Organizational Memory: Review of Concepts and Recommendations for Management

E. W. Stein

The notion of corporate or organizational memory has been discussed for over a quarter of a century. A major objective of this work is to review the conceptual foundations of organizational memory drawing from information systems research, management science, economics, systems theory, political theory, organizational behavior, decision making, and communication theory. The paper provides the reader with a working definition of organizational memory, identifies ways to distinguish the contents of organizational memory, and explicates the processes of memory including knowledge acquisition, retention, maintenance and retrieval. Recommendations are made throughout the work regarding ways information managers can assess and control the effects of organizational memory. While this work does not represent the last word on organizational memory, it provides a conceptual road map to the many different and seemingly contradictory perspectives on the topic. As a practical guide, this work is valuable to managers struggling to compete using, and in spite of, organizational memory.

Introduction

The Ford Motor Company today is very different from the same company of 1970, yet many essential characteristics remain so that Ford is still Ford, for better or worse. The persistence of organizational features suggests that organizations have the means to retain and transmit information from past to future members of the social system. This capability we might call the organization’s memory.

There are three major reasons to explore this concept in more detail: (i) memory is a rich metaphor that provides insight into organizational life; (ii) organizational memory is embedded in other management theories; (iii) organizational memory is relevant to management practice. For example, Karl Deutsch used the concept as a metaphor to provide insight into the essential features of social systems:

A society or community that is to steer itself must continue to receive a full flow of three kinds of information: first, information about the world outside; second, information from the past, with a wide range of recall and recombination; and third, information about itself and its own parts . . . The facilities for memory storage, and particularly the circuits for recall, recombination, new storage, and reapplication of memory data are critical here. There is no will, no conation, without some operating memory. The will of individuals or groups can be paralyzed by destroying their stored past information or by disrupting its flow into the system . . . autonomy in the long-run depends on memory.1

Another reason to deepen our understanding of organizational memory is that it has long since worked its way into management theory. As a management concept, organizational memory relates the dialectics of learning vs. unlearning, flexibility vs. stability, human resources vs. information technologies, and is essential to planning, communicating, decision making and information processing in organizations. For example, Argyris and Schon\(^2\) claim that "...for organizational learning to occur, learning agents’ discoveries, inventions, and evaluations must be imbedded in organizational memory". Weick has argued that organizations must accept and live with their memories because memory is an important co-producer of the personality of the firm:

> If an organization is to learn anything then the distribution of its memory, the accuracy of that memory, and the conditions under which that memory is treated as a constraint become crucial characteristics of organizing. If knowledge is packaged in the mind of one individual presumably the organization will unfold in a different manner than if the memory is housed in a set of committees with different interests. Furthermore, the organization's usage of its retained interpretations will also be affected by whether that memory is placed in files, rule books, or on computers and how much of that information the organization admits to.\(^3\)

Finally, we need to deepen our understanding of organizational memory because the topic is relevant to management practice. Memory management is a daily activity at most organizations. In general, the processes of organizational memory can have a significant effect on the functioning of the firm:

> In an M-Form (short for multidivisional form) company, divisional managers compete against each other for scarce corporate “endowments” such as capital funds. But they also cooperate, subordinating their divisions’ goals for the sake of teaching a corporate consensus. Later, the corporate “memory” is used to reward those who cooperate and punish the selfish. ... trade associations and MITI will “remember” who cooperated. ... “It is these institutions that are the loci of the social memory.” And that memory rewarded the cooperative with participation in such projects as the Fifth Generation computer.\(^4\)

This capacity however is fragile and easily dissipated as organizations restructure themselves to meet the demands imposed by increasing turbulence and complexity in the environment:

> Holiday (Inn) now preoccupies itself with constant corporate bureaucracy re-organizations and executive reshufflings. Its institutional memory seems confined to a corner of its Hotel Services Division building, where memorabilia like an early Holiday Inn room replica are displayed.\(^5\)

Each time an organization re-structures itself, the contents of organizational memories are affected. Turnover of personnel results in the loss of the human component of an organization’s memory, which can have a significant effect on the bottom line.\(^6\) When people depart, they leave spaces in existing networks of social interaction and take with them important knowledge and experience accumulated over many years. Consider these illustrations:

