [4][23][36]. *Cue-dependent* forgetting, which may be the most common form of forgetting, occurs when we lack necessary cues to locate items in memory. Context and state influence the effectiveness of cues. *Context-dependence* suggests that when the environments are similar during encoding and retrieval, remembering will be improved. *State-dependence* suggests that recall is improved when encoding and recall are undertaken under similar psychological states.

*Decay* theories emphasize that representations or memory traces fade or disappear over time. Without rehearsal, decay occurs in short-term, or working, memory that has a very limited storage capacity and retention times in the range of seconds to several tens of seconds. As the time between encoding and retrieval lengthens, memories also fade except in the case of *hypernesia* where memory for details improves over time.

Theories of *interference* posit that existence of old memories and new memories either displace or inhibit recall. While the capacity of long-term memory is assumed to be large (if not unlimited) and relatively permanent, some researchers posit that interference causes *displacement* or the complete loss of an item from memory and other researchers posit that the strength of the connections between concepts is inhibited. In either case, *retroactive interference* is the inhibition by new information of the recall of older information; a process which may be more active in an information rich and dynamic environment. When old memories inhibit the recall of newer memories, *proactive interference* occurs and may block the assimilation of new information.

According to *semantic network models* of memory when someone experiences the "tip-of-the-tongue" or "feeling-of-knowing" phenomena it is an instance of incomplete knowledge retrieval that occurs when part of a semantic network or group of attributes are retrieved. *Motivated forgetting*, or *repression*, is generally associated with the blocking of memories to avoid embarrassment or protect one's ego or pride. In organizational decision making terms, it may foster the selective forgetting of instances where forecasts or decisions were incorrect [10].

Finally, the physical condition of the brain may influence recall. For example, physical *trauma* may produce amnesia (although amnesia may be the result of psychological trauma). *Anterograde amnesia* is inability to remember things that occur before a trauma; *retrograde amnesia* is the inability to recall events afterwards. Also, *psychosurgery* may remove or destroy parts of the brain. *Aging and disease* may diminish performance. Ultimately, *death* permanently removes all memory.

Before leaving the discussion of individual forgetting, three other mechanisms are worthy of mention but are not *per se* forgetting although they appear to be memory loss. First, *schematization* is a process of abstraction that removes details (i.e., forgets) to form categories and scripts, person schemas, and self-schemas. Second, information encoded in implicit memory is *tacit knowledge* that is available for use but without the individual having any awareness of its origin or content and, thus, it is not possible to recall or verbalize. *Infantile amnesia*, the inability to recall the first several years of one's life, is frequently cited as an instance of implicit memory. A third mechanism that can appear to be forgetting is the *failure to encode or learn* information through inattention or interference in short-term memory before consolidation in long-term memory.

In summary, individual forgetting is not the consequence of a single process, mechanism, or act. Forgetting can impair performance but it may also improve performance. The aforementioned theories allow the OMS researcher craft specific hypotheses about the effect of forgetting and allow the OMS designer to anticipate areas to support individual decision makers.

### 5.2. OMS Mnemonic functions and forgetting

One approach to shifting the focus of OMSs to what Linger and Burstein's [16] term "systems of forgetting" is to propose associations between individual and organizational forgetting mechanisms and OMS mnemonic functions that are the foundation of an OMSs effectiveness [31]. The purpose of Table 1 is to suggest what characteristics or processes OMS designers can influence forgetting in humans and organizations. Of course, system designers will have varying degrees of control of the organizational factors that influence forgetting.

Table 1. Individual and organizational forgetting mechanisms

| | | FORGETTING MECHANISMS | |
|---|---|---|---|
| **OMS Components** | | **Individual** | **Organizational** |
| **Mnemonic Functions** | *Acquisition* | Perceptual senses<br>Encoding failure<br>Proactive interference | Input sensor number and configuration<br>Input fields and categories<br>Law/regulation and policy/routines |
| | *Retention* | Infantile amnesia<br>Retroactive interference<br>Schematization<br>Implicit memory | System documentation<br>Law/regulation and policy/routines<br>Models, data/knowledge representation<br>Socialization and on-the-job-training |
| | *Maintenance* | Decay | Legacy systems |
| | *Search* | Cue dependence<br>Context dependence<br>Incomplete retrieval | Indexes and filters<br>Query formulation<br>Knowledge acquisition |
| | *Retrieval* | State dependence<br>Motivated forgetting | Context sensitive help<br>Power and security |
| **Physical Factors** | | Neural pathways<br>Psychosurgery<br>Disease<br>Anterograde amnesia<br>Retrograde amnesia<br>Aging<br>Death | Telecommunication networks<br>Records destruction practice<br>Media life and terminations<br>Backup practices<br>Disasters<br>Maintenance schedules<br>Bankruptcy or quitting business |

