Aristotelian View of Knowledge Management

David G. Schwartz
Bar-Ilan University, Israel

INTRODUCTION

Defining and understanding knowledge is a rather broad and open-ended pursuit. We can narrow it considerably by stating that we are interested in defining and understanding knowledge as it pertains to knowledge management (KM) rather than tackling the entire realm of epistemology. This article takes the theory of knowledge espoused by Aristotle and views it through the lens of knowledge management.

The writings of Aristotle have proven to be fertile ground for uncovering the foundations of knowledge management. Snowden (2006) points to Aristotle’s three types of rhetorical proof as a basis for incorporating narrative in knowledge management. Buchholz (2006) traces the roots of ontological philosophy forming the basis of current KM ontology efforts back to Aristotle’s work. Butler (2006), in his antifoundational perspective on KM, following Dunne (1993), argues that Aristotle’s phrónésis and téchné need to be at the core of knowledge-management efforts, and while they cannot be directly applied to IT applications, they must be among the elements upon which knowledge management is based.

It is instructive to seek theoretical foundations for our treatment of knowledge in organizational settings and knowledge-management systems. By doing so we increase the likelihood that our solutions are complete and that we have considered all relevant forms of knowledge that we may desire to manage. Rather than start with modern differentiators of knowledge such as tacit vs. explicit (Nonaka & Takeuchi, 1995), descriptive vs. procedural (Holsapple & Winston, 1996), local vs. global (Novins & Armstrong, 1997), and declarative vs. procedural (Minsky, 1975), we will take a step back to first principles.

Aristotle (n.d.), in his Nicomachean Ethics, presents five virtues of thought that can be mapped to levels of knowledge.

- **Epistémé**: Factual or scientific knowledge
- **Téchné**: Skills-based technical and action-oriented knowledge
- **Phrónésis**: Experiential self-knowledge or practical wisdom based on experience
- **Noûs**: Intuition
- **Sophía**: Theoretical knowledge of universal truths or first principles

Other learned traditions and cultures give us similar and related elements, such as the Talmudic philosophical tradition (Luzzatto, 1988; Maimonides, 1966) and Eastern religion and philosophy (Gier, 2004).

As a starting point, we are concerned with the processes shown in the first ring of Figure 1.

1. Knowledge that can be acquired in an organizational setting
   a. creation
   b. discovery
   c. gathering
   d. validation
2. Knowledge that can be organized, categorized, and stored
   a. modeling
   b. classification
   c. calibration
   d. integration
3. Knowledge that can be distributed to some point of action
   a. sharing
   b. reuse
   c. maintenance
   d. dissemination

Without the abilities to acquire, represent, store, retrieve, and apply knowledge in a way that positively affects the operation of our organizations, we are not engaging in knowledge management. Conversely, any form of knowledge to which the aforementioned cannot be applied, while of theoretical importance and interest, cannot be managed. True, as argued by Butler (2003, 2006), the knowledge foundations defined by Aristotle might not be transparently converted into IT-based systems, but that should not prevent us from designing our KM systems and processes to support those knowledge foundations to the greatest extent possible.

Consider the view presented in Figure 1 giving a holistic view of knowledge management and its foundations. The central core of philosophies (the middle) must inform our choice of practical knowledge-management processes (the first ring). These processes must be implemented and adapted to address managerial, social, and organizational needs (the second ring). Finally,
the implementation of KM processes to meet our organizational needs must be supported by and implemented through a set of relevant information technologies (the outer ring).

But how do we get from the central core to the first ring? In this article we will examine the definition and understanding of knowledge as a meeting between the Aristotelian classification and the requirements of practical knowledge-management processes.

**BACKGROUND**

The KM-process ring of Figure 1 shows the three bases of acquisition, organization, and distribution (Schwartz, Divitini, & Brasethvik, 2000), and it is but one of many viable characterizations of process-oriented knowledge management. It represents an emphasis on praxis, taking as a starting point the question, What do we need to do with knowledge in order to make it viable for an organization to use, reuse, and manage it as a tangible resource, and apply it toward specific actions?

By taking this perspective, we avoid to a certain extent the knowledge-information-data (KID) debate regarding the granularity of knowledge. We argue that the distinction between data, information, and knowledge can be conveniently ignored: not treated as irrelevant for a philosophical debate, mind-body discussion, or a metalevel, object-level analysis, but not essential to the fundamental mission of knowledge management.

Arguing that information technologies process data and not information or knowledge, Galliers and Newell (2003) seek to refocus the KM-IT effort on the better management of data. They suggest that since an IT system cannot deal with the fundamental elements of truth and knowledge, it can be counterproductive to create IT-centric knowledge-management initiatives. Holsapple (2002) provides an excellent introduction to different aspects of knowledge and its attributes, including perspectives based on representational issues, knowledge states, production, and the KID debate as well.