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The Bronfms will soon gain even more influence through a new retirement policy for Du Pont directors. . . . The policy calls for ten Du Pont family members and retired executives . . . to leave the board . . . but . . . some company officials worry that the board's institutional memory will be hurt by the loss of three former chairman.7

The leadership corps of the government, the Senior Executive Service (SES), "has become politicized . . . at the expense of the career services," Sen. John Glenn (D-Ohio) said. "The SES is the institutional memory; it knows how to grease the wheels of government and make them turn," Glenn said. The staff analysis of figures suggested that one president's replacement of career employees with political appointees can cripple a "successor's ability to effectively manage government."8

When experts leave, the cost to the organization is even greater because it takes years of education, training and experience to make one.9 Loss of that knowledge can undermine the competitiveness and competence of the firm,10 and have an impact on cultural norms and values.

In sum, a better understanding of organizational memory can assist managers in framing and solving problems related to the retention and utilization of organizational knowledge within their organizations beyond the limited support provided by current information technologies.11 Such knowledge can lead to higher levels of organizational effectiveness, which in turn can result in the attainment of competitive advantage.

Defining organizational memory

There is considerable variation in the descriptions of organizational memory because the notion was borrowed from early sociology and then reinterpreted in a variety of ways. Organizational memory is an instance of collective memory, which evolved from the work of the Durkheim school of sociology at the end of the last century. Durkheim argued that the collective mind is composed of individual minds that share information through the exchange of symbols (ie data).12 Collective memory referred to the social processes of articulating and communicating information leading to shared interpretations that were stored as societal norms and customs. From this original formulation emerged the notion of the memory of a particular social system; ie the organization. A summary of works contributing to our understanding of organizational memory is provided in Table 1.

Organizational memory is commonly defined in terms of the contents of organizational memory and the processes associated with organizational memory. In many cases, organizational memory involves the encoding of information via suitable representations, which later have an effect on the organization as members interpret the stored information in the light of current organizational conditions. On the other hand, not all effects of past information on the organization are voluntary or the product of human enactment. For instance, Krippendorff observed that social memory can function in a non-directive way such that "... information about past events participates in structuring the present and future behavior of a system".13 Adopting a more instrumental position, Walsh and Ungson define organizational memory as 'stored information

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1Bronfms take growing role in Du Point Co. affairs" (1987) Wall Street Journal 7 (17) 1
2Havemann, J (1987) 'Top federal jobs "Politicized"' Washington Post 8 (6) (A)
4Pramalad, C.K and Hamel, G (1990)'The core competence of the corporation' Harvard Business Review May-June, 79-91
5Huber, G.P 'A theory of the effects of advanced information technologies on organizational design, intelligence, and decision making' Academy of Management Review 15 (1) 47-71
7Krippendorff, K (1975) 'Some principles of information storage and retrieval in society' General Systems 20 32
### Table 1 Selected works that define and measure organizational memory

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<td>Krippendorff (1975)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Memory as: (i) communication process; (ii) organizational structure; (iii) by-product of encoding/decoding. Grounded in Ashby’s (1956)&lt;sup&gt;c&lt;/sup&gt; notion of memory as construct based on observer’s point of view</td>
<td>Single-loop learning</td>
<td>People (behaviors, stories); organizational structures; records (files; databases, etc)</td>
<td>Maintained by enduring structures and behaviors, oral traditions, communication networks</td>
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<td>Organizational learning</td>
<td>Argyris and Schon (1979)&lt;sup&gt;d&lt;/sup&gt;</td>
<td>Memory as a consequence of learning. Memory required to store learning, but memory may be obstacle to change</td>
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<td>Weick (1979)&lt;sup&gt;h&lt;/sup&gt;</td>
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from an organization’s history that can be brought to bear on present decisions. Some of the advantages of organizational memories are the honing of core competence, increased organizational learning, increased autonomy, and lower transaction costs. Schatz generalized these observations by suggesting that organizational memory provides information that enables an organization to function effectively. It is assumed in this work that organizational memory should be defined in terms of organizational effectiveness. However, we should be careful not to assume that the availability of organizational memory necessarily leads to organizations that are effective; it can also lead to lower levels of effectiveness and inflexibility. Organizations exhibit functions commonly associated with memory such as retrieval and
retention, but do so via structures and processes appropriate to organizations, not individuals. Thus, extending and clarifying the earlier works, the following working definition of organizational memory is provided:

**Definition:** Organizational memory is the means by which knowledge from the past is brought to bear on present activities, thus resulting in higher or lower levels of organizational effectiveness.

Activities referred to in the definition include decision making, organizing, leading, designing, controlling, communicating, planning, motivating, and so on. The remainder of the paper is devoted to clarification of the contents of memory (i.e. 'knowledge from the past') and the processes of organizational memory (i.e. 'the means by which knowledge from the past is brought to bear on present activities'). Where appropriate, recommendations for information managers are provided.

**Contents of organizational memory**

**Characteristics of organizational memories vs. management information**

Memories are a particular type of information. A memory is a persistent record not dependent on a tight coupling between sender and receiver. Shannon and Weaver's landmark work is instructive on this point. In classic information theory, a message is encoded by a sender, transmitted over a channel and later decoded by a receiver (see *Figure 1a*).

The time between the encoding and sending of a message (d1) is assumed to be short, as is the time to transmit the message to a receiver (d2) via a channel (assumptions that are consistent with Shannon and Weaver focus on maximizing channel capacity and speed). However, with memories, this is not the case. With memories, the coupling between sender and receiver is weak because transmission is one-way and temporal distance is significant. Original intent and context can only be inferred because the receiver can no longer engage the sender in dialog to validate the meaning of a memory. If the receiver is unaware of the context of the sender, then the intended interpretation may not occur. Furthermore, if the sender's context does not match the receiver's context, as memories propagate over time, they may unintentionally impact audiences for which they were never intended; i.e. receivers may accept directives from senders to which they are not legitimately coupled.

Three types of memories can be distinguished using this framework. One type of memory is identified when information is encoded but is not sent immediately (see *Figure 1b*). Usually the time between the encoding and sending of a message is short (d1). When the time between the encoding of a message and its being sent is significant, the information exists long enough to become a memory. Making a 'mental note' of a situation and retrieving it for later use is an example of this type of memory. Another type of memory is identified when the time in transmission (d2) is significant; i.e. when messages remain in continuous transmission by being passed among intermediate nodes (see *Figure 1c*). Finally, any message of extended duration (d3) following transmission can be identified as a memory (see *Figure 1a*).

Messages encoded as paper files and archived for later use are

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Figure 1 Identifying different types of memories using information theory

representative of the first type of organizational memory. Procedures, too, can be encoded for later transmission. Examples include executive directives that are implemented at future dates or contingency plans that are invoked under certain environmental conditions (e.g., nuclear retaliation, computer disaster-recovery procedures). Oral traditions are an example of the second type of organization memory, whereby messages are passed on to intended and unintended receivers over time. The consequences of these continuous transmissions are both positive and negative for organizations. The perpetuation of ineffective operating procedures is a case in point. Messages sent via electronic mail that are appended to a person's log file are representative of the third type of memory. These memories can be used for future decision making or to assign responsibility for various actions (e.g., the Iran Contra affair in the USA).

The following recommendations can be made to information managers to better deal with the effects of organizational memory:

- **Recommendation 1**: Managers need to identify the three types of
memories retained by their organizations: (i) information tokens encoded but not yet sent; (ii) information tokens in transmission; (iii) information tokens that are received. What kinds of memories dominate in the organization? What problems are associated with each type of memory?

- **Recommendation 2**: Managers need to examine the coupling between senders and receivers for different types of organizational memories. Are employees receiving messages from the past that no longer match current conditions? Are inappropriate messages being sent to future members of the organization? What kinds of changes need to be made to the organization to benefit from these couplings?