Stein and Zwass [31] propose five mnemonic functions of OMSs: acquisition, retention, maintenance, search, and retrieval. Since memory is a theoretical construct, it is also necessary to consider the OMS's physical circumstance. Table 1 posits each function or physical factor is associated with mechanisms of individual and organizational forgetting. Reasons that individuals forget was discussed in an earlier section of this paper. Organizational mechanisms are discussed in the remainder of this section.

Organizational forgetting mechanisms, for example records management practices, are in wide use. Since we are aware that disasters may cause "amnesia," organizations create backup procedures and disaster recovery plans that provide for risks of some forgetting. Policy, law, regulation, and practice may require individual and organization forgetting and limit recall of known information. Data administration practices set security levels and limit access to data. Employee terminations may have positive economic impact and remove part of organizational memory. Creation of indexes, database fields, filters, queries, models, and knowledge bases provide abstractions of reality that may cause the organization to forget the details and context. Consequently, while retrieval may be quick and accurate, the validity of the memory may be open to question because the output is supplied without context or it may be incomplete. Finally, attention has been shifted to the physical limitations of our current storage media that do not have as long a storage life as we would have expected [32]. Moreover, although this list does not include economic issues (i.e., cost); individuals and organizations take actions to forget or prevent learning because the costs are excessive.

However, as technology changes and advances, it is becoming less likely that traces of organizational memory will be lost. For example, video cameras, tape recorders, and copy machines can quickly reproduce low-cost, high-quality images. Telecommunications systems facilitate the rapid spatial diffusion of images and data. Storage media density and transfer speeds are increasing. These technologies and others, intentionally or unintentionally, provide multiple copies of certain aspects of organizational memory.

Clearly, technology creates great opportunities for improving remembering and, at the same time, for overloading us with excessive, de-contextualized, formal information. Handy [9:13] observes:

> Life will never be easy, or perfectible, or completely predictable. It will be best understood backward, but we have to live it *forward*. To make it livable at all levels we have to learn to use the paradoxes—to balance contractions and inconsistencies—as an invitation to find a better way.

OMS researchers and designers clearly face paradoxes in the organizational memory arena — costs versus benefits, greater quantities of information available

through technology versus limited organizational and individual attention, and the need to be stable versus the need to be adaptable.

### 5.3. Unraveling the paradox

The increasingly dynamic, complex, and uncertain organizational environment, high personnel turnover, organizational flattening, outsourcing, improving technology, and globalization are among the forces that suggest that the use of OMSs will increase. Given the need for an organization to remain competitive, to maintain coordination at widely dispersed sites, and to instantly access information, Stein and Zwass [31:99] assert that the "ideal organizational memory is both connected and retentive."

However, change may suggest another consequence for organizational memory; that is, the organization's history will become less relevant to its current and future practices because neither the content nor context of past decisions is appropriate for current decisions and future plans [18]. An organization's information environment is rich and ambiguous which makes it difficult to receive reliable feedback to determine causality [15]. Furthermore, espoused history may be less of a collection of "facts," and more a collection of superstitions, "near histories" and "hypothetical histories" that are fragmentary and imagined, set within a dynamic and information rich environment [18]. Douglas [7:80] posits:

> Coherence and complexity in public memory will tend to correspond to coherence and complexity at the social level. … The converse follows: the more the social units are simple and isolated, the simpler and more fragmentary the public memory will be, with fewer benchmarks and fewer levels of ascent to the beginning of time (Rayner 1982).

Consequently, an effective OMS for a given organization may be neither temporally nor spatially integrated. Temporal integration may not be necessary because history provides little guidance for current situations. Spatial integration may be less necessary because the use of teams [1][16] and the limited signals necessary for coordination [11]. In fact, any form of integration may be only as extensive as the social structure requires for existence and contains events and outcomes that did not happen and can not happen (e.g., heroic stories, myths, and superstitions) [7]. Ackerman and Mandel's [1] "memory-in-the-small," or task-based memory, may be an example of the application of Douglas's [7] principle.