Knowledge management, however, does not need to get bogged down in the KID debate. What it does need is to become knowledge centric. Becoming knowledge centric does not necessitate a resolution to the KID debate.
Rather, it means that the field of knowledge management could benefit from taking cues from its philosophical lineage—the theories of knowledge—and not only from the praxis that has driven KM over the past two decades. The heavily practice-oriented roots of organizational knowledge management (Davenport & Prusak, 1998; Senge, 1990) have largely developed independent of any relationship to a theory of knowledge. The necessary KM processes have not evolved from any declared need to find an applied outlet for theories of knowledge. While that in no way invalidates KM processes or practice, it does leave open a very broad question as to how knowledge management relates to its epistemological roots.

Aydede’s (1998) analysis of different possible interpretations of Aristotle’s epistémé and noûs provides some intellectual breathing room to shape our own interpretation of those concepts in directions most amenable to knowledge management.

Hanley (1998) helps provide insights into the applicability of Aristotle to knowledge management by presenting the work of Heidegger, who takes the basic Aristotelian approach to knowledge and presents it from an applied pragmatic view. While Hanley’s work does not explicitly consider the discipline of knowledge management, the perspectives drawn from Heidegger’s interpretation of Aristotle will appear familiar to knowledge-management researchers.

Let us begin by examining each level of knowledge as envisioned by Aristotle, and see how each relates to certain elements of knowledge management.

**AN ARISTOTELIAN VIEW OF MANAGING ORGANIZATIONAL KNOWLEDGE**

The Aristotelian virtues are not hierarchical in nature. They are presented as discrete forms of knowledge intended to cover all possible acts of knowing.

**Epistémé: Factual or Scientific Knowledge**

Epistémé may be the most controversial element of knowledge for knowledge management. It is pure knowledge, such as that of mathematics or logic. Attempting to pin down epistémé is the essence of the knowledge-information-data debate that we discussed, and chose to dismiss, earlier. As scientific knowledge, epistémé is most relevant to our pursuit, and it encompasses knowledge of cause and effect, and deduction (Parry, 2003). A stated goal of information technology is to represent those facts and relationships known as epistémé in digital form, and leverage that representation in different applications as declarative knowledge. In addition, data-mining techniques seek to help identify epistémé that is buried within an organization and bring it to the surface. In parallel, IT seeks to do the same for procedural knowledge, which maps very well to Aristotle’s tèchné.

**Téchné: Skills-Based Technical and Action-Oriented Knowledge**

Téchné deals with things that change rather than the constant relationships found in epistémé. Harnessing tèchné is at once one of the most challenging and most fruitful of knowledge-management pursuits. To begin with, an organization is the primary place where one would find the bearer of tèchné relevant to that organization, and it is precisely that knowledge that we seek to encapsulate and reuse. Téchné reflects the dynamic nature of knowledge. Furthermore, and perhaps most difficult in practice, it is the tèchné that artificial intelligence and decision-support systems seek to automate. So, from that perspective, Aristotle has given us a clearly defined and delimited type of knowledge that can be addressed by information technologies.

**Phrónésis: Experiential Self-Knowledge or Practical Wisdom Based on Experience**

Phrónésis is practical knowledge dealing with action and getting things done. In Aristotle’s view, phrónésis is acquired through hands-on training and experiencing the actions being learned. From a learning-through-action perspective, phrónésis differs from tèchné in terms of the way each type of knowledge can be shared. The Aristotelian view would be that tèchné can be taught from practitioner to student, whereas phrónésis can only be shared through actual mutual experience. In terms of the value of knowledge, Sveiby’s (1997) focus on the knowledge-action value chain can find relevant roots in phrónésis. In terms of knowledge management, phrónésis leads us in the direction of simulation, rich media, e-learning, and other forms of the experiential presentation of knowledge or immersion in a virtual environment in which the experience yielding phrónésis can be achieved.

**Noûs: Intuition**

Noûs is perhaps the least understood of all elements necessary for knowledge management. Noûs not only embodies the intuitive side of knowledge, it also subsumes a large part of what we have come to refer to as tacit
knowledge (although clearly there can be tacit knowledge of técнé and phrónэsis). Noûs is not restricted to knowledge of first principles, but is viewed by Aristotle as a manner in which one can become aware of first principles. Observing the relationship between noûs and tacit knowledge, we note that there are two fundamental approaches to dealing with tacit knowledge in knowledge management. The first approach is to attempt to externalize the tacit knowledge through interventions and representation methods in order to create explicit knowledge. This, in essence, is attempting to transform the noûs into the epistémé. The second approach is to recognize that the tacit will and should remain tacit, but that the goal of knowledge management is to enable the organization to identify and reach the owner of the tacit—the bearer of the noûs—in an efficient and effective manner. This leads us to employ information technologies to support organizational communications, forums, communities, relationship networks, and the abundance of Internet-enabled interactions that have developed over the past decade.