### Spatial and temporal aspects of organizational memories

While considerable work has been done on the propagation of information over space through diffusion research, little work has been done on the temporal aspects of information in organizations. According to Krippendorff, social research has systematically avoided the temporal dimension because of the inherent methodological difficulties. Memories are time-functions. The time that an impression comes into being to the time its intensity decays below a threshold constitutes its lifetime. An impression ceases to exist as a memory when its intensity drops below threshold. The duration of an impression is based on the vivacity of the original event, the select attention of the system, image decay and other factors. By convention, memories are usually classified as short term or long term. Studies show that individuals have short-term memories that fade rapidly and long-term memories that extend for decades unless they become inaccessible due to injury. In the context of organizations, short term and long term have special meaning. For example, information maintained for just a few hours would be considered short term to members of most organizations, but not to a trader executing buy and sell decisions. Similarly, six months would be long term to a computer industry analyst, but not to a banker reviewing credit history. Duration within an organization thus relates to the rate of organizational and environmental change, and to the perceptions of the stakeholders.

The following recommendation can be made to information managers in dealing with organizational memories of different duration:

- **Recommendation 3**: Managers need to consider the role of both short-term and long-term memories, where duration is contingent on organizational context. What duration is considered long term? Short term? Which memories contribute most to organizational effectiveness?

### Classifying organizational memories

The memories maintained by an organization constitute a map of its past that contains enormous amounts of information. The position taken in this paper is that the knowledge-base component of organizational memory is most crucial to organizational effectiveness. This proposition is supported by Prähöld and Hamel who argue that organizational know-how is a new source of competitive advantage, as well as Duncan and Weiss who argue that organizational knowledge is necessary to organizational learning and adaptation. Knowledge is an awareness of the efficiency and effectiveness of different courses of
Organizational memory helps decision makers choose appropriate actions (from talks to strategies) to achieve organizational goals. Four types of such knowledge can be identified. Suggestive information is evocative and weakly points the way toward a particular course of action. Predictive information strengthens the argument for a particular course of action by providing evidence of correlation or causality. Decisive information puts an end to controversy by providing unequivocal evidence to support attainment of the decision makers' goals through certain courses of action. Systemic information reminds the decision maker to consider the impact of the decision on the system. A classification such as this one could be used to categorize the contents of organizational memory.

Another approach is to classify the content of organizational memory in terms of the semantic value of the knowledge itself. For example, Covington classified the content of the memories of three government agencies in terms of positional tasks (‘procedures’) and past strategies (‘policies’), as well as normative orientation. Stein classified organizational memories in terms of the level of abstraction (concrete vs. abstract) and normative orientation (prescriptive vs. descriptive) of the memories (see Figure 2).

Frameworks such as this one can help managers map the contents of organizational memory. The following recommendation is therefore made to information managers:

- **Recommendation 4**: Managers should inventory and classify the contents of memory for their organizations using an appropriate framework. How much knowledge does the organization possess? How much of the knowledge is descriptive and concrete? What part is normative? Abstract? How is each type of knowledge retained and
maintained by the organization? Can such knowledge be readily accessed? Which organizational memories support organizational effectiveness and the attainment of competitive advantage?

Processes of organizational memory

Organizational memory is differentiated from general knowledge because it functions as a process and may be non-cognitive. The knowledge-base of an organization is like a topographical landscape — just as the forces of nature mold and shape the land, the processes of social interaction change the structure of the knowledge-base of the organization over time. Processes affect the magnitude, distribution, lifetime, location, form, etc, of the knowledge maintained by organizations.

The defining processes of organizational memory are acquisition, retention, maintenance and retrieval. These processes provide the means by which knowledge from the past is brought to bear on present activities, thus resulting in higher or lower levels of organizational effectiveness (see Figure 3).