### 5.4. Remembering and Forgetting in OMSs

How much information should we attempt to capture in an OMS? Simon [29:169] observes that retaining everything in memory "is to deny that the world is lawful and hence redundant." He [28:174] argues that attention is the scarce information resource — for both the individual and the organization — and, thus, "it is not enough to know how much it costs to produce and transmit information; we must also know how much it costs, in terms of scare attention, to receive it." This leads to his statement of the general design principle and a challenge to the information systems community [28:175-6; emphasis in original]:

> *An information-processing system (a computer or a new organization unit) will reduce the net demand on the rest of the organization's attention only if it absorbs more information previously received by others than it produces — that is, if it listens and thinks more that it speaks.*
>
> It is conventional to begin designing an IPS by considering the information it will *supply*. In an information-rich world, however, this is doing things backwards. The crucial question is how much information will it allow to be *withheld* from the attention of other parts of the system.

Two criticisms of Simon's prescription are relevant. First, has the technological change been so significant as to render useless his [28] nearly three decades old advice.? Clearly, while the cost, speed, and size have all improved access to and use of technologies, the fundamental understanding of technology has changed little except, possibly, in the area of artificial intelligence. Also, consider that technology is but one piece of a man-machine system. Human evolution is a very slow process and may constrain the effective application of technology unless, as some argue, technology should replace humans because humans are frail and fallible.

Second, is "withholding" information the same as "forgetting" information? Withholding is filtering or, put another way, intentionally forgetting the details. When system inputs are designed, information (or more precisely "data") is always withheld since we choose what to measure, when to measure, and how to measure. While it can be argued that drilldown and similar functionality can be built into a system, exposing all details could overload the human part of the system. It is ironic that if a human withholds information, devious motivations may be attributed to the individual although machine filtering is deemed desirable.

So what should an organization forget? Sowunmi,

Burstein, and Smith [30] suggest improving decisions by forgetting inhibitors and not forgetting past errors. Peters [21] suggests that we forget hesitation, blockbusters, detail, big dollars, resources, failures, rules, propriety, professionals, balance, consensus, and right and wrong. He [21] also advocates a "strategic forgetting plan" and establishing co-presidents of creation, destruction, and preservation — the Hindu troika of Brahma, Shiva, and Vishnu.

These prescriptions are somewhat akin to Weick's 38:221] notion that we must "treat memory as a pest" which must be simultaneously doubted and believed to be effective. Banks, for example, maintain stability and flexibility in an equivocal environment by operating with the contradictory belief [28:222] "It is good to save and bad to borrow, it's good to borrow and bad to save." Whether any of these prescriptions is valid remains an open question.

## 6. Summary

Individuals and organizations forget and forgetting is generally thought to be "bad." We may label forgetting "bad" because it potentially robs our identity, the past or history, and limits our future by allowing us to act only in the present.

The perspectives of Douglas [7], Simon [28,29], and Weick [28] provide OMS researchers and designers with a more sanguine view of forgetting within organizational contexts. While organizations can not operate effectively without an organizational memory their perspective suggests that: (1) the breath of memory may be associated with the organization's environment; (2) the first priority for designing memory is to concentrate on mechanisms to forget; and, (3) the validity of memory must be doubted while using its lessons.

The challenge for OMS researchers and designers is to build systems that are appropriately forgetful. The design process must begin with surfacing the assumptions one wants to make about human nature and the man-machine interaction that is appropriate. In Norman's [20:224] framework, most contemporary OMSs are "machine centered" when a "human centered" system may be more useful. That is, consider the human to be "creative," "compliant," "attentive to change," "resourceful," and a flexible decision maker who adapts to the situation.

William James observed that "In the practical use of our intellect, forgetting is as important a function as recollecting …" A "forgetful" OMS is not the same as having a "bad memory" — forgetting may be the most useful activity an OMS can perform!

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## 9. Endnotes

[11] *Webster's Ninth New Collegiate Dictionary* (1987:484) cites six senses of the word "forget": "to lose the remembrance of;" "to cease from doing;" "to treat with inattention or disregard;" "to disregard intentionally;" "to cease remembering or noticing;" and, "to fail to become mindful at the proper time."

[2] *Webster's Ninth New Collegiate Dictionary* (1987:1292) cites two senses the word "unlearn": "to put out of one's knowledge or memory" and "to undo the effect of: discard the habit of."

[3] *Webster's Ninth New Collegiate Dictionary* (1987:79) cites two senses of the word "amnesia": "loss of memory due usu. to brain injury, shock, fatigue, repression, or illness" and "a gap in one's memory."