Another interpretation of noûs is that it emerges from our familiarity with phrónэsis and técнé. In other words, by nurturing our support for phrónэsis and técнé, we strengthen our ability to exhibit noûs. Butler (personal communication, 2005), based on Bruner’s observation (1962, p. 18) that “the act that produces effective surprise…[is] the hallmark of the creative enterprise,” suggests that noûs can come about as a result of the processes in which phrónэsis and técнé are applied to repairing breakdowns (and to a certain extent epistémé as well). In other words, what we know and how we intuit noûs comes about in part from our reflections on técнé and phrónэsis. Therefore, it would appear that support for the noûs within knowledge management may in fact be derived from our treatment of these two contributing types of knowledge.

**Sophia: Theoretical Knowledge of Universal Truths or First Principles**

We argue that sophía, representing the universal and necessary characteristics of knowledge, has little place in understanding knowledge specific to organizational knowledge management. While universal and necessary truths are surely important to any analysis and treatment of knowledge, they are firmly in the domain of the philosophical and theoretical. Scientific discovery (which we may wish to manage postdiscovery), argumentation, and proof of theorems are all in the realm of the sophía, but still not within the knowledge-management mandate.

**DISCUSSION**

The first step in bridging the gap between Aristotle’s theory of knowledge and knowledge management is to envision how each Aristotelian virtue can be addressed in each phase of knowledge management. Table 1 illustrates.

We can see that the acquisition, organization, and distribution process demands of knowledge management will differ for each of Aristotle’s types of knowledge. By understanding this categorization of knowledge, we can achieve greater clarity of thought in our attempts to develop knowledge-management processes for application in organizational settings.

Finally, we can take the analysis one step further by considering which of the 12 specified processes of knowledge management can be reasonably performed on each type of knowledge, as shown in Table 2.

Consider the noûs, for example. We would argue that while noûs cannot be acquired by an IT-based KM system, it can in fact be discovered, modeled, and classified through the use of social network-mapping tools. True, from a philosophical purist perspective, the noûs itself will always remain within its bearer; however, the sharing and dissemination of knowledge within an organization considers both knowledge and metaknowledge. Having a digital representation of where noûs can be found and how it might be applied is as important for some aspects of knowledge management as building a lessons-learned database is for others. Thus, the values for noûs shown in Table 2 relate to a metalevel reference to the noûs.

Knowledge of the types técнé and phrónэsis, while they cannot be created through KM processes, can indeed be discovered, gathered for storage by representational systems, organized, and distributed. While phrónэsis and técнé maybe the core constituents of practical knowledge (Butler & Murphy, 2006), we can enhance noûs within the organization by increasing accessibility to técнé and phrónэsis, leveraging the relationship between these different types of knowledge discussed earlier. Here there would seem to be an important role to be played by metaknowledge describing the técнé and phrónэsis within the organization to create some form of organizational noûs, which may effectuate some degree Heidegger’s hermeneutical circle (Sampaio, 1998) or Gadamer’s (1975) circle of understanding.

With epistémé we can go a step further and utilize data mining, text mining, neural networks, information resource discovery, and other advanced pattern-recognition technologies to create new knowledge based on the patterns of data that exist within our extensive organizational information systems.
Aristotelian View of Knowledge Management

Table 1. Mapping Aristotle’s knowledge virtues to knowledge management stages

<table>
<thead>
<tr>
<th>Virtue</th>
<th>Acquisition</th>
<th>Organization</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epistémé</strong></td>
<td>By gathering facts and relationships known about the organizational knowledge domain and its human participants</td>
<td>Knowledge bases, databases, data warehouses, documents, and diagrams</td>
<td>Enabled and enhanced by information technologies and computer-mediated communications</td>
</tr>
<tr>
<td><strong>Téchné</strong></td>
<td>Through interaction, interviews, and discussions with practitioners who have exhibited acquired téchné</td>
<td>Extensive cross-referencing of skills and activities across the organization</td>
<td>Potentially replicated and implemented through information technologies, artificial intelligence, and decision-support systems</td>
</tr>
<tr>
<td><strong>Phrónésis</strong></td>
<td>By recording lessons learned and case studies in the ongoing organizational experience</td>
<td>Case books, project retrospectives, and narratives</td>
<td>Stored, replicated, and delivered through rich media-based computer technologies</td>
</tr>
<tr>
<td><strong>Noûs</strong></td>
<td>By determining paths to those people who have exhibited relevant noûs within the organization</td>
<td>Social networks guided by metaknowledge describing participants and their capabilities</td>
<td>The network through which noûs is uncovered is enabled by computer-mediated communications, forums, and online communities</td>
</tr>
<tr>
<td><strong>Sophía</strong></td>
<td>Not a goal of knowledge management</td>
<td>Not a goal of knowledge management</td>
<td>Not a goal of knowledge management</td>
</tr>
</tbody>
</table>