Acquiring organizational memories

Most discussions of knowledge acquisition in organizations focus on learning. Learning can take place at many levels according to Bateson.20 The receipt of a sensory signal is the most basic form of learning. Higher order learning occurs through trial and error. First-order learning is usually defined as the exercise of choice within a bounded set of alternatives. Second-order learning is a change in first-order learning; eg a corrective change in the set of alternatives or a change in how the sequence of experience is punctuated. Following Bateson, Argyris and Schön21 describe learning in organizational contexts in terms of single-loop and double-loop learning. They define single-loop learning as learning that occurs when members detect errors and make changes to preserve the central features of the organization as defined by the norms of performance. Double-loop learning occurs when members detect conflicting requirements and try to resolve those conflicts by changing prevailing norms and values.

Clearly, complex relationships exist between learning and memory. Individual learning cycles are completed when new knowledge is

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accepted and encoded into individual minds. Individual knowledge may reside briefly in short-term memory or can be retained for years. Argyris and Schon argue that organizational learning is not complete until individual learning is embedded in the organization. '... their work as learning agents is unfinished until the results of their inquiry — their discoveries, inventions, evaluations — are recorded in the media of organizational memory ...'.32 Double-loop learning poses the challenge that unlearning33 must take place, since individuals must change their shared theories-in-use and images of organization. Social systems are notoriously resistant to adopting new ideas and practices. Organizational memory is therefore essential to organizational learning, while learning is a necessary condition for memory. On the other hand, organizational memories produce barriers to learning, especially double-loop learning.

- **Recommendation 5:** Managers need to explore the impact of both individual and organizational learning on knowledge acquisition, as well as the impact of organizational memories on individual and organizational learning. To what extent is single-loop learning favored? Do organizational memories impede double-loop learning?

Other means by which organizations acquire organizational knowledge include the acquisition of records (databases, files, etc) and human capital.34 While research has systematically examined the loss of human capital as employee turnover, few works exist on ways to value the knowledge assets of institutions. There is a similar lack of metrology with regard to ways to evaluate the knowledge resources contained in files and databases to which organizations have access.

**Retaining organizational memories**

The graybeards (senior managers) ... serve as a repository for what the experts call institutional memory. They will stand around the water cooler and spin tales for the new hires about the founder and his high standards. If there's anything at all worth preserving in your corporate culture, these are the guys to keep it alive.35

Retention is likely the most important and widely recognized feature of organizational memory. Krippendorff36 argues that what is retained is reflective of group values, while Douglas37 observed that social systems systematically select some types of information for encoding and not others. Douglas cites the Nuer study by Evans-Pritchard as an explicit demonstration of how institutions direct and control social memory. The Nuer were able to remember as many as 11 generations of their ancestors through stories. Closer inspection revealed that they systematically encoded the lives of some but forgot others. ... the tribal memory ... developed a yawning hole, and multiple ancestors (were) tumbling headlong into it ...38 In more contemporary light, Douglas reminds us that scientists tend to deny or ignore discoveries that predate their own.

Several mechanisms have been proposed as means to retain organizational information. These can be classified into three major categories: schemas, scripts, and systems (see Table 2). These mechanisms operate at both individual and organizational levels and are more or less appropriate for different types of knowledge.

A schema is an individual cognitive structure that helps people
organize and process information efficiently. Schemas represent categories of information that share a structural property such as membership in a conceptual group; e.g., leadership. Schema are arranged hierarchically and are divided into nominal categories at each level. For example, the notion of leadership may be divided into qualities that define leadership; e.g., charisma, articulate speech, pleasing physical appearance, strong voice, and so on. These categorizations aid both the retention and retrieval of knowledge by individuals and clearly provide means for individuals to retain knowledge of organizational activities. On the other hand, organizational memory is more than the sum of individual memories. Part of what an individual knows is shared by other members of the organization. Like holograms, individuals maintain the values, norms and images of the organization. Mead likened these networks of minds to a social mind. Argyris and Schon, Hedberg and Fiol and Lyles identify these shared schema as cognitive 'maps'. Walsh and Ungson and Smith refer to culture as a means to retain organizational memories through icons, symbols, and myths, which are manifestations of a collective mind.

- **Recommendation 6**: Managers need to examine the retentive capacities of personal and shared schema, and the impacts of such mechanisms on organizational effectiveness.