FUTURE DIRECTIONS

For knowledge management to advance, it must continue to explore different theories of knowledge and how those theories will affect both the representation and use of knowledge in organizations.

Viewing knowledge as something that we want to manage forces us to narrow down the realm of epistemology to something we can handle in an applied manner. The analysis shown in this article can also be fruitfully applied to other philosophies of knowledge that differ from the Aristotelian view.

Table 2. Mapping Aristotle’s knowledge virtues to KM processes

<table>
<thead>
<tr>
<th>Process</th>
<th>Noûs</th>
<th>Epistémé</th>
<th>Téchné</th>
<th>Phrónésis</th>
<th>Sophía</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acquisition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>creation</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>n/a</td>
</tr>
<tr>
<td>discovery</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>gathering</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>validation</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>modeling</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>classification</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>calibration</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>integration</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Distribution</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sharing</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>reuse</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>maintenance</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>dissemination</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
</tbody>
</table>

The choice of processes presented in Table 2 is by no means definitive: There are many KM frameworks and models proposing equally attractive alternative sets of processes. However, we should seek the broadest possible matching or coverage between our proposed KM processes and the core knowledge virtues. Subjecting a model of KM processes to some form of “Aristotle test” can help us evaluate the completeness of that model.
CONCLUSION

Understanding and defining knowledge can lead us to an open-ended philosophical debate, or it can lead us to a pragmatic characterization aimed at enabling the organizational goals of knowledge management. By choosing the latter, we are able to focus on those elements of knowledge that truly make a difference in practice: in this case, a mapping of the Aristotelian view to managing knowledge in organizations.

Knowledge can be debated at an epistemological and theological level as seen from Aristotle down to Heidegger and beyond. It can be debated at an implementation and representational level as seen in the ongoing knowledge-information-data discussions. We need to understand and appreciate both debates if we are to engage in the management of knowledge, but we should not let the lack of resolution in either debate hinder our advancement. The pragmatic, process-oriented view of defining and understanding knowledge is what we need to embrace, while the insights from both knowledge debates will continue to inform our activities and enrich our understanding. Examining the philosophical bases of knowledge will enable us to move outward from the philosophical core of Figure 1, to relevant KM processes that can then be moderated by and applied to organizational settings.

Each type of knowledge has different applied value and different challenges in acquisition, organization, and distribution. Aristotle’s five core intellectual virtues or types of knowledge can even today serve as a base from which we launch our knowledge-management initiatives, and understanding them will help guide us.

REFERENCES


Aristotelian View of Knowledge Management


KEY TERMS

Epistémé: Aristotle’s term for factual or scientific knowledge. Epistémé deals with real unchanging objects and what we can know about those objects, their characteristics, and their interrelationships. Covering self-evident, axiomatic principles and what can be logically derived from them, epistémé is central to a deductive system of reasoning. It is united with noûs to form sophía.

Knowledge Information Data (KID) Debate: A discussion (alternatively, the data-information-knowledge debate) that pervades the knowledge-management literature and attempts to determine at what point, if any, data becomes information, and information becomes knowledge.

Noûs: Aristotle’s term for intuition. Noûs does not follow particular rules of construction or deduction. It is viewed as the human ability to comprehend fundamental principles without demonstration or proof. It may emerge from téchné and phrónésis, and is united with epistémé to form sophía.

Phrónésis: Aristotle’s term for experiential self-knowledge or practical wisdom based on experience. The end result, or realization of phrónésis, is action or praxis. Phrónésis should determine the correct means to achieve a particular action.

Sophía: Aristotle’s term for theoretical knowledge of universal truths or first principles. Sophía is viewed as the highest level of knowledge. The end result, or realization of Sophía, is not to be found in action, but rather in theory, which can be developed by understanding and applying the elements of epistémé and noûs.

Téchné: Aristotle’s term for skills-based technical and action-oriented knowledge: how to perform a specific task. The end result, or realization of téchné, is the production of something.