Scripts are another means to retain organizational memories. Although sometimes referred to as 'transformations', the word script is used here because scripts are formulated by design. Scripts describe the appropriate sequencing of events in conventional or familiar situations. Nelson and Winter identify personal routines as the most important form of procedural memory operating in organizations. Roles might also be considered scripts that organizational actors play and are a type of organizational memory. Organizational scripts involve individual scripts that are coordinated through processes of communication. Examples of organizational scripts include standard operating procedures and rituals and ceremonies.

- **Recommendation 7**: Managers need to examine the retentive capacities of personal and organizational scripts, and the impacts of such mechanisms on organizational effectiveness.
Systems are a third mechanism for the retention of organizational knowledge. A system may be defined as a set of inter-related elements which are connected, either directly or indirectly. Memories may be retained in the social fabric of organizations, in their physical structures, and in explicitly designed information systems. Formal organizational structures represent knowledge of organizational environments, goals, and values, as well as reporting channels. Informal networks between organizational actors are a form of memory that directs agents to those who can support problem solving and decision making. The values and designs of organizations are also retained in physical systems. For example, the values symbolized by the cross are encoded in the architecture of Christian churches. Buildings and products produced by companies are similar retention structures (consider the design of the Macintosh by Apple Computer or the image projected by the Chrysler building in New York). While system structures constrain and channel social activity, such permanence can impede efforts to learn.

- **Recommendation 8**: Managers need to examine the retentive capacities of the social and physical structures associated with their organizations, and the impacts of such structures on organizational effectiveness.

Records (e.g., paper files, simple databases), distributed information systems, and artificial intelligence systems facilitate the retention of memories related to organizational activities. A defining feature of records is that past information is encoded spatially and in a medium that persists in time. Encoding involves translation of concepts into physical structures that are decoded by receivers. The primary advantage of records is that the latter may be shared with current or future members by distributing copies of the media. Disadvantages are that records are static representations, transmission is one-way, and members must know how to decode the information they receive. Information systems overcome some of the limitations of records by promoting sharing across time and space. Intelligent systems such as expert systems and case-based reasoning systems provide means to retain and diffuse experiential knowledge, while neural nets provide flexible means to store information as patterns that can be easily updated. Robots and automated production systems are means to encode procedural knowledge.

- **Recommendation 9**: Managers need to leverage advanced information technologies to support the processes and products of organizational memory in order to achieve higher levels of organizational effectiveness.

**Maintenance and loss of organizational memory**

Maintenance is another process fundamental to memory, i.e., how are memories maintained over time? Memories are maintained if an organization has access to its knowledge and expertise. For example, records are accessible to the extent that the physical media remain intact. On the other hand, the US Watergate affair made us painfully aware of how easily recorded memory may be systematically destroyed. Recorded memories are also effectively destroyed when the indices for locating files are lost. Similarly, departing members leave 'holes' in existing knowledge networks. The same phenomenon is witnessed in the
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migration of intellectuals from one country to another, sometimes referred to as ‘brain-drain’. This loss can be measured as turnover. Turnover is usually measured as the number of separating employees divided by the total number of employees. However, turnover does not tell the whole story because the average experience of those who leave may be more important than the absolute number of those who leave. For example, consider two firms that lose 50 per cent of their employees. In the first case, the average tenure of those who leave is 6.2 years and in the second case 1.8 years. The first firm will have lost more knowledge than the second, which a comparison of turnover would not reveal. Knowledge encoded in the social system itself may be lost when existing patterns of interaction are repeatedly broken up or are not allowed to form, as is the case for organizations operating in turbulent environments. One is reminded of the devastating efficiency with which leaders of totalitarian regimes were able to cripple the opposition by selectively eliminating their structural memories through methods of isolation and fragmentation. Firms that fail to reinforce social structures may experience a loss of knowledge as relationships atrophy. On the other hand, systemic memories may be purposely eliminated to cope with change and to promote learning.

- **Recommendation 10**: Managers need to assess the loss of knowledge experienced by their organizations due to turnover and organizational restructuring, and to develop strategies to deal with such losses.

Organizational knowledge can be preserved to some extent by hiring former employees as consultants and by maintaining ties to outside sources. Organizational memories also can be maintained through recurrent patterns of interaction. Personal and social scripts are maintained to the extent that they are practiced and new members are exposed to their occurrence. Sanctification helps preserve rituals. Shared schema are maintained through processes of inter- and intra-organizational communication. By passing messages (eg stories) through communications networks, information may be maintained for long periods of time even as organizational members come and go. Shared knowledge of norms and values emerge from these continuous processes of organizational communication, contributing to the development of shared cognitive maps and culture. One of the critical aspects of information diffusion through social networks is that information must be validated as it is passed from one individual to the next. Duncan and Weiss argue that such validation is necessary if personal knowledge is to become organizational knowledge.

- **Recommendation 11**: Managers need to assess the means by which their organizations maintain different types of knowledge through communication processes, repetition, sanctification, and validation. Strategies should be developed to strengthen processes that will contribute to organizational effectiveness.

**Retrieving organizational memories**

The fourth major memory process is retrieval. Organizational memories can be recalled to support decision making and problem solving. According to classical and administrative models of decision making; cues in the environment, problems, and new projects trigger decision...
making activity requiring information. An inquirer is motivated to retrieve information if: (i) the inquirer values what has been done in previous contexts; (ii) the desired information exists and the inquirer is aware of the information; (iii) the inquirer has the ability to search, locate, and decode the desired information; and (iv) the cost to locate the information is less than re-computing the solution from scratch. According to Prahalad and Hamel\textsuperscript{65} accessing organizational knowledge is key to competitiveness. An organization that maintains but does not use its knowledge-base for operational or political reasons is dysfunctional for the simple reason that it is wasting organizational resources and missing opportunities to secure competitive advantage. The frequency of use of an organization’s knowledge-base can be used as an indicator of the magnitude and effectiveness of memory. On the other hand, retrieval may not always be a ‘good thing’. The retrieval of dysfunctional methods, values, or prejudices is a case in point.\textsuperscript{64} Furthermore, not all forms of knowledge maintained by the organizations are voluntarily retrievable.

- **Recommendation 12:** Managers need to examine the degree to which their organizations support the retrieval of knowledge from the past and the impact of that knowledge on organizational effectiveness.

**Summary and conclusions**

In summary, organizational memory concerns the knowledge-base of the organization and the attendant processes that change and modify that base over time. In this formulation, organizational memory is defined as the means by which knowledge from the past is brought to bear on present activities, thus resulting in higher or lower levels of organizational effectiveness. Memories are distinguished from information because memories are time functions that have intended and unintended effects on receivers. Memories can be classified in terms of their impact on decision makers as well as by knowledge type. The processes of memory include acquisition/learning, retention, maintenance, and retrieval.

As noted, memory is not necessarily a good thing for individuals or organizations. The positive aspects of organizational memory are captured by George Santayana who observed: ‘Those who can not remember the past are condemned to repeat it’. To the extent that organizational knowledge is consonant with the goals of the organization, organizational memory can be said to contribute to organizational effectiveness. At the other extreme, memory is a constraint that threatens the viability of the organization. Members of organizations must determine what to do with the knowledge they acquire in order to meet the incompatible demands of flexibility and stability.

The position taken here is that organizational memory is neutral and its effects are contingent on organizational context. However, organizational memory can lead to higher levels of effectiveness and competitive advantage by design.\textsuperscript{65} An improved organizational memory can benefit the organization in several ways:

- It can help managers maintain strategic direction over time.
- It can help the organization avoid the nightmare of cycling through old solutions to new problems because no one can remember what was done before.

\textsuperscript{63}Op cit, Ref 10
\textsuperscript{64}Op cit, Ref 13
\textsuperscript{65}Op cit, Ref 55

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It can give new meaning to the work of individuals if such efforts are retained.
It can facilitate organizational learning.
It can strengthen the identity of the organization.
It can provide newcomers with access to the expertise of those who preceded them.

Knowledge management is a new source of competitive advantage. A better understanding of the memory processes of knowledge acquisition, retention, maintenance, and retrieval will offer new ways for organizations to profit from organizational knowledge.